



2014 ZOO REVIEW

Annual Report of the North of England Zoological Society
for the year ended 31st December 2014



Our Vision

A DIVERSE, THRIVING AND SUSTAINABLE NATURAL WORLD.

Our Mission

TO BE A MAJOR FORCE IN CONSERVING BIODIVERSITY WORLDWIDE.

Chairman's Statement

BUILDING ON OUR SUCCESS

Following the completion of the roof of the Monsoon Forest last October, the sheer scale of the *Islands* development has become even more apparent. This remarkable building, together with the extensive outdoor elements of the scheme, will soon be providing members and other visitors with an immersive wildlife experience unlike anything that has been seen before in this country.

The main contractors, Laing O'Rourke and Read Construction, are completing their work on the project, while other specialists are finalising the detailed planting and theming that will bring *Islands* to life. The last few months of the project will include an acclimatisation and testing phase, during which animals will transfer to their new accommodation, allowing them to adjust to their surroundings before the opening in July.

Following its construction last year, the Nature Reserve was officially opened by the well-known natural history writer and broadcaster, and NEZS Trustee, Professor Stefan Buczacki on 13th May 2014. This milestone event marked the first phase of a development that we hope will grow within the land holding of the zoo, both in area and maturity, over future years.

2014 was the busiest ever for the zoo with total visitors numbering 1,432,867. The record-breaking numbers in September, October, November and December were helped not only by the fine autumn weather and successful events such as Lantern Magic, but also the publicity arising from the popular BBC television series *Our Zoo*,

a dramatised version of the founding of Chester Zoo.

Membership of the Society also continued to rise, reaching a record level of 57,835 in 2014. This represents an increase of almost 8,000 on the previous year, and 15,000 since 2012.

The success of Chester Zoo has been recognised by a number of awards this year. TripAdvisor™ awarded the zoo a 2014 Certificate of Excellence, signifying that it has consistently earned outstanding feedback from their travellers. Significantly, the zoo won the 2014 TripAdvisor™ Travellers' Choice Attraction Award: Best rated zoo in the UK. It also came second in Europe and sixth in the world in these awards for zoos and aquariums. Chester Zoo was voted the UK's Best Animal or Sea Life Attraction at the Group Travel Awards in London in June 2014, and the Tourism Experience or Event of the Year for our Lantern Magic event at the Marketing Cheshire Annual Awards 2014. We were also awarded the Silver Medal for our Summer Garden 'The threatened islands of South East Asia' at the RHS Flower Show at Tatton Park in July 2014.

The German conservationist Roland Wirth, who has been involved with the zoo since the late 1980's, was the 2014 recipient of the NEZS Gold Medal for his outstanding lifetime achievements in species conservation.

The 80th NEZS AGM that took place in the Lecture Theatre on 24th June 2014 was again a well attended event. The 2013 Annual Report and Statutory Accounts were

formally approved and Malcolm Ardron, Angela Pinnington and Simon Venables were formally elected as Trustees of the Society. Before the statutory items of business, there was a review of the events of 2014, and a question and answer session with the zoo Directors present.

Early in 2014 the Trustees formally endorsed the second five year Strategic Plan for the Society for the period 2013-18. Work will soon commence on developing an even longer-term strategy, both in terms of the masterplan for the zoo itself, and the role of the organisation in worldwide conservation.



Professor Peter Wheeler, Chairman, North of England Zoological Society



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Cover: We have bred two Black crowned cranes in 2014. This page: Grevy's zebra born at Chester Zoo in 2014.

Director General's Review

CELEBRATING OUR HERITAGE WHILST LOOKING FORWARD



2014 was always going to be an interesting year. Many of our staff and our Trustees spent a tremendous amount of time and energy planning, designing and building the *Islands* project, which you will read more about later in this Annual Report. This work will continue to accelerate as we get closer to the opening in 2015 and wrestle with the all important details. Even so, 2014 turned out to be an extraordinary year in a number of ways. Firstly it was record breaking with our highest ever number of visitors! You will find more details of the records broken within Managing Director Jamie Christon's report.

NEZS, Chester Zoo is a conservation and education charity. I was delighted to see two initiatives finally come to fruition in 2014 that I have wanted us to do for some time. Firstly, the opening of the first phase of a Nature Reserve on our very own land. This was a hugely significant event, allowing us, in the long term, to get the best possible value for wildlife from our extensive land holding and demonstrating that conservation of our local, native biodiversity is as important as the often more exotic biodiversity overseas. It was very fitting that wildlife expert, TV presenter and NEZS Trustee Professor Stefan Buczacki officially opened this first phase. I must thank all those volunteers and sponsors who made this possible. The second initiative was our

first ever 'Chester Zoo Expedition' where we took a few of our in-house experts and staff drawn at random from all areas of the zoo to the west coast of Ecuador to continue important research into the biology of the Ecuador amazon parrot, a bird many of you will know is close to my heart. It is my intention that there will be an official expedition each year to give as many of our staff as possible the experience of assisting with our conservation and education efforts around the world.

Early in the year we were all thrilled to hear of the BBC's intention to produce a period drama series depicting the Mottershead family's trials and adventures in buying Oakfield House and creating Chester Zoo. The amazing story of George Mottershead's vision and determination to form Chester Zoo has up until now, been relatively unknown especially compared to the stories of other great zoo founders like Gerald Durrell O.B.E. That the programme was enjoyed by millions of people across the UK with its wonderful authenticity and charm was in great part thanks to the involvement of George's daughter, June Williams, who was wonderfully depicted as an eight year old in the series by Honor Kneafsey. Honor really captured June's deep love of animals and wonderful sense of fun. June, who remained a great friend to the zoo, sadly passed away in May 2015 but we know she had enjoyed seeing the amazing story of her father's great passion, drive



and determination to found our zoo be so beautifully told.

There were some very welcome new additions to the animal collection in 2014. Details of these can be found on pages 13-15 however I must highlight the arrival of the Aye-aye, an Endangered and enigmatic nocturnal lemur. I am delighted that we are involved in this European Breeding Programme. Our dedication to working in the field to conserve species and habitats was demonstrated by us taking over responsibility of the Gashaka Biodiversity Project in Gashaka Gumti National Park, Nigeria.

It is a great privilege for me to lead this zoo with our staff who share George Mottershead's passion, drive and determination to make NEZS, Chester Zoo the best it can possibly be. My sincere thanks to the Directors, Trustees, Members, staff and all who visited us in 2014 for their tremendous support.

Mark Pilgrim, Director General

Left: The Director General Mark Pilgrim and Professor Stefan Buczacki at the opening event of our Nature Reserve.

Right: Honor Kneafsey as June (Our Zoo) with June Williams.

Managing Director's Review

2014 - A RECORD YEAR!



If you read last year's Annual Report, I talked about preparing the zoo for the future. In many respects, the future is here as we work towards opening *Islands* this coming summer.

As Managing Director, part of my responsibility is to ensure operational readiness following the long period of construction. We have watched a series of grassed fields slowly turn into a landscape of accented buildings, planted banks, huge enclosures and river crossings that will theme this amazing new experience.

My report went onto say that the zoo had to remain focused on the opportunities and challenges ahead. Although *Islands* has been and remains a big part of our life on a day to day basis, I was pleased that we have surpassed previous year's performance right across the spectrum within the existing zoo.

The building blocks for future growth are there, evidenced by having a record breaking year welcoming 1,432,867 visitors during 2014. I reported over 50,000 members of NEZS in 2013, this increased to nearly 58,000 in 2014. Records were even set with over 1,500 animal adoptions in the month leading up to Christmas smashing a record last made in 2009.

The zoo team have worked towards a package of year round events and attractions. In spring we saw Bloom, a

celebration of gardens, birds and UK wildlife. At the opposite end of the year, Lantern Magic made more records attracting 28,000 visitors to a pre-Christmas tour of the site at night. The December event went on to win the Marketing Cheshire "Best Event" Award for 2014.

Despite unpredictable summer weather, we also had some record numbers and working with the Girl Guide Association helped regional Brownie groups break a Guinness World Record with over 1,500 sleeping under a single roof during September.

We respect and value the views of our members and visitors. The content of social media channels and websites such as TripAdvisor™ form part of the analysis of our service standards and so in August we were delighted to be named top zoo in the UK in their traveller's awards, and the sixth in the world.

With records in spring, summer and winter, autumn was no exception with weeks of glorious sunny weather and the founding of the zoo being dramatised on BBC1 prime time in a series of programmes called Our Zoo. The result boosted visitor numbers to an all-time high throughout the season and created millions of pounds of PR, promoting our vision and mission nationally and internationally.

These records were all set within the

existing zoo and have prepared us for what will undoubtedly be the biggest year in our history when it is likely records will be made again as we make final preparations to open *Islands* later in the year. Someone I met during 2014 said *Islands* was going to be "game changing" for UK zoos and I am sure its opening will change the whole dynamic of the Upton site forever. *Islands* is the start of what we want the future zoo to look like and will shape the creation of future master planning as we move through the forthcoming year.

Jamie Christon, Managing Director

Above: Managing Director Jamie Christon.

Highlights of the Year 2014 AT A GLANCE



JANUARY

A team of staff lead by Dr Mark Pilgrim travel to Ecuador to research the Ecuador amazon parrot.

Amphibian experts trial a technique to tag a population of 80 of the zoo's Golden mantella frogs with silicone implants, which could play a part in helping to save one of the smallest and most spectacular frogs in the world.

FEBRUARY

A rare Grevy's zebra foal, a female named Merida, is born – the first of its kind to be born at the zoo for over 30 years. Two new Komodo dragons arrive from France.

Bloom, a season of events to celebrate gardens, birds and UK wildlife is launched.

MARCH

We release the first video animated fly-through of how our new £39m *Islands* project will look.

Official figures reveal we are England's most visited attraction outside London, for the third year running.

APRIL

Vets, keepers and doctors swing into action as orangutan Vicky successfully undergoes a sinus operation – the first time the procedure had ever been carried out in the UK.

Four Humboldt penguin chicks hatch bringing the zoo's penguin colony of penguins to over 35.

Left: The opening of our two-acre Nature Reserve in May.

Right: The first UK orangutan sinus operation.

MAY

Our two-acre Nature Reserve, created to help UK native species, opens.

We welcome the arrival of two warthog piglets, the first to be born here.

Primate experts begin a study on orangutans' teeth in a bid to help conservation projects in Malaysia and Indonesia.

JUNE

Four year old Spectacled bear Bernardo arrives from the USA as part of our plans to breed the animals.

Births include a Wide-eyed lemur, yet another first for the zoo.

We help the Large heath butterfly back to a Lancashire nature reserve after a 100 year absence.

JULY

The Ecuador amazon parrot is given a new 'Endangered' status from the IUCN with help from findings from our expedition to South America in January.

AUGUST

Delight as we are named the UK top zoo and Europe's second best zoo in the TripAdvisor™ travellers' choice awards.

Birth of male tapir, Zathras, the first male to be born at the zoo in eight years.

A male Philippine mouse deer described as "not much bigger than a rabbit" moves to the zoo.

SEPTEMBER

Our Zoo, a six-part TV drama based on the inspiring story of the zoo's founder George Mottershead and his family in the 1930s, opens on BBC One.

Kifaru, a 29 year old Eastern black rhino, arrives from Hanover Zoo to bring vital new blood to the European population of this rare species.

We celebrate 80 years as a wildlife charity by launching Me, You & the Zoo, an online archive of personal pictures, films and stories from the zoo's history.

OCTOBER

We hold our annual Go Orange fundraising campaign, raising over £16,000 for orangutan conservation.

A rare anoa calf – the world's smallest species of wild cattle – arrives after a 282 day pregnancy for first time mum, Oana.

Building work on *Islands* enters the final stages, as the roof on *Monsoon Forest* is finished.

NOVEMBER

Delight as we win Event of the Year for Lantern Magic at the Marketing Cheshire Annual Awards.

DECEMBER

We gear up for the opening of *Islands* in summer 2015 by launching a new interactive website.

Christmas comes early for keepers with the very special delivery of a rare Rothschild giraffe calf, Zahra.

We finish the year on a high with a record breaking 2014, visitor figures reach 1,432,867 the highest in our 84 year history!

Reflections on the Year FROM THE EXECUTIVE TEAM



Mark Pilgrim, Director General

"In the future, when we look back on 2014, it will probably be remembered as the year we prepared for *Islands*. While this is very much true, a great deal of our focus was on ensuring that every detail of the *Islands* project is of the highest standard, 2014 holds many other nice and significant memories for me. Leading the zoo's first overseas expedition to the forests of western Ecuador, including a number of staff randomly selected from across all departments, filled me with pride. In often uncomfortable conditions the team were excellent and we collected a great deal of very important data on the biology of the Ecuador amazon parrot that assists us to produce a conservation action plan and we also had a lot of fun. The opening of the first phase of our very own Nature Reserve on our land holding was a major milestone for the zoo. Being voted the best zoo in UK and sixth best zoo in the world by millions of visitors on TripAdvisor™ was a great morale boost to us all, indicating that while we are certainly on the right track as a fabulous zoo we still have room to improve."



Jamie Christon, Managing Director

"2014 was my first full year and was jam packed with memorable events. Many of these were achievements that had been reached in previous years but were then superseded by record breaking results and outstanding levels of work and commitment in 2014. Examples include record breaking months of September, October, November and December which led to the year of 2014 achieving the highest number of visitors ever. Our busiest day ever on record in August, was soon followed by being voted by our visitors as the number one zoo in the UK by TripAdvisor™ and sixth in the world. Other highlights include watching the filming of Our Zoo and then the pride as it was screened on national TV, then in December welcoming almost 28,000 visitors to Lantern Magic, nearly a 100% growth on 2013. Overarching all of this was witnessing the ongoing development of *Islands*, on a week by week, month by month basis and seeing it grow from nothing into readiness for summer 2015."



Simon Mann, Development Director

"2014 was an exciting and eventful year. Our *Islands* project developed from a massive civil engineering exercise into a site that by the year-end had iconic buildings, bridges and a river largely structurally complete. These are the framework for the plants, animals and artefacts that will tell the story of South East Asia's ecological diversity and beauty, and capture our visitors' imaginations from summer-2015. Many individuals, teams and organisations are contributing to bring this dream to reality and I am reminded over and over of the importance of teamwork and cooperation in delivering this milestone project whilst maintaining the high quality of animal welfare and visitor enjoyment within the existing zoo."



Stephanie Sanderson, Science and Education Director

"2014 has been an excellent year. We have made great strides forward in using science to support the animal and plant collection and our skills and expertise have been recognised with a bumper crop of scientific publications. Our educational offer grows from strength to strength with even more opportunities for our visitors to engage with our staff and animals. And of course there is the *Islands* project for which we have been developing a new approach to connecting our visitors with conservation work out in the field. *Islands* provides a wonderful opportunity to learn more about how exhibit design impacts visitors' perception and understanding and this information will be critical in shaping our future developments."



Liz Carnie, Finance Director

"Joining in January 2014 I quickly realised that it would not only be an exciting year in itself but that with significant changes ahead we must continue to ensure our systems and controls evolve with us. Operational achievements and milestones were evidenced in our financial performance for the year and we were pleased to report both a record income and surplus, with income up 6% on the previous year and net incoming resources before other recognised gains and losses of 19%. Capital investment of our funds in the *Islands* project progressed at a pace alongside the continued upgrade of existing zoo facilities. Behind the scenes we upgraded our finance system and developed our website and management information systems in preparation for the opening of *Islands*."

North of England Zoological Society Strategy 2013-2018

A NATURAL VISION

Throughout 2014, the Trustee-approved strategy 'A Natural Vision' informed and guided the management team in planning, achieving and developing our mission and supporting business activities.

Strategic objective 1

To ensure that our conservation and educational activities, both in the zoo and globally, achieve the greatest conservation impact.



This means:

- having more control and influence over our field programmes;
- ensuring that we get the most conservation impact from the collection;
- understanding the expertise and specialisms of our staff and development of new skills required;
- empowering people to make environmentally positive life style changes;
- evaluating the conservation impact of our activities;
- ensuring that we consider the environmental sustainability of all that we do.

1. Logo of our Gashaka Biodiversity Conservation Project in Nigeria.

Strategic objective 2

To be a world class 'must see' visitor attraction, in terms of quality, service and enthralling experiences.



This means:

- providing immersive, authentic experiences, for visitors across all sectors of society, so increasing the reach;
- providing a personalised visitor experience;
- establishing and evaluating what it means to be 'world class';
- consistently provide high quality visitor facilities;
- maintaining year-round, high quality visitor experience;
- continuous improvement of site presentation standards.

2. Our immersive Butterfly exhibit.

Strategic objective 3

To be a centre of excellence for animal and plant care based on sound scientific principles.



This means:

- providing best practice animal and plant husbandry and care;
- ensuring our facilities are fit for the purpose of providing excellent care;
- focusing our science to support conservation and animal welfare;
- sharing our skills and experience both internally and externally.

3. A young orangutan.

Strategic objective 4

To ensure long term commercial viability through excellent business practices.



This means:

- broadening our income base via new markets, products, funding and land use;
- developing better intelligence and market analysis and exploiting this data to better understand our customers;
- working smarter to drive down costs;
- increasing winter revenue;
- revision of the pricing strategy.

4. Products on sale at the zoo's Ark shop.

Strategic objective 5

To ensure that our staff are recognised as being at the heart of the organisation and influence the success of everything we do.



This means:

- helping people innovate, assessing leadership and capability and producing a people development plan;
- ensuring we have excellent recruitment, selection and induction processes;
- improving staff facilities and staff welfare;
- developing a culture that means that everyone is an ambassador for our work;
- training and development including succession planning and building capacity;
- developing a system of reward and recognition that includes performance management, pay and benefits;
- initiating cross-functional working groups that build in flexibility.

5. Our staff getting involved with the Go Orange campaign.

Strategic objective 6

To ensure an excellent external reputation that builds trust and allows us to influence our stakeholders.



This means:

- developing and creating a clear brand and awareness of what we want to be known for;
- receiving industry recognition across multiple disciplines through awards;
- protecting our reputation and having robust crisis management processes;
- developing strategic lobbying on the issues that we feel strongly about;
- ensuring greater public engagement with our science and technology, conservation and commercial activities;
- continuing liaison with our partner organisations and peers, e.g., BIAZA, EAZA, WAZA, IUCN, ALVA;
- providing support and expertise to targeted zoos throughout the world in partnership with like-minded organisations to improve the general public perception of zoos.

6. Chester Zoo winning Event of the Year Award.

Natural Vision Masterplan DEVELOPMENT DURING 2014



Islands

As expected, the past year has been an exciting and at times challenging period, given the complex nature of the *Islands* project both architecturally and technically. Contractors Laing O'Rourke Ltd continued to deliver the *Monsoon Forest* building, and the extensive infrastructure for the site. They were joined on site by Read Construction Ltd in August 2014. The latter are contracted to construct 17 themed

buildings including enclosures housing tigers, babirusa, cassowary and other species and visitor facilities: the shop, toilets and restaurant. They are also completing all the public visitor spaces.

The restaurant will in fact be a 'street kitchen' taking inspiration from South East Asian cuisine with eating terraces giving views of anoa, the children's play area and *Manado Town*, which comprises a Sulawesi street scene complete with tuk tuk vehicles,

authentic buildings and a permit office where the visitor's expedition concludes.

Other contractors have performed a range of specialist services. These include glazing for the Sunda gharial underwater viewing within the *Monsoon Forest* and for other viewing windows, rockwork to reflect different geographical features across the islands and construction of ten bridges. The names of the bridges describe their very different appearances - Dragon Bridge,

Rock Bridge and Bamboo Bridge for example – and each bridge is thematically linked to an island.

The 50,000 plants within *Islands* will be distinctive, and many are unique to specific islands in the scheme. They will include some large trees and a variety of palms and bamboo species as well as shrubs and ground cover. The water channel for the *Lazy River Boat Trip* passes through different terrains and the planting selected for the waterside will help retain the soil along the steeper stretches. Truly exotic species will be located in the *Monsoon Forest* where the canopy trees will rise to a height of nine metres (and continue to grow each year) providing habitats for tree-dwelling and forest floor birds and other fauna.

The 14 river boats have been built in Germany and will be themed with seven different designs in North Wales. Four of them have access for disabled visitors. They will be guided by pulley around a 450 metre channel, passing through misty gullies, stony river beds, and sandy beaches and taking in unique views of the animals, some at eye level, across dry and wet moats. Evidence of Sunda gharials, turtles and other species as well as fishing, hunting and conservation work will be visible from the safety of the boat.

To accommodate the additional visitors attracted by *Islands* the zoo negotiated release of some 16 acres to provide parking for extra vehicles and has invested significantly in approved highways works to promote better traffic flow to and from the site. We are also delivering infrastructure to support sustainable travel choices and will be constructing a cycle path along the A41 in the next 12 months.

Nature Reserve

The Nature Reserve, with trees and a dipping pond, opened in spring 2014 and provides a home to a variety of native wildlife. It is intended that this will form the nucleus of a larger reserve in years to come as funds become available.

Existing Zoo

Although the main focus of activity has been the *Islands* project, the existing zoo has not been neglected over the past year. In 2014 investment was made in renewing the Humboldt penguin decking and redecorating 40 site buildings and structures including catering kiosks and toilets.

The zoo's Maintenance Team have continued to support all core activity including the decommissioning of the *Bugs!* exhibit and the set-up of the Christmas Lantern event. To deliver improved animal welfare the team have performed pool modifications at *Wetlands*, made animal transit crates and executed additional containment works at *Monkey Islands* and mixed Asian and sloth exhibits. Thousands of scheduled servicing and responsive repairing and maintenance activities have also been carried out. Mechanical, drainage and electrical upgrades have also occurred to support commercial activity and deliver infrastructure to serve 1.4 million visitors.

Oakfield House has been subject to particular attention in consideration of the expected increased interest in the building following the *Our Zoo TV* series, with a full refurbishment planned for the future.

Environmental Management

On 1st October 2014 we were re-accredited to the ISO 14001 standard for our Environmental Management System (EMS). We remain as proud today of our continued accreditation to this internationally recognised standard, as when we became the first UK zoo to achieve it in 2004. It provides a methodical, auditable and independently accredited structure for managing environmental legal compliance and driving performance improvement.

In 2014, in consideration of the zoo's Natural Vision strategy, (in particular strategic objective one which encompasses environmental sustainability) the EMS was subject to a full revaluation to ensure its objectives remained harmonious with both strategy and mission.

Key Objectives

Success was achieved in each of the key EMS objectives. Those most notable when comparing to 2013 to 2014 were:

- 12%** reduction in whole site energy
- 26%** reduction in mains water use in the targeted 'primary user group'
- 5%** reduction in single car occupancy for staff commuting to work.

On-site recycling rates continue to increase and waste sent off-site for recycling

reduced from 0.31 kg per visitor to 0.26kg per visitor. Sustainable procurement and environmental behaviour change are other key aspects promoted within the EMS, and the Green Team continues to promote initiatives and support colleagues with policy implementation in these areas across the business.

A modified Type 2 Carbon footprint was undertaken in 2014, covering our emissions from energy, water and waste/recycling. This evidences a footprint of 4,565 tonnes CO₂e which is a reduction of 10% on the 2013 figure.

On 1st May 2014 auditors for the Green Tourism Business Scheme (GTBS) undertook a comprehensive audit of our environmental practices and we were delighted to receive the scheme's Gold Award following ratification by the GTBS.



Our Environmental Manager is vice chair of the BIAZA Environmental Sustainability Group. The most notable input in 2014 was his work on the development of BIAZA-wide KPIs for environmental performance and revision of the BIAZA guidelines for environmental business best practice.

Members of the zoo's Green Team participated in events to promote its work including the Local Authority Green Day held at the Chester Town Hall.

Left: *Islands* site.

Progressing our Mission

CONSERVATION AROUND THE WORLD



Through the implementation of our strategy, all of the activities of NEZS Chester Zoo either directly or indirectly support our mission 'to be a major force in conserving biodiversity worldwide'. Throughout the pages of this Annual Report you will find some wonderful examples of activities throughout the year in support of this mission.

Tragically the need is greater than ever and while habitat destruction remains the greatest threat to biodiversity an extremely worrying trend is the accelerating growth of the illegal trade in wildlife. This trade is having enormous adverse effects on biodiversity. It is of such a scale that wild populations of some charismatic species such as rhinos, elephants, tigers and apes may be traded to extinction within a few years. This trade is behind the highest rates of poaching of rhinos and elephants recorded in recent history. It is not only the charismatic mega fauna that is effected, the wildlife trade is having disastrous effects on populations of many and varied taxa including corals, song birds and owls, particularly in South East Asia, pangolins, lorises and many species of lower vertebrates. Additionally, climate change, and the introduction of invasive species are also responsible for huge biodiversity loss.

We strongly believe that modern progressive zoos can play a large role in the fight against the loss of biodiversity given the necessary resources and leadership. The areas of zoo activity that contribute

directly to conserving biodiversity can be divided up into three activities:

The breeding of species within a captive environment for which there is a real need as part of an action plan for that species.

One nice example of the breeding success of Critically Endangered species in the zoo in 2014 was the Baer's pochard, a small duck whose wild population is suffering an extremely rapid decline. We were delighted to successfully rear 30 of these birds in our specially developed waterfowl breeding facilities. There are many other examples of breeding successes that occurred throughout the year which can be found later in this report.

Direct support of conservation projects and programmes in nature to protect endangered species or habitats.

Not only do we need to manage and breed species in the zoo, if we are to conserve these species in nature for the long term we also need to play an active role in protecting their habitats. During 2014 our long term field programmes went from strength to strength as you can read on pages 26 to 41 of this Annual Report.

Inspiring our visitors about the natural world such that they care enough about nature to make changes in their daily lives that benefit nature and the environment.



While we can be justly proud of our breeding results and our work in the field protecting species and habitats at grass roots level, perhaps our most important role in long term conservation of biodiversity is in inspiring people to care enough about nature to take some action. The more than 1.4 million people who visited Chester Zoo in 2014 and especially our members, provide us with a wonderful opportunity for engagement. Through our zoo exhibits and our messages we need to connect people with wildlife, inspiring them to appreciate it and the value it brings to our lives and the lives of other people. Biodiversity is crucial to human wellbeing, sustainable development and poverty reduction. But people - particularly those in the developed world - have become so far removed from nature that they have forgotten how much they, and others, rely on it.

The delivery of these activities relies heavily on sound science as well as passionate committed people. It is this essential three pronged approach to nature conservation that we believe places zoos uniquely as the only organisations with an ability to do all three.

Left: Critically Endangered Baer's Pochards hatched at Chester Zoo.
Right: Bird market in Java.

In-Zoo Developments

KEY DEVELOPMENTS: ANIMAL AND PLANT COLLECTION DURING 2014

Mammals

2014 saw a continued focus on the *Islands* development. With construction under way, the team has been working to make sure all new enclosures are built to allow the highest standards of animal welfare and to ensure keeper and visitor safety.

Breeding management and the import and export of stock has also been essential preparation for this exciting project and the zoo celebrated the birth of a female Lowland anoa calf in October, the first female to ever be born at the zoo and a great success for this Endangered species. Other breeding success for *Islands* stock this year included a Visayan warty pig and a Babirusa piglet. With two Javan banteng females imported from European zoos, and two calves born, the current herd has increased to seven individuals. The zoo brought three adult warty pigs from the European Breeding Programme and a new species in preparation for *Islands*: the tiny Philippine mouse-deer arrived in July from Rotterdam Zoo.

There have also been some key births and arrivals for core zoo stock this year including a female Grevy's zebra born in February. Highlights over the summer months included the birth of two Critically Endangered primates (an Alaotran gentle lemur and a Buffy headed capuchin), a male South American tapir and two Red panda cubs.

In the summer we also saw the departure of two longstanding zoo residents: 46 year old female Asian elephant Jangoli moved to Madrid after 20 years at the zoo and 15 year old Eastern black rhino male Sammy left after 12 years to go to his new home in Port Lympne as part of breeding programme recommendations.

The Bornean orangutan group, temporarily housed at the zoo, returned to their new facility at Blackpool Zoo in July and a new male arrived from Apenheul Primate Park a few weeks later. We also welcomed a male Spectacled bear to the zoo in June with a two year old female joining him, and our existing resident female in October.

Another important arrival in the latter half of the year was a 29 year old male Eastern black rhino from Hannover Zoo. Having only sired three calves previously, he is an important animal within the European Endangered Species Breeding Programme. It is hoped that, by breeding with the zoo's existing female rhinos, he will add genetic diversity to the zoo population; a vital ex situ



Birds

Our Curator of Birds and a Bird Keeper spent two weeks at the end of January in the Cerro Blanco Forest in Ecuador, participating in the zoo's first field expedition, the focus of which was to gather data on the biology and population of the Ecuador amazon parrot in the dry forest and adjacent mangroves. During the latter part of the year work started to re-landscape the on-show parrot aviary at the *Parrot Breeding Centre* into an Ecuadorian habitat resembling the dry forests of Cerro Blanco.

Top: A new male Spectacled bear arrived at the zoo in June.

Top Right: The tiny Philippine mouse deer, a new species for *Islands*.

Bottom: A female Lowland anoa calf, a first in the zoo's history.

Bottom Right: Ecuadorian habitat on-show parrot aviary at the *Parrot Breeding Centre*.

conservation measure for insuring the future of this Critically Endangered species.

As the year drew to a close, we received an early Christmas present with a female giraffe calf born on the 23rd of December, the first calf to be sired at the zoo by our new bull.

New species for the zoo during the year included Aye-aye, Naked mole-rats, Short-eared elephant shrews and Luzon cloud rats. We also now house a female Scottish wild cat (off-show) with hopes for a male to eventually join her as part of an essential breeding and reintroduction effort for this native species.

In-Zoo Developments

KEY DEVELOPMENTS: ANIMAL AND PLANT COLLECTION DURING 2014 (CONT)



Our Curator of Birds also attended the World Pheasant Association (WPA) conservation meeting at the Cotswold Wildlife Park, where a number of issues were discussed including the plight of the Edwards' pheasant. This species is managed by a number of European zoos, however its status in the wild in Vietnam is bleak and its extinction may be imminent. We are supporting the WPA in genetic studies into the purity of the captive population.

Notable arrivals during the year were a female Great argus pheasant, two female Cabot's tragopan and four Collared partridge. We also successfully parent reared two Black crowned cranes. A new species to the collection is a pair of Luzon lowland scops-owl which arrived from Wrocław Zoo in Poland and Plzen Zoo in the Czech Republic. These birds will be housed in one of the aviaries in the *Tropical Realm*.

Our Curator of Birds spent the first part of August in Singapore and Java working on the long term strategy for a number of highly endangered Indonesian passerines. Following a series of bird thefts at Cikananga Conservation Centre, Java, in June we are now working with colleagues there to disperse some of the birds to other good breeding facilities in the region and establish insurance and conservation-breeding populations in EAZA institutions including at Chester Zoo.

Several bird conservation meetings during 2014 including the 4th Threatened Songbirds of Asia working group (TWASG) meeting at Whipsnade Zoo, the second global management species planning meeting for the Critically Endangered Blue-crowned

laughingthrush and a Mauritius pink pigeon master-planning meeting were attended by our Curator of Birds. This latter Endangered species re-joined the collection after an absence of seven years and the team converted an old off-show aviary block into a new Mauritius pink pigeon rearing facility, including a foster dove room and weaning aviaries.

Our Bird Assistant Team Manager gave a presentation on our Critically Endangered Grey-breasted parakeets and one of our Bird Keepers gave a presentation on techniques for controlled parent-rearing of our waterfowl at the BIAZA annual bird meeting at the Hawk Conservancy Hampshire.

Following on from their previous field work, two of our Keepers spent three months working on the Mauritius cuckoo-shrike project. This involved finding nests and rescuing chicks or eggs from nests, the majority of which are normally otherwise predated by introduced mammals. The chicks were hand-reared at the Black River Aviaries, in Mauritius, where they will be established during 2015. The intention in the future will be to re-introduce this species to a newly protected nature reserve known as Ferney Valley.

Lower Vertebrates and Invertebrates

Creating a balance between maintaining the zoo, providing fresh experiences for our visitors, developing strong links with *in situ* conservation projects, and preparing for the opening of *Islands* has resulted in a very busy year in the lower vertebrate and invertebrate departments.

We continued to expand the *Tropical Realm* through the addition of two new amphibian displays this year. These new exhibits house large groups of Marañon poison frogs, from the high altitude mountains of Peru, and Golden mantella frogs from Madagascar. The latter species being a key focus of our amphibian conservation programme. The team also had great success with the breeding of native Sand lizards - a total of 31 were released at Talacre sand dunes in North Wales as the second part of an annual release onto the site.

The aquarium within the *Spirit of the Jaguar* exhibit saw the arrival of waves of new species, the tank now holds more than 3,500 fish of 21 species. The tank is also home to a large group of turtles, and the occasional visiting sloth! The *Spirit of the Jaguar* exhibit



has also seen improvements to the Leaf cutter ant exhibit; visitors are now able to view different areas of the interior of the colony. Other new species that arrived during 2014 that are now on display include the White-banded cleaner shrimp and the Upside-down jellyfish.

The dozens of new species destined for the *Islands* collection have been slowly arriving and all are settling in well. The project has been a long time in the planning, key aspects of this have included husbandry and functionality of exhibits, support facilities, managing sustainable colonies within the zoo, compatibility of species for mixed exhibits, visibility of animals, veterinary considerations, feasibility of similar species rotation between exhibits, educational value of exhibits, research/conservation roles, and collaboration with other institutions involved in breeding programmes.

As the invertebrate collection has grown so much in preparation for *Islands* we have modified two new rooms to act as support



breeding units. Our team has been carefully working on settling everything in, and have had some breeding successes too! The new arrivals held in the support facilities include, amongst others Giant asian mantis, Jewel wasp, Malaysian dead leaf mantis, Asian forest scorpions, and a large variety of stick insect species.

In the lead up to *Islands* the reptile collection has also increased. Our quarantine facility currently holds a whole group of Asian forest tortoises, in addition to Malaysian giant turtles and Asian pond turtles due to be moved to *Monsoon Forest* within *Islands*. Other new species settling in include the Javan sun skink and the Mountain horned dragon, both of which are hoped to be included in a mixed species exhibit alongside amphibians and fishes.

During this already busy period we have also had great success behind the scenes with the breeding of some highly unique species including the Cinnamon frog, Mao-son frog, and the Tentacled snake. The Aquarium Team have also experienced positive results with their new groups of species such as Betta pallifina, Liquorice gourami and Giant pipefish.

In the *Butterfly House* we have increased the diversity of the visitor experience by introducing staff presentations which provide opportunities for interaction with a variety of invertebrate species such as; Giant African millipedes, African praying mantis, and Hercules beetles.

Our staff have been busy in terms of training and providing support for other programmes, running a series of internal workshops, on topics such as culture of live food, enrichment in aquariums, water quality, and in the herpetological department a workshop about individual marking techniques and theming work.

With the combination of all of these components we have been able to make a substantial progression this year with our husbandry standards and in our ambitious preparations for *Islands*.

Horticulture and Botany

Horticulture and Botany staff were involved in a number of events associated with the zoo's Bloom campaign. Meet the expert sessions were arranged for visitors every fortnight from February to June. Talks included three separate nursery tours, looking at the specialist plant collections and native plant conservation projects, as well as talks



at *Glorious Grasses; Rock Garden, Tropical Realm* and the *Sunken Garden*.

A team member visited the Gashaka Gumti Biodiversity Project in Nigeria, working with taxonomists from Kew Gardens studying the flora of the National Park. They were able to identify and collect plant material and train local plant rangers to take herbarium specimens. It is hoped that this is the start of long term collaboration with Kew in this region.

72 Black poplar trees, grown at the zoo, were taken by partners to plant at various locations throughout Cheshire and North Wales. These included 30 trees to a site near Macclesfield where it is hoped a field gene bank of this locally threatened tree.

The next phases of the planting of Common barberry, for the Barberry carpet moth project, took place on the Shropshire Union Canal.

Site visits were undertaken to monitor the populations and condition of four rare native plants that the zoo is working with including the Isle of Man cabbage, Southern horsetail, Limestone woundwort and Common juniper. In all cases there was evidence that the reintroduced plants were doing well and some natural regeneration was occurring.

Working closely with the Herpetology Team a new Leaf cutter ant exhibit was constructed by the theming team in the *Spirit of the Jaguar* exhibit. In the past this was always a very popular exhibit and it was exciting to get this species back on show.

The zoo hosted the joint annual conference of the BIAZA Plant Working and Native Species

Working Groups. The conference was held over two days and focused on native plant and animal conservation subjects. A number of speakers from zoos and other conservation organisations gave a range of stimulating and thought provoking talks. Workshops were also held and a visit to the Nature Reserve took place.

The Horticulture and Botany Team designed and built a Show Garden at the RHS Tatton Flower Show. The garden was called 'The threatened islands of South East Asia' and was designed to showcase the *Islands* project. The garden was centred on a ruined Buddhist temple and also featured a traditional fishing boat on a stream. The planting was lush and contained orchids, Nepenthes, ferns and a wide range of large leaved and unusual exotic looking plants. The garden was awarded a Silver Medal and was seen by an estimated 80,000 visitors to the show. Additionally Monty Don did a short piece on the garden which appeared on the BBC.

Planting started on the *Islands* project with the planting of the Visayan warty pig, Babirusa, Anoa and Macaque enclosures. We were very proud to win the North West in Bloom trophy and be awarded a Gold Medal.

Far Left: A Cabot's tragopan, a new species to the zoo in 2014.

Far Right: New off-show *Bug Breeding Centre*. **Far Right Bottom:** Our Curator of Lower Vertebrates and Invertebrates with a Golden mantella frog.

Top: The Silver Medal was awarded to the 'threatened islands of South East Asia' garden created by our Horticulture Team at the RHS Tatton Flower Show.

Supporting the Animal and Plant Collection

ENSURING EXCELLENT STANDARDS OF ANIMAL HEALTH, WELFARE AND HUSBANDRY



The Animal and Conservation Medicine staff work closely together and with external partners to ensure excellent standards of animal health, welfare and husbandry. Their activities are audited by the Animal Health, Welfare and Husbandry Sub-Committee of the Conservation and Education Committee – a committee of the zoo's Council. Some of the key support services are highlighted below:

Veterinary Service

Chester Zoo has an in-house team of vets and nurses to provide clinical care to the collection. As well as providing care for sick animals the department also manages a comprehensive preventative health care programme. 2014 was a busy year with a variety of challenging cases, both at individual and population level. Examples include the echocardiographic examination of our 90 kg Reticulated python, the first recorded successful treatment of a case of pox virus in a Giant anteater and, in cooperation with our local species programmes, the vaccination of Badgers in neighbouring zoo land, as part of a comprehensive programme for the protection of the zoo and local wildlife against bovine tuberculosis. A total of 1,816 clinical cases were handled and 552 post mortem examinations were carried out in a wide variety of species and sizes, ranging from frogs to hoofstock.

The department is committed to training. During 2014 it hosted 16 visiting veterinary graduates and undergraduates, provided a residency programme in Conservation Medicine, maintained ongoing teaching collaboration with Liverpool Veterinary

School and delivered conservation medicine courses and ape health workshops abroad in association with organisations such as OVAG (Orangutan Veterinary Advisory Group).

The veterinary department also continues to support Chester Zoo's conservation projects in Malaysia, Indonesia, Montserrat and the UK and represented the zoo in multiple fora including BIAZA, British Veterinary Zoological Society and the European Association of Zoo and Wildlife Veterinarians and the United Nations World Parks congress.

Animal Moves and Records

Accurate record keeping and inter-zoo animal transfers are critical animal management tools and vital to our contribution to international breeding programmes. 2014 saw a 50% increase in animal moves as we gear up for the opening of the *Islands* zone in 2015. The team moved 6,747 individuals in 197 separate transactions (42% of these being international moves) including over 5000 fish, reptiles and invertebrates for our new exhibits. As well as the logistics of arranging their safe transport and providing well designed travelling boxes, permits must be obtained, animal health regulations met and stringent quarantine of all incoming animals undertaken.

Developments in record keeping include transfer of our medical records to the Zoological Information Management System (ZIMS) in November 2014. This is a significant advance allowing effective transfer of all animal records from one institution to another when an individual moves and ensuring better continuity of care.

**Endocrine Service**

Monitoring of reproductive and adrenal hormones enables us to adapt our husbandry practices to support animals better through pregnancy, birthing and the post-partum period. The endocrine service routinely completes reproductive hormone monitoring of four key species within the collection, Asian elephant, Black rhino, Okapi and Onager. We also offer an endocrine service to other collections and institutions across Europe. In 2014 we worked with over 30 institutions, analysing samples from 60 different species.

Animal Feeding Programme

As well as purchasing proprietary feed stuffs, animal food is also produced and harvested by our Animal Supplies Department (ASD). During 2014, ASD sourced, stored and distributed the 400 stock lines and 2000 tonnes of animal food, bedding, browse (cut leafy branches) and fresh grass. This includes 800 vehicle loads of browse, 450 tonnes of forage and bedding, 300 tonnes of fruit and vegetables, 250 tonnes of bagged foods, 35 tonnes of meat and fish and 80,000 chickens, rabbits, rats, mice and day old chicks. Additionally its invertebrate breeding colony produced over three million crickets.

Our Nutritionist works closely with the teams to ensure that the animals are fed diets optimised for their health and wellbeing. Over 425 diet sheets have been produced and 2014 saw the addition of another 50 for species new to the collection. Another 50 are in preparation for species going into the *Islands* exhibit. Our Nutritionist is also leading an international team in the production of FAUNA, modern, efficient and intuitive software to boost the effectiveness of budget management, record-keeping and all communication associated with zoo animal feeding.

Applied Ethology Programme

In 2014 we monitored animal behaviour and enclosure use of six species moving to our new *Islands* exhibit. These projects will continue in 2015 both before and after the move to enable us to assess how the animals are using their new exhibits.

Top: ECG being taken of our 90kg Reticulated python.

Bottom: Vaccination of Badgers on neighboring zoo land against bovine tuberculosis.

Science Investigations

EVIDENCE IN SUPPORT OF APPLIED CONSERVATION, EDUCATION AND WELFARE

Knowledge and understanding underpins the zoo's mission, in both our field and on site activities. Scientific method provides the evidence base for decision making, evaluation and refinement.

In 2014 over 200 research projects were conducted on site in partnership with over 80 organisations. Of these, over half were projects we had commissioned to help us with evidence based decision making. A small sample of these are highlighted below:

Animal Welfare and Wellbeing

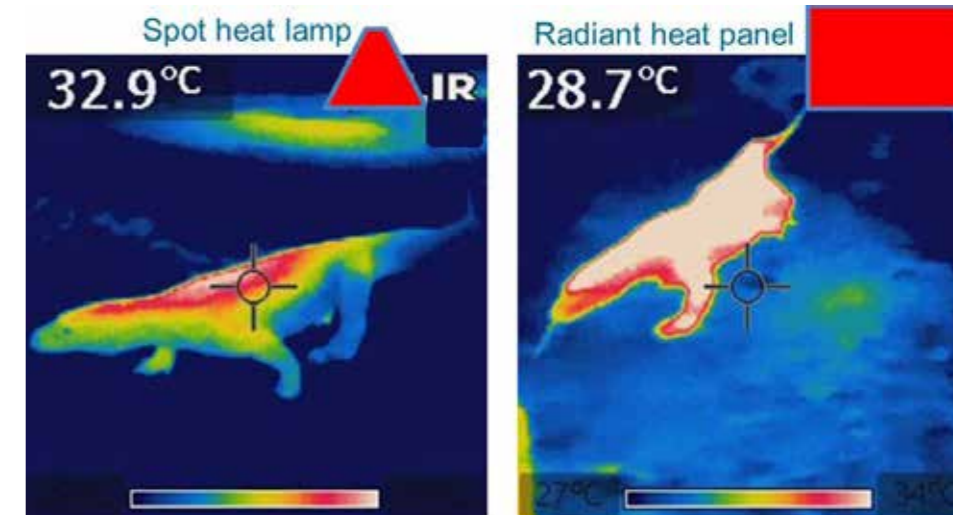
Providing the right thermal environment for large captive reptiles such as Komodo dragons can be a real challenge. With the help of thermal imaging equipment we compared the body temperatures and responses of our dragons to heat panels and the more commonly used heat lamps. Heat panels proved more effective due to the relative spread of heat coverage produced and as a consequence we have moved over to this heat source and will pass on this information to other institutions.

Emerging Diseases and Biosecurity

As part of a multi-disciplinary PhD on amphibian health and conservation we assessed the efficacy of established husbandry practices. We compared two marking methods routinely used in captivity and the wild (injection of a visible elastomer under the skin versus injection of a microchip transponder). Injection of the transponder led to significant change in the frogs' skin bacteria. We do not yet know the significance of this change and whether it might change in animals' susceptibility to infectious disease. This warrants further study. The PhD also demonstrated that boosting baseline UV light provision had no effect on growth or breeding success and this costly addition to husbandry protocols has been stopped.

Human-Wildlife Conflict

A doctoral study investigating conflict between livestock farmers and Jaguars across 19 countries in Latin America demonstrated that social, rather than environmental factors were the key determinant of conflict. This finding has major implications for managing human wildlife conflict across our programmes and as a consequence we will be building our



skills in the areas of psychology, sociology and behaviour change.

Population Management

Hormone monitoring is an important tool in successful population monitoring. The major limiting factor to the endocrinology service we can provide both to our own projects and external organisations is the time and cost of the assays. During 2014 our Endocrinology Team has worked with an industrial partner, Thermo-Fisher Scientific, to develop liquid chromatography-mass spectrometry methods that will enable us to increase capacity of the lab up to five-fold and future proof the service going forwards.

Visitor Studies / Behaviour Change

We were commissioned to work with WAZA on the design, implementation and analysis of a three year project to see what roles zoos are playing in achieving the UN Aichi biodiversity target: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. We have analysed data from 30 WAZA institutions so far and have shown that zoos can make a positive contribution.

Engagement with Science

Capacity building in science is also a key activity. We delivered 50 training workshops and provided training placements to 30 participants covering a range of conservation skills including hormone analysis methods, field survey techniques and zoological medicine. At the 2014 BIAZA Research Symposium two of our placement students won prizes for their research

projects.

Our success in science also hinges on our ability to communicate findings and to support and influence stakeholders both nationally and internationally. During 2014, zoo staff and academic associates contributed to over 80 publications (see Appendix 6 for key publications) and over 100 conference presentations. We peer-reviewed 30 papers for scientific journals and participated in a number of animal management and conservation committees (see Appendix 3 and 7).

Further details of our activities can be found in our annual Science Review (see www.chesterzoo.org/conservation-and-research/resources).

Above: Thermal images of Komodo dragons under different heat sources ©Ryan Boyle.

Discovery and Learning DEVELOPING EXCELLENCE



Award for Excellence

The zoo was awarded the Sandford Award, an independent assessment of education programme quality, for the third time since being the first zoo to achieve the award back in 2004. The judges said "The education provision at Chester Zoo is spectacular ... a committed staff provide both formal and informal learning opportunities [and] are to be congratulated on the standards of education that they provide".

Schools and Colleges

The team continued to develop the taught programme which reached 23,700 pupils during the year. Longer sessions and more teaching out in the zoo aim to deepen engagement and increase contact time with educational visitors, whilst also adapting to audience needs and making the best use of the living collection in our teaching. New sessions, such as Evolution at key stage 2, introduced in response to changes in the primary science curriculum, have proved popular and been well received.

The year also saw increased numbers of younger key stage 1 pupils receiving taught sessions, primarily due to the introduction of Wild Winter, a native species workshop taught during November and December. Whilst exploring an immersive woodland specially created in the Education Centre, children learnt how animals survive winter, made bird feeders to take home and enjoyed storytelling with Santa. In December the Wild Winter exhibition was opened up for families to explore too.

We are further increasing our teaching capacity in the heart of the zoo by refurbishing the Joseph Banks room. This space had been used for our climate change exhibition, Hot Pink Flamingos, that came to an end in October 2014.



Reaching out to the Community

Thanks to our sponsors the Safari Ranger continued to provide free outreach visits to local schools and community groups, visiting 88 schools and delivering workshops to 8,834 pupils over the year.

We also ran a summer school involving University Academy Liverpool and University Academy Warrington, bringing 85 pupils for whom the schools get pupil premium. During activities both at the zoo and in school the children explored the topic 'What do Zoos do?'

Engaging with our Visitors

Alongside animal talks and activities in animal houses, our Zoo Ranger Team (previously known as presenters) also increased their visibility around site and opportunities to talk to visitors about conservation issues following acquisition of a large trike filled with a variety of fascinating artefacts. Further increasing flexibility the 'rapid response' approach has seen them at enclosures talking to visitors about changes in the animal collection as they happen.

Throughout the year Zoo Rangers supported a wide range of initiatives. During Spring, they led bird watching, wildlife recording and bird feeder making activities as part of the Bloom campaign and raised our science profile by participating in the Cheshire wide Amazed by Science Festival. Over the Summer, Animazing activities engaged families with our animal collections and conservation messages, through games, storytelling and fun participatory activities. Families could book Bug Club workshops including pond dipping, build a bug home and moth identification. In the Autumn, the team delivered paid for tours of Oakfield Manor responding to visitor interest in Our Zoo and the zoo's 80th anniversary. A new



history display of archive imagery was also installed on the Oakfield Lawn and inside Oakfield Manor

Throughout 2014 we rolled out the new style species identification signs, ensuring all of the animal collection is labelled in a consistent style in keeping with the zoo brand. Several exhibits were enhanced with new interpretation including the *Wetland Bird Nursery*, *Realm of the Red Ape*, *Leaf Cutter Ants* and *Tropical Realm*. The team has also been busy shaping the storyline for our new *Islands* exhibition, including designing the interpretation and sourcing the artefacts that will help bring this new zone to life.

Top Left: Discovery and Learning staff receive the Sandford Award from Lucy Worsley. © Chris Vaughan

Top Right: Animazing activities led by the Zoo Ranger team.

Bottom Right: Wild Winter bird feeder making.

Commercial Developments DEVELOPING AND OPERATING THE ZOO ATTRACTION



2014 was a busy year from a Commercial Operations perspective, with so much going on. The year began with Bloom, which provided visitors with whole host of things to do to celebrate and get in touch with our native species. This also coincided with the opening of our new Nature Reserve which has already proved popular by nature enthusiasts of all ages.

At Easter the commercial team opened their newly refurbished Fountain shop which now has a picnic and sandwich offer, along with an ice cream parlour, whilst still offering a good selection of retail products for guests to purchase during their visit. A number of picnic packages were also made available online to pre-order whilst booking tickets, taking away some of the effort when planning a day out.

During the summer the zoo was host to Animazing Summer of Fun! To celebrate that Chester Zoo had been a charity for 80 years a whole summer of fun activities were arranged which were free as part of the normal admission price and included added talks, fun kids club and a range of other great activities to add something extra to an already great day out.

The autumn was fantastic with the launch of Our Zoo on BBC One. Tours of Oakfield House gave visitors the opportunity to see behind the scenes and get a real appreciation of what it would have been like to be at the zoo when it all began. The Our Zoo book also proved popular with June Williams spending a number of afternoons signing copies for our guests at the main entrance shop.



In September Chester Zoo welcomed over 5,000 brownies who attended a Wild Encounters event in celebration of their 100th Birthday. The weekend was split into two parts with the Safari Slumber giving the brownies the chance to sleep over at the zoo at their 'base camp' and also take part in an evening lantern walk. In the day the brownies were able to explore the zoo with added activities to take part in to help them achieve their Wild Encounters badges.

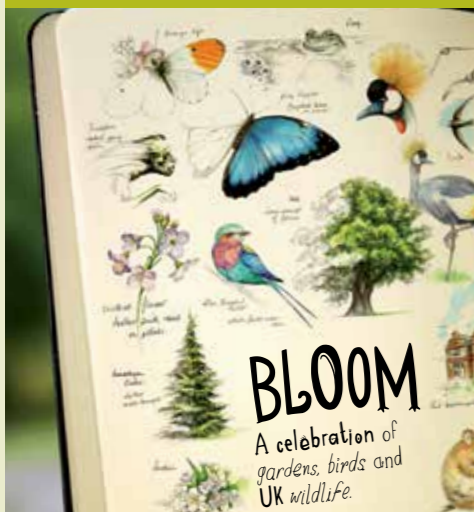
Lantern Magic returned for its third year and has gone from strength to strength. This year saw just fewer than 28,000 guests take

part in the evening spectacle with demand outstripping availability once again. The event proved so popular it won the Tourism Experience or Event of the Year at the 10th Marketing Cheshire Annual Awards. A great achievement and a fitting end to the year that saw record visitor numbers and record commercial performance.

Top: Accepting the award for Lantern Magic – Marketing Cheshire Awards.

Bottom: Brownie Big Birthday Celebrations.

Marketing and Public Relations CELEBRATING OUR HERITAGE



During the spring we celebrated our gardens, birds and UK wildlife with Bloom – a campaign aimed at both adults and families, which included a wildlife watch programme. Our visitors responded well with higher than expected visitor figures and hundreds of people participating in special events and wildlife recording.

Our summer campaign focused on our 'Animazing' animals with a high profile TV advertising campaign with a voiceover provided by Bill Oddie.

In the autumn, we launched a series of tours and an exhibition to tell visitors more about the story of Chester Zoo. We also asked our visitors to submit their personal stories and memories of the zoo for a special 'memories' section of our website. We were overwhelmed by the response with over 500 stories, photos and videos shared to our memories timeline.

We also enjoyed a wonderful Christmas season with a 'sell out' Lantern Magic event. Around 82% of the 27,939 people visiting Lantern Magic had visited for the first time and 89% of visitors said that they would visit again.

The visitor research programme that we launched in 2012 continued, giving us invaluable information about what our visitors want from the zoo and how visitors respond to our marketing activity.

We're always working towards improving our online content and user experience and the website continues to perform well. The BBC drama had a significant positive impact on visits to the website, with an increase of nearly 45% on 2013. Alongside

this, the number of visitors booking online increased by 14.2% on 2013 with overall online revenue increasing by 10.9%.

In March a brand new iPhone and Android app was released. The app has been exceptionally well received, downloaded over 90,000 times and winning six industry awards.

We devoted time to exploring the work of our field conservation teams and promoting the excellent work that our experts do both in the UK and overseas. The stories that we found are available to read on www.actforwildlife.org.uk.

We continue to work hard to bring international and domestic tourists to Chester and have attended a number of travel trade events to raise awareness of Chester as a tourist destination.

Much of our time was devoted to planning for the opening of *Islands* in 2015. We worked with a creative agency to develop the 'brand identity' for *Islands* and filmed the TV advertisement here at the zoo during the summer. We also developed an *Islands* website (www.chestertzoo.org/islands). It features an interactive map of *Islands*, teaser trailers, competitions and the latest *Islands* news. The site is fully optimised for mobile devices and will be used to build anticipation and capture user data as we approach the opening of *Islands*.

PR

The BBC drama *Our Zoo*, which told the story of founder George Mottershead's battle to open the zoo, hit the screens in September to critical acclaim. The show was heavily publicised across all national media in the run up to the six-programme series airing,

Elsewhere stories of glowing frogs, the conservation expedition to Ecuador, the arrival of a Grevy's zebra, Spectacled bear Bernardo, giraffe calf Zahra and the release of the *Islands* animated fly-through were just some of the many zoo stories that reached international and national audiences.

The zoo's social media channels also continued to grow. The PR team devised a social media campaign for Twitter linking the zoo's history to the *Our Zoo* series. Twitter said the results of the campaign, which included live-tweeting before, during and after each episode together with the use of promoted tweets, were "staggering" and "not easily accomplished."

The PR value for 2014 was £39,264,902.70 (advertising equivalent).

Sales and Events

During 2014 the zoo's Sales and Events function moved from the commercial operations division to the marketing division and had a very successful year.

48 weddings and 56 corporate events took place at Oakfield House during 2014, whilst 98 children enjoyed their birthday parties in the new Jungle Party Den.

The quantity of gift and experience sales rose by 632 providing a 56% increase in year on year income. Group sales income also rose year on year by 18%. The successful *Our Zoo* series helped secure 677 sales of Oakfield Tour packages generating income of £15,098.

Left: Bloom campaign to celebrate our native wildlife.

Right: Lee Ingleby as George Mottershead in *Our Zoo* BBC drama.

Membership and Adoptions AN ALL-TIME HIGH!



The total number of members increased by 7,827 in 2014 achieving an all-time high of 57,835 at the end of the year.

A new family pricing structure was introduced in September providing better value for larger families, and the new joining by direct debit scheme enabled 1,459 new members to take advantage of the option to spread the cost of their joining fees over four consecutive months.

Rebranded adoption signage and the popular BBC Drama *Our Zoo* series helped to boost adoption numbers to 6008, achieving a year on year increase of 515 adoptions. In the month of December a record number 1,507 adoptions were processed in three weeks.

Junior Members

Our Junior Members Club events were very well supported again in 2014. For those aged eight and upwards we continued to offer a monthly field trip or event throughout the year, usually running five zoo-based events, and seven visits to other places of interest. Events within the zoo included the ever popular Tracks and Signs day with over 100 Juniors participating, the extremely popular Day with a Keeper for over twelve, our Discovery Session to learn about new exhibits and enclosure design, and the summer barbeque and christmas party, both of which were enormous fun.

Our trips away took us to Manchester Museum of Science and Industry, Hoo Farm near Telford for a special guided tour and

some animal handling, and summer visits to Anglesey Sea Zoo and the Greenwood Forest Park to let off some steam and learn about recycling. In the Autumn we walked to Hilbre Island for some bird watching and also visited the Home Farm and deer rut at Totton Park. In addition we had a wonderful one week Summer School for 32 teenagers in August and this event continues to go from strength to strength engaging and supporting the conservationists of the future and maintaining links with past Juniors.

Above Junior Members tour of our veterinary facilities as part of the Junior Member Summer School.

Trusts, Grants and Sponsorship Received THANK YOU FOR YOUR SUPPORT



We begin with a huge thank you to all our supporters for their help, donations and gifts during 2014. Without you we simply would not be able to continue much of the amazing work we do.

With the completion of *Islands* moving ever closer we continued to work with The Wolfson Foundation, funder of the building and fit-out of the Sumba School and we can't wait to see the room in action.

Grant giving trusts and foundations have continued to support a range of projects this year including the off show Scottish Wildcat exhibit, the ever popular Safari Ranger schools outreach project and a PhD project studying Orchids, using our national collection. Our thanks go to The Oglesby Charitable Trust, the Philip Baker Charity, and The Topinambour Trust for their continued support.

In 2014 we recruited the final four trainees for the Heritage Lottery funded (HLF) Biodiversity Trainees project, which has received tremendous support over its four year lifetime. Having the ability to invest so much in these young people has really paid off with the majority now in paid employment in the conservation or heritage sector. Without HLF's support this project just would not have happened.

Corporate partnerships have grown with a range of new supporters including

Tiger Trailers and Sykes Cottages. Long term support from Airbus and Urengo has continued for both conservation and education projects, and knowing we have their support long-term allows us to plan even greater things for the future. Sadly we see the end to the partnership with the Cheshire Building Society's Big Cat Junior Saver account, which has raised over £200,000 for conservation.

Income from legacies can be the life blood of many old established charities, and indeed it was a legacy that helped the zoo out of hard times back in the 1940s. Work continues hard behind the scenes to promote the great benefits of leaving a gift to the zoo in your Will and we would like to thank those who have done so. During the year the zoo has received bequests from the estates of Hilda Sharpley, Ron Williams, Montague Lincoln, Septimus Burgess, Maureen Tudor and Harold Reid.

A really big thank you goes out to our band of willing volunteers who roll their sleeves up and get dirty helping with a number of jobs, including counting and bagging the money that gets dredged from the ponds across the zoo. During the course of the year they sorted £2,000 – mostly in pennies!

So finally without your support the zoo could not continue the wonderful work it does both on site and around the world. Thank you, you are amazing!



Once again a huge THANK YOU to everyone who has supported us during 2014 including the following major donors:

- Aaron & Partners LLP Solicitors
- Airbus
- Carole L Brown
- Halliwell Jones Chester
- Harold Reid (legacy)
- Heritage Lottery Fund
- Hilda Sharpley (legacy)
- Hillyer McKeown LLP Solicitors
- Knights Solicitors LLP
- Maureen S Tudor (legacy)
- Mrs D M France-Hayhurst Charitable Trust
- Mrs T A Briggs Deceased Will Trust
- Philip Barker Charity
- Ron Williams (legacy)
- Ruth Smart Foundation
- Sykes Cottages Ltd
- The Cheshire Building Society
- The Dwek Family Charitable Trust
- The Eric and Dorothy Leach Charitable Trust
- The Firs School
- The Oglesby Charitable Trust
- The Peter Foden Family Charitable Trust
- URENCO UK Ltd
- YO! Sushi

Left: Chester Zoo Nature Reserve in action. Right: Our Biodiversity Trainees.



Act for Wildlife INCREASING AWARENESS AND FUNDS FOR FIELD CONSERVATION



It's been quite a year for Act for Wildlife. In June we celebrated our third birthday with a refresh and re-launch of the website and ended the year on a high having raised the most for conservation with Act for Wildlife ever!

The campaign to get supporters up and active continued with our call to 'Love a Challenge' and you ran, cycled and swam to raise funds for conservation. Special mentions have to go to Dave Edwards for taking part in no less than four events this year and to cyclists Christopher Kehoe and Ian Meaden for their magnificent 100 mile cycle in the Prudential Ride London event.



In the autumn we asked you to Go Orange for Orangutans and you did in your hundreds, raising a massive £20,000 to help replant an area of forest for orangutans. This simple idea took off with schools, businesses and individuals all wearing orange for a day and paying £1 to do so. Thank you also to the companies who joined our Go Orange Golf Day in Chester, playing 'a round' for orangutans! Many of you did so much and we'd like to say a huge thanks to all those who took part.

As the Act for Wildlife campaign grows and develops, we have brought news from a variety of our conservation partners and

supported projects. This year we took you with us on an expedition to South America to look for the Endangered Ecuador amazon parrot. In spring our Bloom campaign covered a variety of native species topics and even got supporters getting hands on with nature. Nigeria was under the spotlight over the summer as we took on the co-ordination of the project under its new title Gashaka Biodiversity Project (GBP). This project has previously focused on primates but will now expand to look at all the species covered by this habitat. Of course Go Orange for Orangutans helped us understand more about the complex issues around deforestation and why we should buy products with sustainable palm oil. We finished the year by celebrating the 10th anniversary of our Assam Haathi project, working to understand and mitigate the issues causing conflict between villagers and elephants in Assam.

Over the last three years our campaign to Act for Wildlife has become part of our way of working, thinking and being and we hope you'll join us in acting for wildlife in 2015.

Top Left: Go Orange fundraiser Bradley Driver, aged 4.

Top Right: Ferndale Primary School going orange.

Bottom: Supporters get on their bikes for wildlife.

STAFFING, ORGANISATION, STRUCTURE AND TRAINING



Our focus during the year was to ensure a robust people plan for Islands as well as providing "service as normal".

Resourcing

From a permanent headcount of 330 we reached a seasonal peak of 626 employees during 2014. We have streamlined recruitment processes for seasonal staff ensuring a quicker return process. We've also worked with the Commercial Team Managers to produce an end of contract review process that allows for a more objective performance assessment.

Employee Relations

Our Staff Association has worked hard to build a more responsive relationship. Together we have re-structured Staff Association and Management meetings, there are regular site based walkabouts, all Staff Association members attended the Effective Leadership Programme (ELP) workshops and we have worked collaboratively on a number of projects with great success. Pay negotiations for 2015 were successfully concluded and the staff pay structure underlines our commitment to maintaining a fair and transparent pay scheme.

Well Being

In 2014 we worked hard to provide a more proactive occupational health offer. There is now a more even split between those off sick and those still in work who access this service. With a calendar of well-being events lined up, including on site physiotherapists, we are aiming towards even less occupational health intervention in the future.

Training and Development

In June we launched a "Good to Great" programme offering something for everyone.

National Vocational Qualifications – we partnered with Babcock International, a gold award NVQ and Apprenticeship provider. open days saw 50 staff from all over the zoo sign up to start their chosen qualification areas such as Team Leading, Customer Service, Business Admin, Leadership and Management.

Effective Leadership Programme (ELP) – commencing in October we held 17 workshops on **Leading My Team**; 167 people attended and subjects covered included Values, Personal Effectiveness, Time Management and Situational Leadership and we also held 18 workshops on **Communicating With My Team**; 148 people attended and subjects covered included Effective Communication, Assertiveness and Delivering an Effective Team Brief.

Performance and Development Review (PDR) - a new PDR was well received with some constructive feedback highlighting how much easier the review was to complete, with principal accountabilities and a values section offering clear evidence of achievement. We had a 94% return rate.

Values Training

A simplified approach to values was launched called **ACE!**

A1 People – who are proud, passionate, professional and part of a team

Conservation – at the heart of everything we do

Excellence - in Wildlife Welfare, Guest Experience and Internal Customer Service



Internship Programme

Chester Zoo's Internship programme is extremely highly regarded and as a result competition for places on this scheme was fierce again this year. We provide opportunities for up to 32 graduate or sandwich placement students on our full-time one-year internships. These start each September and offer both practical skills delivered in the zoo and theoretical training through a series of monthly workshops covering all aspects of zoo management.

Three-month Internships are offered to those aged 18 upwards. We provide 45 of these annually which have a rolling start date throughout the year and offer purely practical training.

These are both genuine training placements for those who have a desire to follow a career and make a difference in animal welfare and conservation. Interns are allocated to the animal, horticulture, science and curatorial teams. The majority of those still wanting to pursue a career in conservation post-placement, especially from our one-year internship, obtain zoo-based positions following completion and 2014 was no exception with 98% successfully obtaining paid employment in this field. They are a wonderful group to host within the zoo and are much valued during their time working with us.

Left: The zoo interns.
Right: "Good to Great" programme logo.

HEALTH AND SAFETY

Department

During 2014 the two regular First Aid Officers had support from two Seasonal Officers who provided additional assistance during the busy summer months. The regular First Aid Officers have developed their skills and knowledge by being proactive in occupational health awareness campaigns as well as undertaking Display Screen Assessments across the zoo. We also took delivery of two bicycles, kindly donated by Halfords, allowing the team to respond to incidents quicker around the zoo.

Accident Statistics

Due to the continued drive in raising the awareness of reporting accidents and incidents the total number of accidents reported for the year has increased by 674 to 727 (214 Employee accidents and 513 third Party accidents). Reported 'zoo related' accidents increased from 46 to 79 (52 Employee and 27 Third Party). The rolling averages for third party accidents increased slightly from 1.6 to 1.7 per 100,000 visitors and for employees from 0.4 to 0.9 per 100 employees. The current public liability claims experience has been very low again, with only two claims received for 2014, however one further historical claim was also received. There were three RIDDOR reportable accidents during the year and seven employee accidents that resulted in any lost-time. It was noted that over 260 near-miss reports



were logged on the new on-line reporting system and this is seen as a major success during the year.

Training

General Health and Safety training sessions continued throughout the year with topics including Fire, Risk Assessments, Manual Handling, COSHH, Noise and Vibration etc. The bespoke on-line H&S induction course was also utilised resulting in excellent feedback from participants. The zoo also became an approved IOSH Training Centre with the first course to be held in early 2015.

Project Work

2014 saw the launch of 'OSHENS' a new online accident and incident reporting system. 'OSHENS' has proved to be an easy-to-use system and effective management tool which also includes 'Cascade' a major incident alert notification system. Work has continued in promoting wellbeing and Occupational Health with a number of campaigns run throughout the year including Smoking Cessation, Breast Cancer Awareness and Skin Safe – Sun Aware. Flu jabs were also offered to employees free of charge during the winter. An awareness campaign was launched - 'ARK' (Attitude, Responsibility and Knowledge) - promoting the message and that all employees can play a part in Health and Safety with a positive mind-set. 2014 saw the zoo maintain its five stars rating from the local Environmental Health Officers in relation to the catering audit that was undertaken.

Planning and development continued for the Islands project and close work with Turner Townsend, Laing O'Rourke, Read Construction, as well as other contractors has been maintained. Our close links with the local Environmental Health Officers from Cheshire West and Chester Council, Cheshire Fire and Rescue and Cheshire Police has also continued during the year.

Top: One of our First Aiders with a first aid response bicycle donated to the zoo by Halfords.



2014 continued to be an exciting year of growth and development within IT. At the start of 2014 we expanded our IT Development Team to include another permanent Web Developer, the role's primary focus is to continue the ongoing development and support of our online shop. This, along with a

new way of working in 2014 has meant business value being delivered every two weeks using AGILE – which is a project management framework for software development.

IT Support continue to offer an excellent uptime on critical services. In 2014 an uptime of 99.7% was achieved within business hours, excluding planned maintenance. We now operate a morning check routine which ensures EPOS and other business critical applications are ready for use, before staff need to use them.

The BBC drama Our Zoo brought its own set of unique challenges this year, with exceptionally high demand on our

website and online sales. After looking at the projected web hits, and with the aid of some offsite testing, we decided to outsource our website to an external datacentre. With only a few weeks until launch we knew it would be close! Once completed, we knew it was the right decision, and on the opening night of the programme we received 31,869 visitors.

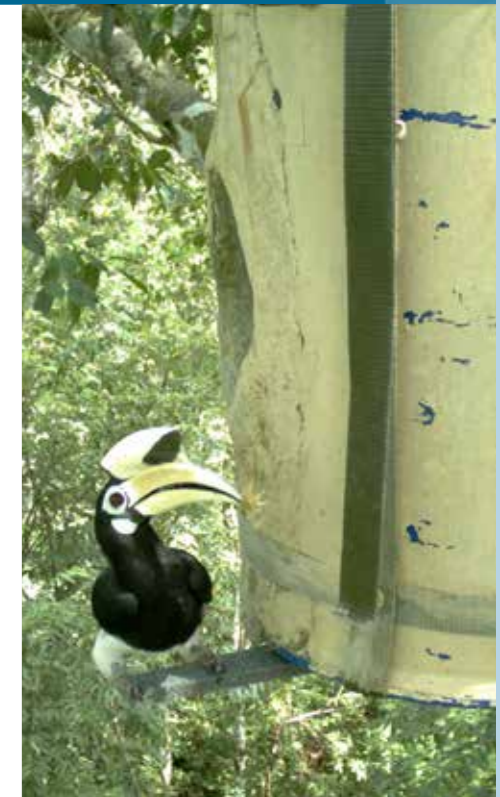
Looking ahead, work for the IT team has already started on *Islands*. We have shifted our focus onto scaling our infrastructure and services across to the new site. Once complete, this will give us the platform to deliver vital services such as EPOS, telephones, computer access, CCTV and a varied and enriched soundscape and interpretation package.

CONSERVATION

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Realm of the Red Ape CONSERVING THE WILDLIFE OF BORNEO AND SUMATRA



Over the past few decades, habitat loss on the islands of Borneo and Sumatra has become the primary threat to native flora and fauna. Conversion of forests for agricultural use is putting numerous species at risk and conservation efforts are vitally important to protect the islands. Palm oil has become the conservation issue of focus in this region.

Zoo staff have been increasingly involved in the issue of unsustainable palm oil production over the last few years, and we are working closely with BIAZA and other zoos on procurement and public awareness campaigns to increase the demand for sustainable palm oil.

In the field, following a preliminary study last year on Sumatra, Indonesia, we furthered our collaboration with Dr Serge Wich of Liverpool John Moores University to increase our support for Critically Endangered Sumatran orangutans. We funded research which investigated the importance of reforested sites for orangutans. Data from the study will complement that data gathered from a nearby forested site where the Sumatran Orangutan Conservation Programme (SOCP) work and will help inform strategies for future reforestation projects.

Collaborations with SOCP continued with support for education activities engaging the communities close to Batang Toru forest in northern Sumatra. The educator for SOCP Educator, Lina Naibaho, works with high schools, church organisations and government departments to raise awareness of orangutans and the importance of forests. We support salaries and the staging of community events. Our veterinary support for international



orangutan conservation also continued with participation in the 2014 Orangutan Veterinary Advisory Group (OVAG) conference in Indonesia. Staff were involved in veterinary training and presented on the threats of oil palm from a European perspective.

This year, we have once again worked closely with our partners HUTAN-KOCP in Malaysian Borneo to raise awareness and funds through our Go Orange for Orangutans campaign, supporting their reforestation activities. Working in the floodplain of the Kinabatangan River, home to the largest population of Endangered Bornean orangutans, we provided essential core funding for their operations, including a warden's salary to protect the sanctuary. The orangutan team followed 22 orangutans at the study site this year and completed 157 days of nest-to-nest direct observation. Zoo supported research also

looked at how orangutans survive and are impacted in areas that interface between forests and palm oil plantations, the findings have been presented to many stakeholders and are currently being developed into practical recommendations for the industry by HUTAN and partners.

We also work alongside HUTAN to support hornbill conservation and education activities and this year we continued our financial support for the Hornbill Conservation Project, and received photos showing two Oriental pied hornbills using one of the artificial nests our staff helped to construct in 2013. The HUTAN Environmental Awareness Programme (HEAP) also continues to deliver the educational programme developed together with the zoo's Discovery and Learning Team and this year we funded the salaries of the delivery team and advised on the production of new educational resources.

Left: Abham Abulani from HEAP, at the tree nursery where local women grow seedlings to re-plant the forest for orangutans.
Middle: Wild Bornean orangutan.
Right: Asian pied hornbill at artificial nest site © HUTAN-KOCP.

The Assam Haathi Project

REDUCING HUMAN-ELEPHANT CONFLICT



The Himalayan foothills of Assam in North East India provide one of the most important remaining areas of habitat for the Endangered Asian elephant. However, the state of Assam is also home to around 30 million people, and in areas where elephant and human habitats overlap, devastating losses of lives and livelihoods occur. Since 2004, we have been working with Ecosystems-India to address this conflict, providing safety for people and reducing retaliations against elephants. By the end of 2014 the Assam Haathi Project was operating in all of the six worst-affected districts of Assam, working with 78 villages directly, which in turn assisted 58 neighbouring communities.

Reducing crop-raiding and implementing other damage protection measures is a core objective of the project, building the capacity among villagers to protect their families and livelihoods. Watchtowers remain popular, and in one area helped to spot and deter elephants 20 times. Watchtowers usually work in tandem with searchlights, which are always in great demand. Over 150 searchlights were used 657 times across more than 40 villages, the bright light acting to deter elephants from crop fields. Chilli fences were also constructed in ten villages to protect paddy crop and homestead gardens, benefitting 57 households. Around

1,600 chilli saplings are being raised in our nurseries. At the end of 2014, the eight solar-powered electric fences built in the project villages across three districts were also working well and contributed to deterring elephants 121 times. For example, the Rupajuli fence in Sonitpur protects property and crops of 250 households, enabling villagers to harvest about 96 tonnes of paddy, while the six fences in Goalpara and Chirang districts protect 1,217 homes and 1,740 acres of crops. All fences are built by the villagers and project staff jointly, with the communities required to take on full ownership and responsibility for the fences in return for the project's assistance with the capital costs. To this end, villages usually form committees for decision-making and implement their own systems for fence maintenance.

Developing alternative sustainable livelihoods is another important project component. In the past year we focused on veterinary training workshops for livestock-raising, development of women's weaving and tailoring micro-enterprises, the distribution of 187 chilli plants for cultivation, establishing a bamboo plantation, as well as early trials with beekeeping, silk moth rearing and fisheries. Around 305 households and eight self-help-groups have taken up the support offered, with regular follow-up mentoring from the project field staff provided when needed.

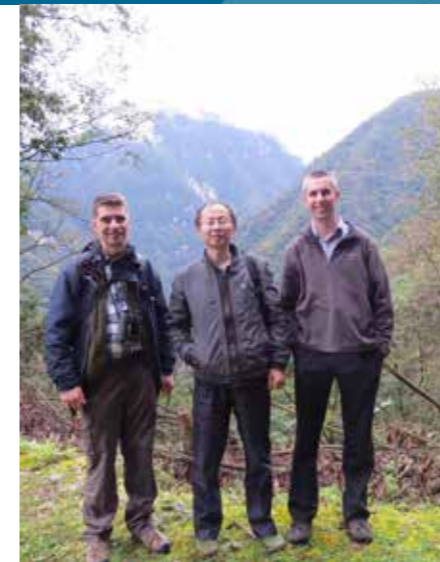
Environment awareness generation is carried out through public education events such as workshops, demonstrations and educator training. 33 awareness events were conducted for local students and public, with emphasis on conflict mitigation, conservation of elephants and fostering a positive attitude towards elephants. 44 "Living with Elephants in Assam" handbooks and other information materials were distributed to villagers as well as institutions.

The promotion of community-based reforestation projects also continues alongside distribution of fuel-efficient cookstoves to relieve the pressure of woodcutting in reserve forests. With assistance from the Assam Energy Development Agency, we conducted training workshops for 134 villagers from six villages in building cookstoves that use around 50% less firewood.

Top Left: Sessa Panbari chulah training.
Top Right: Chilli fence demo at Danigaon, Sonitpur.

Protecting China's Forests

FOCUS ON SICHUAN BIODIVERSITY



The broadleaf forests of Sichuan are areas of exceptional biodiversity, providing refuge for species such as Red and Giant pandas and endemic birds such as the Sichuan partridge. They are also an internationally important area for migrating birds.

The Sichuan Forest Biodiversity Project is a collaboration working with the Sichuan Forest Department in four forest reserves to enhance the protected area network and engage local people in sustainable management and development. This year Dr Simon Dowell, Project Coordinator, and our Head of Field Programmes visited two reserves, attending and contributing to the annual reserve managers' meeting, and helping to develop future plans. The meeting included presentation of galliform survey results, a core component of ongoing biodiversity monitoring.

Monitoring activities were complemented this year through the use of camera traps which provided exciting new discoveries for the Mamize Nature Reserve. Footage of a Giant panda in Mamize confirmed the world's most southerly distribution of this iconic species. A Blue fronted robin was also captured on camera, the record indicating an extension of its previously known range. This finding won the Sichuan Province award for the camera trap photograph with the most scientific importance.

Engaging with local communities is also a major project component, developing alternative livelihoods to help reduce illegal activities within the forests. Bee keeping, walnut grafting and wood-saving stove



projects were all observed to be productive and well adopted by local communities. In 2015 there will be a focus on evaluating the effectiveness of this work, linking this with the trends in species distribution and density observed through the monitoring work.

Another aspect of the China Programme is our education support, working alongside the Chengdu Research Base of Giant Panda Breeding (CRBGPB), Chengdu Zoo and Chinese Association of Zoological Gardens (CAZG). Our Discovery and Learning Team have helped develop a number of initiatives to engage people with nature. Three summer camps were conducted in 2014, linking with the Sichuan Forest Biodiversity Project communities and inspiring rural school children to consider and care for their local environment through games, drama and nature hikes. Complementing this, the Red Panda Programme engages urban

children in Chengdu; 45 sessions were conducted (since October 2013) including 2,430 students in 66 classes, using the Red panda as a flagship species to engage pupils on wider conservation issues.

A programme of public engagement on the issue of wildlife trade has also been developed. Chengdu Zoo and CRBGPB both have public displays highlighting the plight of various species impacted by wildlife trade. Resources have also been developed to enable zoos to effectively deliver education sessions on wildlife trade and, in collaboration with CAZG, it is hoped these can be rolled out to a number of different Chinese zoos in 2015.

Support for the conservation of the Critically Endangered Blue-crowned laughingthrush also continued. The zoo co-ordinates funding from European zoos and in 2014 we welcomed several new partners. This year some 300 birds were counted at the known breeding sites in Wuyuan, China, indicating the numbers in the wild remain stable or are slightly increasing. Zoo staff also participated in the second Global Species Management Plan Meeting for Blue-crowned laughingthrush in zoos.

Top Left: Project Coordinator and our Head of Field Programmes at Ma'anshan Nature reserve.

Top Middle: Giant panda captured on a Chester Zoo funded camera trap.

Top Right: Blue Fronted Robin captured on a Chester Zoo funded camera trap.

Bottom: Chester Zoo staff involvement with Chengdu education programme.

Philippines Conservation HELPING ISLANDS IN DANGER



The Philippines is a globally recognised biodiversity hotspot with hundreds of endemic species found on its 7,000 plus Islands, many of which are threatened with extinction from a range of conservation issues such as the habitat destruction, wildlife trade and poaching.

Working with the Philippines Biodiversity Conservation Foundation (PBCF), we have supported several projects conserving endemic species throughout the archipelago. The work of the PBCF was spearheaded by William Oliver, a man who pioneered conservation action in the Philippines, as well as championing the conservation of many other species globally. It is with great sadness that we report the loss of William, founder and Director of PBCF, who passed away at the end of 2014. The PBCF was created as the umbrella organisation to support the field conservation NGOs and conservation breeding centres which William had created and nurtured. The various project components under the PBCF have been particularly successful in engaging community support for habitat conservation in the region. William will be greatly missed.

Elsewhere in the Philippines, our collaboration with the Palawan based Katala Foundation continued to grow, with focus on the conservation of the Critically Endangered Philippine cockatoos on Palawan and offshore Islands. When the project started in 1998, Rasa Island was home to just 23 cockatoos; at the roost site in October 2014, a total of 297 individuals were counted, a great testament to the success of this project. Between 76 and



90% of cockatoos can be found within Palawan, and at least 48% of the world population is now concentrated in sites managed by Katala. Our partnership has grown stronger over the years and along with financial support for Katala staff in 2014, a unique project was developed to conserve populations of the Philippine cockatoo found on the Iwahig Prison and Penal Farm. Our support will facilitate the ongoing monitoring and research of these populations and implementation of conservation education campaigns.

Threatened by the illegal pet trade and habitat destruction, the Critically Endangered Palawan forest turtle is another key target species for conservation action. Through the reintroduction of confiscated turtles, community engagement and other initiatives, we are helping to secure the future of this species. In December 2013, a protected area for the conservation of the turtles was established in Roxas Palawan. This was a huge step forward, the first protected area for freshwater turtles in the country. To complement this achievement a Protected Area Management Board has been established. Four wardens have been employed and trained in law enforcement to patrol the area on a daily basis; their presence and monitoring is reducing illegal activities in the region.

In order to establish baseline data on the abundance of the Palawan forest turtle, a number of mark-recapture surveys have also been carried out, and alongside radio-tagging activities, this research is helping us to better understanding home range patterns. In 2014, 66 confiscated turtles



were released into the protected area. Through rapid biodiversity assessments, 44 other threatened species have also been recorded in the protected area, highlighting that this is also an important habitat for many other species.

Top Left: Philippine cockatoo in flight © Peter Widmann.

Top Right: Hand-raising a young cockatoo © Peter Widmann.

Bottom: Philippine forest turtle hatching © Sabine Schoppe.

Saving Species in the Mascarenes WORKING IN THE 'LAND OF THE DODO'

Conservation in the Mascarene Islands has been a major focus for Chester Zoo for over 20 years. We work alongside the Mauritian Wildlife Foundation (MWF) and other partners to help conserve the rich fauna and flora through significant technical and financial support.

A major conservation focus for our work has always been threatened endemic birds. Long-term commitments to a number of projects on Mauritius have seen species recover from the brink of extinction and on-going support includes research and management to further secure these populations and their habitat.

The Mauritius olive-white eye is a Critically Endangered passerine with a population of only a few hundred individuals. Several years of intensive management of two populations of Olive white-eyes has seen a steady increase in numbers. The wild mainland population in Black Rivers Gorges National Park now stands at 27 birds, whilst the number of introduced birds on the island of Ile aux Aigrettes rose to 41.

A great success story in Mauritius is that of the Echo parakeet, an endemic parrot which has been downlisted from Critically Endangered to Endangered as a result of conservation action. Once down to only a dozen individuals, numbers are now thought to be as high as 700, with 162 birds fledging during the 2013/2014 season. The species however still needs conservation management, and on-going research continues to play a role in informing conservation strategy and management techniques. Other bird projects supported include conservation of the Mauritius fody and management of Pink pigeon populations.

Each year members of our Bird Team join staff at MWF, contributing avian conservation skills that have been built up through years of hands-on bird conservation at the zoo. In November two Bird Team members participated on a new project to conserve the Mauritius cuckoo-shrike and the Mauritius paradise flycatcher. During their two months in the field our staff provided technical assistance, using their expertise to help harvest eggs and to hand-rear chicks; a head starting technique used to provide these young birds with the best chance of survival. This is the first time this work has been conducted with the Mauritius cuckoo shrike and these birds will be re-released next year to help bolster wild populations.



We also continue to contribute significantly to the development of education programmes designed to increase awareness and appreciation of nature. Our Education Programmes Manager revisited Mauritius to review the performance of the 'Learning with Nature' programme which she helped establish in 2009. She also helped plan and develop a similar programme to be implemented in Ferney Valley and the Grande Montagne Forest Reserve in Rodrigues. Additionally in Grande Montagne we provided support for restoration and reforestation

activities which are gradually recreating the upland forest community.

We also continue to provide financial support for the monitoring and conservation of the Rodrigues fruit bat. This work is complimented in the zoo with the coordination of the European Endangered Species Programme.

Top: Chester Zoo staff hand-rearing Mauritius cuckoo-shrikes.

Bottom: Mauritius cuckoo-shrikes.

Black Rhino Conservation

RIISING TO THE CHALLENGES IN AFRICA



The rhino poaching crisis continued to escalate in 2014 in response to the growing demand for rhino horn. The need for zoo support for rhino conservation is greater than ever and we continue to work with several partners in East Africa to protect the Black rhino and other threatened wildlife.

Chyulu Hills National Park, Kenya, and the surrounding ranch land are home to one of Kenya's last free ranging rhino populations. We partner with Big Life International, a leading force for conservation in this region. Our continued support provides rangers with basics such as salaries, training, rations and fuel. This year we also provided funding for a new waterhole and pipeline which will help deter rhinos from moving into areas of poaching risk in search of water; two new observation posts will provide 24/7 security for this new site. Unfortunately, despite the huge amount of resources and dedication, one rhino was poached in 2014. However a calf, Chester, escaped despite receiving a bullet wound to the neck. The calf was monitored closely and we are pleased to say has survived and is doing well.

We were also pleased to continue our support for the second Maasai Olympics, which engages communities in and around

Chyulu Hills National Park. This event engages local Maasai communities in a series of regional competitions and a final 'Olympic' event. Supported by elders in the region, the Olympics provide a new way for Maasai warriors to prove themselves, where historically this would have involved the killing of wildlife. The event also provides a venue to engage communities in conservation. The final attracted over 2000 people and gained international press coverage. Chester Zoo sponsored the event, including a conservation prize.

We were also pleased to hear this year that Richard Bonham, Big Life Director of Operations and long-time partner of the zoo, very deservedly received a lifetime achievement award, the Prince William Award for Conservation in Africa.

In Tanzania, we continued support for the Black rhino in Mkomazi National Park. Managed by the George Adamson Preservation Trust this rhino population is an important part of the national species recovery plan and has built up a population of 19 Black rhino. The 55km² rhino sanctuary found within the park is fenced and patrolled by a dedicated security team; no rhino have been poached. Our support helps fund this security infrastructure. Our Discovery and Learning Team also continue

to assist with Rafiki wa Faru, an education initiative which provides children and villagers access to the park and delivers a programme of conservation education.

In the Laikipia District we support various members of a strong network of ranches that host the majority of Kenya's Black rhino. Our support in 2014 included the production of four display panels at the Ol Pejeta Conservancy explaining the process of translocating Black rhinos. At Ol Jogi Rhino Reserve, following emergency staffing issues, we supported the training of 30 staff to gain full Kenya Police Reservist status and facilitate the continued protection of the wildlife in this reserve.

Finally, we also continued our partnership with Manchester Metropolitan University and Antony Wanderas of the Northern Rangeland Trust, supporting his PhD research into the factors underlying the high variance in Black rhino reproductive output.

Top: Top: Our Education Programmes Manager at the Maasai Olympics event in 2014.

Bottom Left: Participants in the Maasai Olympics event 2014.

Bottom Middle and Right: Eastern Black rhinos.

Saving Chimpanzees in Nigeria

PROTECTING NIGERIA'S FORESTS



Gashaka Gumti National Park (GGNP) is Nigeria's largest National Park, it is also the most ecologically diverse, with habitats ranging from savannah to montane forests. Its rich biodiversity includes probably the last viable population of the Nigeria-Cameroon chimpanzee.

The zoo has supported conservation in GGNP for over two decades, working closely with the National Park Service and, since 2000, providing core support for Gashaka Primate Project (GPP). Last year marked a period of transition as we took on the coordination for this project and it became the Gashaka Biodiversity Project (GBP). 2014 saw the consolidation of the infrastructure and procedures required to run the GBP, and the initiation of several new exciting project components.

The GBP was very pleased that all of the project field assistants remained with us during this transition, and Dr Umar Buba also continues as the Nigeria-based Project Manager. Changes this year included a new zoo-based Field Programme Coordinator for the GBP, and Chester Zoo Foundation Nigeria was registered as a new company in Nigeria to facilitate GBP activities. Professor Volker Sommer, who previously coordinated the GPP, remains as GBP Scientific Director and continues to manage the on-going research activities that have been at the core of conservation action in GGNP.

A major event this year was an expedition through the interior of the park up to the highest peak in Nigeria, Gangiwai. The large expedition included a botanical team from the zoo and Kew Gardens; who provided training in botany survey techniques and



hope to develop a more comprehensive botanical survey of the park in the future. The expedition covered remote areas of the park, and helped identify areas where signs of poaching activity were present and where conservation activity should be prioritised.

An exciting development was a new GBP partnership with Everton in the Community (EitC), an initiative affiliated with Everton Football Club. EitC supports health and development activities, predominantly in Merseyside but also overseas. Together we developed a fundraising programme and delivered a joint health and conservation awareness programme for the communities within and around GGNP. The programme used a football tournament to create a huge draw, and attracted thousands of people from the local areas as well as many of the local community leaders. A number of speeches, plays, posters and a large parade provided awareness for issues such as malaria, illegal bushmeat and the importance of the forest as a watershed.

At the park entrance we have supported the construction of a new education centre



which will be used to complement educational tours provided to local students and raise local awareness of the parks importance. In collaboration with National Park Education Officers we are currently developing educational materials for the centre.

Elsewhere in Nigeria we continued support for the Nigerian Montane Forest Project (NMFP). The focal site for the project at Ngel Nyaki boosted its research activities this year with a new 20 hectare permanent research plot, one of only five 'Centre for Tropical Science Research' plots in Africa, and the only montane forest plot, making Ngel Nyaki an internationally important forest. The project also continued on-going research and reforestation activities and collaboration with the GBP was also strengthened with NMFP members joining the expedition earlier in the year.

Top Left: Full expedition team photo.

Top Right: Umaru Buba, GBP Project Manager, at Goodison Park.

Bottom Left: Gashaka Gumti National Park. **Bottom Right:** Women's football match as part of the Everton in the Community tournament.

People and Wildlife

TACKLING CONFLICT WITH JAGUARS AND TIGERS

**Jaguar Research Programme**

Conflict with livestock farmers is the most serious threat to the survival of the Jaguar across its range. In collaboration with the Wildlife Conservation Research Unit, University of Oxford, the zoo's Head of Conservation Science carried out a major study of these conflicts across Latin America in order to assess the levels of knowledge and model the risk of conflict across the range. The research also involved a series of field case studies, which contributed towards the understanding of mitigation approaches for different severities of conflict.

Findings from 43 published studies and 117 expert-described cases show that human-Jaguar conflict occurs not only on cattle ranches, but also seriously affects farmers with mixed income sources as well as smallholders and indigenous communities. Regardless of the ecological, cultural or socio-economic context, shortage of wild prey combined with poor livestock husbandry is reported as the main reasons for losses. However, positive or negative attitudes towards Jaguars are not linked to actual losses of livestock. From 17 case studies across seven countries we found that farmers' opinions and behaviours towards Jaguars vary considerably, and were not correlated with factors such as dependence on livestock for income or other socio-economic variables. The only pattern found true across the Jaguar range was that attitudes towards Jaguars could be predicted by a combination of

perceived losses and the social norms of the community, in other words peer pressure to kill Jaguars.

Our spatial analyses showed that 65% of the remaining Jaguar range is outside of protected areas, and 85% of the total Jaguar range overlaps with livestock. Jaguars therefore have to be able to co-exist with farmers and ranchers if the species is to survive in the long-term, and conflict resolution can only succeed by correctly balancing the ecological (prey), practical (livestock husbandry) and social (community pressures) factors that affect the problem.

Tiger Conflict in Nepal

In the Terai lowlands of Nepal, measures to reduce poaching of tigers have led to increases in tiger populations within protected areas, particularly in Chitwan National Park. This, in turn, has led to an increase of deadly encounters between tigers and people in the community-managed reserve forests adjacent to the park. Similarly, in Bardia National Park, tigers are well-protected and increasing numbers are expected to cause similar problems in the near future. Such human-tiger conflict threatens to unravel Nepal's tiger conservation success and must be resolved to protect both the cats as well as the very poor communities who live in these areas.

In collaboration with the Nepalese NGO Green Governance Nepal and Oxford

University, we have created a new tiger conservation project in which we will use participatory approaches to help communities take important steps to enable them to live safely in the vicinity of tiger habitats, while also improving their economic and social situations. The project will work in the conflict hotspot areas around Chitwan and Bardia to implement practical interventions to secure the safety of people and livestock, and expand livelihood opportunities to reduce community dependence on the forested areas where tigers live. The project also ultimately aims to understand and change key human behaviours which threaten local tiger populations. We will also carry out ecological research to improve the understanding of the dynamics of tiger populations around both parks.

Top Left: Community forest next to Chitwan National Park.

Top Right: Tiger awareness sign near Chitwan National Park.

Frogs to the Fore

TACKLING THE GLOBAL AMPHIBIAN EXTINCTION CRISIS



The unique but fragile situation of many species in Madagascar, due to the fast rate of habitat destruction, drives us to increase our our conservation efforts there. During 2014 the main activities have been the ongoing support of studies on the ecology of the Golden mantella frog and the initiation of a new amphibian project with the Harlequin frog. Staff from our Lower Vertebrate and Invertebrate Team have been directly involved both in the field and through facilitating international events.

Madagascar holds a vast diversity of amphibians with probably 500 species, but less than 300 of those are described. This exceptional richness has been disturbed by introduced species and the rapid deforestation, impact of the collection for trade and the need of better understanding of the ecology of these species give us great need to focus our efforts on this island.

Last Refuge of the Golden Mantella Frog

The Golden mantella frog is found only in the district of Moramanga in Eastern Madagascar. Within its restricted range, the species is subject to collection for the international pet trade and habitat loss due to slash-and-burn agriculture, conversion of breeding ponds into rice fields and legal or illegal mining.

To ensure the protection of the Golden mantellas' key habitats, our in country partner, Madagasikara Voakajy (MaVoA) created the Mangabe protected area with the local communities, authorities and the

Malagasy government. Within this new protected area, we have identified 94 breeding ponds of the Golden mantella frog, which represent 68% of all known breeding ponds.

During 2014 we rapidly responded to a call to restore 11 ponds that were damaged by illegal gold mining activities and conversion into rice fields. We are continuing these restoration activities by engaging local communities to plant more native trees at the sites, and monitoring other ponds, to assess when they will be ready for re-colonisation.

Current results from the field do not allow researchers to accurately estimate the size of Golden mantella populations in the wild. In fact, direct counts can be very biased as detection of the species can be very challenging. This lack of population estimates hinders the development of a strategy to sustainably manage the population.

Due to the small size of the species (less than two grams in weight and one cm in length) and absence of natural markings, it is almost impossible to identify individuals.

We at Chester Zoo ran tests in captivity using implanted fluorescent silicone (VIE) under the skin to act as a markers. Following the success of this new marking method in captivity, researchers have implemented this technique allowing them to obtain more accurate estimates of population population sizes of frogs in the



wild. This allows the study of the movements of individual Golden mantellas between breeding ponds. In 2014 we ran the first capture-mark-recapture sessions in four ponds and this will continue into 2015.

In 2014 we also facilitated several amphibian conservation workshops such as a Researcher Links Workshop for the Critically Endangered Axolotl in Mexico and the Second Action Plan for the Conservation of Malagasy Amphibians (ACSAM2) in Madagascar.

Top Left: The Golden mantella frog is just one cm long.

Top Right: Implanting a Golden mantella with VIE under the skin allowing future monitoring of this individual.

Bottom: A Golden mantella frog with an implanted fluorescent silicone marker.

Conserving British Wildlife ACTING LOCALLY IN THE UK



Diverse projects, exceptional events, and high profile media coverage, clearly demonstrate our continued commitment to UK conservation.

Animal Activities

In 2014 our Hazel dormouse research reached ten years of data collection and celebrated a 'decade of dormouse discoveries' including an appearance on BBC Countryfile and papers at the 9th International Dormouse Conference in Denmark. Our vet's experience in micro chipping dormice proved invaluable in development of protocols to facilitate licencing of this procedure in the UK.

Large heath caterpillars reared here pupated successfully and 171 individuals were transported to the Lancashire reintroduction site. When adult butterflies emerged zoo staff helped with the release and press coverage – that day, for the first time in 100 years mating pairs of Large heath butterflies were seen at Heysham Moss. Butterflies collected from the donor site for the second rearing phase at the zoo laid few eggs, so a third phase is scheduled.

The arrival of a Scottish wildcat in the collection coincided with the zoo becoming official partners in the Scottish Wildcat Action Plan, and funding camera traps for wildcat surveys.

Having previously supported badger vaccination programmes for two local wildlife groups implementing our own was a natural progression. Since the zoo is surrounded by farmland, on the edge of the high risk bovine TB region, we have started a five year badger vaccination programme. This aims to minimise TB risk to susceptible



species in the collection, and protect badgers living on the zoo estate. Staff assisted with surveys and vaccination of six badgers in 2014.

Plant Projects

Monitoring at field sites for many of the rare native plants that the zoo works with found the species doing well in most cases, and natural regeneration was observed in some. 72 zoo-grown Black poplar trees were planted by partners at locations in Cheshire and North Wales, and more Common barberry was established along the Shropshire Union canal for the Barberry carpet moth project. Plant conservation projects featured on BBC Radio 4's Gardener's Question Time.

Community Conservation

Professor Stefan Buczacki opened the Chester Zoo Nature Reserve at an event attended by local conservation partners, funders, and zoo trustees. Since opening visitor numbers have been steady, and an increase in wildlife is already apparent. Survey work highlighted a small area of rare unimproved neutral grassland,



and appropriate management has been implemented.

The third Biodiversity Trainees cohort completed their placements and found employment soon after leaving. In March, the final trainees in this HLF-funded project embarked on particularly diverse individual training and work experience programmes. The project ends in 2015, but external funding is being sought for a new version of this highly successful scheme.

The Bloom marketing campaign included a wildlife recording activity, engaging a new audience in this simple but vital conservation action, and gathering a significant number of sightings.

Exceptional Events

The event highlight this year was the British Wildlife Conservation in Action symposium which received exceptionally good feedback, and attracted our largest audience yet for a conservation symposium. The zoo also hosted the BIAZA Native Species and Plant Working Groups conference, RECORD conference, and a very informative wildlife law training course. We joined in the BIAZA BioBlitz - over 24 hours a team of zoo staff, local experts and volunteers scoured the zoo estate for wildlife, resulting in an impressive 2003 records from 431 species.

Top Left: Monitoring at the Common juniper reintroduction site.

Top Right: Dormouse survey filmed for Countryfile.

Middle Top: Mating Large heath butterflies at Heysham Moss.

Chester Zoo Conservation Grants PROVIDING SUPPORT FOR CONSERVATION PROJECTS ACROSS THE GLOBE



Each year we support an extensive range of conservation projects through our Conservation and Research Grant Scheme. These projects range from species monitoring and habitat protection to training and education. Competition for grants is always high, and our review process helps ensure we award grants to projects which have the potential to deliver the greatest conservation impact. In 2014 we supported over 40 projects, some examples of these include:

Mammals

In Argentina we supported an ambitious project in the Ibera region where ecological restoration is making reintroductions of species such as the Jaguar possible, and in Misiones another project is establishing biological corridors for a range of carnivores such as Bush dogs. In Sumatra we contributed funds towards a Human Orangutan Conflict Response Unit, which responds to incidents of human-orangutan conflict, including confiscating illegally captured orangutans and translocating these individuals back to viable habitats where possible.

We also awarded grants for projects reducing the threat of disease to African painted dogs by vaccination of domestic dogs in Zimbabwe, a project monitoring lemur populations in a new protected area of Madagascar and an education awareness initiative helping reduce human-carnivore conflict in Tanzania.



Many of the projects we support through our grants are also long-term partners who we have been supporting for several years. On-going support was provided for Spectacled bear conservation in Peru, the Na'an ku sê Carnivore Conservation Research Project in Namibia and the Giant Armadillo Project and Lowland Tapir Conservation Initiative in Brazil.

Birds

In South Africa we funded a study to determine the safety of carprofen in a wild vulture population. Carprofen is an anti-inflammatory drug used on cattle and could provide a safe alternative to diclofenac, a widely used drug which proves fatal when vultures feed on carcasses of treated cattle, and which has had a devastating impact on vulture populations around the world.

Other bird projects included a study into the Ecuador amazon parrot and continued support for the Mabula ground hornbill project in South Africa and the conservation of Black crowned cranes in West Africa.

Reptiles, Amphibians and Invertebrates

This year we funded two new crocodile conservation projects. In Sri Lanka we supported a project investigating the impacts of human-crocodile conflict and in Malaysian Borneo we supported a study into the impact of habitat fragmentation and expanding human populations on the behaviour of estuarine crocodiles. Continued support was also provided for Philippine crocodiles and we also contribute to a zoo-community supported Partula snail project in Polynesia.



Fish

This year we made a major commitment towards the conservation of goodeids in Mexico. The zoo has been supporting Mexican goodeid conservation for many years and an exciting new project phase this year will aim to re-establish two extinct species back into the wild over the coming years.

Studentships and Scholarships

Seven Conservation Studentships were awarded this year including research into the ecology and habitat use of lemurs, the effects of elephant induced habitat change on the Mountain bongo and the status, ecology and conservation of Asian short-clawed otters.

The Richard Hughes Scholarship, which is awarded to projects with a focus on elephant management, welfare or conservation, was awarded to a project investigating how land-use change in Kenya is driving human-elephant conflict and elephant movement.

Please see Appendix 8: Worldwide conservation activities for a comprehensive list of project support in 2014.

Top Left: A cheetah is fitted with a radio collar ©Na'an ku sê Carnivore Conservation Research Project.

Top Middle: Camera trap image of Giant Armadillo © Giant Armadillo Project.

Top Right: Mexican goodeid reintroduction programme.

Global Partnerships for Progress

WORKING WITH ZOO ASSOCIATIONS, WILDLIFE ORGANISATIONS & CONSERVATION AGENCIES WORLDWIDE



Much of the important work that we do is dependent on us working with like-minded and trusted partners.

World and Regional Zoo Associations

During the year staff attended and participated in a number of World and Regional Zoo association meetings and played a key role in running workshops and chairing meetings. As a leading zoo it is very important that we remain involved in the production of the global and regional zoo association strategies and ensure that our strategy is aligned with them.

Many of our staff play a key role within the European and British and Irish Association of Zoos and Aquariums (EAZA and BIAZA). This work involves Chairing Taxon Advisory Groups, Research Groups or managing studbooks. We are currently responsible for four European Studbooks (ESBs): Jaguar, Mountain chicken frog, Sumatran laughingthrush and Burmese brow-antlered deer, seven European Endangered Species Breeding Programmes (EEPs): Eastern bongo, Komodo dragon, Ecuador amazon parrot, Blue throated macaw, Black rhino, Javan green magpie, Rodrigues fruit bat (also the international studbook for this species) and for the Monitoring Programme for the Grey breasted Parakeet. For a full list of Chester Zoo staff on external boards see appendix 3.

Each year we support the EAZA annual campaign. In 2014 this was Pole to Pole, focusing on raising awareness and stimulating behaviour change for the conservation of biodiversity between the two poles. We supported this by inviting visitors to our Hot Pink Flamingo exhibition in the Joseph Banks Room that focused on climate change and how we can reduce

our impact on the planet. We also used the staff green travel initiative to encourage staff to clock up enough 'green' or 'sustainable' miles to equal the distance between the two poles (approx 12,500 miles).

International Union for Conservation (IUCN)

The IUCN is the key global conservation organisation and responsible for the production of the list of species under threat known as the Red List. Chester Zoo is proud to be amongst the organisations providing financial support for the SSC's Directors position.

Within the IUCN the specialist group perhaps most relevant to zoos is the Captive Breeding Specialist Group CBSG and again Chester Zoo is proud to provide financial support to the Director of CBSG.

Amphibian Survival Alliance

1,895 of the planet's 6,285 amphibians are in danger of extinction, making them the most threatened group of species known to date. The Amphibian Survival alliance (ASA) is a global partnership for Amphibian conservation. The ASA is a motivated and effective network of organisations working together to stem the rapid loss of amphibian populations and species worldwide by implementing the global Amphibian Conservation Action Plan (ACAP). Chester Zoo is proud to have provided financial support to the ASA since its inception and the Director General is a Board member.

International Zoo Educators (IZE)

Chester Zoo is an institutional member of IZE and our Education Programmes Manager is the European and Middle



East Representative of IZE and sits on the Board. Within the European and Middle East region there are 12 Institutional members, zoos demonstrating a strong commitment to education. The 2014 international conference hosted by Ocean Park in Hong Kong, was very well attended with 158 delegates representing 105 institutions from 30 countries. Under the IZE sponsorship scheme, there were 10 sponsored delegates from developing country education programmes. These included three educators from in situ projects we support: Hutan in Sabah, Borneo, the Sumatran Orangutan Conservation Project in Sumatra, and the Laikipia Wildlife Forum in Kenya. We are now preparing for the 2016 conference to be held in Argentina and hosted by Fundación Tamaikén where the theme will be 'The power of the narrative'.

NEZS Gold Medal

While the work we do to conserve biodiversity is on a global scale we are of course just a small piece in a very large picture and we are very proud to work alongside a great many friends and partners to make a greater impact. In 2014 the Society honoured one of our long term friends and conservation partners, Roland Wirth, with the Society's highest award, the Gold Medal.

Top Left: The IZE conference in 2014 was held in Ocean Park, Hong Kong and attended by our Education Programmes Manager.

Top Right: Roland Wirth being presented with the NEZS Gold Medal.

Islands Under Threat

PROTECTING INDONESIA'S WILDLIFE



The islands of Indonesia encompass seven major geographical regions, and are unquestionably one of the world's top biodiversity rich countries and a priority for global conservation. Complementing the Islands development at Chester Zoo, our support for conservation in Indonesia continued to develop in 2014.

Throughout South East Asia songbird conservation is a major area in need of attention. Trade in wild songbirds is reaching crisis point, and formally common birds are disappearing at an alarming rate. The zoo and other partners, working alongside the Cikananga Conservation Breeding Centre (CCBC) in Java, are battling to prevent the extinction of some of Java's most threatened birds through conservation-breeding, education and re-introductions.

Despite a major setback in June when a large number of birds were stolen, progress continues to be made. Five Critically Endangered Javan green magpies, one of the world's most threatened birds, were successfully reared to independence and Black-winged starlings, bred at CCBC and reintroduced back into the wild, are now starting to rear their own young in nest boxes provided by the team and protected by local villagers.

The Bali starling is another species impacted by the songbird trade. This beautiful iconic bird is the emblem for the island of Bali, but teeters on the brink of extinction. There are currently approximately 80 birds held at the aviaries managed by the Begawan Foundation. A

trial release of a small number of starlings took place in 2013 and the population is doing well. Monitoring of the free-living population on the island of Nusa Penida also continues.

The Komodo dragon, the world's largest lizard, is another Indonesian flagship species. Surveys this year assessed the genetic variety of the different wild Komodo dragon populations in Indonesia, as well as the populations in zoos. This valuable information will guide future management and conservation activities. Following on from this research, the zoo has committed to a three year project to comprehensively assess the status and distribution of Komodo dragon populations on the island of Flores using camera traps.

On Sumatra we continue conservation support for the Painted terrapin, a priority conservation species in Indonesia. We provide financial and technical support for this project which is collecting, rearing and releasing hatchlings back to their natural habitat in the Seruway Mangrove Forest, boosting wild numbers.

We also continue our support for the Sumatran rhino; where recent assessments predict that as few as only 100 wild individuals now persist, restricted to only three sites. This year, as a result of a 2014 crisis meeting, we provided financial support towards the development of a Sumatran Rhino Conservation Strategy, a critically important process which will engage all stakeholders and plan the measures needed to save this species. Details on our orangutan



conservation activities in Sumatra can also be found in the Realm of The Red Ape page.

Elsewhere we provided funding for a research project examining stress in wild Sulawesi macaques in the Tangkoko Nature Reserve. The project aims to determine whether the presence of tourism, alongside range restrictions, contribute to stress in the macaques and will help inform species management in the reserve. The zoo also contributed towards the publication of the Indonesian National Conservation Action Plans for Anoa, Banteng and Babirusa, which will inform all those involved in the conservation of the species within Indonesia and beyond.

Top Left: Sumatran laughingthrush at the Cikananga Conservation Breeding Centre.
Top Middle: Bali Starling release into the wild by the Begawan Foundation.
Top Right: Komodo Dragon.

Keeper for a Day Scheme

STAFF INVOLVEMENT IN WORLDWIDE CONSERVATION



Chester Zoo's 'Keeper for a Day' scheme provides an opportunity for visitors to experience a day in the life of a zoo keeper, spending a full day working alongside staff from one of our animal or plant teams. The income from this scheme provides opportunities for zoo staff to get involved with conservation projects, and attend conferences and meetings. In 2014 the fund enabled nine members of staff to undertake activities around the world and also funded the zoo expedition to Ecuador.

Field Conservation Projects

Our Applied Ethologist and Horticulturist Team Manager took part in a two week exploration of the Gashaka Gumti National Park in Nigeria. They were joined by botanists, horticulturists, wildlife experts and engineers from a range of organisations with the aim of surveying the park's wildlife. The expedition accessed areas of the park which are remote and little studied, and the results of this monitoring helped identify a number of priority areas for increased protection.

In India, a member of our Elephant Team visited the Assam Haathi Project where he assisted with the implementation of human-elephant conflict mitigation methods. He helped with the construction of electric fencing, distribution of spotlights to villages

and also conducted a number of school workshops on the importance of elephants and their ecosystems and the best ways to protect them.

Our Formal Learning Coordinator spent two weeks in the Lewa Conservancy, Kenya, where he provided support for the environmental education programme, helping to develop monitoring and evaluation techniques and taking part in a teacher training conference.

The Twilight Team Assistant Team Manager and a keeper from our Carnivore Team visited Proyecto Ibera, a project in Argentina which aims to restore viable populations of a variety of species through reintroductions. The zoo has been supporting the development of their jaguar reintroduction project for a number of years. They had the opportunity to visit the facilities where Jaguars being prepared for reintroduction are housed and offered advice on various aspects of husbandry and enclosure design. They also visited the on-going and successful Giant anteater project.

Animal Health and Welfare Workshops

The Primate Team Assistant Team Manager travelled to Indonesia to take part in the annual Orangutan Veterinary Advisory Group workshop where she delivered a presentation and workshop on the

husbandry techniques and enclosure design for orangutans. She also visited our partners at the Sumatran Orangutan Conservation Programme to work alongside teams involved in the rehabilitation and translocation of confiscated orangutans. Another Primate Team member attended the Pan African Sanctuary Alliance (PASA) workshop in Kenya where she delivered a presentation and workshop on husbandry techniques.

International Zoo Visits

A member of our Elephant Team visited Dallas Zoo where he spent a week working with their keepers. He was able to learn from new training and husbandry techniques which the team hope to implement at Chester Zoo and also experienced how elephants are managed as part of a large mixed exhibit.

Top Left: Staff involvement at the PASA workshop.

Top Right: Staff involvement with Giant Anteater reintroduction programme.

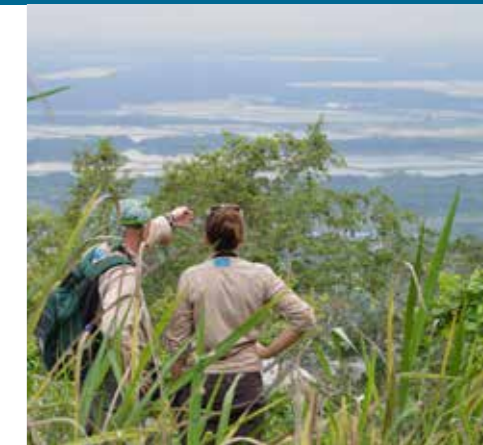
Bottom Left: Nigeria expedition.

Bottom Middle: Applied Ethologist and Horticulture Team Manager in Nigeria.

Bottom Right: Staff involvement with Assam Haathi Project, electric fence construction.

Zoo Expedition 2014

STAFF GO WILD FOR PARROTS IN ECUADOR



In 2014 the first annual zoo expedition took place. Funded through our Keeper for a Day Scheme, the expedition provides an opportunity for staff, not just from the Animal and Field Programme Teams, but from all divisions of the zoo to be involved in the zoo's worldwide conservation work.



The destination was one of the last remaining Ecuadorian dry forests - the Cerro Blanco Protected Forest. Situated on the south west coast just 20 minutes' drive from Ecuador's largest city, Guayaquil, this forest of just over 6,000 hectares is home to a species that has played an important part in the zoo's history for many years, the Ecuador amazon parrot.

Chester Zoo has kept this charismatic parrot since 1982, holding 68 parrots over that time and successfully breeding and rearing 32 chicks, the highest success rate in Europe. Currently you can see them in the zoo's *Parrot Breeding Centre*. This parrot also holds a soft spot in the heart of our Director General who began his career working with them and then went on to study them for a further 14 years. Mark also manages the European Endangered Species Breeding Programme for this species.

The zoo has been supporting the monitoring, research and protection of Ecuador amazon parrots in the Cerro Blanco since January 2013, this work is carried out by our project partner, Fundación ProBosque. The aim of the expedition was to run an intensive monitoring programme in the dry forest and mangrove over two weeks of the breeding season to build up our knowledge of this species in order to help direct its future

Ed Boyd, Education Officer: "As an Education Officer we are often telling the story of conservation to school and college groups, but until now I have never experienced life in the field first hand. This new experience gained will add an extra level of depth to my explanations of what the zoo does when talking to students. Being part of the expedition made me feel like a valued member of staff at Chester Zoo."

conservation.

The team was made up of 10 members of staff, consisting of those selected for their skills and expertise and those selected at random. There were representatives from many zoo divisions, including PR, Marketing, Discovery and Learning, Bird Team, Field Programmes Team, Horticulture Team (see photograph), and the team was led by our Director General.

The team carried out observations of the species in the dry forest where they feed and undertook flock counts twice daily as they flew from their dry forest feeding grounds to the communal coastal mangroves roosting sites. From this they could build up a much better picture of the parrots' behaviour. Tree surveys were also done, looking at the availability of trees with large enough trunks to support nest cavities, and camera traps were placed around the forest to gain an overview of the forest's biodiversity.

The vast majority of Ecuador's mangrove and dry forest has been destroyed due to shrimp farming, banana and cocoa production industries. A more recent concern is the creation of palm oil

plantations. Due to this there are thought to be just three sub-populations of the Ecuador amazon parrot left, occurring only in places where dry forest and mangrove exist in close enough proximity for them to fly between the two habitats on a daily basis.

The Cerro Blanco is the only Protected Forest within the range of the species and is home to the last stronghold and largest sub-population. The expedition team's flock counts suggest there are at least 139 individuals using the Cerro Blanco to feed in, but estimate a total of no more than 186 remaining in this sub-population. Compared to the last estimate of 214 (2006) this shows a slight decline. The results from the expedition were fed back to the IUCN Red List to support the change in the Ecuador amazon parrot's conservation status from Least Concern to Endangered - we are very pleased with this as it highlights to others that this is indeed a species in need of conservation support and one whose future we need to consider carefully.

The expedition was a huge success, not only did the team come back with vital information on the Ecuador amazon parrot that will help us to conserve it into the future, but they had a great time and learnt a huge amount doing so. However, there are many questions still unanswered, so further research is needed, but of course Chester Zoo will continue to look for ways to help safeguard the future of this species.

Top Left: The Ecuador expedition team outside the Cerro Blanco Protected Forest administration building.

Top Right: Looking out from a view point in the Cerro Blanco forest, over the shrimp farms that have encroached into the mangrove forest.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2014

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REFERENCE AND ADMINISTRATIVE DETAILS OF THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY, ITS TRUSTEES AND ADVISORS

The North of England Zoological Society ("the Society") is a registered charity (Number 306077) and a company limited by guarantee (Number 287902), regulated by its Memorandum and Articles of Association. Its principal and registered office is Cedar House, Zoological Gardens, Caughall Road, Upton by Chester, Chester, CH2 1LH.

The Society, also known as Chester Zoo, owns a trading subsidiary company, Chester Zoo Enterprises Limited, whose taxable profits are transferred to the Society via Gift Aid.

During the year Chester Zoo Islands Limited ("CZIL"), a company limited by guarantee (registered in England, no. 08603343), which was also a linked charity (Charity Commission registered no. 306077-1), was dissolved. CZIL was formed to facilitate the management of the Society's Islands exhibit. However in 2014 it was decided to manage Islands through NEZS. CZIL was dormant from incorporation until dissolution.

During the year Chester Zoo Foundation Nigeria ("CZFN"), an unlimited company (registered in England, no. 08904330), was formed. It is a wholly owned subsidiary of Chester Zoo (Nigeria) Limited ("CZNL"), a limited company (registered in England, no. 08374657). CZNL is a wholly-owned subsidiary of the Society. CZNL and CZFN which were both dormant from incorporation until the year end, will facilitate the management of the Society's conservation activities in Nigeria.

The Society also formed and is the sole member of the North of England Zoological Society Pension Trustee Company Limited, a company limited by guarantee (registered in England, no. 9173532) to provide improved governance of the Society's two pension schemes.

Honorary Positions

President

His Grace, The Duke of Westminster, KG, CB, CVO, OBE, TD, CD, DL

Vice Presidents

The Right Honourable Lord Wade of Chorlton, kt, JP

The Honourable Lady Jane Heber-Percy

The Right Honourable Baroness Rendell of Babergh, CBE

Trustees on the date of this report and serving during the Year:

Elected by the members

Professor Peter Wheeler Chairman
Rebecca Burke-Sharples CBE Vice Chairman
Malcolm Ardron (From 24 June 2014)
Professor Malcolm Bennett
Catherine Buckley
Professor Stefan Buczacki
Brian Child
Dr Simon Dowell
Robert Mee DL
Professor Russell Newton
David Pickering
Angela Pinnington (From 24 June 2014)
Dr Judith Skerritt
Bruce Ursell
Simon Venables (From 24 June 2014)
Tony Williams

Co-opted by the Trustees

Malcolm Ardron
Angela Pinnington

Principal Executives

Dr Mark Pilgrim Director General
Jamie Christon Managing Director

Company Secretary

Nick Clarke

Advisors

External Advisors to the Conservation and Education Committee

Brian Coles

Dr Caroline Evans

John Makinson

Tim Sibthorp

Dr Phill Watts (Until 15 April 2014)

External Advisors to the Animal Health, Welfare and Husbandry Sub-committee

Dr Julian Chantrey

Brian Coles

Michael Stanford

External Advisors to the Ethical Review Sub-committee

Prof Sarah Andrew

Dr Jeremy Playfer

External Advisor to the Audit and Risk Management Committee

Simon Bleckly

Auditors

KPMG LLP, 8 Princes Parade, Liverpool, L3 1QH

Internal Auditor

BDO LLP, 3 Hardman Street, Spinningfields, Manchester, M3 3AT

Solicitors

Aaron & Partners, Grosvenor Court, Foregate Street, Chester, CH1 1HG

DTM Legal LLP, Archway House, Station Road, Chester, CH1 3DW

Knights LLP, 34 Cuppin Street, Chester, CH1 2BN

Bankers

Santander, 7th Floor, 4 St Paul's Square, Liverpool, L3 9SJ

The Co-operative Bank, 3rd Floor, Station House, Stamford New Road, Altrincham, Cheshire, WA14 1EP

Actuaries

Mercer Human Resource Consulting, Exchange Station, Tithebarn Street, Liverpool, L2 2QP

STRUCTURE, GOVERNANCE AND MANAGEMENT

Trustees and Governance

The Trustees, as a body of charity trustees and as directors for the purposes of company law, have general control and management of the administration of the Society. They determine the strategic direction and policies of the Society, with consultation and discussion with the Director General and Managing Director of the Society as Principal Executives and their staff who implement policy.

The number of Trustees shall be not less than three and not more than twenty of whom not more than sixteen shall be Elected Trustees and not more than five shall be Co-opted Trustees. Elected Trustees, who must be members of the Society, are elected by the members at the Annual General Meeting to serve for a maximum of six years. Co-opted Trustees are co-opted by the Trustees, to serve for up to fifteen months from being appointed. The Trustees hold at least four formal meetings each year, together with an Annual General Meeting. The Chairman and Vice Chairman are elected by the Trustees from their current membership, for a period not exceeding three years before re-election for a maximum of one further term not exceeding three years. They are not required to retire in accordance with the six year maximum in this circumstance.

Key Responsibilities of the Trustees

With other Trustees to hold the Society "in trust" for current and future beneficiaries by:

- ensuring that the Society has a clear vision, mission and strategic direction and is focused on achieving these;
- being responsible for the performance of the Society and for its "corporate" behaviour;
- ensuring that the Society complies with all legal and regulatory requirements;
- acting as guardians of the Society's assets, both tangible and intangible, taking all due care over their security, deployment and proper application;
- ensuring that the Society's governance is of the highest possible standard.

Trustee Committees

The Trustees have delegated aspects of their powers to committees consisting of some of their members, relevant staff and other advisors. These committees report to the Trustees on matters that require their knowledge or approval. The Trustees also receive copies of the full minutes of all committee meetings.

Conservation and Education Committee - prime responsibility for advising the Trustees on all conservation and education matters, in accordance with the mission.

Animal Health, Welfare and Husbandry Sub-committee - audits and provides advice on animal health, welfare and husbandry. Reports to the Conservation and Education Committee.

Ethical Review Committee - prime responsibility for advising the Executive of the Society, on behalf of the Trustees, in respect of all research and ethics with animals, and to oversee the ethical activities of the Society in so far as they relate to the advancement of the Society's stated mission.

Business Operations Committee - prime responsibility for advising the Trustees on all financial, human resource and business matters, in accordance with the Society's strategic objectives.

Audit and Risk Management Committee - responsibility to review the effectiveness and integrity of systems for internal financial control, risk assessment procedures, information technology security, procedures for detecting fraud, appointment of senior finance staff, appointment of external auditors and review of audit findings and to investigate, on behalf of the Trustees, any financial and administrative matter which may put the charity at risk.

Remuneration Committee - determines remuneration and conditions of service for directors and other key executives.

Trustee Nominations Committee - takes responsibility for identifying and proposing new Trustees, and (if elected) for their subsequent induction, support and development. Reviews the governance structure of the Society and recommends changes to maintain a high standard of Trustees' governance.



The board of NEZS Trustees.

STRUCTURE, GOVERNANCE AND MANAGEMENT (CONT)

The Standing Committee structure at 31 December 2014 is indicated in the table below:

| Committees | Conservation and Education | Animal Health, Welfare and Husbandry | Ethical Review | Business Operations | Audit & Risk Management | Remuneration | Trustee Nominations | Pension scheme ⁽¹⁾ |
|------------------------|----------------------------|--------------------------------------|----------------|---------------------|-------------------------|--------------|---------------------|-------------------------------|
| Malcolm Ardron | | | | x | | | | |
| Prof Malcolm Bennett | x | Chair | | | | | | |
| Catherine Buckley | x | | | | | | | |
| Prof Stefan Bucczacki | x | | | | | | | |
| Rebecca Burke-Sharples | x | | Chair | x | | x | Chair | |
| Brian Child | | | | x | | | | |
| Dr Simon Dowell | Chair | | | | | x | x | |
| Robert Mee | | | | Chair | | x | x | |
| Prof Russell Newton | x | | | | | | | |
| David Pickering | | | | x | | | | |
| Angela Pinnington | x | | | | | | | |
| Dr Judith Skerritt | x | | x | | x | | | |
| Bruce Ursell | | | | x | Chair | | x | x |
| Simon Venables | | | | | x | | | |
| Prof Peter Wheeler | x | | | x | | Chair | x | |
| Tony Williams | | | x | x | x | | | |

⁽¹⁾ Not a committee of the Trustees. The Trustees nominate four persons (two others being nominated by members of the pension scheme) to act as directors of The North of England Zoological Society Pension Trustee Company Limited which acts as sole trustee of The North of England Zoological Society Superannuation Fund Scheme. This was established to provide pension benefits to employees of the Society.

Trustees – Recruitment

Each year, the Trustees prepare a list of names of members of the Society that they recommend for election to the Trustee board at the Annual General meeting. The Trustee Nominations Committee interview nominees wishing to be elected, considering them against the following characteristics:

- Do they support the aims of the Society?
- What can they contribute to the Society?
- Do their skills enhance or fill any current gaps in the overall skills of the Trustees as a whole?
- Is there a balance in terms of the mix of ethnic, gender and age that reflects the membership?
- Are they eligible by law to fulfil the role of a trustee of a charity?

Careful consideration in the recruitment of Trustees is vital for ensuring there is a balance of expertise and in particular a balance between the scientific skills on the one hand and the commercial and business skills on the other. The first is to ensure the scientific activities of the Society fall within the scope of its mission and the second is to ensure the future financial stability and prudent development of the Society.

Trustees – Training

The Society sees the relationship between the executive and the Trustees as fundamental

to its success. It is vitally important therefore that the Trustees understand the overall day to-day operational activities of the Society. To this end, new Trustees are encouraged to complete an induction tour of the zoo's various divisions, and to discuss with the executive team the role and function of each division, and the part it plays in the fulfilment of the Society's mission.

The relationship between the executive and the Trustees is further enhanced by the formation of ad hoc joint working parties to consider strategic issues. This is seen to not only develop the Trustees' awareness of the activities of the operational arm of the Society, but is also designed to develop the relationship between the Trustees and the executive management and staff. The combined meeting of Trustees and the executive team at the bi-monthly meetings of Trustees further enhances this relationship and awareness of operational issues.

Each Trustee is issued with an induction pack on becoming a Trustee that covers their roles and responsibilities and the mission, vision, values, strategy and current plans for the Society. Every Trustee is encouraged to attend an appropriate external training course, covering all aspects of the role and responsibilities of being a charity trustee.

Trustees' Third Party Indemnity

The Society purchases liability insurance cover for the Society, its Trustees and other

officers which gives them appropriate cover against the consequences of any neglect or default on their part.

OBJECTIVES AND ACTIVITIES

Strategic Objectives

The Society's vision and mission are set out on the inside front cover of Zoo Review. Its objects, as set out in its Memorandum and Articles of Association, are (a) to promote the conservation of the physical and natural environment by promoting biodiversity; and (b) to advance the education of the public on the conservation of the physical and natural world and the promotion of biodiversity; in particular by but not limited to the provision of public education, scientific study and the maintenance of endangered animals, plants and habitats in both protective and natural environments.

Public Benefit

The Trustees have complied with the duty in section 4 of the Charities Act 2011 to have due regard to public guidance published by the Charity Commission, including its supplementary guidance on fee charging.

In 2014 over 1,400,000 visits were made by members of the public to enjoy an educational experience at Chester Zoo. The Society relies on income from admission fees, catering and retail sales and other charges to cover its operating costs but in setting the pricing structure, the Trustees give careful consideration to the accessibility

of the Zoo to those on low incomes. The majority of all visitors enjoyed concessionary prices set to encourage visits by children, students, families, senior citizens and those with disabilities, and 29,000 received free admission. Details of our prices and discount terms and conditions are available from our website www.chesterzoo.org. Over 103,000 concessionary priced student visits had a direct instructive content, of which 18,096 received free admission and 23,700 were taught by our staff.

Employee Involvement

The Society continues to provide employees with information on matters of concern to them and regularly consults them and their representatives about the affairs of the Society. Every effort is made to maintain and develop existing arrangements to achieve a common awareness amongst employees of the financial and economic factors affecting the performance of the Society. Employees are also encouraged to contribute ideas that will improve quality and performance in all aspects and areas of the Society.

Disabled Persons

It is the Society's policy to give full consideration to suitable applications for employment from disabled persons.

Opportunities also exist for the Society's employees who become disabled to continue in their employment or to be trained for other positions within the Society.

Investment Policy

Investment powers are limited to those available under the Society's Memorandum and Articles of Association and charity legislation.

The Trustees' objective is, in the normal course of events, to maintain the capital value of the Society's investment assets, whilst allowing the Society to withdraw funds as required. Accordingly, the investments are held in liquid assets. The performance of the assets is benchmarked against the seven day and three month London Interbank Bid Rate. The Society has not set a policy on the social, environmental and ethical considerations of its investments, or on their corporate governance. The Trustees monitor the investment performance and the appropriateness of this policy on an ongoing basis.

The Trustees' Report on pages 42 to 45 was approved by the Trustees on the 3 July 2015 and signed on their behalf by:

Professor Peter Wheeler
Chairman of Trustees

STRATEGIC REPORT FOR THE YEAR ENDED 31 DECEMBER 2014

Review of Activities, Achievements and Performance

The financial statements have been produced in the format prescribed by the Charity Commission's Statement of Recommended Practice ('SORP 2005').

The Zoo has achieved another record breaking year, with income reaching £29.8m, up 6% on 2013, and visitors, excluding under 3's at an all-time high at 1.284m (2013: 1.274m).

Total incoming resources rose by £1.6m to £29.8m (2013: £28.2m). Net incoming resources before other recognised gains and losses increased to £3.7m (2013: £3.1m), producing an overall net cash inflow from incoming resources of £8.8m (2013: £6.7m).

Total Incoming Resources Included:-

- Income from charitable activities rose to £18.7m (2013: £17.5m) – this covers visitor admissions to the Zoo, memberships, Gift Aid, monorail and waterbus rides. Memberships continued to provide an excellent contribution with membership income at £3.3m (2013: £2.8m);
- Voluntary income, covering donations, adoptions and grants in the year decreased slightly to £2.8m (2013: £2.9m) as a result of the impact of the Consumer Contracts Regulations introduced in June 2014.

The Society received bequests totalling £166,000 (2013: £224,000);

- Trading turnover of Chester Zoo Enterprises Limited rose to £8.2m (2013: £7.7m) from its catering and retail activities, as a result of increased visitors and additional vending space.

Total Resources Expended were £26.1m (2013: £25m) due to:-

- Spend on charitable activities; which rose to £17.6m (2013: £16.9m);
- Total employee costs; rose to £10.9m (2013: £10.3m);
- Expenditure on outreach programmes decreased slightly to £1.1m due to the delay in timing of payments (2013: £1.2m);
- Cost of Goods sold from the catering and retail activities rose to £7.1m (2013: £6.9m) which reflected the higher turnover.

The net other recognised loss in respect of the pension fund was £0.4m (2013: £0.4m).

The net cash inflow from incoming resources of £8.8m (2013: £6.7m) was utilised to partly fund net capital expenditure of £17.5m (2013: £7.7m); the majority of which was spent on *Islands*. The rest of the capital expenditure was funded from reserves.

Plans for Future Periods

The *Islands* Project is entering the last stages of construction, with Laing O'Rourke completing as principal contractor on 31 March 2015. Additional works will continue through to the planned opening in July 2015. This £39m project will provide a unique visitor attraction that will be one of the largest in Europe and feature a boat trip around the South East Asian Islands coupled with a spectacular Monsoon Rainforest Exhibit. The project will continue to be funded out of Society reserves and bank borrowing. Costs of £17.0m were capitalised during the year.

Restricted and Designated Funds

Restricted income funds derive from donations, grants and legacies received and are put towards a variety of capital projects and outreach activities. The Society's free reserves may be defined as that part of its unrestricted income funds that are freely available for its general purposes. This therefore excludes those funds that could only be realised by disposing of fixed assets held for charitable use. Accordingly the Trustees consider it appropriate to set aside reserves equivalent to the net book value of the tangible assets as a designated fund of £35.8m (2013: £21.2m).

STRATEGIC REPORT FOR THE YEAR ENDED 31 DECEMBER 2014 (CONT)

Other designated funds principally relate to the Society's capital expenditure programme for the forthcoming year, and to outreach programmes which the Society commits to support over the next three to five years.

Principal Risks and Uncertainties

The Trustees actively review the major risks that the Society faces on a regular basis both generally and specifically, and believe that maintaining free reserves within defined levels will provide sufficient resources in the event of most adverse conditions. They also monitor the key financial and internal control systems and examine other operational and business risks to which the Society is exposed and have established systems to mitigate the significant risks identified.

The key risks identified by the Trustees are macro-economic recessionary influences reducing visitor numbers and income, contagious diseases leading to closure of the zoo, lack of a robust procurement strategy, value for money and operations in line with ethical principles, security and robustness of IT systems and risk of major operational incidents.

The effectiveness of the Society's risk assessment procedures are reviewed by the Audit and Risk Management Committee. BDO LLP are undertaking a schedule of internal audits determined and scoped by the Audit and Risk Management Committee and report back to the committee on a quarterly basis. The Society's Health and Safety Policy is reviewed by the Trustees to ensure it remains both current and effective.

Reserves

It is the general policy of the Society to apply towards its objectives as much cash as it reasonably can, without accumulating excessive reserves. The Trustees do not consider it necessary to retain income in respect of the Society's designated fund activities. Whilst these funds have been earmarked by the Trustees for particular purposes or uses, they are not committed or restricted legally.

The Society must have regard to its substantial continuing commitments, in terms of staffing and of its ongoing charitable objectives, and to the difficulty of predicting its precise income in any year. It must have regard to the annual cyclical swings of cash flow and such variable factors as wet weather at peak visitor times, competing attractions in the region, social trends, support for or opposition to zoos in principle, the potential closure of the Zoo to visitors due to contagious disease or other disasters, and varying levels of economic prosperity and employment.

The Trustees consider that other charitable reserves at the end of any financial year not exceeding 100% of the total resources expended during the year could properly be regarded as both reasonable and justified. Equally it considers that it would not be

prudent to allow such reserves to fall below zero. The Society's other charitable reserves at 31 December 2014, were £nil (2013: £nil) excluding designated reserves.

Statement of Trustees Responsibilities

The Trustees are responsible for preparing the Trustees' Annual Report and the financial statements in accordance with applicable law and regulations.

Company law requires the Trustees to prepare financial statements for each financial year. Under that law they are required to prepare the group and parent company financial statements in accordance with UK Accounting Standards and applicable law (UK Generally Accepted Accounting Practice).

Under company law the Trustees must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the group and charitable company and of the group's excess of income over expenditure for that period. In preparing each of the group and charitable company financial statements, the trustees are required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the group and the charitable company will continue its activities.

The Trustees are responsible for keeping adequate accounting records that are sufficient to show and explain the charitable company's transactions and disclose with reasonable accuracy at any time the financial position of the charitable company and enable them to ensure that its financial statements comply with the Companies Act 2006. They have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the group and to prevent and detect fraud and other irregularities.

The Trustees are responsible for the maintenance and integrity of the corporate and financial information included on the charitable company's website. Legislation in the UK governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Disclosure of Information to Auditor

Each of the persons who are Trustees at the date of approval of this report confirms that:

- So far as the Trustee is aware, there is no relevant audit information of which the Society's auditor is unaware;

- the Trustee has taken all the steps that he/she ought to have taken as a Trustee in order to make himself/herself aware of any relevant audit information and to establish that the Society's auditor is aware of that information.

The confirmation is given and should be interpreted with the provisions of section 418 of the Companies Act 2006.

Auditor

The auditor, KPMG LLP, have indicated their willingness to continue in office and a resolution to reappoint them will be proposed at the Annual General Meeting.

The Strategic Report on pages 45 to 46 was approved by the Trustees on the 3 July 2015 and signed on their behalf by:

Professor Peter Wheeler
Chairman of Trustees

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE NORTH OF ENGLAND ZOOLOGICAL SOCIETY

We have audited the financial statements of The North of England Zoological Society for the year ended 31 December 2014 set out on pages 48 to 63. The financial reporting framework that has been applied in their preparation is applicable law and UK Accounting Standards (UK Generally Accepted Accounting Practice).

This report is made solely to the charitable company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the charitable company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charitable company and its members as a body, for our audit work, for this report, or for the opinions we have formed.

Respective Responsibilities of Trustees and Auditor

As explained more fully in the Statement of Trustees' Responsibilities set out on page 46, the trustees (who are also the directors of the charitable company for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view.

Our responsibility is to audit, and express an opinion on, the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's Ethical Standards for Auditors.

Scope of the Audit of the Financial Statements

A description of the scope of an audit of financial statements is provided on the Financial Reporting Council's website at www.frc.org.uk/auditscopeukprivate.

Opinion on Financial Statements

In our opinion the financial statements:

- give a true and fair view of the state of the group's and the charitable company's affairs as at 31 December 2014 and of the group's incoming resources and application of resources, including its income and expenditure, for the year then ended;
- have been properly prepared in accordance with UK Generally Accepted Accounting Practice; and
- have been prepared in accordance with the Companies Act 2006.

Opinion on Other Matter Prescribed by the Companies Act 2006

In our opinion the information in the strategic report and trustees' report for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on Which we are Required to Report by Exception

We have nothing to report in respect of the following matters where the Companies Act 2006 requires us to report to you if, in our opinion:

- the charitable company has not kept adequate accounting records or returns adequate for our audit have not been received from branches not visited by us; or
- the charitable company financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of Trustees' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Will Baker (Senior Statutory Auditor)

for and on behalf of

KPMG LLP, Statutory Auditor

Chartered Accountants
8 Princes Parade
Liverpool
L3 1QH

3 July 2015

FINANCIAL STATEMENTS

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CONSOLIDATED STATEMENT OF FINANCIAL ACTIVITIES

(incorporating an income and expenditure account) for the year ended 31 December 2014

| | Notes | Unrestricted funds £'000 | Restricted funds £'000 | Total 2014 £'000 | Total 2013 £'000 |
|---|-------|-----------------------------|---------------------------|------------------------|------------------------|
| Incoming Resources | | | | | |
| Incoming resources from charitable activities | | | | | |
| Animals and botanical collection | 2 | 18,688 | - | 18,688 | 17,453 |
| Incoming resources from general funds | | | | | |
| Voluntary income | 3 | 2,577 | 246 | 2,823 | 2,870 |
| Activities for generating funds | | | | | |
| Subsidiary's trading turnover | 4 | 8,174 | - | 8,174 | 7,675 |
| Other | | | | | |
| Investment Income | 5 | 82 | - | 82 | 163 |
| Total incoming resources | | 29,521 | 246 | 29,767 | 28,161 |
| Resources Expended | | | | | |
| Resources expended on charitable activities | | | | | |
| Animals and botanical collection | 6a | 15,670 | 60 | 15,730 | 15,051 |
| Education and research | | 704 | 115 | 819 | 656 |
| Outreach | | 1,019 | 68 | 1,087 | 1,189 |
| Costs of generating funds | | | | | |
| Costs of generating voluntary income | | 177 | - | 177 | 162 |
| Fundraising trading | | | | | |
| Subsidiary's cost of goods sold and other costs | 4 | 7,079 | - | 7,079 | 6,901 |
| Governance costs | 6a | 378 | - | 378 | 339 |
| Other resources expended | | | | | |
| Irrecoverable VAT | 6a | 791 | - | 791 | 738 |
| Total resources expended | | 25,818 | 243 | 26,061 | 25,036 |
| Net incoming resources before other recognised gains and losses | 8 | 3,703 | 3 | 3,706 | 3,125 |
| Other recognised gains and losses | | | | | |
| Actuarial losses offset by asset surplus | 21 | 361 | - | 361 | (420) |
| Net movement in funds | | 3,342 | 3 | 3,345 | 2,705 |
| Reconciliation of funds | | | | | |
| Total funds brought forward | 17 | 31,402 | 117 | 31,519 | 28,814 |
| Total funds carried forward | | 34,744 | 120 | 34,864 | 31,519 |

The notes on pages 51 to 63 form part of these financial statements.

The above results are all in respect of continuing operations.

No Statement of Total Recognised Gains and Losses has been presented as all such gains and losses have been included above.

BALANCE SHEETS AS AT 31 DECEMBER 2014

| | Notes | Consolidated | | Society | |
|--|-------|----------------|---------------|----------------|---------------|
| | | 2014 £'000 | 2013 £'000 | 2014 £'000 | 2013 £'000 |
| Fixed assets | | | | | |
| Tangible assets | 11 | 35,781 | 21,171 | 35,781 | 21,171 |
| Investment in subsidiary company | 12 | - | - | - | - |
| | | 35,781 | 21,171 | 35,781 | 21,171 |
| Current assets | | | | | |
| Stocks | 13 | 476 | 453 | 50 | 115 |
| Debtors | 14 | 1,354 | 2,556 | 1,593 | 2,798 |
| Short term investments | 15 | 2,001 | 11,003 | 2,001 | 11,003 |
| Cash at bank and in hand | | 1,167 | 816 | 1,167 | 816 |
| | | 4,998 | 14,828 | 4,811 | 14,732 |
| Creditors: amounts falling due within one year | 16 | (5,915) | (4,480) | (5,728) | (4,384) |
| Net current (liabilities)/assets | | (917) | 10,348 | (917) | 10,348 |
| Total assets less current liabilities | | 34,864 | 31,519 | 34,864 | 31,519 |
| Net assets | | 34,864 | 31,519 | 34,864 | 31,519 |
| Funds employed | | | | | |
| Income funds – restricted | 17 | 120 | 117 | 120 | 117 |
| Income funds – unrestricted | | | | | |
| Designated funds | 17 | 34,744 | 31,402 | 34,744 | 31,402 |
| Other charitable funds | 17 | - | - | - | - |
| | | 34,864 | 31,519 | 34,864 | 31,519 |
| Total funds employed | 17 | 34,864 | 31,519 | 34,864 | 31,519 |

The notes on pages 51 to 63 form part of these financial statements

The financial statements were approved by the Trustees on 3 July 2015 and signed on their behalf by:

Professor Peter Wheeler
Chairman of Trustees

Robert Mee
Chairman of Business Operations Committee

Bruce Ursell
Chairman of the Audit & Risk Management Committee

Company number – 287902 -North of England Zoological Society
Subsidiaries: company numbers – 2669535 – Chester Zoo Enterprises Limited; 08374657 – Chester Zoo (Nigeria) Limited; 08904330 - Chester Zoo (Nigeria) Foundation; 9173532 -North of England Zoological Society Pension Trustee Company Limited.

CONSOLIDATED CASH FLOW STATEMENT FOR THE YEAR ENDED 31 DECEMBER 2014

| | 2014 £'000 | 2013 £'000 |
|--|----------------|----------------|
| Reconciliation of net cash inflow from net incoming resources | | |
| Net incoming resources | 3,706 | 3,125 |
| Net investment income | (82) | (163) |
| Depreciation charge | 2,882 | 3,214 |
| (Increase) in stocks | (23) | (35) |
| Decrease/(Increase) in debtors | 1,202 | (608) |
| Increase in creditors due within one year | 1,435 | 1,545 |
| Difference between pension charge and cash contributions | (361) | (420) |
| Net cash inflow from incoming resources | 8,759 | 6,658 |
| Returns on investment and servicing of finance | | |
| Interest received | 82 | 163 |
| Capital expenditure and financial investment | | |
| Payments to acquire tangible fixed assets | (17,492) | (7,724) |
| Operating cashflow in year | (8,651) | (903) |
| Management of liquid resources | | |
| Decrease/(Increase) in short term investments | 9,002 | (835) |
| Increase/(Decrease) in net cash at bank and in hand in the year | 351 | (1,738) |

Analysis of changes in net funds during the year

| | Balance at 1 Jan 2014 £'000 | Cash flow £'000 | Balance at 31 Dec 2014 £'000 |
|------------------------------|-----------------------------------|--------------------|------------------------------------|
| Cash | | | |
| Cash at Bank and in hand | 816 | 351 | 1,167 |
| Movement in liquid resources | 11,003 | (9,002) | 2,001 |
| Net cash | 11,819 | (8,651) | 3,168 |

The notes on pages 51 to 63 form part of these financial statements.

PRINCIPAL ACCOUNTING POLICIES

The following accounting policies have been applied in dealing with items that are considered material in relation to the financial statements of The North of England Zoological Society ("the Society"). They are consistent with those adopted in the financial statements for the prior year.

Basis of Preparation

The financial statements have been prepared on a going concern basis under the historical cost convention and in accordance with applicable accounting standards in the United Kingdom, the Charity Commission's Statement of Recommended Practice 'SORP 2005', The Charities Act 2011 and the Companies Act 2006.

The group's activities, together with the factors likely to affect its future development, performance and position are set out in the Trustees' report. The financial position of the group, its cash flows and liquidity position are shown in these financial statements. The Trustees report also notes the principal risks and uncertainties that impact on the group.

The group has considerable financial resources. As a consequence the Trustees believe that the group is well placed to manage its risks successfully despite the current uncertain economic outlook.

After making enquiries, the Trustees have a reasonable expectation that the Society and the group have adequate resources to continue in operational existence for the foreseeable future. Accordingly, they continue to adopt the going concern basis in preparing the annual report and accounts.

Consolidation

The consolidated statement of financial activities (SOFA), consolidated balance sheet and consolidated cash flow statement include the financial statements of the Society and its subsidiary undertakings, Chester Zoo Enterprises Limited, Chester Zoo Nigeria Limited, Chester Zoo Foundation Nigeria and the North of England Zoological Society Pension Trustee Company Limited made up to 31 December 2014 and comply with recommended practice for accounting by charities. The results of the subsidiaries are consolidated on a line by line basis. The charity has adapted the Companies Act formats to reflect the special nature of the charity's activities. No separate SOFA has been presented for the charity alone as permitted by Section 408 of the Companies Act 2006 and paragraph 397 of the SORP.

Funds Employed

All funds employed must be expended in furtherance of the objectives of the Society. Restricted income funds must be used in furtherance of some specific aspect of those objectives.

Designated funds are those which have been set aside by the Trustees out of unrestricted funds for identifiable future expenditure, but the designation has an administrative purpose only and does not legally restrict the Trustees' discretion to apply the funds.

Incoming Resources

In accordance with the SORP, all incoming resources, including Gift Aid, becoming receivable by the Society during the year are recognised in the SOFA, regardless of their source or of the purpose to which they are to be put or have been put. All income, both Unrestricted and Restricted, is recognised at the time of receipt. The exception to this is where income (and the associated Gift Aid) relates to a service to be provided in the following financial year. Such income is deferred and released over the period the service is provided.

Where income is restricted to a specific purpose, as specified by a donor, the income is included in restricted funds, legacies are recognised when payment is received or assets transferred. Grants are recognised when there is entitlement, conditions have been met, and there is certainty of receipt.

Resources Expended

The Society's systems analyse expenses departmentally. Expenditure is recognised when a liability is incurred, and is allocated in accordance with the main activity of the staff concerned or the substance of the costs incurred, including expenditure on charitable activities and on generating funds, and departments providing support services.

Support costs such as management and administration, information technology and property maintenance are incurred in support of activities undertaken to meet the objects of the Society. In accordance with the SORP support costs have been allocated to charitable activities and fundraising, apportioned by usage according to relative cost driving activities.

Governance costs disclosed consist of an allocation of the Director General's costs plus the cost of fulfilling obligations to the members and the Society's statutory obligations. These costs typically include the costs of staging the

members' annual meeting, legal costs, annual audit, taxation advice, trustees' indemnity insurance and the cost of the preparation and publication of the Annual Report.

Education costs include the cost of direct teaching, and costs of producing interpretive and interactive models and signage relating the animal and botanic collection, as well as supporting the publication of International Zoo News magazine.

Outreach costs include the making of grants and donations to research and conservation projects, the administration of such grant making and also the ongoing monitoring of the outcomes of projects.

Costs of generating voluntary income comprise costs of the fund raising department, including administrative salaries and wages, costs of appeal mail shots, inserts and e-mails, and collection of authority to collect Gift Aid on Zoo admission fees and donations, and administration costs related to the animal adoption scheme.

VAT

Visitor admission income is treated as VAT exempt and accordingly, as a partially exempt body, the Society may not recover all VAT incurred on costs, with the exception of VAT incurred in connection with the catering, retail, and seasonal event operations, which operate through the trading subsidiary. The cost of irrecoverable VAT is disclosed separately on the SOFA under other resources expended. Any irrecoverable VAT relating to the purchase of fixed assets is capitalised as part of the asset value.

Taxation

The Society is considered to pass the tests set out in Paragraph 1 Schedule 6 Finance Act 2010 and therefore it meets the definition of a charitable company for UK corporation tax purposes. Accordingly, the charity is potentially exempt from taxation in respect of income or capital gains received within categories covered by Chapter 3 Part 11 Corporation Tax Act 2010 or Section 256 of the Taxation of Chargeable Gains Act 1992, to the extent that such income or gains are applied exclusively to charitable purposes.

Investments in Subsidiary Undertakings

These are included at cost less any provision for impairment.

PRINCIPAL ACCOUNTING POLICIES (CONTINUED)

Fixed Assets

These are included in the balance sheet at historic purchase cost less accumulated depreciation. All assets are depreciated on a straight line basis.

Assets in the course of construction are stated at cost, less any recognised impairment loss. Depreciation of these assets commences when the assets are ready for their intended use.

Freehold Properties

Depreciation is provided on freehold properties excluding land at 2% or 10% per annum. Freehold land is not depreciated.

Buildings and Enclosures

Depreciation is provided at rates varying between 4% and 25% per annum, estimated to write off each asset over the term of its useful life. The rates and method of depreciation are consistent with those used in previous years.

Machinery and Equipment

Depreciation is provided at rates varying between 10% and 25% per annum, depending on the assumed useful life of the asset.

Animals

No annual assessment is made of the value of the animal collection. It is valued consistently at a nominal sum and not depreciated. Purchases and sales during the year are treated as revenue transactions.

Impairment

The carrying amounts of assets are reassessed when impairment indicators are present. An impairment loss is recognised to the extent the carrying amount of an asset exceeds its estimated recoverable amount.

Leases

Where the Society enters into a lease which entails taking substantially all the risks and rewards of ownership of an asset, the lease is treated as a finance lease. The asset is recorded in the balance sheet as a fixed asset and is depreciated over its estimated useful life. Future instalments under such leases, net of finance charges, are included within creditors. Rentals payable are apportioned between the finance element which is charged to the SOFA as interest, and the capital element, which reduces the outstanding obligation for future instalments.

All other leases are operating leases and the rental charges are taken to the SOFA as incurred.

Stocks

Stocks are valued at the lower of cost and estimated net realisable value. Where necessary, provision is made for obsolete, slow moving and defective stocks.

Pensions

The Society operates two voluntary pension schemes.

The Society makes contributions to a defined contribution pension scheme for certain staff members. The cost of these contributions is charged to the SOFA when payable.

The cost of benefits accruing during the year of the defined benefit scheme in respect of past service is included within staff costs. The net aggregate value of the investment return on the scheme's assets and the increase in the present value of the scheme's liabilities, arising from the passage of time, are included in the SOFA in either other incoming resources or in other resources expended. Actuarial gains and losses are recognised in the net movement in funds in the SOFA.

The balance sheet includes the surplus or deficit in the defined benefit scheme taking assets at their year-end market values and liabilities at their actuarially calculated values discounted at the current rate of return on a high quality corporate bond of equivalent term and currency to the liability. To the extent that the scheme is in surplus, the Society does not recognise any of the surplus as the Society is unable to recover any surplus either through reduced contributions in the future or through refunds from the scheme.

Grant-making

Liabilities relating to grants are recognised once the Society is irrevocably committed to the provision of the grant.

Grant-making Policy

The Society supports a wide range of conservation and research activities both in the Zoo and externally, often in partnership with other organisations. This support may be ongoing as with our major conservation programmes in partnership with Ecosystems-India in Assam or the Mauritian Wildlife Foundation in the Mascarenes. One-off annual grants including scholarships are also awarded.

Criteria for our funding support for projects include feasibility; qualification of project

personnel; capacity building; benefits to local communities; relevance to other conservation initiatives of the Zoo and regions or countries where the Zoo already has a field conservation focus; links to species within the collection plan; opportunities for technical support from Zoo staff.

Primarily support is provided to those projects which are judged to have potential to make a significant positive conservation impact. Applications are requested to be made on our standard grant application forms and these are formally reviewed by at least two qualified people, usually Society employees before a funding decision is made.

Related Party Transactions

The Society has taken advantage of the exemptions available under the Financial Reporting Standard 8 (Related Party Transactions) not to disclose details of transactions with entities that are part of The North of England Zoological Society group.

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2014

1. Status

The Society is a company limited by guarantee and has no share capital. Members have guaranteed the liabilities of the Society to the extent of £1 each in the event of the charity being wound up.

2. Incoming Resources from Charitable Activities

| | Unrestricted Funds | | | Total 2014 £'000 | Total 2013 £'000 |
|--|-----------------------------|--------------------------------|------------------------------|------------------------|------------------------|
| | Visitor related £'000 | Other unrestricted £'000 | Other designated £'000 | | |
| Animals and botanical collection | | | | | |
| Visitor admission to zoo and gardens | 14,212 | - | - | 14,212 | 13,769 |
| Monorail and boats | 501 | - | - | 501 | 486 |
| Membership of zoo and Gift Aid thereon | 3,275 | - | - | 3,275 | 2,751 |
| Other | 700 | - | - | 700 | 447 |
| Total incoming resources from charitable activities | 18,688 | - | - | 18,688 | 17,453 |

3. Voluntary Income

| | Unrestricted | Restricted | Total 2014 £'000 | Total 2013 £'000 |
|--|---------------|---------------|------------------------|------------------------|
| | 2014 £'000 | 2014 £'000 | | |
| Donations and Gift Aid on admission to zoo | 2,035 | - | 2,035 | 2,150 |
| Animal adoptions | 240 | - | 240 | 205 |
| Grants and Other Donations | 302 | 246 | 548 | 515 |
| Total voluntary income | 2,577 | 246 | 2,823 | 2,870 |

The restricted income funds derive from certain donations, grants and legacies received and are put towards a variety of capital projects, equipment or outreach activities.

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2014 (CONTINUED)

4. Activities for Generating Funds – Trading by Subsidiary Company

The Society has a wholly owned trading subsidiary, Chester Zoo Enterprises Limited, incorporated in the UK (representing an investment of £100 in ordinary £1 shares) which operates the catering and retail activities of the Zoo from outlets rented from the Society, and certain seasonal events. It transfers its taxable profit via Gift Aid to the Society; a summary of its trading results is shown below. Audited financial statements for the year ended 31 December 2014 will be filed with the Registrar of Companies.

| | Total 2014 £'000 | Total 2013 £'000 |
|--|------------------------|------------------------|
| Chester Zoo Enterprises Limited trading results | | |
| Incoming resources | | |
| Turnover | 8,174 | 7,675 |
| Resources expended | | |
| Labour and cost of goods sold | (5,800) | (5,760) |
| Gross trading surplus for year | 2,374 | 1,915 |
| Indirect costs | | |
| Operating and support costs paid to Society | (1,279) | (1,141) |
| Property rents paid to Society | (562) | (562) |
| Operating Profit | 533 | 212 |
| Taxation | - | - |
| Profit for the financial year | 533 | 212 |
| Gift Aid donation to parent company | (533) | (212) |
| Surplus/(deficit) retained in subsidiary | - | - |

Turnover of £8,174,000 (2013: £7,675,000) is included in the consolidated statement of financial activities within Activities for generating funds - Subsidiary's trading turnover.

Direct and indirect costs of £7,079,000 (2013: £6,901,000) are included within Fundraising trading - Subsidiary's cost of goods sold and other costs.

The society has restated 2013 figures in relation to the presentation of the Gift Aid payment in line with recent guidance. As the trustees now consider the Gift Aid payment to be akin to a distribution rather than an expense, it is now presented outside of the profit and loss account as an adjustment to profit taken to retained earnings.

5. Investment Income

| | Total 2014 £'000 | Total 2013 £'000 |
|------------------------------------|------------------------|------------------------|
| Income from short term investments | 82 | 163 |
| Total investment income | 82 | 163 |

6a. Analysis of Resources Expended

| | Staff Costs £'000 | Other Direct Costs £'000 | Support Costs £'000 | Total 2014 £'000 | Total 2013 £'000 |
|--|-------------------------|--------------------------------|---------------------------|------------------------|------------------------|
| Resources expended on charitable activities | | | | | |
| Animals and botanical collection | 5,144 | 7,258 | 3,328 | 15,730 | 15,051 |
| Education and research | 527 | 120 | 172 | 819 | 656 |
| Outreach | 267 | 763 | 57 | 1,087 | 1,189 |
| Total for Society | 5,938 | 8,141 | 3,557 | 17,636 | 16,896 |
| Costs of generating funds | | | | | |
| Costs of generating voluntary income | - | - | 177 | 177 | 162 |
| Total for Society | - | - | 177 | 177 | 162 |
| Subsidiary's cost of goods sold and other costs | 2,500 | 3,300 | 1,279 | 7,079 | 6,901 |
| Total for group | 2,500 | 3,300 | 1,279 | 7,256 | 7,063 |
| Governance costs | 251 | 127 | - | 378 | 339 |
| Other resources expended | | | | | |
| Irrecoverable VAT | - | 791 | - | 791 | 738 |
| Total resources expended for Society | 6,189 | 9,059 | 3,734 | 18,982 | 18,135 |
| Total resources expended for group | 8,689 | 12,359 | 5,013 | 26,061 | 25,036 |

Resources expended on the charitable activity of animals and botanical collection include costs associated with marketing, administration of Society membership, and provision of guest services and amenities of £4,092,000 (2013: £3,809,000).

6b. Analysis of Support Costs

| | Total 2014 £'000 | Total 2013 £'000 |
|-------------------------------|------------------------|------------------------|
| Direct Staff Costs | 2,252 | 2,343 |
| Other Costs | 2,761 | 2,265 |
| Total of support costs | 5,013 | 4,608 |

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2014 (CONTINUED)

7. Grants Payable in Furtherance of the Charity's Objects

The Society makes institutional grants payable in furtherance of the charity's objects, to support field and zoo conservation and research. The grants have been included in the other direct costs analysis of total resources expended.

| | Grants to institutions £'000 | Grants to individuals £'000 | Total 2014 £'000 | Total 2013 £'000 |
|-----------------------------|---------------------------------|--------------------------------|------------------------|------------------------|
| Analysis | | | | |
| Field Conservation | 589 | - | 589 | 637 |
| Field Education | 44 | - | 44 | 45 |
| Studentships | - | 8 | 8 | 7 |
| Other | 43 | - | 43 | 85 |
| Total grants payable | 676 | 8 | 684 | 774 |

8. Net Incoming Resources before other Recognised Gains and Losses

| | Total 2014 £'000 | Total 2013 £'000 |
|---|------------------------|------------------------|
| This is after charging: | | |
| Services provided by the Society's auditor | | |
| Fees payable for the audit of the charity and consolidated accounts | 18 | 15 |
| Fees payable for the audit of the subsidiary | 3 | 6 |
| Fees payable for taxation advice for the charity | 0 | 10 |
| Fees payable for taxation advice for the subsidiary | 3 | 1 |
| Depreciation of tangible fixed assets | 2,882 | 3,214 |

9. Trustees' Remuneration

The Trustees, being charity Trustees, received no remuneration (2013: £nil). Trustees were reimbursed during the year for travelling expenses necessarily incurred. Insurance costing £4,000 (2013: £4,000) has been taken out by the Society to protect the Society, its Trustees and other Officers against the consequences of any neglect or default on their part.

10. Employee Costs

| | Total 2014 £'000 | Total 2013 £'000 |
|-------------------------------------|------------------------|------------------------|
| Wages and salaries cost | 9,359 | 8,846 |
| Social security cost | 763 | 713 |
| Pension cost: | | |
| Defined Benefit pension scheme | - | - |
| Defined Contribution pension scheme | 779 | 716 |
| Total employee costs | 10,901 | 10,275 |

The number of employees, including those employed for only part of the year, whose emoluments for the year (excluding pension contributions) fell within each band of £10,000 from £60,000 upwards is shown below. All of these employees had benefits accruing to them under both the Society's defined benefit and defined contribution pension schemes. Contributions to the defined contribution scheme for these employees totalled £58,000 (2013: £53,000).

| | 2014 Number | 2013 Number |
|---------------------------|----------------|----------------|
| From £100,001 to £110,000 | 2 | 1 |
| From £90,001 to £100,000 | - | - |
| From £80,001 to £90,000 | 1 | 1 |
| From £70,001 to £80,000 | 2 | 1 |
| From £60,001 to £70,000 | - | 1 |

The average number of persons (full time equivalents (FTE)) employed by the Society during the year was as follows:

| | 2014 Number | 2013 Number |
|---|----------------|----------------|
| Animals and botanical collection | 194 | 178 |
| Education and Research | 16 | 16 |
| Outreach | 9 | 7 |
| Fundraising | | |
| Society | 4 | 4 |
| Subsidiary trading | 135 | 121 |
| Support and Governance | 70 | 72 |
| Total FTE employees | 428 | 398 |

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2014 (CONTINUED)

11. Tangible Fixed Assets

| | Assets in course of construction £'000 | Freehold Property £'000 | Buildings and enclosures £'000 | Machinery and equipment £'000 | Animals £'000 | Total £'000 |
|----------------------------|---|-------------------------------|---|--|------------------|----------------|
| Cost | | | | | | |
| At 1 January 2014 | 11,468 | 3,791 | 27,879 | 1,214 | 1 | 44,353 |
| Additions | 16,988 | - | 291 | 213 | - | 17,492 |
| Disposals and Transfers | (2,356) | - | 27 | - | - | (2,329) |
| At 31 December 2014 | 26,100 | 3,791 | 28,197 | 1,427 | 1 | 59,516 |
| Depreciation | | | | | | |
| At 1 January 2014 | 2,329 | 2,777 | 17,268 | 808 | - | 23,182 |
| Charge for the year | - | - | 2,713 | 169 | - | 2,882 |
| Disposals | (2,329) | - | - | - | - | (2,329) |
| At 31 December 2014 | - | 2,777 | 19,981 | 977 | - | 23,735 |
| Net book value | | | | | | |
| At 31 December 2014 | 26,100 | 1,014 | 8,216 | 450 | 1 | 35,781 |
| At 31 December 2013 | 9,139 | 1,014 | 10,611 | 406 | 1 | 21,171 |

A depreciation charge of £2,329,000 brought forward on assets in the course of construction that related to an impairment charge for the year ended 31 December 2010 has been included in disposals, as the assets will no longer be brought into a position where they will have economic use.

The Trustees consider that the Society holds no fixed assets for investment purposes. Whilst some of the fixed assets do yield a rental income, they were not acquired for that purpose, but to facilitate the operation of the zoo, which is the primary charitable purpose of the Society.

The Trustees consider that it is not meaningful to consider the market value of most of the Society's land and buildings.

Such assets are necessary to the operation of the Zoo, which is the primary charitable purpose of the Society. Where an assessment can be made, the Trustees consider that the market value exceeds the book value.

All the tangible fixed assets included in the consolidated statement above relate entirely to the Society.

The Society considers that none of its assets meet the definition of heritage assets under FRS 30. Although certain assets may have a heritage quality, these are all used for operational purposes in the running of the Zoo and are therefore classified as operating assets.

12. Investments

| | 2014 £ | 2013 £ |
|--|------------|-----------|
| Investment in Chester Zoo Enterprises Limited | 100 | 100 |
| Investment in Chester Zoo (Nigeria) Limited | 1 | 1 |
| North of England Zoological Society Pension Trustee Company Limited | 1 | - |

The principal undertakings in which the Group's interest at the year end is more than 20% are as follows:

| | Country of incorporation | Principal activity | Class and percentage of shares held | |
|---------------------------------|--------------------------|--|-------------------------------------|---------------|
| | | | Group | Company |
| Subsidiary undertakings | | | | |
| Chester Zoo Enterprises Limited | UK | Catering and Retail | 99% ordinary | 99% ordinary |
| Chester Zoo (Nigeria) Limited | UK | Protecting the biodiversity of Nigeria | 100% ordinary | 100% ordinary |
| Chester Zoo Foundation Nigeria | UK | Protecting the biodiversity of Nigeria wholly owned by Chester Zoo (Nigeria) Limited | 100% ordinary | - |

13. Stocks

| | Group | | Society | |
|------------------|---------------|---------------|---------------|---------------|
| | 2014 £'000 | 2013 £'000 | 2014 £'000 | 2013 £'000 |
| Goods for resale | 426 | 338 | - | - |
| Consumables | 50 | 115 | 50 | 115 |
| Total | 476 | 453 | 50 | 115 |

14. Debtors: Amounts Falling due within One Year

| | Group | | Society | |
|---------------------------------------|---------------|---------------|---------------|---------------|
| | 2014 £'000 | 2013 £'000 | 2014 £'000 | 2013 £'000 |
| Trade debtors | 199 | 168 | 181 | 152 |
| Amount owed by subsidiary undertaking | - | - | 257 | 258 |
| Other debtors | 18 | 1,256 | 18 | 1,256 |
| VAT recoverable | 708 | 789 | 708 | 789 |
| Prepayments and accrued income | 429 | 343 | 429 | 343 |
| Total | 1,354 | 2,556 | 1,593 | 2,798 |

Amounts owed by the subsidiary are unsecured, interest free and repayable on demand.

15. Short Term Investments

| | Group | | Society | |
|---------------|---------------|---------------|---------------|---------------|
| | 2014 £'000 | 2013 £'000 | 2014 £'000 | 2013 £'000 |
| Cash Deposits | 2,001 | 11,003 | 2,001 | 11,003 |

16. Creditors: Amounts Falling due within One Year

| | Group | | Society | |
|---------------------------------------|---------------|---------------|---------------|---------------|
| | 2014 £'000 | 2013 £'000 | 2014 £'000 | 2013 £'000 |
| Trade creditors | 2,697 | 2,153 | 2,510 | 2,057 |
| Other taxes and social security costs | 238 | 199 | 238 | 199 |
| Accruals | 1,122 | 727 | 1,122 | 727 |
| Other creditors | 501 | 308 | 501 | 308 |
| Deferred income | 1,357 | 1,093 | 1,357 | 1,093 |
| Total | 5,915 | 4,480 | 5,728 | 4,384 |

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2014 (CONTINUED)

17. Movement in Consolidated Funds

| | Balance at 31 Dec 2013 £'000 | New funds 2014 £'000 | Funds utilised 2014 £'000 | Transfers 2014 £'000 | Balance at 31 Dec 2014 £'000 |
|--|---------------------------------------|----------------------------|---------------------------------|----------------------------|---------------------------------------|
| Restricted income funds | | | | | |
| Animal collection | 46 | 48 | (60) | - | 34 |
| Education | 17 | 114 | (115) | - | 16 |
| Outreach | 53 | 84 | (68) | - | 69 |
| Events and Promotions | 1 | - | - | - | 1 |
| | 117 | 246 | (243) | - | 120 |
| Designated funds | | | | | |
| Reserves tied to tangible fixed assets | 20,323 | - | - | - | 20,323 |
| Animal collection | 150 | - | (150) | 743 | 743 |
| Education | 18 | - | (18) | 18 | 18 |
| Outreach | 615 | - | (615) | 642 | 642 |
| Other capital projects | 350 | - | (350) | 468 | 468 |
| Islands Project | 9,946 | - | (9,946) | 12,550 | 12,550 |
| | 31,402 | - | (11,079) | 14,421 | 34,744 |
| Other charitable funds | - | 29,521 | (15,100) | (14,421) | - |
| Total group funds employed | 31,519 | 29,767 | (26,422) | - | 34,864 |

The restricted income funds derive from the Animal Adoption Scheme and certain donations, grants and legacies received. Animal adoption income is all utilised to purchase animal foods, and the remaining restricted funds are put towards a variety of capital projects, equipment or outreach activities.

The designated funds relate principally to the Society's capital expenditure programme for the coming year, and to outreach programmes which the Society wishes to support over the next three to five years.

Movement in Society Funds

All the restricted funds and designated funds included in the consolidated statement above relate entirely to the Society. The equivalent figures for other charitable funds and total funds employed for the Society alone are:

| | Balance at 31 Dec 2013 £'000 | New funds 2014 £'000 | Funds utilised 2014 £'000 | Transfers 2014 £'000 | Balance at 31 Dec 2014 £'000 |
|-------------------------------------|------------------------------------|----------------------------|---------------------------------|----------------------------|------------------------------------|
| Other charitable funds | - | 29,521 | (15,100) | (14,421) | - |
| Total Society funds employed | 31,519 | 29,767 | (26,422) | - | (34,864) |

18. Financial Commitments

| | Group | | Society | |
|---|---------------|---------------|---------------|---------------|
| | 2014 £'000 | 2013 £'000 | 2014 £'000 | 2013 £'000 |
| Capital expenditure, contracted for but not provided in the financial statements: | 12,550 | 11,798 | 12,550 | 11,798 |

19. Contingent Liabilities

The Society has been involved in a challenge with HMRC in relation to the amount of VAT that can be recovered in respect of the costs of running Chester Zoo and in particular those costs that relate to its animals. A Tribunal heard the case in November 2014 the results of which were published

19. Contingent Liabilities (continued)

in June 2015 finding in favour of the Society. Within the financial statements The Society presents the amount that the Trustees currently assess to be the recoverable amount of VAT previously paid to HMRC in respect of this matter. The result of the Tribunal now indicates that the Society will be entitled to recover an amount greater than this, however this will only be recognised when the period in which HMRC can appeal is closed and the amount and recovery is more certain. Further, should HMRC appeal and be successful a potential liability could arise. The Trustees do not consider a reliable estimate of this potential liability can be made.

20. Related Party Transactions

The Society has taken advantage of the exemptions available under the Financial Reporting Standard Number 8 (Related Party Transactions) not to disclose details of any transactions with entities that are part of The North of England Zoological Society Group.

21. Pensions

The Society operates two pension schemes; a defined benefit scheme and a defined contribution scheme. The defined benefit scheme holds assets in a separately administered fund which closed to future accrual in March 2012. In line with FRS 17, a surplus can only be recognised in the balance sheet to the extent that the Society can gain economic benefit from it. As the scheme is closed to future accrual, a surplus can only be recognised to the extent of an agreed refund, so there is not any recognition of surplus at the year end.

A full actuarial valuation was carried out at 31 December 2011 and updated to 31 December 2014 for the purpose of these disclosures by Mercer, a qualified independent actuary.

| | 2014 £'000 | 2013 £'000 |
|---|---------------|---------------|
| Present value of funded defined benefit obligations | 17,857 | 15,489 |
| Fair value of plan assets | 21,217 | 20,018 |
| Surplus | 3,360 | 4,529 |
| Effect of non-recognition of surplus as required by FRS17 | (3,360) | (4,529) |
| Net pension surplus | - | - |

The major assumptions made by the actuary for the defined benefit scheme were as follows:

| Weighted average assumptions used to determine benefit obligations at: | 2014 | 2013 |
|--|-------|-------|
| Discount rate | 3.70% | 4.70% |
| Rate of price Inflation (RPI) | 3.10% | 3.40% |
| Rate of increase of pensions in payment (5% LPI) | 3.10% | 3.40% |
| Rate of increase of pensions in payment (2.5% LPI) | 2.20% | 2.20% |

| Weighted average assumptions used to determine net pension cost: | 2014 | 2013 |
|--|-------|-------|
| Discount rate | 4.70% | 4.50% |
| Expected long term rate of return on scheme assets | 5.55% | 4.90% |
| Rate of salary increase | N/A | N/A |
| Rate of price Inflation (RPI) | 3.40% | 3.00% |
| Rate of increase of pensions in payment (5% LPI) | 3.40% | 3.00% |
| Rate of increase of pensions in payment (2.5% LPI) | 2.20% | 2.10% |

| Assumed life expectations on retirement at age 65: | 2014 | 2013 |
|--|------|------|
| Retiring today (member age 65) | 22.9 | 22.8 |
| Retiring in 20 years (member age 45 today) | 25.0 | 25.0 |

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2014 (CONTINUED)

21. Pensions (continued)

Expected return on plan assets

To develop the expected long term return on assets assumption, the Society considered the current level of expected returns on risk free investments (primarily government bonds), the historical level of the risk premium associated with the other asset classes in which the portfolio is invested and the expectation for future returns of each asset class. The expected return for each class was then weighted based on the actual asset allocation to develop the expected long-term rate of return on assets assumption for the portfolio. This resulted in the selection of the 5.55% assumption for the year ended 31 December 2014. Given that the Society will be required to adopt FRS 101 or FRS 102 for the year ending 31 December 2015, the assumption as at 31 December 2014 will not determine the interest on plan assets figure under FRS101 or FRS102, and the discount rate at 31 December 2014 will be used (3.7%p.a.).

The percentage of scheme assets in the scheme and the expected rates of return analysed by asset allocation in 2014 have therefore not been included. The figures for 2013 were:

| | Expected return on assets at 31 Dec 2013 | Percentage of plan assets at 31 Dec 2013 |
|-------------------------------|--|--|
| | % | % |
| Equity securities | 6.10 | 50.5 |
| Debt securities | 4.70 | 39.8 |
| Property | 6.10 | 9.6 |
| Other | 0.50 | 0.1 |
| Weighted Average/Total | 5.55 | 100.0 |

| | 2014 £'000 | 2013 £'000 |
|--|---------------|---------------|
| Change in benefit obligation | | |
| Benefit obligation at beginning of year | 15,489 | 14,868 |
| Current service cost | - | - |
| Interest cost | 716 | 660 |
| Members' contributions | - | - |
| Actuarial loss | 2,158 | 518 |
| Benefit and expenses paid | (506) | (557) |
| Plan curtailments | - | - |
| Benefit obligation at end of year | 17,857 | 15,489 |

| | 2014 £'000 | 2013 £'000 |
|---|---------------|---------------|
| Change in scheme assets | | |
| Fair value of plan assets at beginning of year | 20,018 | 17,478 |
| Expected return on scheme assets | 716 | 660 |
| Actuarial gains on scheme assets | 628 | 2,017 |
| Employer contributions (incl. employer direct benefit payments) | 361 | 420 |
| Members contributions | - | - |
| Benefits and expenses paid | (506) | (557) |
| Fair value of scheme assets at end of year | 21,217 | 20,018 |

| | 2014 £'000 | 2013 £'000 |
|---|---------------|---------------|
| Components of pension costs | | |
| Current service cost | - | - |
| Interest cost | 716 | 660 |
| Expected return on scheme assets | (716) | (660) |
| Total net expenses | - | - |
| Actual return on scheme assets | 1,344 | 2,438 |
| Actuarial gains immediately recognised in the SOFA | (1,530) | (1,499) |
| Effect of asset limit | 1,169 | 1,919 |
| Total pension cost recognised in the SOFA | 361 | 420 |
| Cumulative amount of actuarial losses recognised | 3,872 | 2,342 |

Five year history

| | Financial year ending in: | | | | |
|---|---------------------------|---------------|---------------|---------------|---------------|
| | 2014 £'000 | 2013 £'000 | 2012 £'000 | 2011 £'000 | 2010 £'000 |
| Defined benefit obligation at end of year | 17,857 | 15,489 | 14,868 | 16,435 | 14,387 |
| Fair value of plan assets at end of year | 21,217 | 20,018 | 17,478 | 15,787 | 15,686 |
| Surplus/(Deficit) | 3,360 | 4,529 | 2,610 | (648) | 1,299 |
| Difference between the expected and actual return on scheme assets | | | | | |
| Amount (£'000s) | (628) | (2,017) | (1,252) | 1,117 | (430) |
| Percentage of scheme assets | 3% | 10.0% | 7.0% | 7.0% | 2.7% |
| Experience (gain)/loss on scheme liabilities | | | | | |
| Amount (£'000s) | - | - | 46 | 52 | - |
| Percentage of scheme liabilities | 0% | 0% | 0% | 0% | 0% |
| Total amount recognised in statement of total recognised gain and losses | | | | | |
| Amount (£'000s) | (361) | (420) | (1,520) | (2,148) | (168) |
| Percentage of scheme liabilities | 2.0% | 2.7% | 10.2% | 13.1% | 1.2% |

The Society has committed to making annual solvency deficit contributions up to 2022 and has granted a first legal charge to the Trustees of the Scheme over certain assets of the Society. However, the Scheme remains in surplus on a technical provisions basis.

Contributions

Contributions to the defined contribution scheme totalled £451,000 (2013: £406,000).

Looking Ahead to 2015

OPENING ISLANDS

**Islands**

2015 is going to be such a historic year for Chester Zoo. Come the summer, all of the hard work to get the *Islands* project completed with the animals and plants settled into their new homes will have finally become a reality. This will be a great cause for celebration for everyone involved. For many other of the zoo's staff the hard work will have only just begun as we welcome visitors to come and explore and discover all the sights, sounds and tastes of *Islands*.

Strategic Development Plan

No sooner than *Islands* has opened and we will begin developing the third phase of our Strategic Development Plan (the Diamond Jubilee Quarter was the first, with *Islands* being the second phase). During the second half of 2015 the senior management team and the Trustees will get together to plan out the future development of Chester Zoo.

Breeding Success and New Species

We look forward to the breeding successes that 2015 will certainly bring, some large, some small, but all important. Many of these births will be expected and often predicted with great accuracy by the Science Team, however each year also usually brings some very nice surprises.

Almost all of the new species for *Islands* are already part of the collection either on or off show. The main exception is the Sunda gharial a large threatened species of crocodile from South East Asia that specialises on eating large fish. Seeing this awesome reptile in the beautiful environment of the *Monsoon Forest* will become one of the iconic images of *Islands*.

Not quite so exciting but still very important is the work we will be doing on some large maintenance projects during the year including fitting new nets to the *Tsavo Aviary* the enormous *Wetland Aviary* and putting a new roof on the *Tsavo Black rhino* building.

Zoo Expedition to Assam

Our Managing Director Jamie Christon will be leading the 2015 zoo expedition to Assam early in the year. The group, including a number of staff chosen at random to take part in this expedition, will visit our Assam Haathi project. The group will see how our work helps the local people to live alongside elephants by mitigating against the negative impacts that elephants and people living in the same area can have. The group will hold a number of workshops with the local communities to build capacity on topics as diverse as marketing their produce, agricultural practices and beekeeping.

Above: Sunda gharial at La Ferme aux Crocodiles in France ©Michel Gunther.

NOTES

NOTES

APPENDICES ON CD

1. Chester Zoo Annual Report
2. Chester Zoo Organisational Structure
3. Chester Zoo Staff on External Boards
4. Brief Biographies of the Director Team
5. Brief Biographies of the Trustees
6. Discovery and Learning Members' Talks
7. Zoo Research and Scientific Publications
8. Worldwide Conservation Activities

Species Holdings, Roles and IUCN Red List Status

9. Mammals
10. Birds
11. Reptiles
12. Amphibians
13. Fishes
14. Invertebrates
15. Plants
16. Summary of Conservation Status of the Collection
17. About the Chester Zoo Collection Plan
18. Summary of All Roles



We would like to thank all the kind people who gave us permission to use their photographs for this report.



Alaotran gentle lemur with her young born at Chester Zoo in 2014.

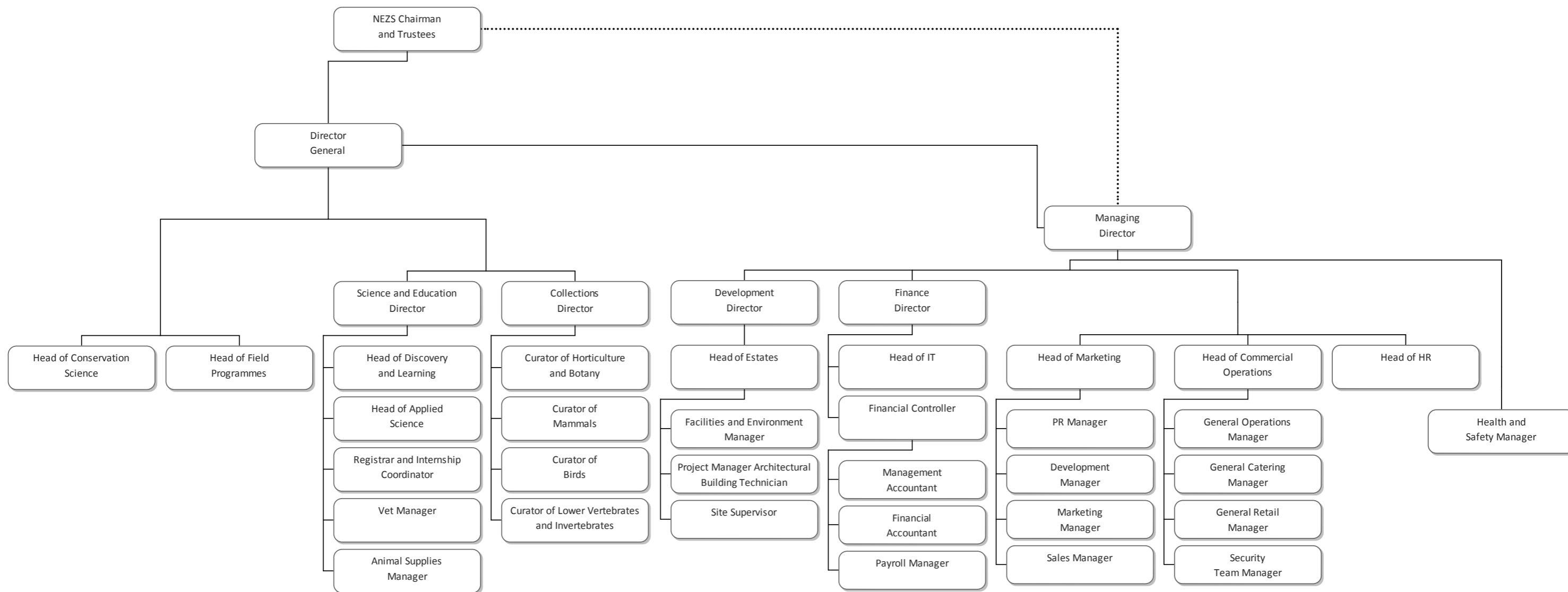
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NEZS/Chester Zoo ORGANISATION MANAGEMENT STRUCTURE 2014



STAFF ON EXTERNAL BOARDS (page 1 of 2)

Catherine Barton Conservation Officer

Chair, BIAZA Palm Oil Sub Group

Member, BIAZA Environmental Sustainability and Climate Change Committee

Sarah Bazley Zoo Rangers' Team Manager

Community School Governor, Acresfield Primary School, Upton

Sarah Bird Biodiversity Officer

Trustee, rECOrd - the Biodiversity Information System for Cheshire, Halton, Warrington and Wirral

Committee Member, Cheshire Mammal Group

Member, BIAZA Native Species Working Group

Member, Cheshire region Biodiversity Technical Group

Member, Wales Biodiversity Partnership Invasive Non Native Species Sub Group

Member, Wales Mammal Biodiversity Action Forum

Member, North East Wales Joint Biodiversity Partnership

Member, North Wales and River Dee Invasive Non Native Species Forum

Member, Cheshire Recorders' Forum

Member, Cheshire Black Poplar Biodiversity Action Plan Group

Member, North East Wales Plant and Mammal Biodiversity Groups

Kate Brankin Education Admin Coordinator

Regional Coordinator for Diploma in the Management of Zoo and Aquarium Animals

Jamie Christon Managing Director

Member, Council, Association of Leading Visitor Attractions

Member, Business Advisory Council, Faculty of Business, Enterprise and Lifelong Learning, University of Chester

Governor, Upton High School, Upton, Chester

Director, Marketing Cheshire

Member, Institute of Directors

Gabby Drake Veterinary Resident

Member, British Veterinary Zoological Society

Dr Maggie Esson Education Programmes Manager

Member, BIAZA Education and Training Committee

Member, EAZA Education and Exhibit Design Committee

IZE Board Member and Regional Representative for Europe and the Middle East

Education Advisor, EAZA Rhino Taxon Advisory Group

Dr Andrea Fidgett Nutritionist

Chair, EAZA Nutrition Group

Vice-Chair, EAZA Research Committee

Member, AZA Nutrition Advisory Group

Member, IUCN Conservation Breeding Specialist Group

Reporting Member, BIAZA Research Group

Honorary Lecturer, Dept Vet Pathology, University of Liverpool

Treasurer, Flora and Fauna International (North West Group)

Nutrition Subgroup Leader, UK Elephant Welfare Group

Affiliate Welfare Researcher, University of Glasgow

Section Editor, Journal of Zoo and Aquarium Research

Adam Fryda Formal Education Coordinator

Co-opted School Governor, Lamberhead Community Primary School, Wigan

Dr Gerardo Garcia Curator of Lower Vertebrates and Invertebrates

Chair, EAZA Amphibian Taxon Advisory Group

Vice-Chair, EAZA Reptile Taxon Advisory Group

Member, Steering Committee, Amphibian Ark

Member, IUCN-SSC Amphibian Specialist Group

Member, IUCN-SSC Tortoise and Freshwater Turtle Specialist Group

Member, IUCN-SSC Crocodile Specialist Group

Member, Conservation Committee of Thoiry-Peaugres Conservation

Dr Sonya Hill Applied Ethologist (until 5th September 2014)

Chair, BIAZA Animal Welfare Focus Group (until mid-2014)

Vice-Chair, BIAZA Research Committee

Research 'Champion', BIAZA Living Collections Committee

Animal Welfare 'Champion', BIAZA Living Collections Committee (until mid-2014)

Member, Research Sub-group of the EAZA Great Ape Taxon Advisory Group

Member, Captive Care Working Party, Primate Society of Great Britain

Trustee, Jane Goodall Institute (UK)

Honorary Lecturer, Dept of Veterinary Science, University of Liverpool

Martin King Head of IT

Chief Technical Officer, EAZA Group for Zoo Animal Contraception

Chartered Member, British Computer Society

Member, Charity IT Leaders Group

Javier Lopez Veterinary Manager

Veterinary Advisor, BIAZA Reptile and Amphibian Working Group

Veterinary Advisor, EAZA Amphibian Taxon Advisory Group

Veterinary Advisor, EAZA Leptodactylus fallax European StudBook

Veterinary Advisor, EAZA Reptile Taxon Advisory Group

Veterinary Advisor, EAZA Alaotran gentle lemur European Endangered Species Programme

Veterinary Advisor, EAZA Aye aye European Endangered Species Programme

Simon Mann Development Director

Member, CBI North West Regional Council

Ray Morrison Facilities and Environment Manager

Vice Chair, BIAZA Environmental Sustainability and Climate Change Committee

Member, British Institute of Facilities Management

Andrew Moss Education Research Officer

Member, BIAZA Research Committee

Member, EAZA Education and Exhibit Design Committee

Associate Fellow, University of Warwick

Stuart Nixon Field Programme Coordinator

Member, IUCN SSC Primate Specialist Group (Great apes section)

Member, IUCN SSC Giraffe and Okapi Specialist Group

Member, International Primatological Society

Andrew Owen Curator of Birds

Member, EAZA Bird Taxon Advisory Group

Steering Committee Member, BIAZA Bird Working Group

Member, EAZA Threatened Songbirds of Asia Working Group

Member, Spoon-billed Sandpiper Husbandry Advisory Group

Dr Mark Pilgrim Director General

Member, BIAZA Council

Member, EAZA Council

Chair, UK Elephant Welfare Group (until December 2014)

Board Member, Amphibian Survival Alliance

Member, World Conservation Union (IUCN)

Member, UK Committee and Conservation Council, IUCN Conservation Breeding Specialist Group, Species Survival Commission

Member, IUCN Asian Elephant Specialist Group

Member, EAZA Elephant Taxon Advisory Group

Member, EAZA Rhino Taxon Advisory Group

Member, EAZA Ape Taxon Advisory Group

Member, EAZA Technical Assistance Committee

Member, WAZA Nominations Committee

EAZA Accreditation Inspector

Trustee, Chester Zoo Nigeria Limited & Chester Zoo Foundation Nigeria

Trustee, 'RhiNOremedy'

Ambassador, Cheshire Business Leaders

Member, Institute of Directors

Penny Rudd Registrar

Coordinator, Flora and Fauna International (North West Group)

Member, Reaseheath College's Animal Care Course Industrial Liaison Group

Co-ordinator, Cheshire's Biodiversity Action Plan for Harvest Mice

Member, Cheshire Mammal Group

Member, Cheshire West & Chester Council Adoption Panel

Stephanie Sanderson Science and Education Director

Vice President, European Association of Zoo and Wildlife Veterinarians

Co-Chair, Veterinary Advisory Group, BIAZA

Member, BIAZA Living Collections Committee

Member, DEFRA Zoo Liaison Group

Member, DEFRA GB Avian Disease Core Group

Member, DEFRA EU Animal Health Law Core Group

Member, UK Elephant Welfare Group

BVZS Council Member as DEFRA liaison

Secretary and Trustee, Zebra Foundation for Veterinary Zoological Education

Honorary Lecturer, Dept Vet Pathology, University of Liverpool

Mark Sparrow Curator of Botany and Horticulture

Member, BIAZA Plant Working Group

Member, Liaison Committee, Association of Zoological Horticulture

Member, EAZA Zoo Horticulture Group Committee

Member, EAZA Zoo Horticulture Group – Plant Conservation Committee

Member, ZooLex Editorial Board

Ambassador, World Land Trust

STAFF ON EXTERNAL BOARDS (page 2 of 2)

Steve Unwin **Veterinary Officer**

Member, Pan African Sanctuary Alliance
Advisory Committee

Member, International Committee of American
Association of Zoo Veterinarians

Member, Captive Care Working Party of the
Primate Society of Great Britain

Member, IUCN Wildlife Health Specialist Group

Member, Advisory Committee on Ape
Reintroduction

Chair, Orangutan Veterinary Advisory Group

Chair, Pan African Sanctuary Alliance Veterinary
Committee

Veterinary Advisor, Sulawesi Macaque EEP

Honorary Lecturer, Dept Vet Pathology,
University of Liverpool

Lecturer in Masters Wild Animal Health – Royal
Veterinary College/ZSL

Diplomate (Zoo Health Management),
European College of Zoological Medicine

Dr Susan L Walker **Head of Applied Science**

Co-Chair, European Group on Zoo Animal
Contraception

Secretary and Board Member, International
Society of Wildlife Endocrinology

Reporting Member, BIAZA Research Group

Honorary Lecturer, University of Liverpool

Dr Roger Wilkinson **Head of Field Conservation & Research** **(until 31st March 2014)**

Vice-President, West African Ornithological
Society

Vice-President, Avicultural Society

Council Member, Mauritian Wildlife Foundation

Trustee, Polillo Island Biodiversity Conservation
Foundation

Member, Advisory Board to the Nigerian
Montane Forest Project

Member, EAZA Conservation Committee

Member, BIAZA Field Programmes Committee

Member, IUCN-UK Committee

Consultant to British Ornithologists' Union
Records Committee

Chair, Chester and District Ornithological
Society

Scott Wilson **Head of Field Programmes**

Chair, BIAZA Field Programmes Committee

Member, BIAZA Council

Council Member, Mauritian Wildlife Foundation

Trustee, Chester Zoo Nigeria Limited & Chester
Zoo Foundation Nigeria

Dr Alexandra Zimmermann **Head of Conservation Science**

Senior Research Associate, WildCRU, Zoology
Department, Oxford University

Member, IUCN-SSC Cat Specialist Group

BRIEF BIOGRAPHIES OF THE DIRECTOR TEAM

MARK PILGRIM BSc (Hons), PhD **Director General**

Mark left school in 1980 and found engineering work in Portsmouth Dockyard. He decided to go back to further his education at the North East London Polytechnic, graduated with a Degree in Science in 1986 and joined the zoo as a bird keeper two years later. Mark went on to become Deputy Curator of Birds and, in 2001, became Chief Curator responsible for the whole animal and plant collection at the zoo. In 2007 Mark became Director of Conservation and Education with a determination to bring these two key areas of the zoo closer. Mark is a Council member of the European Association of Zoos and Aquariums (EAZA) and the British and Irish Association of Zoos and Aquariums (BIAZA). Mark was the Chair of the UK Elephant Welfare Group (until December 2014) and manages the European zoo populations of Black Rhino, Jaguar and the Ecuadorian Amazon Parrot. In September 2010, Mark was appointed as the new Director General of the Society, only the fourth in its history.

JAMIE CHRISTON BA (Hons) **Managing Director**

After graduating from Leicester University with a Degree in Politics, Jamie spent his first 10 years working in core high street food and department store management with various management roles initially in the North West and then across the rest of the UK. In 2003, as UK regional airport dynamics changed, Jamie joined Manchester Airport Group, heading up commercial operations at East Midlands, Humberside and Bournemouth Airports. In 2007, he continued his career as Commercial Director and then latterly Managing Director of Exeter Airport in the South West where he managed the transition from local authority to private sector ownership. During that period, Jamie managed masterplanning, site development and helped improve commercial profitability. More recently Jamie has been responsible for group on-board operations for Stena Line, one of Europe's leading ferry operators during a period of rapid expansion and change. Jamie joined the Society in July 2013.

STEPHANIE SANDERSON MA VetMB, **MSc (WAH), MRCVS** **Science and Education Director**

Stephanie graduated from Cambridge University in 1994 with Zoology and Veterinary Degrees. She spent three years in general veterinary practice before moving into a fulltime career working with wildlife. Stephanie was awarded an MSc in Wild Animal Health from London Zoo & the Royal Veterinary College in 1999 and joined Chester Zoo as their first staff vet that same year. During her 15 years at the zoo, she has held a number of positions culminating in her joining the Director team in 2012 first as Director of the Living Collection and then as Director of Science and Education. Stephanie also plays a significant role in advising on animal health both at national and international level. She chairs the British and Irish Association of Zoos and Aquarium (BIAZA)'s Veterinary Advisory Group, is vice president of the European Association of Zoo and Wildlife Veterinarians (EAZWV) and acts as an advisor to the Department of Environment, Food & Rural Affairs (DEFRA).

SIMON MANN BSc **Development Director**

Simon initially studied as an architect before completing a Degree in Construction Management. After qualifying he worked for a number of regional and national building contractors as a design and build manager on projects across the UK. In 1997 Simon moved to project management consultancy, initially working for a specialist London based practice on a series of high profile projects including the BBC Broadcasting House re-development in Central London. In 2003 he joined the largest UK PM consultancy and as a Director helped to develop the regional business within the North West. Simon first worked for the Society as Interim Development Director for Natural Vision in 2008 before taking up the permanent role in March 2009.

ELIZABETH CARNIE, BSc (Hons), FCA **Finance Director**

After graduating from Durham University with a degree in Mathematics, Liz joined PricewaterhouseCoopers LLP in Liverpool and qualified as a Chartered Accountant in 2000. Liz worked for PwC Audit & Assurance for 10 years, working with a number of North West PLCs on both statutory audits and corporate transactions. Liz also spent a year in PwC's London office working in the Accounting Technical department advising the practice and delivering training both internally and to external clients. Liz joined Styles & Wood Group PLC in 2007 as Group Financial Controller and worked with the business through a number of transactions including refinancing and equity fundraising. Liz joined the Society as Director of Finance in January 2014.

BRIEF BIOGRAPHIES OF THE COUNCIL OF TRUSTEES

Chairman

Prof Peter Wheeler BSc, PhD

Executive Dean of the Faculty of Science and Professor of Evolutionary Biology at Liverpool John Moores University. He graduated in Zoology from Durham University where he also completed his doctorate on reptilian and mammalian thermoregulation. Subsequent research covered a range of topics, including birds of prey and dinosaurs, but has focussed primarily on early human evolution. In his current role of Executive Dean he has responsibility for the delivery of education and research across a wide range of life and physical sciences, together with associated supporting activities including strategic planning, finance, resourcing and oversight of development projects. A long standing zoo enthusiast, Professor Wheeler has been a regular Chester Zoo visitor since 1981. He is also a keen birder and wildlife photographer and has travelled extensively in Europe, Africa, Asia, South America and the Arctic in pursuit of these interests.

Vice Chairman

Mrs Rebecca Burke-Sharples CBE

Retired NHS Chief Executive. 32 years' experience in the NHS and was awarded the CBE in 2002 for services to nursing and health care management. Previously a member of the UK Council on Bio-ethics with a keen interest in the ethical treatment of animals. Prior to retirement in 2008 she was Chief Executive of a large NHS Primary Care Trust with a budget of over half a billion pounds. She has expertise in organisational development and continuous improvement initiatives. A Fellow of Liverpool John Moores University, and Non Executive Director of a leading NHS Foundation Trust. Married to Alan, a retired Finance Director, who is currently a Trustee of the NEZS Superannuation Fund Scheme and has previously served as NEZS Council Member; they have one daughter.

Trustees

Mr Malcolm Ardron BA Hons (Oxon), CEng FIMechE

Company Managing Director and Fellow of the Institution of Mechanical Engineers. After studying Engineering Science at Oxford University a career in both public and private sectors ranging from construction of nuclear power stations, road and rail projects, industrial and commercial buildings; consultant to nuclear and manufacturing sectors in UK and Europe on commercial dispute resolution including Expert Witness to Court (Technology & Construction Division). Currently Managing Director of a company providing engineering and construction services.

Prof Malcolm Bennett BVSc, PhD, MRCVS, FRCPath

Professor of Veterinary Pathology, University of Liverpool. Research and teaching interests are in 'One Health' approaches to infectious diseases, especially infections that might be zoonotic, emerging infectious diseases, and infectious diseases of wild animals in the context of ecosystem health and the interfaces between humans, domestic animals and biodiversity.

Mrs Catherine Buckley MA (Oxon), PGCE

Retired Headmistress of The Queen's School, Chester. After studying Modern Languages at Oxford, she spent two years teaching in Southern Germany. Has since taught for most of her career at leading independent schools in the North West. She retired after nine years as headmistress of The Queen's School in summer 2010. She is also a Vice Chair of Governors at Bolton School.

Prof Stefan Buczacki BSc, DPhil, Hon DUniv, CBiol, FSB, FIHort, FLS, ARPS

Biologist. Main areas of expertise horticulture, plant pathology, botany and natural history. Although graduating in Botany [Southampton] and Forestry [Oxford], his first love was Zoology, ignited by his childhood in a Derbyshire village. He spent many years in research before becoming a high profile gardening personality, appearing on TV and radio and in newspapers and magazines. He is Britain's most experienced gardening writer and broadcaster with credits including nearly 60 books, over 3000 articles and a radio and TV career stretching back nearly 30 years. In addition to his familiar popular role, he works as an expert witness and consultant with an international reputation and holds an Honorary Chair at Liverpool John Moores University. He is also now gaining a more unexpected reputation as a political biographer.

Mr Brian Child MIPA

Retired. Spent 25 years at McCann-Erickson Manchester and 10 of those as Chief Executive. During this time also held the role of UK Group Chairman and for the last two years held the role of European Vice President and Chief Executive of Momentum Europe. Now runs his own marketing company, specifically to help small/medium agencies to realise the full extent of their ambitions. Is a non-executive director of The Foundry, a group of marketing services suppliers based throughout the UK. Has a special interest in international zoo marketing.

Dr Simon Dowell BSc (Hons), DPhil

Formerly Head of International Affairs at the Faculty of Biological and Earth Sciences, LJMU and now Associate Dean (Strategy & Development) at the Faculty of Health and Life Sciences at Oxford Brookes University. After completing his PhD at the University of Oxford, worked as a research biologist at the Game Conservancy Trust where he co-founded and chaired the IUCN Species Specialist Group on Partridges, Quails and Francolins. His work on the Sichuan Hill Partridge is a major part of NEZS's Sichuan Forest Conservation Programme in China which he co-ordinates and for which he has been awarded the zoo's Honorary Conservation Fellowship. Takes a keen interest in local conservation and was a Council Member and Chair of the Conservation Committee for the Cheshire Wildlife Trust from 2004 to 2008.

Mr Robert Mee FCIB, DL

Robert has recently retired from a 40 year career in financial services where he held a number of Company Directorships. He is Chair of the Ellesmere Port Development Board and a Director of the Ellesmere Port Fab Lab. He has Chaired the Business Operations Committee for the last seven years and is a member of the Remuneration Committee.

Prof Russell Newton BSc, PhD, DSc, FRSC

Professor of Biochemistry at Swansea University until retirement in 2008, when elected Emeritus Professor, and formerly Lead Director of Biomolecular Analysis Mass Spectrometry Facility. As a biochemist, involved in various multidisciplinary projects, including the development of Seracitin®, an antibiotic extracted from natural sources, and of DisiAq®, which has attained publicity recently for its contribution in stimulating the first successful breeding of rare endangered frogs at Paignton Zoo. Currently Chair of Scientific Advisory Board of Endocrine Pharmaceuticals.

Dr David O Pickering FCA, DL, FIoD

Doctor of Business Administration at the University of Chester. Born a farmer. Qualified as a Chartered Accountant. Retired. Career – Director of Meadow Foods Ltd; Chester Race Co. In retirement: Trustee of Chester Zoo; Champion of Chester Walls; Sexton of Hope Church, North Wales; Chair, The Giant Manufacturing Co Ltd at Thornton Science Park.

Miss Angela Pinnington BSc (Hons)

Management Consultant specialising in Business Performance Improvement and Strategy. Currently running a business providing management training and coaching. Also a trustee of Ariel Trust, an education charity working with disadvantaged young people. Previously a director of UK and Irish companies.

Dr Judith Skerritt BSc, MSc, PhD

After graduating in Mathematics in Canada, gained a PhD in Pure Mathematics from the University of Liverpool before taking lecturing positions, including head of department, in Montreal. In 1993 established a local veterinary practice with her husband where she directed the business and operational aspects. In 1999 along with three other colleagues, she established VetMRI which was the world's first mobile MRI facility for animals. She was Business Director of Vet MRI for five years. In 2004 established with her husband a large multidiscipline veterinary referral hospital in the North West. Was Business Director and co-owner of this company. Was the Principal of a newly established veterinary nursing college which she set up within the hospital. Was a Trustee of the NEZS from 2001 to 2008 and Chairperson of the Education Committee. Was re-elected as a Trustee of the NEZS in 2009.

Mr Bruce Ursell

Had a career in the City of London eventually becoming CEO of two merchant banks and director of a FTSE 100 company. Chaired the management board of a top ten accounting firm. Commenced working life by spending five years in sub-Saharan Africa. From 1998 he spent 12 years as a non-executive director of the London arm of the largest bank in Africa and has more recently chaired entities managing private and European Government investments in emerging markets, particularly in Africa. Chair of the zoo's Audit and Risk Management Committee.

Mr Simon Venables FCA MBA MA (Cantab) BA (Hons)

Assistant Finance Director and Head of Internal Audit at Bibby Line Group in Liverpool, with previous experience as Audit Senior Manager at KPMG. A Chartered Accountant, spent 13 years with KPMG in Liverpool after graduating from Cambridge University (Geography) in 2000. Completed an MBA at Manchester Business School in 2009.

Mr Tony Williams

After a long career as a senior executive in financial services with a major Chester-based bank, now runs a successful consultancy with his wife, helping businesses with their development and future strategy. Tony was a Trustee of the Friends of The Potteries Museum and Art Gallery for a number of years and was involved in their fundraising programme to enable the Museum to buy the important Anglo Saxon "Staffordshire Hoard" exhibits. A keen supporter and Trustee of the zoo for nearly 20 years and served as Chairman of the Council of Trustees of the Society from 2004 to 2010 and was re-elected as a Trustee for a further term in 2012.

Discovery and Learning

2014 MEMBERS' TALKS

Tuesday 11th February

Planting Seeds for Children – Dr Maggie Esson

Maggie talks about her recent visits to the zoo's outreach projects in Sumatra and Assam and looks at the work being undertaken to encourage villagers' better understanding of human/wildlife conflict. In Assam, for example, we're explaining elephant behaviour and trying to mitigate against the elephants with fences, spotlights and chilli. These first steps are planting seeds for a safer future for village children and improved relationships between villagers and wildlife.

Dr Maggie Esson is Education Programmes Manager in the Discovery and Learning Division

Wednesday 12th March

An Evening with Our Rhinos Team

Enjoy an evening of behind the scenes' chat as our keepers tell you all about the various species on their section. Hear about their working day and the latest news on our rhinos, tapirs, capybara and deer, to name but a few of the species on their section.

The Zoo's Rhino Team

Thursday 10th April

Sustainability and Climate Change ... - Chester Zoo's Green Team

The zoo is rightly proud of its ISO14001 status and in this talk we'll be explaining why sustainability is a part of the mission of zoos and how energy consumption and waste impacts on biodiversity.

Come and meet our Green Team – a group of enthusiastic staff who are passionate about sustainable travel, waste and water, energy and green buildings – and they'll introduce you to this year's EAZA Campaign Pole to Pole. They'll tell you what the zoo is doing to help change behaviours and what we can all do to look after the environment and those who live in it – animals, plants and ourselves! Come armed with questions! The Green Team folks are fond of their topic and like to talk a lot!

Chester Zoo's Green Team: John Sutton (Retail), Christopher Williams (Facilities and Environment), Mark Sparrow (Horticulture and Botany), Stephanie Sanderson (Director Learning Collections), Ray Morrison (Facilities and Environment), Nick Davis (Mammals), Martin King (IT), Sarah Bazley (Zoo Rangers), Simon Hacking (Marketing), Sue Clews (Catering), Tracy Bryan (Admin),

Kim Halliday (Project Co-ordinator), Liam Adamson (Catering), Vicky Powell (Retail), Scott Wilson (Field Programmes), John Iles (Finance), Brendan O'Brien (Catering), Sarah Bird (Biodiversity) and Lorraine Shuker (Health and Safety)

Wednesday 14th May

Expedition Ecuador! – Dr Mark Pilgrim and the Ecuador Explorers

In January 2014, 10 members of staff from divisions across the zoo embarked on an expedition to Ecuador - to the Cerro Blanco Protected Forest. This fragment of dry forest is home to the Endangered Ecuador amazon parrot, a species found only in four locations down the West coast of Ecuador. Acting as a safe haven for the species, the Cerro Blanco is home to a group of up to 200 parrots, and protects them and co-existing biodiversity against major threats of deforestation and poaching.

Despite their endangered status, not a huge amount is known about this group of shy parrots. The expedition team will be running an intensive two week field study during the parrot's breeding season, targeting questions about their biology and behaviour that will aid the future conservation of the species.

The Explorers: Becca Biddle, Mark Sparrow, Andrew Owen, Roger Wilkinson, Gareth Evans, Maile Belanger, Will Condliffe, Ed Boyd, Simon Hacking.

Monday 9th June

Gold Medal Recipient – Roland Wirth

Each year the zoo awards a Gold Medal to someone who has had a huge impact in the fields of zoology, conservation and the natural world. This year's recipient is Roland Wirth and he will be giving a special talk especially for members.

According to his mother, Roland has been interested in wildlife ever since he could talk and from a very early age wanted to be a zoo director or a field biologist. As long as he can remember, animals and plants have been his main interest and they still are. For a long time, he worked in his parents' furniture business but didn't let the grass grow under his feet where his wildlife passion was concerned. He volunteered wherever and whenever he could and in 1982 co-founded ZGAP, Zoological Society for the Conservation of Species and Populations. He has worked for ZGAP since then as well as chairing a number of IUCN SSCs, working for BirdLife International, being a board member of the Loro Parque

Fundacion and in 2001, he co-founded the Species Conservation Foundation. He is a member of the EAZA Conservation Committee and of the ASAP (Asian Species Action Partnership).

Roland will talk about some of the many species conservation projects which he has helped set up and run, providing some background information on conservation about issues and facts you might find surprising and may inspire us to look at things from a different angle. Did you know that all the world's national parks and protected areas have a combined annual budget that is less than what dog owners in Western Europe spend on dog food per year?

And if we really want to live sustainably and not contribute to the demise of the world's wild places and wildlife, the UK should only have 5.5 million human inhabitants and Germany 7.9 million. A provoking thought! But where does this figure come from?

Roland believes that wildlife is important to us, not only because there are such unusual benefits as Giant pouched rats saving people in Africa from being blown up by landmines but because animals inspire our culture and mental wellbeing in more ways than most people realise.

Tuesday 9th September

Butterflies with Heather Prince

Our Butterfly Journey opened in 2009 and this is the first talk by our Butterfly Team. Find out all about the husbandry of the animals from our keepers and Heather will update you on the Large Heath Butterfly Project. Our Butterfly Keeper, Heather, is hoping they will pupate and emerge successfully so she can report good news.

Heather Prince, Butterfly Keeper

Wednesday 15th October

Acting for Wildlife: Global Conservation Issues

Our Field Conservation Team takes a look at some of the current global conservation issues impacting species and habitats around the world. Hear how our field conservation programmes, with dedicated technical support and funding, are tackling to combat these issues around the world.

Scott Wilson (Head of Field Programmes), Sarah Bird (Biodiversity Officer), Steve Unwin (Veterinary Officer) and Cat Barton (Assistant Conservation Officer)

Wednesday 19th November

Moving Animals!

Join Penny Rudd and Liz Ball for an evening of tales and anecdotes and find out more about the interesting and complicated world of moving animals.

Penny Rudd is the zoo's Registrar, also overseeing internships and Junior Members. Liz Ball is the Registrar's Assistant.

Tuesday 2nd December

Islands! – Simon Mann

Ahead of the opening of our major new exhibit in 2015, Simon will update you on the progress of Islands, the trials and tribulations, the excitement and buzz.

Simon is the zoo's Development Director

ZOO RESEARCH AND SCIENTIFIC PUBLICATIONS

(page 1 of 2)

Akister, M. (2014). Social development of juvenile mandrills [BSc Dissertation]: University of Chester.

Antwis, R. E., **Garcia, G., Fidgett, A. L.,** & Preziosi, R. F. (2014). Tagging frogs with passive integrated transponders causes disruption of the cutaneous bacterial community and proliferation of opportunistic fungi. *Applied and Environmental Microbiology*, 80(15), 4779-4784. doi: 10.1128/AEM.01175-14

Antwis, R. E., Haworth, R. L., Engelmoer, D. J., Ogilvy, V., **Fidgett, A. L.,** & Preziosi, R. F. (2014). Ex situ diet influences the bacterial community associated with the skin of red-eyed tree frogs (*Agalychnis callidryas*). [10.1371/journal.pone.0085563]. PLoS One, 9(1), e85563. doi: 10.1371/journal.pone.0085563

Antwis, R. E., Preziosi, R. F., & **Fidgett, A. L.** (2014). The effect of different UV and calcium provisioning on health and fitness traits of red-eyed tree frogs (*Agalychnis callidryas*). *Journal of Zoo and Aquarium Research*, 2(3), 69-76.

Antwis, R. E., Preziosi, R. F., & **Fidgett, A. L.** (2014, 01/08/14). The influence of diet and lighting on fitness related traits and cutaneous skin bacteria in anurans. Paper presented at the 10th Comparative Nutrition Society Symposium, USA.

Antwis, R. E., **Purcell, R. S., Walker, S. L., Fidgett, A. L.,** & Preziosi, R. F. (2014). Effects of visible implanted elastomer marking on physiological traits of frogs. *Conservation Physiology*, 2. doi: 10.1093/comphys/cou042

Barlow, C. J. (2014). Variation in captive chimpanzee (*Pan troglodytes*) behaviour between enclosure type and the effects of visitor presence at Chester Zoological Gardens [BSc dissertation]. Chester: University of Chester.

Boyle, R. (2014). Evaluation of heat provision for effective thermoregulation in four species of reptiles at Chester Zoo (Komodo dragons, Galapagos tortoises and red tailed racers) [BSc Dissertation]: Harper Adams University.

Boyle, R., **Fidgett, A. L.,** & Baker, B. (2014, 01/07/14). Hot enough? Evaluation of heat provision for effective thermoregulation in three species of reptiles at Chester Zoo (Komodo dragons, Galapagos tortoises and red tailed racers) Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Campbell, E., **Purcell, R. S.,** Liddicoat, T., & **Walker, S. L.** (2014). Development of liquid chromatography-mass spectrometry for the determination of ovarian activity in female Asian elephants (*Elephas maximus*). Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Chadwick, C. (2014). Social behaviour and personality assessment as a tool for improving the management of cheetahs (*Acinonyx jubatus*) in captivity PhD PhD, University of Salford.

Contreras MacBeath, T., Rodriguez, M. B., Sorani, V., Goldspink, C., & **McGregor-Reid, G.** (2014). Richness and endemism of the freshwater fishes of Mexico. *Journal of Threatened Taxa*, 6(2), 5421-5433.

Davis, N. (2014, 15/11/14). The introduction of new male into an established group of zoo-housed spider monkeys. Paper presented at the Primate Welfare Symposium, Chester Zoo.

Davis, N., & Helm, C. (2014, 28/06/14). Zoo Design Principles. Paper presented at the ABWAK Enclosure Design Workshop, Chester Zoo.

Dove, V., French, N., Grillo, T., Holyoake, C., Jakob-Hoff, R., Kock, R., Langstaff, I., Lees, C., MacDiarmid, S., McInnes, K., Miller, P., Murray, N., Reiss, A., Rideout, B., Siah, S., Skerratt, L., Tompkins, D., Travis, D., **Unwin, S.,** van Andel, M., Vitali, S., & Warren, K. (2014). Manual of Procedures for Wildlife Disease Risk Analysis (pp. 160). Paris. In association with IUCN and SSC.

Drake, G. J., Lopez, J., Edwards, L., Kolter, L., Cosgrove, S., & Nuttall, T. (2014, 11-13 Sept 2014). Early success using oclacitinib maleate (Apoquel®) to treat Spectacled bear (*Tremarctos ornatus*) alopecia syndrome. Paper presented at the 27th Annual Congress of the ESVD-ECVD, Salzburg, Austria.

Drake, G. J., Lopez, J., Purcell, R. S., Lewis, N., Argo, C., Pettit, M., Matsun, T., Kelsall, A., Penfold, L., Schook, M., & **Walker, S. L.** (2014, 7-9 November 2014). A new conservation breeding tool - minimal intervention artificial insemination for wild equids. Paper presented at the BVZS Autumn meeting, Lancaster University/Blackpool Zoo.

Edwards, K. L., McArthur, H. M., Liddicoat, T., & **Walker, S. L.** (2014). A practical field extraction method for non-invasive monitoring of hormone activity in the black rhinoceros. *Conservation Physiology*, 2, 1-8. doi: 10.1093/comphys/cot037

Edwards, K. L., Shultz, S., **Pilgrim, M.,** & **Walker, S. L.** (2014). Irregular ovarian activity, body condition and behavioural differences are associated with reproductive success in female eastern black rhinoceros (*Diceros bicornis michaeli*). *Gen Comp Endocrinol*, In Press. doi: 10.1016/j.ygcen.2014.07.026

Ehlers Smith, D. A. (2014). The effects of land-use policies on the conservation of Borneo's endemic *Presbytis* monkeys. [10.1007/s10531-014-0639-0]. *Biodiversity Conservation*, In press(DOI: 10.1007/s10531-014-0639-0).

Esson, M. (2014, 02/09/14). Innovation in public education - it's a risk! Paper presented at the 22nd Biennial Conference of International Zoo Educators Association, Ocean Park, Hong Kong.

Esson, M., & Moss, A. (2014). Zoos as a context for reinforcing environmentally responsible behaviour: the dual challenges that zoo educators have set themselves. *Journal of Zoo and Aquarium Research*, 2(1), 8-13.

Esson, M., Moss, A., & Pitchford, L. (2014). The 'Thinking Big' Elephant Project. *Journal of the International Association of Zoo Educators*, 50, 14-16.

Fidgett, A. L. (2014, 22/09/14). From ingredients to nutrients - the recipe for optimal parrot nutrition. Paper presented at the VIII International Parrot Convention, Loro Parque Fundacion, Tenerife.

Fidgett, A. L., & Gardner, L. (2014). Advancing avian nutrition through best feeding practice. [10.1111/izy.12057]. *International Zoo Yearbook*, 48, 116-127.

Fidgett, A. L., & Walker, S. L. (2014). Chester's growing crash! *The Horn Magazine*(Spring 2014), 10.

Garcia, G., Randrianantoandro, C., Griffiths, R., Razafimanahaka, J., Rakotondrasoa, E., Andriantsimanarilafy, R., Ralaierimalala, S., Bungard, M., & Edwards, W. (2014, 2014). Challenges and opportunities for Malagasy amphibians: Golden Mantella Programme. Paper presented at the Amphibian Conservation Research Symposium 2014.

Guarino, F. M., **Garcia, G.,** & Andreone, F. (2014). Huge but moderately long-lived: age structure in the mountain chicken, *Leptodactylus fallax*, from Montserrat, West Indies. *Herpetological Journal*, 24(July 2014), 167-173.

Gusset, M., **Moss, A.,** & Jensen, E. (2014). Biodiversity understanding and knowledge of actions to help protect biodiversity in zoo and aquarium visitors. *WAZA Magazine*, 15, 14-17.

Hall, R. H. (2014). Evaluation of feeding behaviour of captive big cat species when fed diets of differing ease of consumption, including assessment of amount of bone consumed [BSc Dissertation]. Nottingham: Nottingham Trent University.

Hilser, H. (2014). Macaca nigra - Bacan Island Expedition. End of Project Report NEZS - Chester Zoo. [Report]. Indonesia: Selamatken Yaki.

Hosey, G., Brunger, D., Formella, I., Ward, S., Melfi, V., & **Hill, S. P.** (2014). Do zoo visitors cause an increase in wounding aggression in captive chimpanzees and ring-tailed lemurs? Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland

Hough, L. (2014, 26/11/14). Controlled parent-rearing of waterfowl. Paper presented at the BIAZA Bird Working Group Annual Meeting, Hawk Conservancy, Andover, Hants.

Jakob-Hoff, R., MacDiarmid, S., Lees, C., Miller, P., Travis, D., Kock, R., Dove, V., French, N., Grillo, T., Holyoake, C., Langstaff, I., McInnes, K., Murray, N., Reiss, A., Rideout, B., Siah, S., Skerratt, L., Tompkins, D., **Unwin, S.,** Van Andel, M., Vitali, S., & Warren, K. (2014). Manual of Procedures for Wildlife Disease Risk Analysis Published in association with the International Union for Conservation of Nature and the Species Survival Commission. Paris: World Organisation for Animal Health.

Malbon, A. J., Ricci, E., **Unwin, S.,** & Chantrey, J. (2014, 2014). Cerebellar abiotrophy in two related lion-tailed macaques (*Macaca silenus*). Paper presented at the ESVP/ECVP Proceedings.

Malbon, A. J., Ricci, E., **Unwin, S.,** & Chantrey, J. (2014). Cerebellar abiotrophy in two related lion-tailed macaques (*Macaca silenus*). *Journal of Comparative Pathology*, 150(1), 93.

Masters, N., & **Lopez, J.** (2014, 7-9 November 2014). Practical management of EEHV for UK elephant collections. Paper presented at the BVZS Autumn meeting, Lancaster University/Blackpool Zoo.

Matthews, N. (2014). Bovine tuberculosis and zoos - a badger vaccination programme at Chester Zoo BIAZA News (Vol. Autumn 2014, pp. 14). London: BIAZA.

McHale, M., Hutchinson, S., **Rowlands, T., Roffe, S., & Bottell, L.** (2014). Investigating paddock use and behaviour of Rothschild giraffe (*Giraffa camelopardalis rothschildi*) at Chester Zoo Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

McLaren, C., **Bottell, L.,** Nager, R., **Owen, A., McLeod, W., & Fidgett, A. L.** (2014, 01/07/14). Does flamingo behaviour and husbandry (pre-breeding season) influence the quality of their offspring. Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Michaels, C. J., Antwis, R. E., & Preziosi, R. F. (2014). Manipulation of the calcium content of insectivore diets through supplementary dusting. *Journal of Zoo and Aquarium Research*, 2(3), 77-81.

Moss, A. (2014, 12/05/14). The difficulties in measuring biodiversity-friendly behaviour change in zoo and aquarium visitors. Paper presented at the 8th International Zoo and Aquarium Marketing Conference, Bristol Zoo Gardens, Bristol.

Moss, A. (2014, 09/06/14). Engagement: What does it look like and how do we measure it? . Paper presented at the BIAZA Annual Conference, Yorkshire Wildlife Park.

Moss, A. (2014, 06/07/14). Visitor Studies at the zoo: The long but worthwhile road to developing internal support. Paper presented at the Visitor Studies Group Annual Conference, London.

Moss, A., & Esson, M. (2014). Zoo Education: Outputs, outcomes and measuring the unexpected. *WAZA Magazine*, 15, 2-5.

Moss, A., Jensen, E., & Gusset, M. (2014). Evaluating the contribution of zoos and aquariums to Aichi biodiversity target 1. *Conservation Biology*, In Press. doi: 10.1111/cobi.12383

Moss, A., Jensen, E., & Gusset, M. (2014). A Global Evaluation of Biodiversity Literacy in Zoo and Aquarium Visitors. *WAZA Executive Office: WAZA Executive Office.*

Moss, A., Jensen, E., & Gusset, M. (2014). What do zoo and aquarium visitors know about biodiversity? . *WAZA News*, 1+2(14), 26-27.

Moss, A., Jensen, E., & Gusset, M. (2014). Zoo visits boost biodiversity literacy. [10.1038/508186d]. *Nature*, 508(186), 10 April 14. doi: 10.1038/508186d

Neller, S. (2014). Housing the hornbill: a study of enclosure use [BSc Dissertation]. Chester: University of Chester.

Nelson, E. (2014). The Effects Of Visitors On Captive Chimpanzees (*Pan troglodytes*) [BSc Dissertation]: University of Chester.

Owen, A. (2014). EAZA European studbook for Sumatran (Black and White) Laughingthrush *Garrulax bicolor* (Vol. 2). Chester: Chester Zoo.

Owen, A. (2014). How important are off-show facilities to the success of our programmes? The Chester example. Paper presented at the Mid-year meeting Birds TAG, Vogel Park Avifauna, Alphen a/j Rijn, The Netherlands.

Owen, A. (2014). Report on the threatened songbirds of Asia Working Group, including news from Cikananga Breeding Centre. Paper presented at the Mid-year meeting Birds TAG, Vogel Park Avifauna, Alphen a/j Rijn, The Netherlands.

Owen, A., Wilkinson, R., & Sozer, R. (2014). In situ conservation breeding and the role of zoological institutions and private breeders in the recovery of highly endangered Indonesian passerine birds. [10.1111/izy.12052]. *International Zoo Yearbook*, 48, 199-211.

Pilgrim, M., & Biddle, R. (2014). EAZA Best Practice Guidelines Black rhinoceros (*Diceros bicornis*). Chester.

Rose, C., Worsfold, H., Caskie, E., **Hall, D., Rowlands, T., & Bottell, L.** (2014). Who's top dog? A study of behaviour and paddock use of the African painted dog (*Lycaon pictus*) at Chester Zoo. Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Royle, C. (2014). The effects of visitor presence on the behavioural patterns of Sumatran orangutans [BSc Dissertation]. Chester: University of Chester.

Sanderson, J., Young, A., Hodge, S., Kyabulima, S., **Walker, S. L.,** & Cant, M. (2014). Hormonal mediation of a carry-over effect in a wild cooperative mammal. *Functional Ecology*. doi: 10.1111/1365-2435.12307

Sandland, K. E. F., Treanor, A. P., Kidd, H., & **Hill, S. P.** (2014, 01/07/14). Does the behaviour of lions and tigers change in relation to presenter talk events? Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Shave, R., Oxborough, D., Somauroo, J., Feltrer, Y., Strike, T., Routh, A., Chapman, S., Redrobe, S., Thompson, L., **Unwin, S.,** Sayers, G., Murphy, H., Rapoport, G., & Stohr, E. (2014). Echocardiographic assessment of cardiac structure and funding in great apes: a practical guide. *International Zoo Yearbook*, 48.

Sread, J., & **Hill, S. P.** (2014, 01/07/14). Using research to help with management of the greater one-horned rhinoceros at Chester Zoo. Paper presented at the 16th Annual Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Stott, L. E. (2014). Individual Differences In Hand Preferences For Tool Use In Chimpanzees (*Pan troglodytes*) [BSc Dissertation]: University of Chester.

ZOO RESEARCH AND SCIENTIFIC PUBLICATIONS

(page 2 of 2)

Sutherland, W. J., Aveling, R., Brooks, T. M., Clout, M., Dicks, L. V., Fellman, L., Fleishman, E., Gibbons, D. W., Keim, B., Lickorish, F., Monk, K. A., Mortimer, D., Peck, L. S., Pretty, J., Rockstrom, J., Rodriguez, J. P., Smith, R. K., Spalding, M. D., Tonneijck, F. H., & Watkinson, A. R. (2014). A horizon scan of global conservation issues for 2014 [Contributing author: **McGregor-Reid, G.**]. *Trends in Ecology and Evolution*, 29(1), 14-22.

Tahas, S., Timofte, D., Chantrey, J., & **Lopez, J.** (2014, 26 April 2014). Multiple mycobacterial infections in a zoo aquarium. Paper presented at the BVZS Spring Meeting 2014, Marwell Zoo, U.K.

Tahas, S., Timofte, D., Chantrey, J., & **Lopez, J.** (2014). Multiple mycobacterial infections in a zoo aquarium. Paper presented at the Proceedings of the European Association of Zoo and Wildlife Veterinarians, Warsaw, Poland.

Tapley, B., Rendle, M., Baines, F. M., Goetz, M., Bradfield, K. S., Rood, D., **Lopez, J.**, **Garcia, G.**, & Routh, A. (2014). Meeting ultraviolet B radiation requirements of amphibians in captivity: a case study with mountain chicken frogs (*Leptodactylus fallax*) and general recommendations for pre-release health screening. *Zoo Biology*, In Press. doi: 10.1002/zoo.21170

Titchard, R. (2014). Individual and population level laterality in the Chilean flamingo (*Phoenicopterus chilensis*) and the link with pair bonding Bangor: Bangor University.

Vercoe, M. (2014, 27/11/14). Grey Breasted Parakeet *Pyrrhura griseipectus*. Paper presented at the BIAZA Bird Working Group Annual Meeting, Hawk Conservancy, Andover, Hants.

Weise, F. J., Stratford, K. J., & van Vuuren, R. J. (2014). Financial costs of large carnivore translocations--accounting for conservation. *PLoS One*, 9(8), e105042. doi: 10.1371/journal.pone.0105042

Weise, F. J., Wessels, W., Munro, S., & Solberg, M. (2014). Using artificial passageways to facilitate the movement of wildlife on Namibian farmland. *South African Journal of Wildlife Research*, 44(2), 161-166.

White, D. (2014). Rodrigues fruit bat (*Pteropus rodricensis*) species update. Paper presented at the EAZA Small Mammal TAG, Budapest.

Wickett, G. (2014). Visitor Effects On Behaviour & Enclosure Use In Captive Giant Otters (*Pteronura brasiliensis*) & Asian Short-clawed Otters (*Aonyx cinerea*) [BSc Dissertation]: University of Chester.

Williams, E., Bremner-Harrison, S., Harvey, H., **Evison, E.**, & Yon, L. (2014, 01/07/14). A behavioural assessment of resting behaviour in captive Asian elephants. Paper presented at the 16th Annual BIAZA Research Symposium, Blair Drummond Safari Park, Stirling, Scotland.

Zimmermann, A. (2014). Jaguars and people: a range wide analysis of human wildlife conflict. D.Phil, University of Oxford.

Zimmermann, A. (2014, August 2014). Solutions for human-elephant conflict: lessons from Assam. Paper presented at the Asia Regional Conference of the Society for Conservation Biology, Melaka, Malaysia.

Zimmermann, A. (2014, May 2014). The state of knowledge about human-jaguar conflicts: a synthesis of expert opinion, empirical research and a spatial model of conflict hotspots. Paper presented at the International Symposium on Wild Cats Conservation, Costa Rica.

WORLDWIDE CONSERVATION ACTIVITIES (page 1 of 2)

| Project Title: | Focus Country: |
|---|------------------------------|
| Project Support: Reintroducing the Jaguar back to the marshlands of Iberá, Argentina | Argentina |
| Project Support: The next step for carnivore conservation in Misiones, Argentina - establishing a biological corridor | Argentina |
| Project Support: Diurnal surveys of threatened primates in the Lama Forest and along the Benin-Nigeria border | Benin |
| Studentship: University of Glasgow Bolivia Expedition 2014 | Bolivia |
| Project Support: Giant Armadillo Project - conservation and ecology of Giant armadillos in Brazil | Brazil |
| Project Support: Lowland Tapir Conservation Initiative (LTCI) - Pantanal tapir program | Brazil |
| Project Support: Primates in a disturbed forest in the western highlands of Cameroon | Cameroon |
| Amphibian Programme: Management and effects of captive breeding on Darwin's frogs | Chile |
| China Programme: Blue-crowned laughingthrush project | China |
| China Programme: Sichuan Forest Biodiversity Project | China |
| Networking and Partnerships: Staff participation in the Panthera symposium 'Wild cats conservation in the Americas' | Costa Rica |
| Project Support: Assessment of the consequences of noise from human activity on the physiology and health of primates in north-eastern Costa Rica | Costa Rica |
| Project Support: Enhancing coexistence with Jaguars in Costa Rica - design and analysis of community-based incentives | Costa Rica |
| Project Support: Strengthening community empowerment for the conservation of endangered primates in south-eastern Côte d'Ivoire | Cote d'Ivoire |
| Project Support: Okapi Conservation Project | Democratic Republic of Congo |
| Studentship: Understanding burning regimes in Lac Tele Community Reserve, Republic of Congo | Democratic Republic of Congo |
| Networking and Partnerships: staff participation at the International Dormouse Conference | Denmark |
| Project Support: Conservation research for the Ecuador amazon parrot in the Cerro Blanco protected forest and surrounding areas, Guayaquil | Ecuador |
| Chester Zoo Ecuador Expedition 2014 | Ecuador |
| Amphibian Programme: Funding support for the Amphibian Survival Alliance | Global |
| Project Support: Donation towards the production of TRAFFIC bulletin | Global |
| Project Support: Advanced photo-analysis for fast automated identification of elephant ivory online illegal trade | Global |
| Project Support: Contribution to the EAZA Ape Campaign | Global |
| Project Support: Protecting the western Chimpanzee and primate species from illegal logging and bushmeat hunting | Guinea-bissau |
| Networking and Partnerships: Staff attendance at Conference of International Zoo Educators Association | Hong Kong |
| Project Support: ZOO & WILD promoting conservation, education, training and national zoo associations | India |
| Elephant Programme: Assam Haathi Project | India |
| Rhino Programme: Supporting grassroot conservation activities to secure the future of the Greater one-horned rhino in India | India |
| Project Support: Addressing human orangutan conflict in agricultural landscapes in northern Sumatra | Indonesia |
| Project Support: Assessment of the status and distribution of Komodo dragon populations on the island of Flores | Indonesia |
| Project Support: Bali starling breeding and release program - Conservation, monitoring and educational awareness | Indonesia |
| Project Support: Cikananga Conservation Breeding Centre - construction of a new security fence | Indonesia |
| Project Support: Collection, rearing and release of hatchlings back to their natural habitat as a means to prevent extinction of the Painted terrapin in Sumatra, Indonesia | Indonesia |
| Project Support: Conservation breeding of Anoa, Banteng and Babirusa - publication of Indonesian national conservation action plans | Indonesia |
| Project Support: Conservation breeding program for the Javan short-tailed magpie | Indonesia |
| Project Support: Komodo Dragon Project - community awareness, habitat and wildlife protection plan for the Wae Wuul nature reserve, West Flores | Indonesia |
| Project Support: Protecting one of the last remaining populations of the endangered Bornean banteng in Central Kalimantan | Indonesia |
| Project Support: Recovery program for the Black-winged starling in West Java | Indonesia |
| Project Support: The stress factor - examining anthropogenic sources of stress in wild Sulawesi macaques | Indonesia |

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| Realm of the Red Ape Programme: Conservation education and raising awareness on orangutans and forest functions around the Batang Toru forest, Tapanuli, North Sumatra, Indonesia. | Indonesia |
| Realm of the Red Ape Programme: The behaviour, distribution and density of Sumatran orangutans in a reforestation area in North Sumatra | Indonesia |
| Rhino Programme: Developing a Sumatran rhino strategic plan | Indonesia |
| Studentship: "Run through the Jungle" and "Living on the edge"? - the direct and indirect impacts of logging on mammals in Sabah, Borneo. | Indonesia |
| Rhino Programme: Factors underlying the high variance in Black rhinoceros reproductive output | Kenya |
| Rhino Programme: Maasai Olympics - using competition in sport to demonstrate prowess and a coming of age, as a replacement for traditional practices of lion hunting amongst Maasai warriors and their peers. | Kenya |
| Rhino Programme: Production of conservation education signage for Kenya Wildlife Service | Kenya |
| Rhino Programme: Regaining Kenya police reserve status for Ol Jogi's rangers | Kenya |
| Rhino Programme: Reinforcing security for the Black rhino population of the Chyulu Hills National Park | Kenya |
| Richard Hughes Scholarship: Understanding how land-use change in the Transmara District, Kenya is driving human-elephant conflict and elephant movement | Kenya |
| Studentship: Measuring the effects of Elephant induced habitat change on the Critically Endangered Mountain bongo | Kenya |
| Amphibian Programme: Building capacity for amphibian conservation in Madagascar | Madagascar |
| Project Support: Communities count - understanding local perspectives of participatory monitoring in Madagascar's new Protected Area system. | Madagascar |
| Project Support: Conserving the Golden mantella frogs - monitoring forests, ponds and populations for a better management | Madagascar |
| Project Support: Save the lemurs - monitoring diurnal lemur populations in Mangabe new protected area | Madagascar |
| Studentship: The sleeping site ecology and habitat use of the Southern woolly lemur and the Southern lesser bamboo lemur - effects of habitat disturbance and implications for conservation | Madagascar |
| Networking and Partnerships: Staff attendance at 3rd Regional Conference of the Society for Conservation Biology | Malaysia |
| Project Support: Assessing the impacts of habitat fragmentation and subsequent anthropogenic expansion on the behavioural, population, and nesting ecology of the Estuarine crocodile | Malaysia |
| Realm of the Red Ape Programme: Core funding for the Kinabatangan Orangutan Conservation Programme (KOCP) | Malaysia |
| Realm of the Red Ape Programme: Hutan hornbill conservation project | Malaysia |
| Realm of the Red Ape Programme: Support for KOCP's HUTAN environmental awareness programme (HEAP) | Malaysia |
| Realm of the Red Ape Programme: Support for KOCP's wildlife warden and conflict mitigation unit (WWCMU) | Malaysia |
| Mascarenes Programme: Conservation of the Mauritius olive white-eye by the management of a reintroduced population on the predator free-island of Ile aux Aigrettes, and the monitoring and management of the mainland population | Mauritius |
| Mascarenes Programme: Developing and improving the education and eco-tourism value at terrestrial biodiversity conservation sites in Mauritius | Mauritius |
| Mascarenes Programme: Long-term conservation management of the Echo parakeet. Restoring the species and developing management techniques | Mauritius |
| Mascarenes Programme: Long-term conservation management of the Pink pigeon. Restoring the species and developing management techniques | Mauritius |
| Mascarenes Programme: Propagation and conservation of Critically Endangered plant species of Mauritius | Mauritius |
| Mascarenes Programme: Restoration and reforestation of the Grande Montagne Nature Reserve (Rodrigues) with native plants to recreate the upland forest community | Mauritius |
| Mascarenes Programme: Survey and monitoring of Rodrigues fruit bat population. Sensitization of the Rodriguan population | Mauritius |
| Mascarenes Programme: The conservation of the Mauritius fody. Long-term management and population monitoring of the Ile aux Aigrettes population. | Mauritius |
| Mascarenes Programme: The ecology and management of reintroduced and wild populations of the Critically Endangered Mauritius olive white-eye | Mauritius |
| Mascarenes Programme: The translocation and management of the Mauritius cuckoo-shrike and the Mauritius paradise flycatcher | Mauritius |
| Project Support: Socio-ecology and conservation of Spider monkeys in Mesoamerica | Mexico |
| Project Support: Conservation and reintroduction of Goodeids. | Mexico |
| Project Support: Mitigating the human-crocodile conflict in Nilwala river, Sri Lanka: creating a path towards co-existence | Nepal |

WORLDWIDE CONSERVATION ACTIVITIES (page 2 of 2)

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| Project Support: Poverty reduction for human-wildlife coexistence - people and tigers in Nepal | Nepal |
| Project Support: Red panda forest guardians initiative | Nepal |
| Studentship: Status, ecology and conservation of Asian small clawed otter | Nepal |
| Nigeria Programme: Gashaka Biodiversity Project | Nigeria |
| Nigeria Programme: The Nigerian Montane Forest Project | Nigeria |
| Project Support: Forest Guardians | Peru |
| Project Support: Investigating presence and habitat use of Andean bears in the endangered tropical dry forest of north west Peru. | Peru |
| Philippines Programme: Conservation of the Palawan forest turtle in Dumarao, Roxas through protected area management and wardening scheme | Philippines |
| Philippines Programme: Conservation of the Philippine cockatoo in Iwahig Prison and Penal Farm, Palawan, Philippines | Philippines |
| Philippines Programme: Facilitating the recovery of the Philippine cockatoo in Palawan and Siargao Islands, Philippines | Philippines |
| Project Support: European zoos supporting in-situ conservation of the Philippine Crocodile | Philippines |
| Project Support: Partula field programme consortium | Polynesia |
| Project Support: Disease investigation in Chimpanzees at a sanctuary in Sierra Leone | Sierra Leone |
| Project Support: A study to determine the safety of carprofen in a wild vulture population | South Africa |
| Project Support: Mabula Ground Hornbill Project | South Africa |
| Project Support: Behaviour and social dynamics of crop raiding in Asian elephants: does social learning influence behaviour around beehive fence protected farms? | Sri Lanka |
| Project Support: Using educational park visits to reduce human-carnivore conflict in Tanzania's Ruaha landscape | Tanzania |
| Rhino Programme: Providing protection for the Black rhinos of Mkomazi National Park, Tanzania | Tanzania |
| Rhino Programme: The Mkomazi Project. Environmental Education Programme – 'Rafiki wa Faru'. | Tanzania |
| Project Support: Sustainable innovations with wildlife neighbouring communities in Kibale | Uganda |
| Native Species Programme: An investigation into the activity of European badgers on the Chester Zoo estate | United Kingdom |
| Native Species Programme: Bees, wasps and ants of Cheshire – a conservation assessment | United Kingdom |
| Native Species Programme: Black poplar project | United Kingdom |
| Native Species Programme: Chester Zoo BioBlitz | United Kingdom |
| Native Species Programme: Chester Zoo Nature Reserve | United Kingdom |
| Native Species Programme: Flutter Back – The return of the Large heath butterfly | United Kingdom |
| Native Species Programme: Grasses identification course held at Chester Zoo | United Kingdom |
| Native Species Programme: Halkyn Mountain heathland management | United Kingdom |
| Native Species Programme: North West Dormouse Partnership | United Kingdom |
| Native Species Programme: Scottish wildcat conservation action plan – wildcat monitoring programme | United Kingdom |
| Native Species Programme:Nantclwyd y Dre Lesser horseshoe bat-cam project | United Kingdom |
| Networking and Partnerships: Hosting of the 'British Wildlife Conservation in Action' symposium | United Kingdom |
| Networking and Partnerships: MaMoNet Hedgehog and Harvest mouse seminar, Aberystwyth | United Kingdom |
| Networking and Partnerships: Staff attendance at the Remote sensing & conservation symposium, ZSL | United Kingdom |
| Networking and Partnerships: Zoo representation at the Student Conference on Conservation Science, Cambridge | United Kingdom |
| Networking and Partnerships:Staff participation - 'International wildlife trafficking: solutions to a global crisis' symposium, ZSL | United Kingdom |
| Studentship: Lineage-specific diagnostics to type amphibian chytrid lineages in traded amphibians, zoo collections and wild populations | United Kingdom |
| Project Support: Ex situ conservation of the Edwards's pheasant | Vietnam |
| Project Support: Conservation of Black crowned cranes in West Africa | West Africa |
| Project Support: African painted dog project - reducing risk of population decimation from disease | Zimbabwe |

MAMMALS STOCKLIST

(page 1 of 2)

| Common Name | Scientific Name | Stock 31/12/12 | | | ACQUISITIONS | | | BIRTHS | | | DEATHS | | | DISPOSITIONS | | | STOCK 31/12/13 | | |
|-------------------------------|--|----------------|----|---|--------------|---|----|--------|---|-----|--------|----|-----|--------------|----|----|----------------|----|-----|
| | | M | F | U | M | F | U | M | F | U | M | F | U | M | F | U | M | F | U |
| Short-eared elephant shrew | <i>Macroscelides proboscideus</i> | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Aardvark | <i>Orycteropus afer</i> | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Rock hyrax | <i>Procavia capensis capensis</i> | 6 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 3 | 0 |
| Asian elephant | <i>Elephas maximus</i> | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 5 | 0 |
| Linne's two-toed sloth | <i>Choloepus didactylus</i> | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Giant anteater | <i>Myrmecophaga tridactyla</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| Northern tree shrew | <i>Tupaia belangeri</i> | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 2 |
| Red-fronted lemur | <i>Eulemur rufus</i> | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| Alaotran gentle lemur | <i>Hapalemur alaotrensis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| Ring-tailed lemur | <i>Lemur catta</i> | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 |
| Aye-aye | <i>Daubentonia madagascariensis</i> | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Black-tailed marmoset | <i>Callithrix melanura</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| Eastern pygmy marmoset | <i>Callithrix pygmaea niveiventris</i> | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 |
| Golden-headed lion tamarin | <i>Leontopithecus chrysomelas</i> | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Black lion tamarin | <i>Leontopithecus chrysopygus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Pied tamarin | <i>Saguinus bicolor</i> | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| Emperor tamarin | <i>Saguinus imperator subgriseus</i> | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Buffy-headed capuchin | <i>Cebus xanthosternus</i> | 4 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 |
| Red titi | <i>Callicebus cupreus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| White-faced saki | <i>Pithecia pithecia</i> | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Black howler | <i>Alouatta caraya</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Colombian Black Spider Monkey | <i>Ateles fusciceps robustus</i> | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 3 | 4 | 0 |
| Sulawesi crested macaque | <i>Macaca nigra</i> | 10 | 12 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 12 | 0 |
| Lion-tailed macaque | <i>Macaca silenus</i> | 7 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 6 | 12 | 0 |
| Mandrill | <i>Mandrillus sphinx</i> | 7 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 10 | 0 |
| Lar gibbon | <i>Hylobates lar</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Chimpanzee | <i>Pan troglodytes</i> | 7 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 17 | 0 |
| Bornean orangutan | <i>Pongo pygmaeus pygmaeus</i> | 3 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 3 | 3 | 0 |
| Sumatran orangutan | <i>Pongo pygmaeus abelii</i> | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 5 | 0 |
| African Dormouse | <i>Graphiurus murinus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gambian giant pouched rat | <i>Cricetomys gambianus</i> | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 |
| Black Spiny Mouse | <i>Acomys</i> | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Turkish spiny mouse | <i>Acomys cilicicus</i> | 10 | 17 | 0 | 0 | 0 | 0 | 8 | 2 | 192 | 34 | 33 | 115 | 0 | 0 | 0 | 5 | 10 | 29 |
| Eurasian harvest mouse | <i>Micromys minutus</i> | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Slender-tailed cloud rat | <i>Phloeomys pallidus</i> | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Naked mole-rat | <i>Heterocephalus glaber</i> | 0 | 0 | 0 | 1 | 4 | 22 | 0 | 0 | 12 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 4 | 32 |
| African crested porcupine | <i>Hystrix africaeaustralis</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 2 | 0 |
| Capybara | <i>Hydrochaeris hydrochaeris</i> | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 |
| Livingstone's fruit Bat | <i>Pteropus livingstonii</i> | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Rodrigues Fruit Bat | <i>Pteropus rodricensis</i> | 45 | 66 | 0 | 0 | 0 | 0 | 3 | 5 | 3 | 3 | 3 | 3 | 0 | 20 | 0 | 45 | 48 | 0 |
| Seba's short-tailed bat | <i>Carollia perspicillata</i> | 48 | 97 | 0 | 0 | 0 | 0 | 32 | 5 | 91 | 59 | 22 | 96 | 0 | 0 | 11 | 0 | 0 | 264 |
| Central African cheetah | <i>Acinonyx jubatus soemmeringii</i> | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 |
| Scottish wild cat | <i>Felis silvestris grampia</i> | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Serval | <i>Leptailurus serval</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Asiatic lion | <i>Panthera leo persica</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Jaguar | <i>Panthera onca</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Sumatran tiger | <i>Panthera tigris sumatrae</i> | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 |
| Narrow-striped mongoose | <i>Mungotictis decemlineata</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Dwarf mongoose | <i>Helogale parvula</i> | 2 | 7 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 7 | 1 | 4 | 0 | 2 | 4 | 0 |
| Banded mongoose | <i>Mungos mungo</i> | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 1 | 0 | 1 | 4 | 0 |

MAMMALS STOCKLIST (page 2 of 2)

| | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|------------|------------|----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|-----------|-----------|------------|------------|------------|
| Slender-tailed meerkat | <i>Suricata suricatta</i> | 6 | 8 | 0 | 0 | 0 | 0 | 4 | 5 | 3 | 2 | 0 | 1 | 6 | 7 | 0 | 4 | 8 | 0 |
| African hunting dog | <i>Lycaon pictus pictus</i> | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 |
| Bush dog | <i>Speothos venaticus</i> | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 |
| Spectacled bear | <i>Tremarctos ornatus</i> | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Oriental small-clawed otter | <i>Aonyx cinerea</i> | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 2 | 0 |
| Giant otter | <i>Pteronura brasiliensis</i> | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 3 | 0 |
| Brown-nosed coati | <i>Nasua nasua</i> | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Red panda | <i>Ailurus fulgens fulgens</i> | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| Grevy's zebra | <i>Equus grevyi</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | 0 |
| Persian onager | <i>Equus hemionus onager</i> | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 |
| Malayan tapir | <i>Tapirus indicus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| South American tapir | <i>Tapirus terrestris</i> | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| Eastern black rhinoceros | <i>Diceros bicornis michaeli</i> | 3 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 | 0 |
| One-horned rhinoceros | <i>Rhinoceros unicornis</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Babirusa | <i>Babyrousa babyrussa</i> | 3 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 3 | 1 |
| Warthog | <i>Phacochoerus africanus</i> | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 4 | 0 |
| Red River Hog | <i>Potamochoerus porcus</i> | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Visayan warty pig | <i>Sus cebifrons</i> | 2 | 1 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 4 | 0 |
| Bactrian camel | <i>Camelus bactrianus</i> | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Vicugna | <i>Vicugna vicugna</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Philippine mouse-deer | <i>Tragulus nigricans</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Southern pudu | <i>Pudu puda</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 |
| Burmese brow-antlered deer | <i>Rucervus eldii thamin</i> | 5 | 14 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | 3 | 0 | 3 | 2 | 0 | 0 | 2 | 17 | 2 |
| Philippine Spotted Deer | <i>Rusa alfredi</i> | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 2 | 0 |
| Baringo giraffe | <i>Giraffa camelopardalis rothschildi</i> | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 |
| Okapi | <i>Okapia johnstoni</i> | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 | 0 |
| Blackbuck | <i>Antilope cervicapra</i> | 2 | 9 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 7 | 0 |
| Kirk's dik-dik | <i>Madoqua kirkii</i> | 3 | 4 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 2 | 3 | 1 | 1 | 2 | 0 | 1 | 2 | 0 |
| Banteng | <i>Bos javanicus</i> | 2 | 3 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 3 | 4 | 0 |
| Lowland Anoa | <i>Bubalus depressicornis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Congo Buffalo | <i>Syncerus caffer nanus</i> | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 |
| Eastern bongo | <i>Tragelaphus eurycerus isaaci</i> | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| Lesser kudu | <i>Tragelaphus imberbis</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 0 |
| West African Situnga | <i>Tragelaphus spekii gratus</i> | 4 | 17 | 0 | 0 | 0 | 0 | 2 | 6 | 2 | 2 | 1 | 1 | 2 | 4 | 0 | 2 | 18 | 1 |
| Red forest duiker | <i>Cephalophus natalensis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Roan antelope | <i>Hippotragus equinus</i> | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 |
| Scimitar-horned oryx | <i>Oryx dammah</i> | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 |
| # denotes managed in groups | Total | 289 | 467 | 5 | 13 | 20 | 22 | 66 | 42 | 334 | 130 | 89 | 245 | 30 | 57 | 11 | 210 | 331 | 338 |
| | | | 761 | | | 55 | | | 442 | | | 464 | | 98 | | | 879 | | |

BIRD STOCKLIST

(page 1 of 3)

| Common Name | Scientific Name | STOCK 31/12/13 | | | ACQUISITIONS | | | BIRTHS | | | DEATHS | | | DISPOSITIONS | | | STOCK 31/12/14 | | |
|----------------------------|---|----------------|----|----|--------------|---|---|--------|----|----|--------|---|----|--------------|----|----|----------------|----|----|
| | | M | F | U | M | F | U | M | F | U | M | F | U | M | F | U | M | F | U |
| Southern cassowary | <i>Casuarus casuarius</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Red-billed curassow | <i>Crax blumenbachii</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Kenya crested guineafowl | <i>Guttera pucherani</i> | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 2 | 2 | 1 |
| Collared hill partridge | <i>Arborophila gingica</i> | 1 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 |
| Crested wood partridge | <i>Rollulus rouloul</i> | 15 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 12 | 4 | 4 | 8 | 1 | 0 | 0 | 11 | 6 | 2 |
| Temminck's tragopan | <i>Tragopan temminckii</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Cabot's tragopan | <i>Tragopan caboti</i> | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Himalayan impeyan pheasant | <i>Lophophorus impejanus</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Salvadori's pheasant | <i>Lophura inornata</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| Vietnamese pheasant | <i>Lophura hatinhensis</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Lady Amherst's pheasant | <i>Chrysolophus amherstiae</i> | 2 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 |
| Palawan peacock pheasant | <i>Polyplectron emphanum</i> | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 4 | 3 |
| Great argus | <i>Argusianus argus</i> | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Congo peacock | <i>Afropavo congensis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Lesser white-fronted goose | <i>Anser erythropus</i> | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Red-breasted goose | <i>Branta ruficollis</i> | 2 | 3 | 5 | 0 | 0 | 0 | 2 | 4 | 3 | 0 | 0 | 4 | 2 | 4 | 0 | 2 | 3 | 4 |
| White-faced whistling duck | <i>Dendrocygna viduata</i> | 8 | 24 | 35 | 0 | 0 | 0 | 1 | 3 | 35 | 1 | 0 | 8 | 1 | 3 | 27 | 1 | 1 | 54 |
| Cape teal | <i>Anas capensis</i> | 1 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 6 | 1 | 1 | 9 |
| Red-billed pintail | <i>Anas erythrorhyncha</i> | 2 | 1 | 7 | 0 | 0 | 0 | 5 | 4 | 6 | 0 | 1 | 4 | 5 | 3 | 2 | 0 | 0 | 8 |
| Hottentot teal | <i>Anas hottentota</i> | 2 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 9 | 1 | 1 | 6 | 0 | 0 | 3 | 3 | 3 | 1 |
| Garganey | <i>Anas querquedula</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Baer's pochard | <i>Aythya baeri</i> | 9 | 7 | 0 | 0 | 2 | 0 | 16 | 14 | 1 | 0 | 0 | 1 | 17 | 15 | 0 | 8 | 8 | 0 |
| Tufted duck | <i>Aythya fuligula</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 |
| Ferruginous Duck | <i>Aythya nyroca</i> | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 7 |
| White-winged wood duck | <i>Cairina scutulata</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Marbled teal | <i>Marmaronetta angustirostris</i> | 1 | 4 | 4 | 0 | 0 | 0 | 2 | 5 | 8 | 0 | 0 | 7 | 2 | 5 | 0 | 1 | 4 | 4 |
| Smew | <i>Mergus albellus</i> | 0 | 0 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 4 |
| Hooded merganser | <i>Mergus cucullatus</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Red-crested pochard | <i>Netta rufina</i> | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 1 | 0 |
| White-headed duck | <i>Oxyura leucocephala</i> | 4 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 16 | 0 | 0 | 4 | 4 | 5 | 5 |
| Comb duck | <i>Sarkidiornis melanotos</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| African white-backed duck | <i>Thalassornis leuconotus leuconotus</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| Humboldt penguin | <i>Spheniscus humboldti</i> | 6 | 7 | 25 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 7 | 29 |
| Flamingo | <i>Phoenicopterus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Chilean flamingo | <i>Phoenicopterus chilensis</i> | 46 | 50 | 15 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 14 | 0 | 0 | 13 | 46 | 50 | 10 |
| Caribbean Flamingo | <i>Phoenicopterus ruber</i> | 53 | 45 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 52 | 45 | 10 |
| Black stork | <i>Ciconia nigra</i> | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| Waldrapp ibis | <i>Geronticus eremita</i> | 12 | 11 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 12 | 8 | 6 |
| Eurasian spoonbill | <i>Platalea leucorodia</i> | 5 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 3 | 2 |
| Little egret | <i>Egretta garzetta</i> | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| Hamerkop | <i>Scopus umbretta</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Dalmatian pelican | <i>Pelecanus crispus</i> | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 |
| Black vulture | <i>Coragyps atratus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Andean condor | <i>Vultur gryphus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| European Black Vulture | <i>Aegypius monachus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Sunbittern | <i>Eurypyga helias</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

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BIRD STOCKLIST

(page 2 of 3)

| | | | | | | | | | | | | | | | | | | | |
|---------------------------------|--|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|----|---|----|
| West African Crowned Crane | <i>Balearica pavonina pavonina</i> | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 |
| Grey-crowned crane | <i>Balearica regulorum</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| East African grey-crowned crane | <i>Balearica regulorum gibbericeps</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Stanley crane | <i>Anthropoides paradiseus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Wattled crane | <i>Bugeranus carunculatus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Blacksmith plover | <i>Anitibyx armatus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nicobar pigeon | <i>Caloenas nicobarica</i> | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 1 |
| Emerald Dove | <i>Chalcophaps indica</i> | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 1 | 4 | 0 | 0 | 0 | 2 | 4 | 3 |
| Rock dove | <i>Columba livia</i> | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| Pink Pigeon | <i>Columba mayeri</i> | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Pied imperial pigeon | <i>Ducula bicolor</i> | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 | 2 | 0 | 7 | 0 | 0 | 22 |
| Mindanao bleeding heart dove | <i>Gallucolumba criniger</i> | 2 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 3 | 0 |
| Luzon bleeding heart dove | <i>Gallucolumba luzonica</i> | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 |
| Golden heart dove | <i>Gallucolumba rufigula</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Victoria crowned pigeon | <i>Goura victoria</i> | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| White-naped pheasant pigeon | <i>Otidiphaps nobilis aruensis</i> | 3 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | 0 | 1 | 4 | 0 | 0 | 0 | 3 | 3 | 0 |
| Green-naped pheasant pigeon | <i>Otidiphaps nobilis nobilis</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| Black-naped fruit dove | <i>Ptilinopus melanospila</i> | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 3 | 1 |
| Pink-headed fruit dove | <i>Ptilinopus porphyrea</i> | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Superb fruit dove | <i>Ptilinopus superbus</i> | 5 | 7 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 0 | 5 | 5 | 0 |
| Java (Barbary) Dove | <i>Streptopelia risoria</i> | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 4 | 0 |
| Socorro dove | <i>Zenaida graysoni</i> | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Red-and-blue lory | <i>Eos histrio</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Mount Apo Lorikeet | <i>Trichoglossus johnstoniae</i> | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 1 | 3 | 1 | 0 | 0 | 3 | 5 | 0 |
| Yellow-backed chattering lory | <i>Lorius garrulus flavopalliatius</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| Purple-naped lory | <i>Lorius domicella</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Derbyan parakeet | <i>Psittacula derbiana</i> | 7 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 2 | 3 | 2 | 0 | 0 | 3 | 4 | 3 |
| Hyacinth macaw | <i>Anodorhynchus hyacinthinus</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 |
| Blue-headed macaw | <i>Ara couloni</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Blue-throated macaw | <i>Ara glaucogularis</i> | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 0 |
| Golden conure | <i>Aratinga guarouba</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Grey-breasted Parakeet | <i>Pyrrhura leucotis griseipectus</i> | 7 | 6 | 1 | 0 | 0 | 0 | 5 | 2 | 3 | 2 | 2 | 4 | 0 | 0 | 0 | 10 | 6 | 0 |
| Ecuadorian Amazon | <i>Amazona autumnalis lilacina</i> | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 4 | 4 | 0 |
| Green-cheeked amazon | <i>Amazona viridigenalis</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 |
| Red-vented cockatoo | <i>Cacatua haematuropygia</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| Lesser sulphur-crested cockatoo | <i>Cacatua sulphurea</i> | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Schalow's turaco | <i>Tauraco schalowi</i> | 3 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 2 | 2 | 1 |
| Fischer's turaco | <i>Tauraco corythaix fischeri</i> | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 2 |
| White-crested turaco | <i>Tauraco leucolophus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Violet turaco | <i>Musophaga violacea</i> | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 |
| Luzon lowland scops owl | <i>Otus megalotis</i> | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Northern white-faced owl | <i>Ptilopsis leucotis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Spectacled owl | <i>Pulsatrix perspicillata</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| Brown wood owl | <i>Strix leptogrammica</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Great grey owl | <i>Strix nebulosa lapponica</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Ural owl | <i>Strix uralensis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Northern Hawk owl | <i>Sumia ulula</i> | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| Tawny frogmouth | <i>Podargus strigoides</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

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BIRD STOCKLIST

(page 3 of 3)

| | | | | | | | | | | | | | | | | | | | |
|---------------------------------|--|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|------------|------------|------------|
| Lilac-breasted roller | <i>Coracias caudatus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Von der Decken's hornbill | <i>Tockus deckeni</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Rhinoceros hornbill | <i>Buceros rhinoceros silvestris</i> | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 2 | 0 |
| Great Hornbill | <i>Buceros bicornis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Visayan tarctic hornbill | <i>Penelopides panini panini</i> | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 4 | 0 |
| Wrinkled Hornbill | <i>Aceros corrugatus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Mindanao Writhe-billed Hornbill | <i>Aceros leucocephalus</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Brown-breasted barbet | <i>Lybius melanopterus</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 |
| Green jay | <i>Cyanocorax yncas</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Azure-winged magpie | <i>Cyanopica cyanus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Red-billed Chough | <i>Pyrhacorax pyrrhacorax</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Red-billed Blue Pie | <i>Urocissa erythrorhyncha</i> | 5 | 3 | 0 | 0 | 0 | 0 | 5 | 1 | 2 | 1 | 0 | 2 | 6 | 2 | 0 | 3 | 2 | 0 |
| Red-whiskered bulbul | <i>Pycnonotus jocosus</i> | 4 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 5 | 5 |
| African montane white-eye | <i>Zosterops eurycricotus</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Fairy bluebird | <i>Irena puella</i> | 2 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 3 | 0 |
| Asian Glossy Starling | <i>Aplonis panayensis</i> | 0 | 0 | 25 | 0 | 0 | 2 | 0 | 0 | 10 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 40 |
| Amethyst Starling | <i>Cinnyricinclus leucogaster</i> | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Royal Starling | <i>Cosmopsarus regius</i> | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Emerald starling | <i>Lamprotornis iris</i> | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 45 |
| Bali mynah | <i>Leucopsar rothschildi</i> | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 | 0 |
| Red-winged starling | <i>Onychognathus morio</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Scissor-billed Starling | <i>Scissirostrum dubium</i> | 3 | 4 | 1 | 2 | 1 | 0 | 1 | 0 | 4 | 0 | 1 | 4 | 0 | 0 | 0 | 6 | 4 | 1 |
| Pied starling | <i>Spreo bicolor</i> | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Superb starling | <i>Spreo superbus</i> | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| White-rumped Shama | <i>Copsychus malabaricus</i> | 2 | 2 | 0 | 0 | 0 | 0 | 3 | 5 | 6 | 0 | 0 | 1 | 3 | 3 | 5 | 2 | 4 | 0 |
| Snowy-headed robin chat | <i>Cossypha niveicapilla</i> | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 3 | 0 |
| Orange-headed thrush | <i>Zoothera citrina</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 |
| Chestnut-backed thrush | <i>Zoothera dohertyi</i> | 2 | 8 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 7 | 0 |
| Blue-crowned laughing thrush | <i>Dryonastes courtioi</i> | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 3 | 0 |
| Black & White Laughingthrush | <i>Garrulax bicolor</i> | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 1 | 6 | 2 | 1 | 0 | 4 | 4 | 0 |
| Pekin robin | <i>Leiothrix lutea</i> | 2 | 2 | 30 | 0 | 0 | 0 | 0 | 0 | 13 | 1 | 0 | 8 | 0 | 0 | 0 | 2 | 2 | 34 |
| Grey-cheeked Liocichla | <i>Liocichla omeiensis</i> | 3 | 5 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 0 | 1 | 3 | 0 | 2 | 0 | 6 | 5 | 0 |
| Red-tailed laughing thrush | <i>Trochalopteron milnei</i> | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 | 8 | 2 | 3 | 0 | 3 | 3 | 0 |
| Red fody | <i>Foudia madagascariensis</i> | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 19 |
| Village Weaver | <i>Ploceus cucullatus cucullatus</i> | 0 | 1 | 24 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 8 | 2 | 0 | 0 | 1 | 28 |
| Black-necked weaver | <i>Ploceus nigricollis nigricollis</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Timor Zebra Finch | <i>Taeniopygia guttata guttata</i> | 3 | 4 | 28 | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 0 | 2 | 5 | 5 | 0 | 18 | 20 | 0 |
| Javan sparrow | <i>Lonchura oryzivora</i> | 0 | 0 | 144 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 22 | 0 | 0 | 130 | 0 | 0 | 217 |
| Timor sparrow | <i>Lonchura fuscata</i> | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 14 |
| Collared grosbeak | <i>Coccothraustes affinis</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Montserrat oriole | <i>Icterus oberi</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| Pope cardinal | <i>Paroaria dominicana</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Brazilian tanager | <i>Ramphocelus bresilius</i> | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| TOTAL | | 370 | 391 | 516 | 10 | 16 | 15 | 57 | 62 | 283 | 25 | 39 | 184 | 78 | 70 | 206 | 365 | 368 | 605 |

denotes managed in groups

1277

41

402

248

354

1338

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REPTILES STOCKLIST (page 2 of 2)

| | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|--|----|-----|-----|----|----|----|---|---|-----|---|----|----|---|----|----|----|-----|-----|---|
| Rhinoceros snake | <i>Rhynchophis boulengeri</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 |
| San Francisco gartersnake | <i>Thamnophis sirtalis tetrataenia</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Mangrove snake | <i>Boiga dendrophila</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Mangrove snake | <i>Boiga dendrophila melanota</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Flying snake | <i>Chrysopelea ornata</i> | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Paradise flying snake | <i>Chrysopelea paradisi</i> | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Cornsnake/red ratsnake | <i>Elaphe guttata</i> | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| One hundred flower ratsnake | <i>Elaphe moellendorfi</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Black ratsnake | <i>Elaphe obsoleta obsoleta</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Tentacled snake | <i>Erpeton tentaculatum</i> | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 5 | 9 |
| Red-tailed ratsnake | <i>Gonyosoma oxycephala</i> | 5 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 4 |
| Eyelash Viper | <i>Bothriechis schlegelii</i> | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 0 |
| White-lipped Viper | <i>Cryptelytrops albolabris</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| West African gaboon viper | <i>Bitis gabonica rhinoceros</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Spectacled caiman | <i>Caiman crocodilus</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| | TOTAL | 63 | 85 | 201 | 17 | 26 | 21 | 0 | 0 | 208 | 9 | 10 | 76 | 8 | 5 | 31 | 62 | 103 | 316 | |
| | | | 349 | | | 64 | | | | 208 | | 95 | | | 44 | | | 481 | | |

* denotes held at Education Department

denotes managed in groups

AMPHIBIAN STOCKLIST

| Common Name | Scientific Name | STOCK 31/12/13 | | | ACQUISITIONS | | | BIRTHS | | | DEATHS | | | DISPOSITIONS | | | STOCK 31/12/14 | | | # | |
|--------------------------------|-------------------------------------|----------------|------------|------------|--------------|------------|------------|----------|-----------|-----------|-----------|------------|------------|--------------|-----------|----------|----------------|------------|------------|----|---|
| | | M | F | U | M | F | U | M | F | U | M | F | U | M | F | U | M | F | U | | |
| Rio Cauca Caecilian | <i>Typhlonectes natans</i> | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | # |
| Zacapu Axolotl | <i>Ambystoma andersoni</i> | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| Climbing toad | <i>Pedostibes hosii</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | |
| Green & black poison dart frog | <i>Dendrobates auratus</i> | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 6 | 2 | 0 | |
| Blue poison dart frog | <i>Dendrobates azureus</i> | 11 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 11 | 7 | 1 | 0 | |
| Maranon Poison Dart Frog | <i>Dendrobates mysteriosus</i> | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 47 | # | |
| Red backed poison dart frog | <i>Dendrobates reticulatus</i> | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 4 | 0 | |
| Golden poison dart frog | <i>Phyllobates terribilis</i> | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Strawberry poison dart frog | <i>Oophaga pumilio</i> | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | |
| Mission golden-eyed tree frog | <i>Trachycephalus resinifictrix</i> | 2 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 3 | 0 | |
| Morelet's tree frog | <i>Agalychnis moreletii</i> | 16 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 6 | 5 | 4 | 0 | 7 | 7 | 10 | # | |
| Mountain chicken frog | <i>Leptodactylus fallax</i> | 12 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 18 | 0 | 0 | |
| Golden mantella | <i>Mantella aurantiaca</i> | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 84 | # | |
| Blue-legged mantella | <i>Mantella expectata</i> | 0 | 0 | 18 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 19 | # | |
| Sambava tomato frog | <i>Dyscophus guineti</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | |
| Red rain frog | <i>Scaphiophryne gottlebei</i> | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 46 | # | |
| Surinam toad | <i>Pipa pipa</i> | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | # |
| Goliath frog | <i>Conraua goliath</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Mao-Son frog | <i>Sylvirana maosonensis</i> | 0 | 0 | 0 | 2 | 2 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 11 | # | |
| Frog | <i>Fejervarya limnocharis</i> | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | |
| Rancho redondo frog | <i>Lithobates vibicarius</i> | 12 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 7 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | |
| Black-spotted rock frog | <i>Staurois guttatus</i> | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 23 | # | |
| Splash frog | <i>Staurois parvus</i> | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 2 | # | |
| Painted Indonesian tree frog | <i>Nyctixalus pictus</i> | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 33 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 6 | 33 | # | |
| Denny's tree frog | <i>Polypedates dennysii</i> | 0 | 0 | 0 | 1 | 1 | 22 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 24 | # | |
| Bornean eared frog | <i>Polypedates otlophus</i> | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 2 | 46 | # | |
| Tree frog | <i>Rhacophorus exechopygus</i> | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | # | |
| Jade gliding tree frog | <i>Rhacophorus prominanus</i> | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | # | |
| Reinwardt's flying frog | <i>Rhacophorus reinwardtii</i> | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | # | |
| | | 75 | 70 | 334 | 4 | 3 | 161 | 1 | 2 | 33 | 20 | 20 | 190 | 9 | 5 | 1 | 50 | 58 | 381 | | |
| | | | 479 | | | 168 | | | 36 | | | 230 | | | 15 | | | 489 | | | |

denotes managed in groups

FISHES STOCKLIST

| Common Name | Scientific Name | STOCK 31/12/14 |
|---------------------------------|---------------------------------------|----------------|
| Epaulette shark | <i>Hemiscyllium ocellatum</i> | 2 |
| Arapaima | <i>Arapaima gigas</i> | 2 |
| Blunt Jaw Elephant Trunkfish | <i>Campylomormyrus elephas</i> | 5 |
| Snowflake moray | <i>Echidna nebulosa</i> | 2 |
| Two spot barb | <i>Puntius cumingii</i> | 12 |
| Black ruby barb | <i>Puntius nigrofasciatus</i> | 51 |
| Barb | <i>Puntius rhomboocellatus</i> | 26 |
| Cherry barb | <i>Puntius titteya</i> | 160 |
| Harlequin rasbora | <i>Trigonostigma heteromorpha</i> | 4 |
| Butterfly barb | <i>Barbus hulstaerti</i> | 1 |
| Phoenix rasbora | <i>Boraras merah</i> | 366 |
| Celestial pearl danio | <i>Celestichthys margaritatus</i> | 21 |
| Giant Danio | <i>Danio malabaricus</i> | 152 |
| Omani Blind Cave Fish | <i>Garra barreimiae</i> | 55 |
| Rainbow shiner | <i>Notropis chrosomus</i> | 337 |
| Neon green rasbora | <i>Sundadanio axelrodi</i> | 64 |
| Clown loach | <i>Chromobotia macracanthus</i> | 5 |
| Dwarf Loach | <i>Yasuhikotakia sidthimunki</i> | 27 |
| Long-finned Characin | <i>Brycinus longipinnis</i> | 73 |
| Coral red pencilfish | <i>Nannostomus mortenthaleri</i> | 3 |
| Glowlight tetra | <i>Hemigrammus erythrozonus</i> | 103 |
| Rummynose tetra | <i>Hemigrammus rhodostomus</i> | 60 |
| Bleeding heart tetra | <i>Hyphessobrycon erythrostigma</i> | 158 |
| Black neon tetra | <i>Hyphessobrycon herbertaxelrodi</i> | 50 |
| Lemon tetra | <i>Hyphessobrycon pulchripinnis</i> | 40 |
| Flame-back Bleeding Heart Tetra | <i>Hyphessobrycon pyrrhonotus</i> | 98 |
| Lizard tetra | <i>Iguanodectes geisleri</i> | 47 |
| Purple Emperor Tetra | <i>Inpaichthys kerri</i> | 55 |
| Diamond tetra | <i>Moenkhausia pittieri</i> | 252 |
| Redeye tetra | <i>Moenkhausia sanctaefilomenae</i> | 42 |
| Emperor tetra | <i>Nematobrycon palmeri</i> | 9 |
| Cardinal tetra | <i>Paracheirodon axelrodi</i> | 2700 |
| X-ray tetra | <i>Pristella maxillaris</i> | 50 |
| Penguin Tetra | <i>Thayeria boehlkei</i> | 5 |
| Polka-dot Upside-down Catfish | <i>Synodontis angelicus</i> | 2 |
| Lake Malawi Upside-down Catfish | <i>Synodontis njassae</i> | 6 |
| Poll's upsidedown catfish | <i>Synodontis polli</i> | 2 |
| Brochis Catfish | <i>Brochis splendens</i> | 16 |
| Panda catfish | <i>Corydoras panda</i> | 6 |
| Reticulated Corydoras | <i>Corydoras reticulatus</i> | 8 |
| Sterba's catfish | <i>Corydoras sterbai</i> | 125 |
| Catfish | <i>Baryancistrus demantoides</i> | 7 |
| Bristlenoe Plecostomus | <i>Hemiancistrus dolichopterus</i> | 103 |
| Emporor Pekoltia | <i>Hypancistrus zebra</i> | 1 |

| | | |
|-------------------------------|------------------------------------|-----|
| Plecostomus | <i>Hypostomus plecostomus</i> | 1 |
| Ringlet Pleco | <i>Panaqolus maccus</i> | 4 |
| Lanceolate whiptail catfish | <i>Rineloricaria lanceolata</i> | 2 |
| Shore rockling | <i>Gaidropsarus mediterraneus</i> | 1 |
| Boeseman's rainbowfish | <i>Melanotaenia boesemani</i> | 5 |
| Lake Kutubu Rainbow Fish | <i>Melanotaenia lacustris</i> | 20 |
| Killiefish | <i>Pachypanchax sakaramyi</i> | 90 |
| Butterfly Goodeid | <i>Ameca splendens</i> | 648 |
| Bold characodon | <i>Characodon audax</i> | 70 |
| Golden Saw-finned Goodeid | <i>Skiffia francesae</i> | 25 |
| Crescent Zoe | <i>Zoogoneticus tequila</i> | 117 |
| Halfbeak | <i>Hemirhamphodon</i> | 3 |
| Duck-billed Fish | <i>Oryzias sarasinorum</i> | 9 |
| Shrimpfish | <i>Aeoliscus strigatus</i> | 4 |
| Asian River Pipefish | <i>Doryichthys boaja</i> | 32 |
| Big-bellied Seahorse | <i>Hippocampus abdominalis</i> | 29 |
| Pacific giant seahorse | <i>Hippocampus kuda</i> | 13 |
| Longspined Seascorpion | <i>Taurulus bubalis</i> | 3 |
| Snailfish | <i>Liparis</i> | 5 |
| Flagtail Grouper | <i>Cephalopholis urodeta</i> | 1 |
| Orchid dottyback | <i>Pseudochromis fridmani</i> | 6 |
| Emporor/Banggai Cardinal Fish | <i>Pterapogon kauderni</i> | 50 |
| Copperband butterflyfish | <i>Chelmon rostratus</i> | 1 |
| Bicolor angelfish | <i>Centropyge bicolor</i> | 1 |
| Coral beauty | <i>Centropyge bispinosus</i> | 1 |
| Keyhole angelfish | <i>Centropyge tibicen</i> | 1 |
| Cichlid | <i>Cichlidae</i> | 306 |
| Discus | <i>Symphysodon aequifasciatus</i> | 8 |
| Agassiz' dwarf cichlid | <i>Apistogramma agassizii</i> | 7 |
| Golden mojarra | <i>Cichlasoma bocourti</i> | 9 |
| Common Severum | <i>Heros efasciatus</i> | 2 |
| Redhead Tapajos | <i>Geophagus</i> | 4 |
| Blue butterfly cichlid | <i>Mikrogeophagus ramirezi</i> | 4 |
| Pin Striped Damba | <i>Paretroplus menarambo</i> | 22 |
| Freshwater angelfish | <i>Pterophyllum scalare</i> | 30 |
| Tomato Clown Fish | <i>Amphiprion frenatus</i> | 1 |
| Common Clownfish | <i>Amphiprion ocellaris</i> | 14 |
| Goldtail damselfish | <i>Chrysiptera parasema</i> | 2 |
| Yellow wrasse | <i>Halichoeres chrysus</i> | 1 |
| Vermiculate Wrasse | <i>Macropharyngodon bipartitus</i> | 1 |
| Corkwing wrasse | <i>Symphodus melops</i> | 1 |
| Shanny blenny | <i>Lipophrys pholis</i> | 10 |
| Empire gudgeon | <i>Hypseleotris compressa</i> | 4 |
| Sand goby | <i>Pomatoschistus minutus</i> | 2 |
| Golden goby | <i>Gobiodon okinawae</i> | 8 |

FISHES STOCKLIST (page 2 of 2)

| | | | |
|-------------------------|---------------------------------|-------------|---|
| Glass Goby | <i>Gobiopterus chuno</i> | 7 | |
| Bristle-tooth Tang | <i>Ctenochaetus tominiensis</i> | 1 | |
| Regal Tang | <i>Paracanthurus hepatus</i> | 1 | |
| Yellow tang | <i>Zebrasoma flavescens</i> | 1 | |
| Ornate ctenopoma | <i>Ctenopoma ansorgii</i> | 2 | |
| White Seam Betta | <i>Betta albimarginata</i> | 4 | |
| Spotfin betta | <i>Betta macrostoma</i> | 2 | |
| Toba betta | <i>Betta rubra</i> | 2 | |
| Pallifina betta | <i>Betta pallifina</i> | 4 | |
| Blueline gourami | <i>Parosphromenus</i> | 60 | * |
| Liquorice Gourami | <i>Parosphromenus linkei</i> | 60 | * |
| Nagy's licorice gourami | <i>Parosphromenus nagyi</i> | 6 | |
| Giant pikehead | <i>Luciocephalus pulcher</i> | 4 | |
| Peppermint pikehead | <i>Luciocephalus aura</i> | 7 | |
| Saddled puffer | <i>Canthigaster valentini</i> | 1 | |
| Total | | 7053 | |

* denotes bred in collection during the year

INVERTEBRATES STOCKLIST

| CommonName | ScientificName | STOCK 31/12/14 | |
|--------------------------------|------------------------------------|----------------|------|
| Frilled upside-down jellyfish | <i>Cassiopea</i> | 10 | |
| Gorgonian | <i>Euplexaura</i> | 30 | |
| Tan bushy soft coral | <i>Plexaura</i> | 1 | |
| Leather coral | <i>Lobophytum</i> | 1 | |
| Leather Coral | <i>Sarcophyton trocheliophorum</i> | 1 | |
| Soft Coral | <i>Sinularia</i> | 32 | |
| Coral | <i>Capnella imbricata</i> | 1 | |
| Beadlet anemone | <i>Actinia equina</i> | 1 | |
| Snakelocks anemone | <i>Anemonia viridis</i> | 2 | |
| Sea Anemone | <i>Heteractis</i> | 41 | |
| Mushroom Polyp | <i>Actinodiscus</i> | 195 | |
| Bubble coral | <i>Plerogyra sinuosa</i> | 3 | |
| Bowl Coral | <i>Turbinaria peltata</i> | 3 | |
| Yellow Encrusting Anemone | <i>Parazoanthus</i> | 200 | |
| Giant ramshorn snail | <i>Marisa cornuarietis</i> | 50 | |
| Partula snail | <i>Partula affinis</i> | 18 | * |
| Partula snail | <i>Partula mirabilis</i> | 29 | * |
| Partula snail | <i>Partula taeniata nucleola</i> | 140 | * |
| Partula snail | <i>Partula varia</i> | 222 | * |
| African Land Snail | <i>Achatina fulica</i> | 5 | */** |
| Asian forest scorpion | <i>Heterometrus longimanus</i> | 7 | |
| Tanzanian Whipscorpion | <i>Damon variegatus</i> | 34 | * |
| Montserrat tarantula | <i>Cyrtopholis femoralis</i> | 40 | |
| Brazilian salmon tarantula | <i>Lasiodora parahybana</i> | 1 | |
| Indian social spider | <i>Stegodyphus sarasinorum</i> | 100 | |
| Red Cherry Shrimp | <i>Neocaridina</i> | 30 | |
| Cleaner Shrimp | <i>Lysmata amboinensis</i> | 15 | |
| Common Lobster | <i>Homarus gammarus</i> | 1 | |
| Bernhard's hermit crab | <i>Pagurus bernhardus</i> | 2 | |
| 'Red Devil' Vampire Crab | <i>Geosesarma</i> | 12 | * |
| American cockroach | <i>Periplaneta americana</i> | 100 | |
| Madagascar hissing cockroach | <i>Gromphadorhina portentosa</i> | 178 | */** |
| Deaths Head Cockroach | <i>Blaberus</i> | 50 | |
| Malaysian dead-leaf mantis | <i>Deroplatys desiccata</i> | 23 | * |
| Giant Asian Mantis | <i>Hierodula membranacea</i> | 21 | * |
| Mantis | <i>Sphodromantis</i> | 7 | * |
| Florida Leaf Katydid | <i>Stilpnochlora coulouiana</i> | 100 | |
| Malaysian Leaf Katydid | <i>Ancylecha fenestrata</i> | 5 | |
| Sabah thorny stick insect | <i>Aretaon asperimus</i> | 30 | |
| Malaysian Jungle Nymph | <i>Heteropteryx dilatata</i> | 21 | * |
| Giant Thorny Stick Insect | <i>Trachyaretaon brueckneri</i> | 21 | */** |
| Giant leaf insect | <i>Phyllium giganteum</i> | 25 | |
| Giant stick insect | <i>Eurycantha calcarata</i> | 140 | |
| Macleay's Spectre Stick Insect | <i>Extatosoma tiaratum</i> | 19 | */** |

| | | | |
|-----------------------------|--|-------------|----------|
| Scarab | <i>Dorcus parryi</i> | 1 | |
| Western hercules beetle | <i>Dynastes hercules</i> | 7 | |
| Sun beetle | <i>Pachnoda marginata</i> | 29 | |
| Flower Beetle | <i>Smaragdesthes africana oertzeni</i> | 30 | |
| Elephant beetle | <i>Xylotrupes gideon</i> | 10 | |
| Great Mormon | <i>Papilio memnon</i> | 8 | |
| Scarlet swallowtail | <i>Papilio rumanzovia</i> | 11 | |
| Giant Wood Nymph | <i>Idea leuconoe</i> | 26 | |
| Large heath butterfly | <i>Coenonympha tullia</i> | 13 | |
| Giant Owl | <i>Caligo memnon</i> | 41 | |
| Blue Morpho | <i>Morpho peleides</i> | 72 | |
| White Morpho | <i>Morpho polyphemus</i> | 5 | |
| Zebra Longwing | <i>Heliconius charitonius</i> | 8 | |
| Malachite | <i>Siproeta stelenes</i> | 3 | |
| Leafcutter ant | <i>Atta cephalotes</i> | 2 | colonies |
| Emerald cockroach wasp | <i>Ampulex compressa</i> | 6 | * |
| Madagascar Russet millipede | <i>Colossobolus litoralis</i> | 5 | |
| Giant African millipede | <i>Archispirostreptus gigas</i> | 3 | ** |
| Cushion Starfish | <i>Asterina gibbosa</i> | 1 | |
| Common Starfish | <i>Asterias rubens</i> | 1 | |
| Green Brittle Starfish | <i>Ophiarachna incrassata</i> | 22 | |
| Slate-pencil sea urchin | <i>Eucidaris tribuloides</i> | 1 | |
| Long Spined Urchin | <i>Diadema antillarum</i> | 6 | |
| | | 2278 | |

* denotes bred in collection during the year

** denotes held at Education Department

PLANT STOCKLIST (page 1 of 5)

| Scientific Name | Common Name | Total |
|--|-------------------------|-------|
| <i>Acacia choriophylla</i> | Acacia choriophylla | 1 |
| <i>Achyranthes arborescens</i> | Achyranthes arborescens | 1 |
| <i>Acianthera chrysantha</i> | Orchid | 1 |
| <i>Acianthera scalpricaulis</i> | Orchid | 1 |
| <i>Amesiella monticola</i> | Orchid | 1 |
| <i>Amesiella philippensis</i> | Orchid | 1 |
| <i>Amorphophallus titanum</i> | Titan Arum | 4 |
| <i>Angraecum subulatum</i> | Orchid | 1 |
| <i>Ansellia africana</i> | Orchid | 1 |
| <i>Araucaria araucana</i> | Monkey Puzzle | 10 |
| <i>Brachyglottis compacta</i> | Brachyglottis compacta | 1 |
| <i>Brassia verrucosa</i> | Orchid | 1 |
| <i>Cedrus deodara</i> | Himalayan Cedar | 2 |
| <i>Charianthus purpureus</i> | Charianthus purpureus | 3 |
| <i>Chromolaena lucayana</i> | Chromolaena lucayana | 3 |
| <i>Clerodendrum laciniatum</i> | Clerodendrum laciniatum | 1 |
| <i>Clidemia umbrosa</i> | Clidemia umbrosa | 3 |
| <i>Coincya monensis ssp. monensis</i> | Isle of Man Cabbage | 10 |
| <i>Copiapoa ahremephiana</i> | Cacti | 6 |
| <i>Copiapoa calderana</i> | Cacti | 11 |
| <i>Copiapoa cinerascens</i> | Cacti | 1 |
| <i>Copiapoa cinerea</i> | Cacti | 7 |
| <i>Copiapoa cinerea ssp. cinerea</i> | Cacti | 6 |
| <i>Copiapoa coquimbana</i> | Cacti | 15 |
| <i>Copiapoa dealbata</i> | Cacti | 8 |
| <i>Copiapoa echinoides</i> | Cacti | 14 |
| <i>Copiapoa esmeraldana</i> | Cacti | 4 |
| <i>Copiapoa fielderiana</i> | Cacti | 6 |
| <i>Copiapoa grandiflora</i> | Cacti | 4 |
| <i>Copiapoa humilis</i> | Cacti | 23 |
| <i>Copiapoa humilis ssp. tenuissima</i> | Cacti | 8 |
| <i>Copiapoa humilis ssp. varispinata</i> | Cacti | 8 |
| <i>Copiapoa humilis ssp. tecopillana</i> | Cacti | 2 |
| <i>Copiapoa hypogaea</i> | Cacti | 25 |
| <i>Copiapoa hypogaea ssp. hypogea</i> | Cacti | 10 |
| <i>Copiapoa hypogaea ssp. laui</i> | Cacti | 15 |
| <i>Copiapoa krainziana</i> | Cacti | 10 |
| <i>Copiapoa longistaminea</i> | Cacti | 6 |
| <i>Copiapoa marginata</i> | Cacti | 13 |
| <i>Copiapoa megarhiza</i> | Cacti | 4 |
| <i>Copiapoa megarhiza ssp. echinata</i> | Cacti | 7 |
| <i>Copiapoa montana</i> | Cacti | 23 |
| <i>Copiapoa serpentisulcata</i> | Cacti | 6 |
| <i>Copiapoa solaris</i> | Cacti | 7 |
| <i>Copiapoa taltalensis</i> | Cacti | 8 |

| | | |
|--|---------------------------|----|
| <i>Copiapoa taltalensis ssp. desertorum</i> | Cacti | 4 |
| <i>Copiapoa taltalensis ssp. taltalensis</i> | Cacti | 1 |
| <i>Corokia macrocarpa</i> | Corokia macrocarpa | 1 |
| <i>Cotoneaster cambricus</i> | Wild Cotoneaster | 7 |
| <i>Davidia involucrata var. involucrata</i> | Handkerchief Tree | 1 |
| <i>Dicksonia antarctica</i> | Soft tree fern | 10 |
| <i>Dionaea muscipula</i> | Venus Fly Trap | 5 |
| <i>Diospyros egrettarum</i> | Diospyros egrettarum | 2 |
| <i>Doricera trilocularis</i> | Doricera trilocularis | 1 |
| <i>Dracula dalessandroi</i> | Orchid | 1 |
| <i>Dracula deltoidea</i> | Orchid | 1 |
| <i>Dracula fuligifera</i> | Orchid | 1 |
| <i>Dracula hawleyi</i> | Orchid | 1 |
| <i>Dracula nycterina</i> | Orchid | 1 |
| <i>Dracula octavioi</i> | Orchid | 1 |
| <i>Dracula portillae</i> | Orchid | 1 |
| <i>Dracula rezeckiana</i> | Orchid | 1 |
| <i>Dracula ripleyana</i> | Orchid | 1 |
| <i>Dracula vampira</i> | Orchid | 1 |
| <i>Dracula venosa</i> | Orchid | 1 |
| <i>Dracula wallisii</i> | Orchid | 3 |
| <i>Dracula woolwardiae</i> | Orchid | 1 |
| <i>Drosera adelae</i> | Sundew | 5 |
| <i>Drosera regia</i> | Sundew | 5 |
| <i>Drosera rotundifolia</i> | Sundew | 5 |
| <i>Dryadella hirtzii</i> | Orchid | 2 |
| <i>Equisetum x meridionale</i> | Southern Horsetail | 40 |
| <i>Ficus citrifolia</i> | Shortleaf Fig | 1 |
| <i>Ficus religiosa</i> | Sacred Fig | 1 |
| <i>Gastonia mauritiana</i> | Gastonia mauritiana | 2 |
| <i>Gesneria ventricosa</i> | Gesneria ventricosa | 1 |
| <i>Ginkgo biloba</i> | Maidenhair tree | 10 |
| <i>Helicteres jamaicensis</i> | Helicteres jamaicensis | 3 |
| <i>Heteropterys purpurea</i> | Heteropterys purpurea | 2 |
| <i>Hibiscus fragilis</i> | Hibiscus fragilis | 1 |
| <i>Hibiscus insularis</i> | Phillip Island Hibiscus | 1 |
| <i>Hibiscus rosa-sinensis</i> | Chinese Hibiscus | 10 |
| <i>Hyophorbe verschaffeltii</i> | Hyophorbe verschaffeltii | 1 |
| <i>Juniperus communis</i> | Common Juniper | 3 |
| <i>Latania lodigessii</i> | Latania lodigessii | 12 |
| <i>Latania lontaroides</i> | Red Latan Palm | 2 |
| <i>Latania verschaffeltii</i> | Palm | 1 |
| <i>Lepanthes cascajelensis</i> | Orchid | 2 |
| <i>Lobelia digitalifolia</i> | Lobelia digitalifolia | 2 |
| <i>Lomatophyllum tormentorii</i> | Lomatophyllum tormentorii | 19 |
| <i>Luronium natans</i> | Floating Water Plantain | 27 |

PLANT STOCKLIST (page 2 of 5)

| | | |
|---|------------------|---|
| <i>Magnolia soulangeana</i> | Chinese Magnolia | 1 |
| <i>Mammillaria angelensis</i> | Cacti | 1 |
| <i>Mammillaria backbergiana</i> var. <i>erestii</i> | Cacti | 1 |
| <i>Mammillaria bocasana</i> | Cacti | 1 |
| <i>Mammillaria bocensis</i> | Cacti | 1 |
| <i>Mammillaria bombycina</i> | Cacti | 1 |
| <i>Mammillaria bullardiana</i> | Cacti | 1 |
| <i>Mammillaria cerralboa</i> | Cacti | 1 |
| <i>Mammillaria duoformis</i> | Cacti | 1 |
| <i>Mammillaria hahniana</i> | Cacti | 1 |
| <i>Mammillaria herrerae</i> | Cacti | 1 |
| <i>Mammillaria kraehenbuehlii</i> | Cacti | 1 |
| <i>Mammillaria magnifica</i> | Cacti | 1 |
| <i>Mammillaria marksiana</i> | Cacti | 1 |
| <i>Mammillaria matudae</i> | Cacti | 1 |
| <i>Mammillaria mercadensis</i> ssp. <i>patonii</i> | Cacti | 1 |
| <i>Mammillaria meyranii</i> | Cacti | 1 |
| <i>Mammillaria microhelia</i> | Cacti | 1 |
| <i>Mammillaria moelleriana</i> | Cacti | 1 |
| <i>Mammillaria napina</i> | Cacti | 1 |
| <i>Mammillaria oteroi</i> | Cacti | 1 |
| <i>Mammillaria painteri</i> | Cacti | 1 |
| <i>Mammillaria parkinsonii</i> | Cacti | 1 |
| <i>Mammillaria peninsularis</i> | Cacti | 1 |
| <i>Mammillaria pilcayensis</i> | Cacti | 1 |
| <i>Mammillaria pilispina</i> | Cacti | 1 |
| <i>Mammillaria pondii</i> | Cacti | 1 |
| <i>Mammillaria pringlei</i> | Cacti | 1 |
| <i>Masdevallia agaster</i> | Orchid | 1 |
| <i>Masdevallia amaluzae</i> | Orchid | 1 |
| <i>Masdevallia andreotana</i> | Orchid | 1 |
| <i>Masdevallia apparitio</i> | Orchid | 1 |
| <i>Masdevallia atahualpa</i> | Orchid | 1 |
| <i>Masdevallia attenuata</i> | Orchid | 1 |
| <i>Masdevallia carmenensis</i> | Orchid | 1 |
| <i>Masdevallia chaetostoma</i> | Orchid | 1 |
| <i>Masdevallia collina</i> | Orchid | 1 |
| <i>Masdevallia concinna</i> | Orchid | 1 |
| <i>Masdevallia dynastes</i> | Orchid | 3 |
| <i>Masdevallia empusa</i> | Orchid | 1 |
| <i>Masdevallia gilbertoi</i> | Orchid | 1 |
| <i>Masdevallia instar</i> | Orchid | 1 |
| <i>Masdevallia lynchiphora</i> | Orchid | 1 |
| <i>Masdevallia menatoi</i> | Orchid | 5 |
| <i>Masdevallia oreas</i> | Orchid | 1 |
| <i>Masdevallia ova-avis</i> | Orchid | 3 |

| | | |
|---|------------------------|----|
| <i>Masdevallia panguiensis</i> | Orchid | 1 |
| <i>Masdevallia pinocchio</i> | Orchid | 1 |
| <i>Masdevallia purpurella</i> | Orchid | 1 |
| <i>Masdevallia reichenbachiana</i> | Orchid | 1 |
| <i>Masdevallia rolfeana</i> | Orchid | 2 |
| <i>Masdevallia sanctae-inesae</i> | Orchid | 2 |
| <i>Masdevallia stenorrhyncus</i> | Orchid | 1 |
| <i>Masdevallia tovarensis</i> | Orchid | 2 |
| <i>Masdevallia urosalpinx</i> | Orchid | 1 |
| <i>Masdevallia veitchiana</i> | Orchid | 3 |
| <i>Matucana aurantiaca</i> ssp. <i>polzii</i> | Cacti | 10 |
| <i>Matucana aureiflora</i> | Cacti | 8 |
| <i>Matucana formosa</i> | Cacti | 12 |
| <i>Matucana haynei</i> | Cacti | 20 |
| <i>Matucana huagalensis</i> | Cacti | 13 |
| <i>Matucana intertexta</i> | Cacti | 2 |
| <i>Matucana krahni</i> | Cacti | 10 |
| <i>Matucana madisoniorum</i> | Cacti | 25 |
| <i>Matucana oreodoxa</i> | Cacti | 2 |
| <i>Matucana paucicostata</i> | Cacti | 8 |
| <i>Matucana pujupatii</i> | Cacti | 6 |
| <i>Matucana ritteri</i> | Cacti | 23 |
| <i>Matucana tuberculata</i> | Cacti | 2 |
| <i>Matucana weberbaueri</i> | Cacti | 1 |
| <i>Metasequoia glyptostroboides</i> | Dawn Redwood | 6 |
| <i>Neobenthamia gracilis</i> | Orchid | 1 |
| <i>Nepenthes adnata</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes alata</i> | Tropical Pitcher Plant | 8 |
| <i>Nepenthes alba</i> | Tropical Pitcher Plant | 9 |
| <i>Nepenthes albomarginata</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes ampullaria</i> | Tropical Pitcher Plant | 10 |
| <i>Nepenthes andamana</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes angasanensis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes argentii</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes aristolochioides</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes beccariana</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes bellii</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes benstonei</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes bicalcarata</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes bokorensis</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes bongso</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes boschiana</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes burbidgeae</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes burkei</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes campanulata</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes ceciliae</i> | Tropical Pitcher Plant | 1 |

PLANT STOCKLIST (page 3 of 5)

| | | |
|-----------------------------------|------------------------|----|
| <i>Nepenthes chang</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes chaniana</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes clipeata</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes copelandii</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes danseri</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes deaniana</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes densiflora</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes diatas</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes distillatoria</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes dubia</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes ephippiata</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes eustachya</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes eymae</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes faizaliana</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes flava</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes fusca</i> | Tropical Pitcher Plant | 13 |
| <i>Nepenthes glabrata</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes glandulifera</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes gracilis</i> | Tropical Pitcher Plant | 7 |
| <i>Nepenthes gracillima</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes gymnamphora</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes hamata</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes hamiguitanensis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes hirsuta</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes hispida</i> | Tropical Pitcher Plant | 9 |
| <i>Nepenthes hurrelliana</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes inermis</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes insignis</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes izumiae</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes jacquelineae</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes jamban</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes kampoiana</i> | Tropical Pitcher Plant | 15 |
| <i>Nepenthes kerrii</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes khasiana</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes kongkandana</i> | Tropical Pitcher Plant | 14 |
| <i>Nepenthes lamii</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes lavicola</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes lingulata</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes longifolia</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes lowii</i> | Tropical Pitcher Plant | 7 |
| <i>Nepenthes macfarlanei</i> | Tropical Pitcher Plant | 7 |
| <i>Nepenthes macrophylla</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes macrovulgaris</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes madagascariensis</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes mapuluensis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes masoalensis</i> | Tropical Pitcher Plant | 4 |

| | | |
|---------------------------------|------------------------|----|
| <i>Nepenthes maxima</i> | Tropical Pitcher Plant | 24 |
| <i>Nepenthes merrilliana</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes mikei</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes mindanaoensis</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes mira</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes mirabilis</i> | Tropical Pitcher Plant | 14 |
| <i>Nepenthes muluensis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes murudensis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes naga</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes neoguineensis</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes northiana</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes ovata</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes peltata</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes pervillei</i> | Tropical Pitcher Plant | 2 |
| <i>Nepenthes petiolata</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes philippinensis</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes pilosa</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes platycheila</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes rafflesiana</i> | Tropical Pitcher Plant | 12 |
| <i>Nepenthes rajah</i> | Tropical Pitcher Plant | 9 |
| <i>Nepenthes ramispina</i> | Tropical Pitcher Plant | 8 |
| <i>Nepenthes reinwardtiana</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes rhombicaulis</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes rowanae</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes sanguinea</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes sibuyanensis</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes singalana</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes smilesii</i> | Tropical Pitcher Plant | 12 |
| <i>Nepenthes spathulata</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes spectabilis</i> | Tropical Pitcher Plant | 11 |
| <i>Nepenthes stenophylla</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes sumatrana</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes suratensis</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes surigaoensis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes talangensis</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes tenax</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes tentaculata</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes tenuis</i> | Tropical Pitcher Plant | 1 |
| <i>Nepenthes thai</i> | Tropical Pitcher Plant | 12 |
| <i>Nepenthes thorelii</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes tobaica</i> | Tropical Pitcher Plant | 8 |
| <i>Nepenthes tomoriana</i> | Tropical Pitcher Plant | 4 |
| <i>Nepenthes treubiana</i> | Tropical Pitcher Plant | 5 |
| <i>Nepenthes truncata</i> | Tropical Pitcher Plant | 10 |
| <i>Nepenthes veitchii</i> | Tropical Pitcher Plant | 6 |
| <i>Nepenthes ventricosa</i> | Tropical Pitcher Plant | 10 |

PLANT STOCKLIST (page 4 of 5)

| | | |
|---|---|-----|
| <i>Nepenthes veillardii</i> | Tropical Pitcher Plant | 3 |
| <i>Nepenthes vogelii</i> | Tropical Pitcher Plant | 1 |
| <i>Notopleura guadalupensis</i> ssp. <i>guadalupensis</i> | <i>Notopleura guadalupensis</i> ssp. <i>guadalupensis</i> | 1 |
| <i>Nymphaea alba</i> | White Water Lily | 1 |
| <i>Olearia hectorii</i> | Daisy Bush | 1 |
| <i>Olearia traversii</i> | Daisy Bush | 1 |
| <i>Palicourea crocea</i> | <i>Palicourea crocea</i> | 1 |
| <i>Paphiopedilum emersonii</i> | Orchid | 1 |
| <i>Paphiopedilum fowliei</i> | Orchid | 1 |
| <i>Phormium tenax</i> | New Zealand Flax | 10 |
| <i>Phragmipedium lindenii</i> | Orchid | 1 |
| <i>Pilularia globulifera</i> | Pillwort | 50 |
| <i>Pisonia aculeata</i> | <i>Pisonia aculeata</i> | 1 |
| <i>Pithecellobium oblongatum</i> | <i>Pithecellobium oblongatum</i> | 1 |
| <i>Pleione formosana</i> | Orchid | 1 |
| <i>Pleurothallis aspergillum</i> | Orchid | 1 |
| <i>Pleurothallis cardiophylla</i> | Orchid | 3 |
| <i>Pleurothallis dodsonii</i> | Orchid | 1 |
| <i>Pleurothallis macrantha</i> | Orchid | 1 |
| <i>Pleurothallis pallida</i> | Orchid | 1 |
| <i>Pleurothallis phyllocardia</i> | Orchid | 5 |
| <i>Pleurothallis rowleei</i> | Orchid | 1 |
| <i>Pleurothallis scoparum</i> | Orchid | 1 |
| <i>Pleurothallis volcanica</i> | Orchid | 1 |
| <i>Populus nigra</i> ssp. <i>betulifolia</i> | Black Poplar | 0 |
| <i>Porroglossum amethystinum</i> | Orchid | 1 |
| <i>Porroglossum andrettae</i> | Orchid | 1 |
| <i>Porroglossum dalstroemii</i> | Orchid | 2 |
| <i>Porroglossum teaguei</i> | Orchid | 1 |
| <i>Potamogeton compressus</i> | Grass-Wrack Pondweed | 160 |
| <i>Restreplopsis pandurata</i> | Orchid | 1 |
| <i>Sarcanthemum coronopus</i> | <i>Sarcanthemum coronopus</i> | 2 |
| <i>Sarcochilus falcatus</i> | <i>Sarcochilus falcatus</i> | 1 |
| <i>Sarracenia alata</i> | Pitcher Plant | 1 |
| <i>Sarracenia flava</i> | Pitcher Plant | 1 |
| <i>Sarracenia leucophylla</i> | Pitcher Plant | 1 |
| <i>Sarracenia minor</i> | Pitcher Plant | 1 |
| <i>Sarracenia oreophylla</i> | Pitcher Plant | 1 |
| <i>Sarracenia psittacina</i> | Pitcher Plant | 1 |
| <i>Sarracenia rubra</i> ssp. <i>alabamensis</i> | Pitcher Plant | 1 |
| <i>Scaphosepalum beluosum</i> | Orchid | 3 |
| <i>Scaphosepalum fimbriatum</i> | Orchid | 1 |
| <i>Scaphosepalum hirtzii</i> | Orchid | 2 |
| <i>Scaphosepalum microdactylum</i> | Orchid | 4 |
| <i>Scaphosepalum ovulare</i> | Orchid | 1 |
| <i>Scaphosepalum beluosum</i> | Orchid | 3 |

| | | |
|---|---|----|
| <i>Scaphosepalum ovulare</i> | Orchid | 1 |
| <i>Sequoiadendron giganteum</i> | Giant Redwood | 2 |
| <i>Specklinia picta</i> | Orchid | 1 |
| <i>Stachys alpina</i> | Limestone Woundwort | 42 |
| <i>Stelis hirtzii</i> | Orchid | 4 |
| <i>Strongylodon macrobotrys</i> | Jade Vine | 1 |
| <i>Tabebuia heterophylla</i> | <i>Tabebuia heterophylla</i> | 1 |
| <i>Tarena borbonica</i> | <i>Tarena borbonica</i> | 1 |
| <i>Terminalia bentzoe</i> ssp. <i>rodriguesensis</i> | <i>Terminalia bentzoe</i> sp. <i>rodriguesensis</i> | 1 |
| <i>Tilia xeuropaea</i> | Lime Tree | 50 |
| <i>Trachycarpus fortunei</i> | Windmill Palm | 10 |
| <i>Trisetella gemmata</i> | Orchid | 3 |
| <i>Trochetiopsis ebenus</i> | St. Helena Ebony | 4 |
| <i>Turbincarpus alonsoi</i> | Cacti | 13 |
| <i>Turbincarpus beguinii</i> ssp. <i>zaragozae</i> | Cacti | 15 |
| <i>Turbincarpus gielsdorfianus</i> | Cacti | 20 |
| <i>Turbincarpus hoferi</i> | Cacti | 14 |
| <i>Turbincarpus horripilus</i> | Cacti | 10 |
| <i>Turbincarpus laui</i> | Cacti | 10 |
| <i>Turbincarpus lophophoroides</i> | Cacti | 15 |
| <i>Turbincarpus mandragora</i> ssp. <i>mandragora</i> | Cacti | 10 |
| <i>Turbincarpus mandragora</i> ssp. <i>pailanus</i> | Cacti | 5 |
| <i>Turbincarpus pseudomacrochele</i> ssp. <i>krainzianus</i> | Cacti | 3 |
| <i>Turbincarpus pseudomacrochele</i> ssp. <i>lausseri</i> | Cacti | 5 |
| <i>Turbincarpus pseudomacrochele</i> ssp. <i>minimus</i> | Cacti | 3 |
| <i>Turbincarpus pseudomacrochele</i> ssp. <i>pseudomacrochele</i> | Cacti | 5 |
| <i>Turbincarpus pseudopectinatus</i> | Cacti | 15 |
| <i>Turbincarpus saueri</i> ssp. <i>knuthianus</i> | Cacti | 1 |
| <i>Turbincarpus saueri</i> ssp. <i>nelissae</i> | Cacti | 1 |
| <i>Turbincarpus saueri</i> ssp. <i>saueri</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>schwarzii</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>andersonii</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>bonatzii</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>dickisoniae</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>flaviflorus</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>gracilis</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>jauernigii</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>macrochele</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>rioverdensis</i> | Cacti | 1 |
| <i>Turbincarpus schmiedickeanus</i> ssp. <i>schmiedickeanus</i> | Cacti | 1 |
| <i>Turbincarpus subterraneus</i> ssp. <i>subterraneus</i> | Cacti | 1 |
| <i>Turbincarpus subterraneus</i> ssp. <i>booleanus</i> | Cacti | 1 |
| <i>Turbincarpus swobodae</i> | Cacti | 10 |
| <i>Turbincarpus valdezianus</i> | Cacti | 10 |
| <i>Turbincarpus viereckii</i> | Cacti | 4 |
| <i>Turraea lacinata</i> | <i>Turraea lacinata</i> | 5 |

PLANT STOCKLIST (page 5 of 5)

| | | |
|----------------------------|---------------------|---|
| <i>Vernonia bahamensis</i> | Vernonia bahamensis | 1 |
| <i>Zapoteca formosa</i> | Zapoteca formosa | 2 |
| <i>Zingiber officinale</i> | Ginger | 1 |

370 species

SUMMARY OF CONSERVATION STATUS OF THE COLLECTION

Table 1. Animal Stock

As of 31st December 2014

| | Number of Species | Number of Specimens |
|---------------|-------------------|---------------------|
| Mammals | 81 | 879 |
| Birds | 134 | 1338 |
| Reptiles | 52 | 481 |
| Amphibians | 22 | 489 |
| Fishes | 104 | 7053 |
| Invertebrates | 67 | 2278 |
| Total | 460 | 12518 |

Table 2. Summary of the Conservation Status of Chester Zoo's Animal Collection by IUCN Category

as of 31st December 2014

| *IUCN Red List Category | Mammals | Birds | Reptiles | Amphibians | Fishes | Invertebrates | Total by category |
|---|----------------|-----------------|----------------|----------------|-----------------|----------------|-------------------|
| Threatened Species (Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), and Vulnerable (VU)) | 47 | 44 | 18 | 7 | 15 | 4 | 29% 135 |
| Near Threatened (NT) | 5 | 17 | 1 | 1 | 0 | 0 | 5% 24 |
| Least Concern (LC) | 28 | 72 | 11 | 11 | 29 | 1 | 33% 152 |
| Data Deficient (DD) | 1 | 1 | 0 | 1 | 6 | 0 | 2% 9 |
| Not Evaluated (NE) | 0 | 0 | 22 | 2 | 52 | 62 | 30% 138 |
| Total species | 100% 81 | 100% 134 | 100% 52 | 100% 22 | 100% 102 | 100% 67 | 100% 458 |

(Percentage figures are IUCN category compared against total species figures).

* IUCN 2014. IUCN Red List of Threatened Species. Version 2014.3. <www.iucnredlist.org>

Table 3. Summary of the Conservation Status of Chester Zoo's Plant Collection by IUCN Category

as of 31st December 2014

| IUCN Categories | Number of plant species |
|---|-------------------------|
| Threatened Species (Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), and Vulnerable (VU)) | 64% 235 |
| Near Threatened (NT) | 4% 14 |
| Least Concern (LC) | 10% 37 |
| Data Deficient (DD) | 5% 20 |
| Not Evaluated (NE) | 0% 1 |
| Total in Zoo | 83% 307 |

Table 4. Numbers of Animal and Plant Species in Managed Programmes

as of 31st December 2014

| Taxon Group | Species in Managed Programmes |
|---------------|-------------------------------|
| Mammals | 63 |
| Birds | 72 |
| Reptiles | 21 |
| Amphibians | 2 |
| Fishes | 0 |
| Invertebrates | 0 |
| Plants | 0 |
| Total | 158 |

Table 5. Species' Roles in the Collection Plan

as of 31st December 2014

| Roles | Mammals | Birds | Reptiles | Amphibians | Fishes | Invertebrates | Plants | Totals |
|--|---------|-------|----------|------------|--------|---------------|--------|------------|
| <i>Ex Situ</i> Management | 11 | 28 | 13 | 4 | 5 | 4 | 29 | 65 |
| <i>In Situ</i> Conservation Ambassador | 19 | 30 | 7 | 11 | 33 | 4 | 95 | 104 |
| Education | 51 | 49 | 15 | 5 | 5 | 0 | 147 | 125 |
| Research and Husbandry Techniques | 24 | 59 | 49 | 21 | 60 | 0 | 0 | 213 |
| Visitor Experience | 44 | 109 | 47 | 22 | 95 | 59 | 313 | 376 |
| No Current Role | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 5 |

In order to justify a place in the collection all species held at Chester Zoo must fulfil at least one of the above roles, with several species having more than one role. These roles can be grouped into five key categories all of which reflect our mission.

ABOUT THE CHESTER ZOO COLLECTION PLAN

Chester Zoo's Institutional Collection Plan (ICP) gives an overview of the current state of our animal and plant collection and the role of each species within it. It is an important source of information to all staff and a key tool that is used by curators to plan the future and progress towards it.

Fundamental to the concept of a collection plan is the notion of species 'role'. The table below summarises the various different roles that we use at Chester Zoo. The roles mirror our mission and cover the core areas of conservation breeding, conservation ambassador, education, research and visitor experience. A species must have at least one at least one in order to justify its place in the collection – many however will have multiple roles. It is also worth noting that in some instances one or more of the assigned roles may apply only to certain individuals of a species. The roles fulfilled by each of the species we hold are reviewed annually and may change over time as activities and priorities for each species are evaluated.

As well as the species role(s), the collection plan also contains some basic information about each species including common and scientific names, geographic range and IUCN Red List threat category and, in order to manage each species and the collection as a whole, a variety of other operational data is included. Data relevant to managing the species and collection includes the number of each species currently held (males.females.unsexed), the target number for each species, the current and future location in the Zoo, and breeding recommendations. Links to husbandry guidelines, diet sheets and relevant *in situ* field programmes are also provided.

Chester Zoo ICP Species* Roles

All species* held at Chester Zoo must fulfil at least one of the following roles in order to justify its place in the collection. These roles can be grouped into five key categories all of which reflect our mission.

* "Species" in the context of this document may sometimes refer to subspecies or localised populations

1. Ex Situ Management

| | |
|--|---|
| 1a. <i>Ex Situ</i> Management – Release Programme | A species* that is Extinct in the Wild or is in imminent danger of extinction which is being managed in an <i>ex situ</i> at Chester Zoo where one or more of the individuals are released back into the wild as part of the recommended** conservation action. |
| 1b. <i>Ex Situ</i> Breeding – Insurance Population | A species* that is Extinct in the Wild or is in imminent danger of extinction which is being managed in an <i>ex situ</i> breeding programme at Chester Zoo as part of the recommended** conservation action. |

** Recommended action could come, for example, an IUCN SSC Specialist group, from the results of a recognised IUCN/CBSG CAMP/PHVA process, a published Species Action Plan, a national or regional BAP, a government request from a range State etc.

2. In Situ Conservation Ambassador

| | |
|----------------------------|---|
| 2a. Flagship Species | A species* acting as a flagship for a Chester Zoo <i>in situ</i> programme. |
| 2b. Species Conservation | A species* for which there is a significant species-specific <i>in situ</i> focus, as part of long-term support for Chester Zoo's projects or multi-species programmes. |
| 2c. Habitat Conservation | A species* receiving <i>in situ</i> support indirectly through region or habitat focused Chester Zoo programmes and/or projects. |
| 2d. Zoo Community Projects | A species* supported <i>in situ</i> by the zoo community and where Chester Zoo is a contributor to the project. |

3. Education

| | |
|--|---|
| A species used to convey the Key Conservation Message(s) that: | |
| 3a. Interdependence | "All living things including humans live in ecosystems and depend on other living things for their survival." |
| 3b. Human Impact | "Human activities are causing serious environmental damage." |
| 3c. Partnerships | "Chester Zoo works in partnerships with other organisations to conserve nature and natural resources." |
| 3d. Chester Zoo | "Chester Zoo is a charity whose mission is to be a major force in conserving biodiversity worldwide." |
| 3e. You! | "We can all make changes to help the environment and zoos can help inspire people to do this." |

4. Research & Husbandry Techniques

| | |
|--|---|
| 4a. Husbandry Development and/or Skills Training | A species for which we are developing particular husbandry methods to address an identified issue and /or that we are using to build staff capacity in specific husbandry or field conservation skills. |
| 4b. Research with <i>In Situ</i> Application | A species undergoing clearly defined applied research that contributes to the conservation of that species or a related species in the wild. |
| 4c. Research with <i>Ex Situ</i> Application | A species undergoing clearly defined applied research that leads to evidence-based decisions regarding captive management. |
| 4d. Pure Research | A species undergoing clearly defined pure research that increases knowledge of natural history, behaviour, ecology, population biology, taxonomy, disease. |

5. Visitor Experience

Note these species are less likely to be chosen if they require large amounts of investment to maintain in the collection and they have no other role.

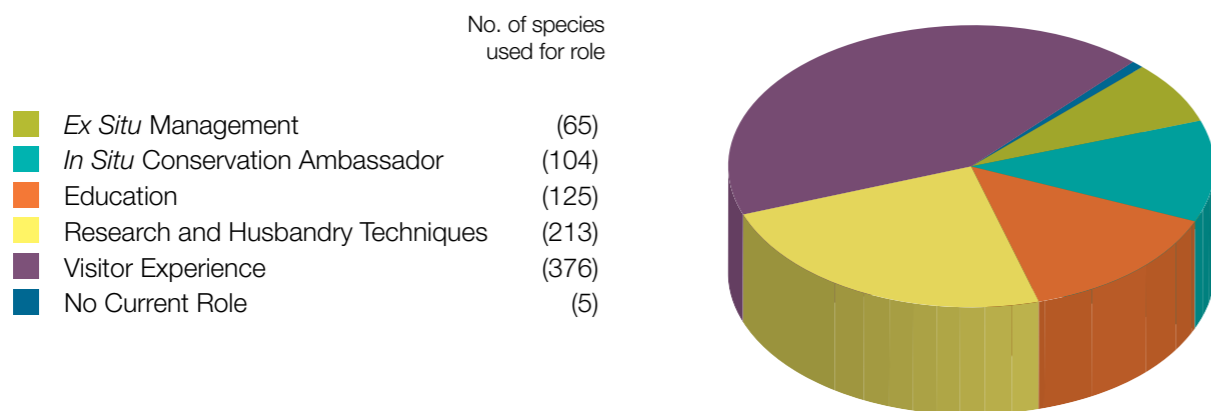
| | |
|-------------------------|---|
| 5a. Exhibit Enhancement | A species exhibited in, or apparently in, another species' enclosure in order to enhance the visitor experience. Such a species must originate from the same geographic area and habitat and should demonstrate behaviours, enclosure use, and activity periods that differ from the focal species in order to expand animal visibility. |
| 5b. Theme Enhancement | A species exhibited separately from the focal species within a themed exhibit or region of the zoo in order to enhance visitor experience. Such a species must clearly reinforce the respective theme. |

No Current Role

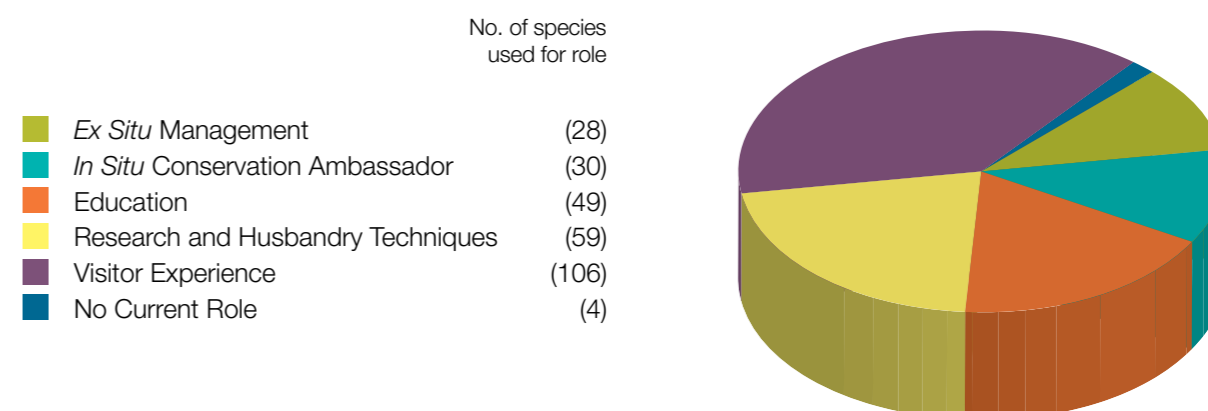
A species that currently makes no clearly defined contribution to Conservation, Education or Research and does not enhance Visitor Experience. We may continue to work with these species if we anticipate that they will shortly be able to fulfil one of the above roles. If not, the species will be phased out of the collection.

SUMMARY OF ALL ROLES (page 1 of 2)

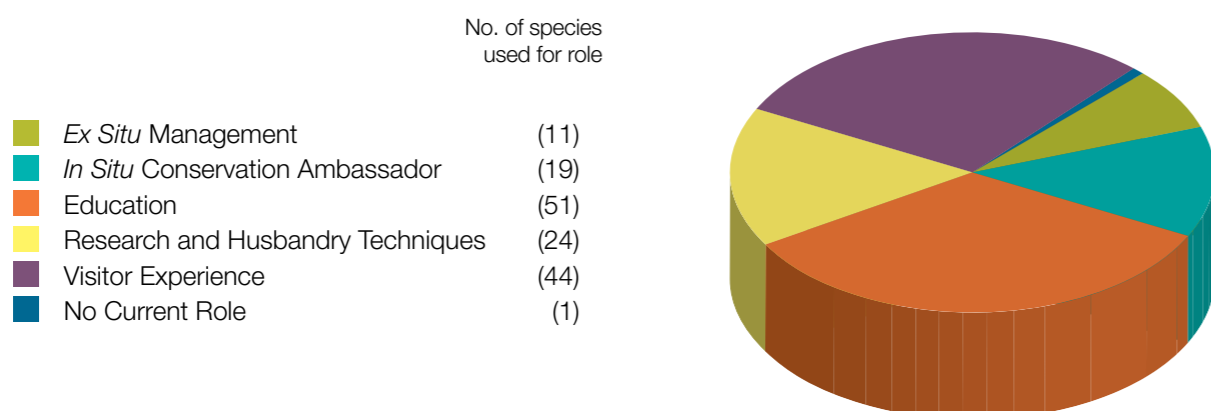
Distribution of roles fulfilled by **all animal species** at Chester Zoo in 2014



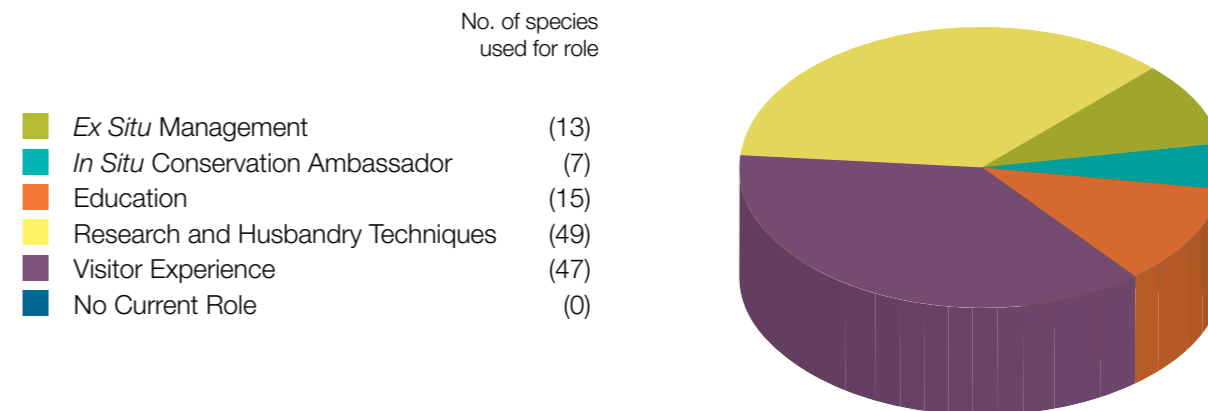
Distribution of roles fulfilled by **bird species** at Chester Zoo in 2014



Distribution of roles fulfilled by **mammal species** at Chester Zoo in 2014

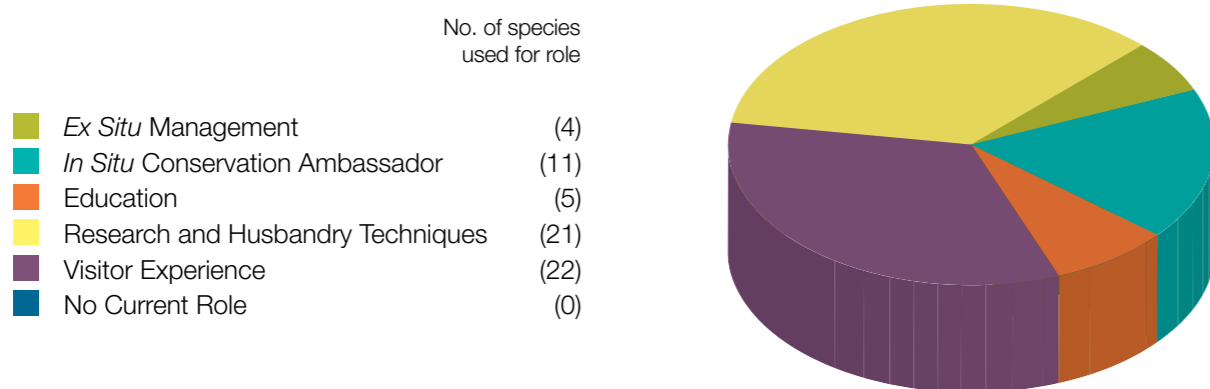


Distribution of roles fulfilled by **reptile species** at Chester Zoo in 2014

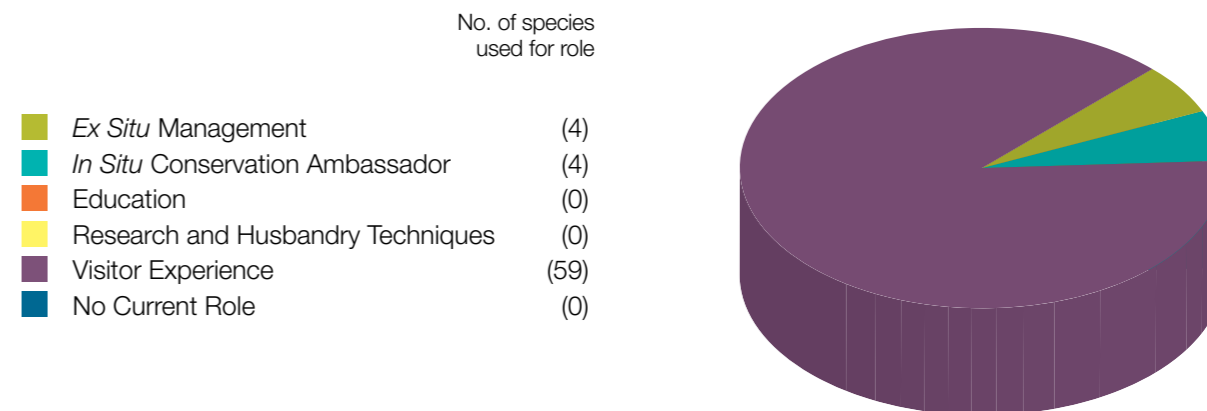


SUMMARY OF ALL ROLES (page 2 of 2)

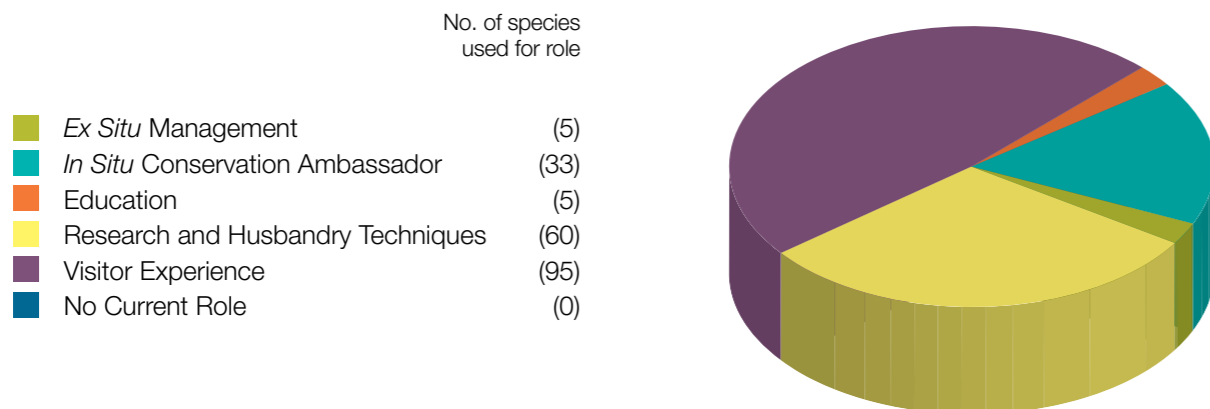
Distribution of roles fulfilled by **amphibian species** at Chester Zoo in 2014



Distribution of roles fulfilled by **invertebrate species** at Chester Zoo in 2014



Distribution of roles fulfilled by **fish species** at Chester Zoo in 2014



Distribution of roles fulfilled by **plant species** at Chester Zoo in 2014

