



2015 ZOO REVIEW

Annual Review of the North of England Zoological Society

www.chesterzoo.org

HIGHLIGHTS OF THE YEAR

Lemurs watching the rare solar eclipse, a whole host of births, innovative conservation projects around the globe and the opening of the UK's largest ever zoo development, *Islands*: some of the photographic moments that defined 2015.



Three tiny tiger triplets Jaya, Topan and Kasarna were born to Sumatran tigress Kirana and dad, Fabi.



Sophie the onager was more than happy to let a group of jackdaws pinch bits of her coat.



Three Ring-tailed lemurs were snapped watching the solar eclipse.



The first of six Humboldt penguin chicks hatched in April.



Prime Minister David Cameron visited the zoo to see how work was progressing on *Islands*.



Walking tall! Sanyu, a rare Rothschild's giraffe, was the first of two calves to be born at the zoo in 2015.



Phase one of the UK's biggest ever zoo development, *Islands*, opened in July.



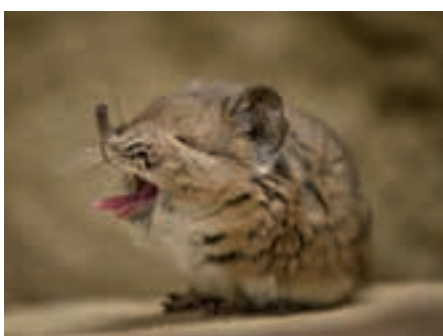
August saw the unveiling of Monsoon Forest – the largest indoor zoo exhibit ever built in the UK.



Four Northern bald ibis chicks which were bred at the zoo were flown to Jerez in southern Spain.



Sun bears made a return to the zoo after a 40-year absence.



Two cheeky sengis made their public debuts in November and hit the headlines.



In December keepers announced the arrival of a rare female Brazilian tapir.

The North of England Zoological Society is the charity that runs Chester Zoo and our conservation campaign, Act for Wildlife.

VISION & MISSION

OUR VISION IS FOR A DIVERSE, THRIVING AND SUSTAINABLE NATURAL WORLD.

OUR MISSION IS TO BE A MAJOR FORCE IN CONSERVING THE LIVING WORLD.

Chairman: Professor Peter Wheeler

A LANDMARK IN OUR HISTORY



Almost five years to the day after the Trustees took the initial decision to proceed with the *Islands* project, our breeding group of Sumatran orangutans moved into their new accommodation. In 2015 the years of careful planning came to fruition as architects' drawings and artists' impressions assumed a physical reality. Although the sheer scale of *Islands* is now apparent, most visitors will remain unaware of the complexity of the engineering and

construction involved, most of which lies intentionally hidden behind, or beneath, the spacious naturalistic enclosures. Many zoos have had grand ideas of the projects they would like to undertake, but that Chester Zoo has been able to actually deliver what is undoubtedly the most ambitious project ever undertaken by a UK zoo is of immense credit to all of the many people involved.

Although 2016 will be the first full year that *Islands* will be open, the indications are that not only will it make an enormous contribution to our conservation and education activities, but it will inspire even more people to visit the zoo.

The renowned conservationist and esteemed friend of Chester Zoo, Dr. Simon Stuart, was the recipient in 2015 of the North of England Zoological Society (NEZS) Gold Medal for outstanding lifetime achievement in natural science, conservation and the environment.

This was in recognition of the vision and leadership he has provided to global species conservation through his work with the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC). The award was presented to him by our President, His Grace the Duke of Westminster, at a ceremony in June 2015.

Sadly, in 2015, we said goodbye to our Vice President and generous donor Baroness Ruth Rendell of Babergh. Ruth had been a loyal supporter and regular visitor to the zoo for over 15 years, always so fond of the elephants. Her dedication and her passion will be very much missed.

The 81st NEZS AGM took place in the Lecture Theatre on 8th September 2015, later than usual due to the opening of *Islands*. At this well attended meeting the 2014 Annual Report and Statutory Accounts were formally approved. Thanks are due to Dr Simon Dowell, Catherine Buckley and Judith Skerritt who retired as elected Trustees at the AGM following many years of service to the Society. William Beale and Sandra Donnelly were both formally elected as incoming members of the Board of Trustees.

This will be my last Chairman's statement as I have now completed my maximum term of office and will be handing over the reins to Bruce Ursell. I would like to thank all the members, Trustees, Executives and other zoo staff, who have made this an extremely enjoyable and exciting six years, and I look forward to seeing the Society and zoo move even further ahead in the years to come.



Trustees of the North of England Zoological Society

NORTH OF ENGLAND ZOOLOGICAL SOCIETY

President: His Grace the Duke of Westminster, KG, CB, CVO, OBE, TD, CD, DL

Vice Presidents: The Rt Hon Lord Wade of Chorlton, kt, JP, The Hon Lady Jane Heber-Percy

The North of England Zoological Society (NEZS) is the charity that runs Chester Zoo and our conservation campaign, Act For Wildlife.

Our Board of Trustees

Our Trustees, as a body of voluntary, charity trustees and as directors for the purposes of company law, have general control and management of the administration of NEZS. 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.

Our Trustees during 2015 (names in bold are pictured): **Malcolm Ardron**, William Beale, **Prof. Malcolm Bennett**, **Catherine Buckley**, Prof. Stefan Buczacki, **Rebecca Burke-Sharples**, **Brian Child**, Sandra Donnelly, Dr. Simon Dowell, Richard Griffiths, **Robert Mee**, **Prof. Russell Newton**, **David Pickering**, **Angela Pinnington**, **Dr. Judith Skerritt**, **Bruce Ursell**, **Simon Venables**, **Tony Williams**, **Prof. Peter Wheeler**.



Zoo entrance and shop



Dr Mark Pilgrim

DIRECTOR GENERAL'S REVIEW

On the foundations of several years of growth and development, 2015 was always planned to be a year of step change, a year in which the North of England Zoological Society, Chester Zoo not only continued to grow and progress but made significant leaps forward in achieving its strategic objectives.

The completion and opening of the *Islands* project, the largest ever zoo development in UK history, has moved us into the very top tier of world class zoos.

2015 however gave us more reasons to celebrate than *Islands* alone; there were some really significant developments in the collections too. Firstly with the appointment of Collections Director, Mike Jordan, who re-joined the zoo after previously being Curator of Higher Vertebrates and then spending eight years working in conservation roles in South Africa. Information about the development of the animal and plant collections can be found throughout this annual review and I have picked out just a few of the highlights. The birth of three Critically Endangered Sumatran tigers was great news for this important European Breeding Programme as well as being perfect timing, as they were at just the right age to move with their parents to the new exhibit in *Islands*, proving to be the stars of the show in the summer.

Populations of giraffe, once common across Africa are dwindling to worryingly small numbers. The Rothschild's giraffe in particular has an estimated wild population of less than 2500 animals. Again as part of a European Breeding Programme, the birth of Sanyu and Kidepo gave a boost to us and the population of this iconic animal.

At the other end of the size scale but another Endangered species bred in 2015 was the Pied tamarin, one of my favourite little primates.

The beautiful Javan green magpie is right on the brink of extinction. It has been collected for the local Asian cage bird trade and is now so rare that it rarely even appears in the local bird markets. We have been working with our field partners at the Cikananga Wildlife Centre, a breeding facility in Java for a few years now where these birds are being bred. As an insurance population we brought six pairs of these birds to Chester during 2015 to initiate a European Breeding Programme. The birds have settled in very well and we are hopeful that they will breed during 2016 giving extra hope of saving this species.

Closer to home we are delighted to be working in partnership with the Vincent Wildlife Trust to bolster populations of the rarely seen Pine marten in mid Wales.

Good zoos need good people and in support of our objective to connect people to wildlife, and to complement our excellent staff, we recruited a passionate group of visitor engagement volunteers to talk to and inspire our visitors about the wonders of the natural world and what actions they can take to secure its future.

Of course none of this work in support of our mission can happen without a robust financial model and 2015 was an extraordinary year in terms of commercial performance. Our Managing Director Jamie Christon explains how our visitor targets were not only achieved but in many cases exceeded.

Chester Zoo remains an extraordinary place with amazing species and incredible people; it is an enormous privilege to be its Director General.



Jamie Christon

MANAGING DIRECTOR'S REVIEW

2015 was a fantastic year for the zoo from start to finish. The year saw 1,694,115 visitors passing through our gates, an 18% improvement on 2014 which in itself had been a record year.

We got off to a great start with strong spring visitor numbers as a result of good spells of weather, the ongoing legacy of the successful BBC series "Our Zoo" and interest around new births.

We were really pleased to see our membership steadily rise ahead of the summer as well as welcoming more standard admission visitors than ever before.

The opening of *Islands* dominated 2015 and despite delays to a very complex project, we opened phase one in July.

Islands meant big changes to the way the zoo operates on a daily basis and a lot of preparation had been made to deal with the interest it generated. Anticipating a very busy summer, we introduced a new pricing calendar which helped spread visitor numbers across the summer weeks rather than peaking around the weekends and bank holidays. Online booking increased from 27% to over 60% and this helped minimise queues and allowed quick entry from our staffed car parks into the zoo.

We recruited 150 volunteers during the year to help deliver better visitor engagement as well as over 300 seasonal staff who helped deliver our catering, retail and guest experience. At peak we were employing over 700 staff.

The opening of phase two of *Islands* later in the summer encouraged strong visitor numbers which ran into the autumn, again providing record attendance.

We achieved our one millionth visitor earlier than ever before on the 15th August and numbers continued to rise especially during the late summer period helped by a few weeks of sunny, warm weather.

For the first time, our marketing campaign stretched across the UK, advertising nationally across television and print media, and across regional radio. We welcomed visitors from further than ever before, as well as within the more local north west catchment areas.

Our December Lantern Magic walk was bigger than ever and we saw nearly 30,000 guests visit after dark to explore the zoo.

Membership continued to increase throughout the second half of the year with 76,358 active members at year end, a huge increase of 32% during the year.

We were delighted to team up with television production company Blast! and Channel 4 to film a new documentary series called "The Secret Life of the Zoo" to air in 2016.

In so many respects, Chester Zoo celebrated its most successful year ever in 2015. The challenge is now to repeat and build on this success in 2016 and onwards.



Chester Zoo's award-winning gardens

AWARDS

The reputation of Chester Zoo as a successful and well-managed visitor attraction and conservation organisation was again recognised by a number of awards in 2015:

- **The Trip Advisor Travellers' Choice Attractions award** rated Chester as the Best Zoo in the UK
- **2015 Trip Advisor Certificate of Excellence Hall of Fame award**
- **In the Leisure and Tourism Business of the Year we were recognised with the UK Heart Safe Award**
- **Gold NHS Cardiac Smart Award including three individual lifesaver awards**
- **The West Cheshire and Chester Active Employer for the Year**
- **The Silver award from the Reserve Forces and Cadets Association Employer recognition Scheme for our support to those in the reserve forces and those looking for work after service**
- **The Marketing Cheshire Award for Tourism Marketing Campaign of the Year, for our *Islands* campaign plus Commendation for Best Large Visitor Attraction of the year**
- **The Retail Greats Awards for Best Museum/Visitor Attraction Gift Shop**
- **Shortlisted at the international IAAPA awards for Best Retail Merchandising**
- **Winner of The High Sheriff's Award for Enterprise**
- **2015 Royal Horticultural Society's (RHS) North West in Bloom Awards, winner of 'Best Large Tourist Attraction of the Year'**

BIAZA (British and Irish Association of Zoos and Aquariums) Awards:

- **Silver Award for Animal Breeding, Care and Welfare, for rearing waterfowl**
- **Silver Award for Conservation, for the Maasai Olympics project**
- **Gold Award for work in partnership with Durrell Wildlife Conservation Trust and ZSL London Zoo for Mountain Chicken project**
- **Silver Award for Education for "From Presenters to Zoo Rangers"**
- **Silver Award for PR, Marketing, Digital & Events for the Chester Zoo smartphone app**
- **Gold Award for Research for the work to understand frogs and their symbiotic bacteria.**

North of England Zoological Society Strategy 2013-2018

A NATURAL VISION

Throughout 2015, our Trustee-approved strategy 'A Natural Vision' informed and guided our teams 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.



Gashaka Biodiversity Conservation Project in Nigeria

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.

Strategic objective

2

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



Our immersive butterfly exhibit

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.

Strategic objective

3

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



A young orangutan

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.

Strategic objective

4

To ensure long term commercial viability through excellent business practices.



Products on sale at the zoo's shop

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.

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.



Our staff getting involved with the Go Orange campaign

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.

Strategic objective

6

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



Chester Zoo winning a Marketing Cheshire award

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.



Islands - Coral Sands

DEVELOPING THE ZOO IN 2015

Islands

In July 2015 we opened *Islands*. This amazing recreation of six South East Asian islands took over two years to complete and, at £40.6m, was the largest project ever undertaken by Chester Zoo.

Islands became a truly unique project in both size, scope and design and pulled on resource from a number of specialist contractors as well as many Chester Zoo staff.

During the summer of 2015 *Islands* opened in planned phases as species settled into their new habitat and final touches were made to enclosures and back of house areas.

Over the last 6 months of 2015, and into early 2016, additional species were added including the Sumatran orangutans.

Further development is being planned for *Islands* in 2016 allowing additional enclosure space to be created for more of our current collection to be relocated to new, state of the art enclosures which further represent the natural environment of South East Asia.

There has been a great amount of customer feedback about *Islands* and we have collated this information to allow us to continue to further enhance the visitor experience as they journey through the expedition.

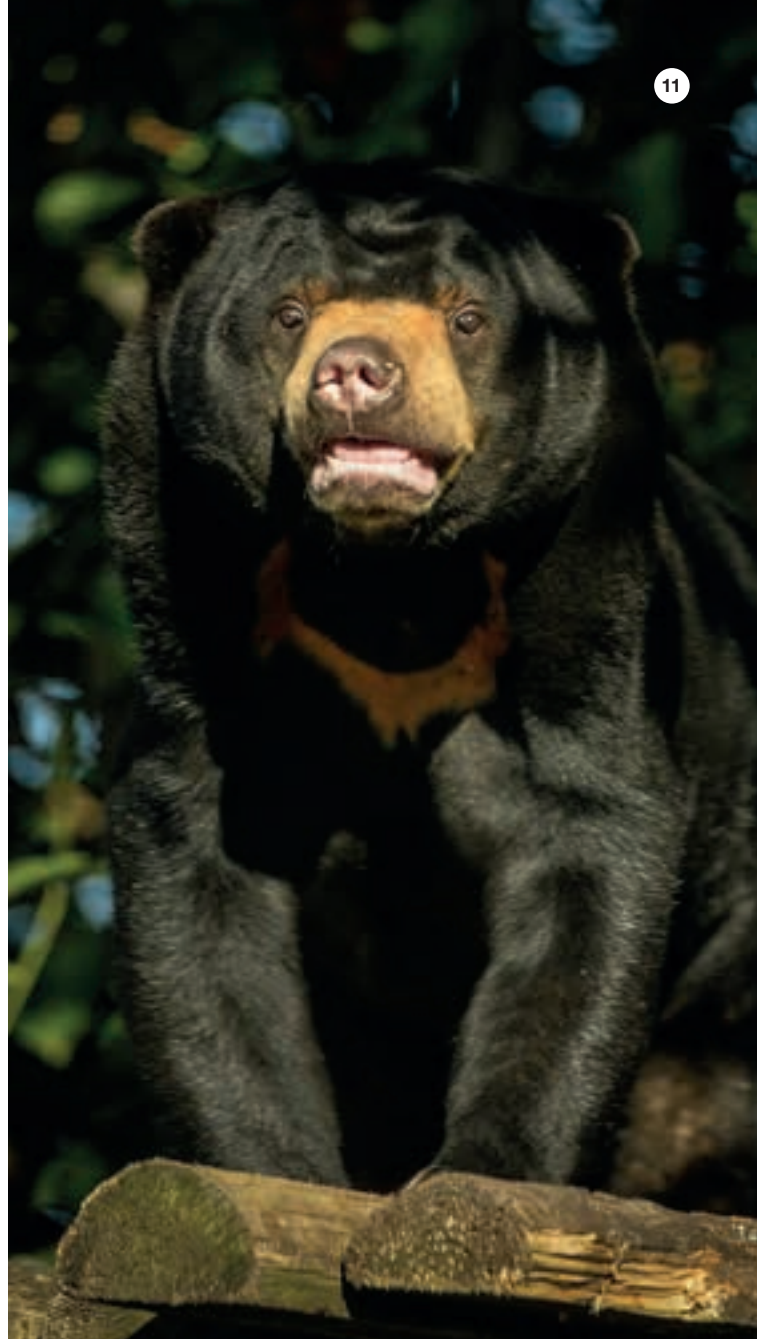
Developing other parts of the zoo

Whilst the zoo team focused primarily on the delivery of *Islands* during 2015, there was a great deal of additional enhancement work undertaken to other parts of the zoo. These included re-roofing the popular *Tsavo Black rhino house* with an impressive new thatch, and re netting the *Tsavo aviary*. We also dredged and installed aerators into the ponds around the flamingo exhibit to improve the water quality. To enhance the visitor experience we reinvested in customer toilets, catering kiosks and also prepared for major refurbishment of Bembe restaurant at the zoo entrance as well as further extending accommodation for the membership team.

Preparing enclosures vacated by species which relocated to *Islands* was also an important project during 2015. An example of "backfilling" emptied exhibits included the successful introduction of a pair of Sun bears to the habitat which had formerly housed the family of Sumatran tigers. The bears have become very popular and visitors are enjoying viewing them from the newly named Sun bear platform.



Cassowary



Sun bear



Islands – bird's eye view



Bali Starling temple

Strategic Development Plan

With the huge investment of resources in *Islands*, development of the zoo's strategic development plan was put on hold for much of 2015. In the final quarter of the year we began in earnest to evaluate and develop the elements that will inform the next stages of the zoo's physical development with the intention of seeking the Trustees' approval of the scheme in the first half of 2016.

The key principle of the strategic development plan is to create large themed zones, similar in nature to *Islands*, based on either geographical groupings or habitat type, for example rainforest or savannah. This will be in conjunction with major investment in the zoo's infrastructure as well as development opportunities for the zoo owned land outside the existing core zoo to ensure we maintain and future proof.





Monsoon Forest



Tiger enclosure



Sunda Gharial



Environment

In May 2015 we attained reaccreditation to the Green Tourism Business Scheme, achieving the gold level award. In June we completed the installation of an array of photo voltaic panels to the roof of Cedar House, our administration building. These will generate around 63,000 kW hours of electricity each year which will meet up to 70% of the electricity demand at Cedar House during the summer period. The green energy will cut our carbon emissions by 16,000 kg a year and provide opportunities to engage our visitors on energy use and climate change.

These initiatives, delivered within the framework of our environmental management system ISO14001 will help achieve the financial sustainability we are looking for from our investments.



SCIENCE

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.

Scientific activity occurs across the zoo and beyond and involves our highly skilled and experienced staff in many divisions. Research projects involving the living collection are primarily identified by our curators and animal and plant teams. Projects which are not completed by zoo staff are offered to professional researchers or postgraduate students who collaborate with or are supervised by a member of zoo staff. Our in-zoo experts also act as specialist supervisors on multi-zoo projects or projects which take place in the field. Chester Zoo is currently supporting 12 PhD students from 9 different universities. In 2015 Chester Zoo staff were actively involved in 45 research projects, the majority of which we had commissioned to directly help us with evidence based decision making, a small sample of these are highlighted below.

Biodiversity Surveys and Ecological Monitoring

In an ongoing collaboration with researchers from Manchester Metropolitan University, different population monitoring methods for the Hazel dormouse were compared to determine the most accurate technique. This species is relatively rare locally and estimating populations can be challenging. This study developed a new population model that incorporated dormouse nest counts and offspring counts, which are collected as standard as part of dormouse nest box monitoring. This new model was a significant improvement and is now recommended to others working on the ecology and conservation of the hazel dormouse.

Conservation Breeding and Management

Zoo populations play an important role in conservation, particularly for amphibian reintroductions, however these individuals need to be able to adapt to wild conditions once released. The fitness of a zoo population of Golden mantella, a Critically Endangered frog, was evaluated as part of a multi-disciplinary PhD with the University of Salford. Results showed that captive individuals had different skin colouration and did not perform tonic immobility when compared to their wild counterparts, which may make them more susceptible to predation. Investigating fitness can improve zoo population breeding and help informed decisions regarding reintroductions.

Human-Wildlife Conflict

Human-elephant conflict involves crop raiding, destroyed homes, and injuries and deaths of both people and elephants. As part of our Assam Haathi Project in India, which mitigates this conflict across six districts of northeast India, we are currently revisiting a decade of monitoring data to determine optimal cost-benefit strategies for managing conflicts, with a view to modelling future outcomes for elephant conservation.

Livelihoods and Sustainable Developments

Nearly half of Nepal's population lives in poverty and many communities are directly dependent on natural resources around national parks. Successful anti-poaching campaigns have led to an increase in tiger numbers, which has resulted in human-wildlife conflict. Marginalised poor communities are now struggling to live alongside this threatened yet dangerous predator. We are conducting qualitative social research



Collecting behavioural data



Dormice monitoring



Golden mantella

to understand the options for these communities to pursue alternative livelihoods that may improve their economic and personal safety. In addition, our joint doctoral student with the University of Oxford is studying the effects of such interventions on the population ecology of tigers and leopards in the region.

Visitor and Community Engagement

In collaboration with WAZA (World Association of Zoos and Aquariums) and the University of Warwick we continued to provide support for a 3-year study assessing the educational impact of zoos and aquariums on biodiversity literacy in visitors. This year a second global survey of zoo visitors was conducted. Nearly 5,000 visitors to 20 zoos from 14 countries participated and we again found significant increases in biodiversity understanding and the knowledge of actions to help protect biodiversity between pre- and post-visit. We also found significantly higher biodiversity understanding in those visitors that reported viewing education materials from the global biodiversity literacy campaign – ‘Biodiversity is Us’.

Wildlife Health and Wellbeing

Islands presented us with a unique research opportunity. As the majority of the animal species housed in *Islands* had been housed in existing enclosures at Chester Zoo we could assess animal behaviour and wellbeing both pre- and post-*Islands*, within the same individuals. Similarly, by assessing key visitor-related variables such as visitor viewing behaviour, perceptions, attitudes and social conversations we would also be able to assess the impact *Islands* has on visitors. This large-scale, cross-disciplinary work has involved over a dozen students collecting data since May 2014. Post-*Islands* data will continue to be

collected into 2017 to enable a full assessment of how the animals have settled into their new homes. Conclusions will be used to guide future developments.

Supporting Scientific Research

In addition to actively undertaking research projects we support a wide range of scientific activities. The Richard Hughes Scholarship (awarded to projects with a focus on elephant management, welfare or conservation) was awarded to a project researching reproductive success and adrenal physiology in wild African elephants and Black rhinoceros. In total in 2015 Chester Zoo supported over 150 research projects in partnership with over 80 organisations, and we approved 17 biological sample requests, provided 17 training opportunities for undergraduate students and offered 10 studentship grants for conservation related research.

Our strength in science also relies on disseminating our findings both nationally and internationally with peers and the wider public. This year we contributed to over 60 publications, abstracts and reports, we delivered over 170 presentations, seminars and training sessions and peer reviewed over 80 manuscripts and abstracts. We were awarded a Gold Research Award at the 2015 BIAZA Annual Awards for a doctoral study understanding the interactions of frogs and their symbiotic bacteria to improve *ex-situ* husbandry and develop the use of probiotic treatments against chytridiomycosis disease. In 2015 we increased our engagement with members of the public by attending science festivals for the first time. We also launched our Science Twitter account (@ScienceatCZ) to actively engage with members of the scientific community and interested members of the public. Further details of our activities can be found in our annual Science Review (www.chesterzoo.org/conservation-and-research/resources).



Asian elephants at Chester Zoo

CHESTER ZOO CONSERVATION SCHOLARS 2015

We are pleased to be currently supporting 12 PhD students from nine different institutions

Influences of competitive behaviour in cooperatively breeding mammals, Rhiannon Bolton, University of Liverpool

'My project aims to investigate the underlying mechanisms that balance contented and aggressive behaviours in mammals which rear their young together in shared nests. Such animals, for example African painted dogs, are endangered in the wild, therefore gaining greater understanding of how their bodies function should help to improve the conservation of these species.'

Environmental sound impact on zoo mammals, Marina Bonde de Queiroz, Salford University

'My research is about the impact of sound pollution on zoo mammal behaviour and welfare. I will focus specifically on the noise produced by the zoo visitors, how it can affect the animals, and how it can influence the public's experience at the zoo.'

Social welfare of captive Asian elephants, Rutendo Wazara, University of Liverpool

'My PhD will be about measuring the strength of social bonds of captive elephants. My aim is to find a way for zoo keepers to monitor the social development of elephants simply and effectively and to test if social relationships are linked to other measures of zoo elephant welfare.'

Fencing African elephants in Kenya: landscape and welfare impacts, Jacqui Morrison, Manchester Metropolitan University

'My research is looking at what the effects are of building a fence around a national park in Kenya. I will be measuring levels of stress in elephants and looking at their group structures whilst also assessing the impact on the habitat including the types of vegetation present and any possible damage.'

Orchid-Mycorrhizal fungi interactions; improving propagation methods for chlorophyllous and mycoheterotrophic orchids, Oliver Hughes, University of Manchester

'My research looks at interactions between orchids and fungi. For the majority of their lives most orchids are reliant on interactions with fungi,

to share nutrients and gain protection from diseases. Orchid seeds rely on being infected by fungi to germinate and grow. I am studying this relationship to better understand the biology of these plants and help their conservation.'

Impact of ex-situ husbandry: comparisons between in situ and ex situ species, Luiza Passos, University of Salford

'My project is trying to evaluate the effects of the captive environment on the behaviour of reptiles and amphibians in order to understand if, in the case of a reintroduction, captive animals would have the right skill for survival back in the wild.'

Population status and conservation of the critically endangered Bermuda skink Plestiodon longirostris, Heléna Turner, University of Kent

'I am researching the population and conservation of a critically endangered lizard, the Bermuda skink. As they have many threats, I want to know how many currently remain in the wild and determine whether there have been any significant changes in the health of the population to help with their future recovery.'

Assessing practical interventions for reducing human-large felid conflict in Nepal, Susana Rostro, University of Oxford

'I'm identifying the factors that influence human-felid conflict in Nepal, and determining the effectiveness of interventions carried out by Chester Zoo to reduce conflict. This will help to: 1) evaluate if interventions are culturally-relevant, situation-specific, and successful; 2) determine if tigers and leopards are affected; 3) understand the relationship between ecology and conflict.'

Factors influencing management and conservation of wild Asian elephants in Peninsular Malaysia, Ee Phin Wong, University of Nottingham Malaysia Campus

'Human-elephant conflict usually involves elephants raiding crops, which causes economical loss to plantation owners and smallholders in Peninsular Malaysia. One mitigation measure is translocating these elephants to larger forest areas. My PhD is investigating the effect of translocation on the health of the animals and how they adapt to their new environment using non-invasive wildlife endocrinology techniques.'

Defining in-situ characteristics to determine best practice for ex situ husbandry for Harlequin mantella, Jade Newton-Youens, University of Manchester

UK Pine marten recovery programme: Impact of translocation strategies, David Bavin, University of Exeter and Vincent Wildlife Trust

Dynamics and conservation of a population of the Harlequin mantella at Fohisokina, Madagascar, Christian Radrianantoandro, Antananarivo University



Sumba School

Fundraising through Chester Zoo and Act for Wildlife

THANK YOU FOR YOUR SUPPORT

What an amazing year we have had, and so we begin with a huge thank you to all our supporters, donors, volunteers and friends for their continuing help without which we simply would not be able to achieve everything we want to.

With the opening of *Islands* in 2015 we are hugely grateful to the Wolfson Foundation for their support of the Sumba School in *Islands* (pictured above). We are delighted that the room is now up and running. It's a resource that is providing school groups and visitors with not only a place for interactive education sessions, but also a chance to step into the forests of South East Asia thanks to the specialist 360 degree films shown within.

Grant-giving trusts and foundations have continued to support a range of projects this year including the Safari Ranger schools outreach project and a PhD on orchid research. New, funded, activities included The Green Gold Conspiracy theatre production and an artist in residence, both projects raising the profile of our work in the area of promoting sustainable palm oil. Other funding from Foundations has allowed an update of The Ronald and Kathleen Pryor Bird Hide and the installation of bike lockers. Education at the zoo has been enhanced with the addition of two new projects including a "wild winter" experience for younger children and activity packs for use in the nature reserve.

In 2015, after four years, the Heritage Lottery funded Biodiversity Trainees project ended with a celebration event attended by special guest, broadcaster Iolo Williams. We want to say a special thanks to our funders, without whom this project certainly would not have happened. 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, a great legacy for the project.

Support from the corporate sector has grown with a range of new partnerships including Sykes Cottages, Cullimore Dutton, Hillyer McKeown, M&S Bank and Medicash. Long term support from Airbus and Urenco 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.

Funding for our conservation projects via the Act for Wildlife campaign has continued to grow during 2015 including receiving a significant donation from a private donor towards our China project. More people than ever took up the challenge to fundraise. You cycled, ran, baked and got muddy all to help wildlife across the world. And if that wasn't enough, when we asked you to do more you did, raising over £1,000 in 24 hours for an emergency appeal to help endangered turtles.

This year the society has benefited from a number of legacies and we would like to take this opportunity to say thank you for thinking of us in this way.

Finally a really big thank you goes out to our committed volunteers who help with fundraising and support the wider zoo team.

To all our supporters and friends we thank you for your support and look forward to working with you again in the future.



Biodiversity Trainees

THANK YOU to everyone who has supported us during 2015 including the following major donors:

Airbus	Philip Barker Charity
AT 3D-SQUARED	Ronald S Williams (legacy)
Carole L Brown	SeaWorld & Busch Gardens Conservation Fund
ClubAZ	Sheila Hartley (legacy)
Cullimore Dutton Solicitors	Stuart E R Bailey (legacy)
Freda B Warburton (legacy)	The Ampelos Trust
Halliwell Jones Chester	The Dwek Family Charitable Trust
Harold Reid (legacy)	The Ernest Cook Trust
Heritage Lottery Fund	The Finnis Scott Foundation
Hillyer McKeown LLP Solicitors	The Granada Foundation
itravelSMART	The Peter Foden Family Charitable Trust
Maureen S Tudor (legacy)	The Ronald and Kathleen Pryor Charity
MBNA and Bank of America	The Wolfson Foundation
Merrill Lynch	URENCO UK Ltd
Medicash	
M&S Bank	
Mrs T A Briggs Deceased	
Will Trust	



itravelSMART





Health check for a Sumatran tiger cub

ANIMAL HEALTH, WELLBEING AND HUSBANDRY

In 2015 we strengthened the veterinary department's capacity by employing another full time veterinary officer and one administration assistant. We also made preparations to increase capacity further by creating a residency in zoo health management in 2016.

We were delighted that the first ever, fully funded, three month zoo veterinary internships took place this year at Chester Zoo. Two Indonesian veterinarians were selected for this with the overall aim of increasing *in-situ* veterinary capacity for conservation programmes.

Away from the zoo we continued our contribution to the South East Asia programme through support to OVAG and a new programme of health support to Cikananga passerine breeding centre. Locally, we continued the Tuberculosis badger vaccination programme.

The team made a variety of contributions to the research and science activities of the zoo, covering areas ranging from effects of darting primates in the wild, to chytrid treatment of wild populations of Mountain chicken frogs, to advances in the treatment of Spectacled bear alopecia, and development and evaluation of alternative methods for blood sampling for EEHV (elephant endotheliotropic herpes virus) diagnosis.



Conservation overview

Mauritius cuckoo shrike
nestlings

A BLENDED APPROACH

The world continues to change, and in response so has the role of zoos. Climate change, growing human populations and associated increasing pressures on land and natural resources are having an escalating impact on the world's biodiversity.

Natural habitats continue to be lost or degraded, and the number of species threatened with extinction grows. The wild is getting smaller and more fragile, and the role of zoos as conservation organisations is more important now than ever.

Zoos are an important part of a wider global conservation community and it is our duty to identify where we can have the most impact, to best utilise our unique suite of skills and opportunities, to save species from extinction.

We provide the very best husbandry and welfare for some of world's rarest creatures, underpinned by sound science benefitting conservation both in the zoo and wild; and we have an extensive network of academic, government, zoo and conservation partners that allows us to have conservation impact spanning from Chester Zoo to global biodiversity hotspots across the globe.

The actions needed to save a species are rarely simple and a holistic approach is needed. This report has multiple examples of research we support in the field, in the zoo, and most importantly where the two strands run parallel to complement each other.

People are of course the key component of the conservation puzzle and we have teams dedicated to engaging and enthusing, to getting people to care and more importantly to take action. These skills are not only applicable to our visitors but also for governments or policy makers or for communities on the front line, living side by side with wildlife – we are uniquely placed to engage and connect with all of these audiences.

We manage populations of threatened species in the zoo, and increasingly wild populations also require degrees of management. We have keepers with years of specialist experience and our work in Mauritius is a great example of how these skills are applied in the zoo and field; managing zoo populations as an extension of the wild ones.

The strongest example this year of our integrated approach to conservation is our work in Indonesia – our commitment to conservation in this region exemplified by *Islands* and our complementary activities in the wild.

The following pages showcase our conservation activities in 2015, demonstrating how zoo and field based approaches have worked

hand in hand to tackle conservation challenges – a blended, one plan, approach that optimises the skills and resources that zoos have to offer the conservation community. It is also an approach, which despite continued global challenges to wildlife, is having an impact.

PALM OIL

September 2015 saw the launch of our Sustainable Palm Oil Challenge campaign; a way of celebrating the companies who are already committed to 100% Roundtable on Sustainable Palm Oil (RSPO) certified sustainable palm oil, supporting those that want to be sustainable and making it easier for people to choose sustainable palm oil products. We ran various activities and projects to reach different target audiences:

- We launched a crowd-sourced 'shopping list' gallery of products which contain RSPO sustainable palm oil.
- Alongside Coney, a theatre production company, we reached new audiences with the palm oil message through experimental theatre.
- Research took place on restaurants in Chester, investigating their commitments to ethical purchasing and knowledge of sustainable palm oil. Following this research, which surveyed over 80 restaurants in Cheshire, a restaurant toolkit was produced.
- The Palm Oil Challenge in the zoo saw the installation of artwork outside Realm of the Red Ape created as a collaboration between our artist in residence, Angela Sidwell, and local school children and zoo visitors.

In other work, we are working closely with BIAZA (British and Irish Association of Zoos and Aquariums) and other international zoos on procurement and public awareness to increase the demand for sustainable palm oil. In particular this year a highlight was the co-organisation of the BIAZA Palm Oil Action Conference, where over 40 BIAZA members attended, increasing knowledge on sustainable palm oil, activities in the field and actions which BIAZA members can take – from procurement and auditing to communication with the public. The conference was a huge success and further developments will be taken forward this year. Our Annual Conservation Symposium was held in October, focussed on 'Labelling Sustainability', with particular emphasis on MSC, FSC and RSPO certification schemes.



Conserving species of

LATIN AMERICA

Ecuador Amazon parrot

Chester Zoo holds a National Plant Collection comprising over 1,500 species of Latin American orchids. During the year, 25 additional species were added to the collection, and a further 20 new plants propagated by the division to build up existing species in the collection.

A PhD student has been carrying out research on pollination of Pleurothallid orchids, plus root sampling from various species to screen for a suitable mycorrhizal fungi. The premise of this research is that if *ex-situ* propagation of orchids can be improved, this will help to reduce pressures on collecting specimens from the wild.

The IUCN recently completed a Global Species Assessment of Cactus, and found that this taxon is much more threatened than previously thought. The zoo holds three National Collections and over 250 species of South American cactus, of which 84 are now thought to be threatened in the wild.

Work is on-going in the zoo to grow different cactus species from seed. Experimental work has also been carried out around grafting as a potential propagation technique which could be used in the future, where species are rare or difficult to grow from seed.

The jaguar, the largest cat of the Americas, survives in patches of habitat across 18 countries of Central and South America, but its numbers are continuing to decline.

Around 65% of its range is outside of wildlife reserves and protected areas, and it is here that jaguars roam onto farming and ranching lands, and prey on cattle and other livestock.

This leads to retaliatory killing of many cats, which can decimate their populations faster than habitat loss. It also seriously affects the incomes and welfare of the people of who we ask support for wider environmental protection goals.

In our recently completed global study on human-jaguar conflict led by our conservation scientists in collaboration with Oxford University and a large team of jaguar experts, we studied patterns and priorities for jaguar conservation.

Studying over 100 human-jaguar conflicts across Latin America, including 17 case studies in-depth, we found that a huge variety of types of communities and socio-economic contexts exist. Although there are ecological and agronomic patterns in these scenarios, there is nothing that consistently predicts why some farmers tolerate jaguars and others kill them.

From this we determined that in order to resolve human-jaguar conflict, we need to not only protect wild prey and work with farmers and ranchers to improve livestock husbandry practices, but also perhaps most importantly understand the cultures and social norms of the farming communities that live near jaguar habitats and find ways to encourage them to benefit from, value, and protect jaguars.

To this end, we are currently developing a new field conservation project on jaguars with partners in Brazil and elsewhere, which will act as a model for ensuring the safe coexistence of jaguars and people across different kinds of landscapes.

This year we continued our support for the Lowland Tapir Conservation Initiative. We've supported their ongoing research in the Brazilian Pantanal for many years. The team expanded their work to a new site; the Cerrado. This new component of the project aims to assess the threats facing tapirs and develop effective conservation strategies to minimise them.

We also continued our support for Ecuador Amazon parrot research. As well as funding on-going monitoring and protection, our Director General and his Technical Assistant travelled to Ecuador and Peru to continue to map the range of the species as part of an on-going study.

Our support to projects on Spider monkeys, Giant armadillos and Grey-breasted parakeets also continued this year.

Within the zoo we said goodbye to Franka, the 18 year old female Spectacled bear, a sad loss for our keepers and visitors.

Conserving species of AFRICA

Gashaka Gumti National Park

This year we supported a new field project on endangered Rothschild's giraffes in Uganda. As well as providing financial support, our Africa Programme Manager and Giraffe Team Manager travelled to Uganda to assist with initial population surveys in Kidepo Valley National Park. In the zoo there were two Rothschild giraffes born in 2015; Sanyu was born on the 7th June to mum Dagmar and Kidepo was born on the 23rd July to mum Orla, both sired by Meru. One sad loss this year was that of Aoife the Rothschild giraffe on the 23rd June 2015, who had to be euthanised due to an ongoing back problem. Aoife had been at the zoo since July 2008 and still had two offspring here; Tula who was born at the zoo in 2010, and Zahra who was born just last year in December.

The 31st January 2015 saw the birth of the female Critically Endangered Eastern black rhinoceros, Fara. Sadly, Fara passed away on the 3rd March due to heart failure. The killing of rhinos for their horn continues to escalate and to be the major threat to rhino worldwide. We continued to focus field support for the Eastern black rhino in Kenya and Tanzania.

At the Chyulu Hills National Park, Kenya, we continued our funding for Biglife Foundation rangers who provide 24/7 monitoring and protection for the small but important rhino population. Work continues towards an Intensive Protection Zone, which would provide increased security to the rhino plus huge benefits to the ecosystem and wider wildlife. This year saw significant increases in rangers, training and infrastructure, including funding from Chester Zoo to boost intelligence gathering capacity. Despite huge dedication and investment sadly a rhino was lost. Bahati, a calf orphaned by poachers last year and who survived against the odds despite suffering a gunshot wound, died this year after being caught in a snare.

At Mkomazi National Park, Tanzania we continue to support the George Adamson Wildlife Preservation Trust (GAWPT) to protect the rhinos that have been translocated to the Mkomazi rhino reserve. This requires ongoing support for infrastructure personnel and maintenance, which also includes our funding of the highly effective tracker and attack dogs. We have also worked closely with GAWPT to develop a Rafiki wa Faru – an education programme that engages local communities with the wildlife in the park, and we continued funding for education officer salaries.

Elsewhere we also continued our support for the Association of Private Land Rhino Sanctuaries (APLRS) in the Laikipia District, where the majority of Kenya's Black rhino are found. These sanctuaries are essential stakeholders in Kenya's national action plan for the conservation of Black rhino.

In collaboration with Manchester Metropolitan University we also continued to fund PhD research into the Factors Underlying the High Variance in Black Rhinoceros Reproductive Output with academic input from Chester Zoo staff conducting their MSc projects.

2015 was a challenging year for the Gashaka Biodiversity Project (GBP) due to the change of Nigeria's federal government following general elections in March. Nonetheless significant progress was made in the development of our flagship Africa Programme. In January our Africa Programme Coordinator made his first visit to the Gashaka-Gumti National Park (GGNP) with our Head of Field Programmes, getting familiar with the project, spending time in the park and liaising with the Nigerian Park service. January also saw a change of GGNP management with outgoing park director Dr. George Okeyoyin taking a senior position at the Nigerian Park Service (NPS) headquarters in Abuja. The incoming director Cornelius Oladipo MSc. brings with him

a wealth of experience including several years' experience as a former park ranger in GGNP.

We also shared the loss of Heidi the Western chimpanzee, who was born at the zoo in 1972. Heidi was euthanised on the 19th March 2015 due to ongoing health issues.

In March we hosted the 1st Gashaka Biodiversity Symposium. This exciting event gathered over 50 conservationists and researchers working in central Africa including speakers from IUCN, The Wildlife Conservation Society, University College London as well as the zoo. Dr. Umar Buba, GBP project manager also visited the UK for this event, delivering a talk on his research on chimpanzees at the GGNP. He also visited Everton F.C. to discuss next steps for the GBP ecosystem health project, sponsored by the Everton in the Community Initiative (EitC). June saw a second visit to Nigeria for zoo staff, initiating a pilot camera trap study for elusive Golden cat and Forest leopard as well as witnessing the second phase of the EitC supported ecosystem health project. This activity targeted a number of key villages, delivering conservation and health messages and providing diagnosis, treatment and preventative measures for a number of common tropical diseases (such as Malaria and Typhoid). In total 992 people attended the sessions, 666 were treated and 500 mosquito nets distributed. Our collaboration with the Taraba State University, Jalingo continued, with six undergraduate students from the Taraba State University, Jalingo visiting Kwano in July and four MSc level Nigerian students receiving student support bursaries.

Throughout the year the zoo's "Discovery and Learning" department continued the development of interpretation for the new GGNP education centre, (constructed in 2014) and a number of improved management and operating procedures were implemented in-country. November saw our long-term collaborator and initiator of the original "Gashaka Primate Project" Professor Volker Sommer, University College London, hand over scientific direction of GBP activities to the zoo and the legal registration of Chester Zoo as an International NGO in Nigeria entered its final stages. Also in November Dr. Umar and Cornelius Oladipo visited the zoo, furthering our long-term partnership with the NPS and discussing new strategies and activities for the GBP in 2016. These will include the intensification of protection activities, the first complete census of chimpanzees in GGNP and the first attempt to assess the status of large mammals and threats since the late 1990s. 2016 promises to be an exciting year in the development of the GBP!

We continued support for okapi conservation; sending Kheri the male Okapi to White Oak Conservation Center in Florida to join the SSP whilst continuing our support in the Democratic Republic of Congo.

Another significant export this year was that of Winston the male Mandrill to Disney's Animal Kingdom in Florida which went smoothly, having taken over 12 months to plan and carry out.

Six Slender tailed meerkats were born at the zoo in 2015; four in June and two more in August.

We also started supporting a PhD looking into the effects of fencing a reserve in Kenya on elephant populations. The PhD aims to determine the effect on population size and physiology of the elephants as well as the impact their confinement has on the forest habitat and vegetation structure. This is in addition to continuing Mountain bongo research in Kenya and on-going support for a project reducing the threat of disease to African painted dogs through vaccination of domestic dogs in Zimbabwe.



Conserving species of

MASCARENES & MADAGASCAR

Mauritius Olive white-eye

Collaborative conservation in the Mascarenes has a proven track record of success, saving many endemic Mauritian species from extinction.

Our long standing relationship with the Mauritius Wildlife Foundation (MWF) and other partners continued in 2015. Our Director of Collections and Head of Field Programmes visited Mauritius discussing exciting opportunities to further utilise the unique skills and opportunities we have to support integrated conservation action for Mauritian species.

The major focal area for our technical support over the last few years has been for passerine conservation. We continued to fund the Mauritius Fody and Olive white-eye projects - including on-going management of the populations successfully established on the off shore island of Ile aux Aigrettes. We also supported PhD research on rat control and the outcomes of this research are currently being applied to management in the field, with particular relevance to the wild Olive white-eye populations in Combo where continued habitat loss and the impact of rats are of major concern.

Another developing passerine project is for the Mauritius cuckoo shrike, and two of our bird keepers provided hand rearing and nest mapping and monitoring skills.


We continue to give financial support for the Pink pigeon and Echo parakeet – examples of species brought back from the brink of extinction, but which do still require on-going management and research. A new phase of the Echo parakeet work included

translocations to establish a new sub population in the SE of Mauritius. To support this programme a new male Mauritius pink pigeon was imported from Dallas Zoo, USA, to Chester as part of the EEP conservation-breeding programme for this highly threatened species. Pigeons bred at Chester will soon be moved back to Mauritius to provide important genetic diversity for the reintroduction programme on Mauritius.

Another new species added to the collection this year was the Madagascan Lesser-hedgehog tenrec, brought in from a private collection on the 10th December, which has become part of the Fruit Bat Forest exhibit.

The endemic plants of Mauritius are also under incredible threat and their importance is globally recognised. Work continued to build up the gene banks of these threatened plants and to propagate for on-going replanting projects. This includes replanting on Ile aux Aigrette, which through intensive management now has strong populations of both native plants and animals. Here Learning with Nature, develop by MWF in conjunction with Chester Zoo, goes from strength to strength and is booked to capacity.

We continue to coordinate the conservation breeding programme for the Rodrigues fruit bat and on Rodrigues Island we again funded the annual Rodrigues fruit bat surveys and the restoration of Grande Montagne Nature Reserve, a critically important habitat for range of endemic species. To date almost 80% of this once highly degraded habitat has been restored.



Cabot's tragopan

Conserving species of SOUTH ASIA

Significant births this year included three Endangered Persian onager foals born within a few weeks of each other. Another significant birth this year was that of Nandita Hi Way, the female Endangered Asian elephant calf, born at the zoo on the 20th August to experienced mum Thi Hi Way. Nandita is the first calf born at the zoo sired by bull Aung Bo. However, sad losses this year were that of Bala and Hari Hi Way on the 15th September and the 27th October respectively. Both calves tested positive for elephant endotheliotropic herpesvirus (EEHV), a very fast-moving virus which affects both wild and captive elephants between the ages of two and five years old. There is currently no vaccine against EEHV, although the zoo is committed to ongoing research into this.

The Himalayan foothills of Assam in north east India provide one of the most important remaining areas of habitat for the 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, Chester Zoo has been working with Ecosystems-India to address this conflict across the state, providing safety for people and reducing retaliations against elephants. In 2015 we continued our work to control crop-raiding and property damage by elephants, which we achieve through a combination of barrier and deterrent methods. The Assam Haathi Project also works extensively with women's groups to develop alternative sustainable livelihoods, in particular small livestock, weaving, tailoring, beekeeping, fisheries and other microenterprises.

An expedition of 12 Chester Zoo staff with a variety of expertise travelled to Assam in early 2015 (see page 27 for more details about the expedition).

Notable breeding successes in the zoo include the rearing of 25 Critically Endangered Baer's Pochard and Vulnerable Cabot's tragopan were bred for the first time at the zoo during 2015. We also continued coordination of the collaborative support for the Critically Endangered Blue crowned laughing thrush. A total of 321 birds were counted in the wild during the breeding season, and survey results included disturbance at one site due to construction and the discovery of two new breeding sites. These new sites may represent the movement of birds from other known sites and future research will aim to investigate this further. A new Memorandum of Agreement was signed with Forestry Bureau of Wuyan County, Jiangxi for continued monitoring and protection of these threatened birds.

In China, our largest project is the Sichuan Forest Biodiversity Project, which has been running since 2002, protecting and conserving forest biodiversity in the Liang Shan region of Sichuan.

A fifth reserve, Qin Cai Ping, was added to the network of other reserves we support, extending protection to a vital corridor of broadleaf forest along the ridge linking Laojunshan nature reserve in the east of the region with larger forests further west. Giant pandas have dispersed from their strongholds eastwards along the forested ridge to Laojunshan, so we know how important this dispersal corridor is to endangered wildlife.

Continuous monitoring of Gamebird populations at three of the reserves over the last 7-9 years is revealing an underlying increase in populations of key species, including the Sichuan Hill-partridge, providing evidence that this careful management to reduce disturbance is paying off. In 2015 a new Memorandum of Understanding was signed directly with the five Nature Reserves that collectively form this project to secure the continuation of this work for another two years. Working closely with this project we also continued to fund the education activities of the Chengdu Research Base of Giant Panda Breeding.

Over the past 20 years the human population in Nepal's Terai lowlands has increased by as much as 81%, making the area the most densely populated region of Nepal and significantly increasing consumption of forest resources. Simultaneously, effective conservation actions, including the establishment of community-managed buffer zones and a successful anti-poaching initiative, have resulted in increasing tiger populations. As a result, human-tiger conflict (tiger attacks on people and livestock) have also increased, particularly in buffer zone areas around Chitwan National Park and Bardia National Park.

In 2015 Chester Zoo together with its new Nepalese NGO partner Green Governance Nepal, created the new Living with Tigers project, in order to address this urgent human-tiger conflict situation.

We selected the precise field sites and the communities with which we will be working in Chitwan and Bardia, using a structured approach considering community characteristics, needs, agency and perceptions, and designed in full our baseline monitoring and evaluation and social research plans. The project will target in particular those households with a high dependence on forest resources for subsistence or income; those that have large livestock; and people involved in community forest management activities. In the Terai, women are typically responsible for collecting the bulk of forest resources so the project will work closely with women from target households.

In setting up new projects there is also much to do in setting up agreements and applying for permits to work with communities and carry out research alongside the applied conflict mediation work.

We also had our doctoral student from Oxford University begin her research as part of this project, in which she will study the effects of the project's conflict intervention work on the ecology and distribution of tigers and leopards at the edges of these national parks. This will help conservation scientist better understand the continuously changing ecological and landscape dynamics of human-carnivore conflicts.

In addition this year we funded a new project dedicated to saving the Indian buffalo by lowering the dependency of local communities on forest resources and establishing a protocol for forest restoration. We also continued our support for ZOO/WILD, a collaborative organisation bringing together conservationists to promote education, networking and training.



Conserving species of

SOUTH EAST ASIA

The Katala team studying a map to identify boundaries and critical areas for the Palawan forest turtle © Katala

A significant new import this year was the arrival of a male and female Sun bear from the Rare Species Conservation Centre in Kent. Toni and Milli arrived on the 6th October 2015 and settled straight into their enclosure which was previously the home of the Sumatran tigers. Both Toni and Milli were rescue animals and are the first Sun bears to live at the zoo in over 30 years. Also new to the collection this year were a male and a female Endangered Moloch gibbon, Alven and Tilu, who were imported here from Howletts Wild Animal Park in Canterbury on the 30th December 2015. This is an Endangered species and both individuals moved straight into their brand new enclosure in the *Monsoon Forest* exhibit on *Islands*.

On the 3rd January 2015, three Critically Endangered Sumatran tigers (two males and a female) were born to parents Kirana and Fabi. This year also saw the export of the two female Sumatran tigers from Kirana and Fabi's previous litter. One went to Parc de la Haute Touche in Obterre, and the other to Wrocław Zoo in Poland. Fabi the male Sumatran tiger also moved on to Paignton Zoo in December.

Borneo and Sumatra, the home to the last remaining populations of orangutans, remain a focus for our conservation support. Conversion of forests for agricultural use is putting numerous species at risk and conservation efforts are vitally important to protect the islands. Palm oil continues to be a conservation issue of focus in this region.

2015 saw Indonesian forests burn for over 3 months, although an annual occurrence, the fires this year were particularly devastating. Emergency support was provided to The Orangutan Tropical Peatland Project (OuTrop) to support their firefighting efforts. On the 3rd September, Siska, a female Critically Endangered Sumatran orangutan was born to mother Subis at the zoo.

This year we have once again worked closely with our partners HUTAN in Malaysian Borneo, focussing on providing essential core funding for their operations. Initiated this year, our partnership for the HUTAN Hornbill Conservation programme has increased, with a PhD project researching the ecology of Bornean hornbills, of which the Kinabatangan is one of the three study sites. Monitoring of the

artificial hornbill nest boxes which are staff assisted with in 2013 has continued, with further evidence that the boxes are being visited by a number of species included rhinoceros hornbill and bushy-crested hornbills. The HUTAN Environmental Awareness Programme (HEAP) also continues to deliver the educational programme developed together with the zoo's Discovery & Learning Team and our veterinary support for international orangutan conservation also continued with participation in the 2015 Orangutan Veterinary Advisory Group (OVAG) conference in Java, Indonesia.

We have continued a partnership in Sumatra focussing on protecting the critically endangered painted terrapin. Terrapin eggs are at risk from poaching, and this project works to protect eggs through nesting patrols and other measures. In addition we supported a new project alongside partners Danau Girang Field Centre to carry out a habitat assessment of the Kinabatangan sanctuary using drone technology.

In 2015, the IUCN red list status of the Helmeted Hornbill was changed from Near Threatened to Critically Endangered, confirming the urgency of conserving this species. The main threat is from illegal poaching for its ivory casque. Our support continued for work being carried out in Indonesia to assess the population size and protect the species.

During 2015 our commitment to Indonesian bird conservation and support for Cikananga Conservation Breeding Centre (CCBC) in West Java continued. Twelve Critically Endangered Javan green magpies were imported from CCBC to the Zoo; and we will now be coordinating an EEP for this species as well as managing the Sumatran laughing thrush programme.

The Curator of Birds and the Head of Veterinary Medicine spent two weeks in March at CCBC, where they provided bird husbandry training and veterinary support to CCBC staff. An MOU was developed between Chester Zoo and CCBC with the aim of establishing viable captive breeding populations of highly endangered Indonesian birds and developing long term strategies for their survival and translocation to the wild.

Financial support continued for the Begawan Foundation in Bali for their work with the critically endangered Bali starling and four Bali starlings were bred at the zoo for the first time in many years; it is hoped these four chicks will be sent back to Indonesia in the not too distant future.

Whilst the Endangered Javan banteng were thriving in the new Islands zone with two born in 2015, this year saw the initiation of our partnership with IUCN Asian Wild Cattle Specialist Group (AWCSG). We established a new Programme Officer for the group which will be based at Chester Zoo, starting in January 2016. The position will support the Chair of the AWCSG part time, with the remaining time as SE Asia Field Programme Coordinator. In addition, we provided funds to support the salary of the AWCSG this year.

On the 20th March 2015 two Vulnerable Northern babirusa piglets were born (one male and one female), and we continued our support for an education programme on Sulawesi macaques and funded a new project to protect populations of babirusa and anoa in Sulawesi.

The Philippines are a global hotspot for biodiversity, and continue to be a focal region for our support. Follow the sad passing of our colleague William Oliver last year, Field Programme staff met with Philippines Biodiversity Conservation Foundation Inc (PBCFI) partners to discuss future directions of projects. In memory of William Oliver we also funded a dedicated student conservation award. Exciting news from surveys included rediscovery of the Rufous-headed hornbill on Negros where it was previously thought extinct.

Our continued PBCFI support included contributing funds to maintain important populations of species such as the Philippines spotted deer, Visayan warty pig and Visayan tarictic hornbill at the NFEFI and Mari-it breeding centres. This is in conjunction with support of field activities continuing community engagement, habitat protection, reforestation and monitoring activities for these species. On the 28th December 2015 two Critically Endangered Visayan warty pigs were born in the zoo to experienced mum Viv. Another notable birth was that of a Northern Luzon cloud rat on the 3rd February, the first to be born at the zoo since the breeding pair arrived in 2014.

Our other major partner in the Philippines, the Katala Foundation, also continued their dedication to wildlife in Palawan. The Philippine cockatoo remains a major focal species, with the highly successful Philippine Cockatoo Conservation Programme (PCCP) protecting the majority of the sub populations of this critically endangered bird. A new male Philippine cockatoo arrived at the zoo from Bristol and is hoped to be an important new breeding bird for the conservation programme.

In June we received an urgent call for help from the Katala Foundation when a truck full of over 4000 freshwater turtles bound for illegal markets were confiscated. Many were Philippine forest turtles, a species we work with Katala Foundation to protect and monitor in the wild. We were proud to be part of a global community (including our Act For Wildlife supporters who donated to the emergency appeal) who responded to provide financial and technical support to help. The event highlighted the need for the continued monitor and protection work we support that protects core sites for this species, and has successfully engaged local communities in their protection.

The zoo holds the National Collection of *Nepenthes* (South-east Asian pitcher plants), comprising a total of 125 species of which 8 are critically endangered, 13 are endangered and 33 are vulnerable. During the year 4 new species were added to the collection. The zoo also keeps 50 species of Slipper Orchids from Asia (particularly South-east Asia). This genus of orchids has recently been reassessed by IUCN and many species are now listed as Endangered or Critically Endangered.

The new *Islands* development saw the construction of several new bird exhibits. The pair of Southern cassowary moved into a purpose-built enclosure, which can be viewed from the *Lazy Boat Ride*. The *Bali Temple* highlights the zoo's ex-situ conservation work with the Begawan foundation in Bali. Bali starling, Java sparrow, Pied imperial pigeons and Yellow-backed chattering lorries are all on show in this new walk-through aviary. A young pair of Javan rhinoceros hornbills was moved into a new aviary in *Monsoon Forest* and it is hoped that the zoo can continue the breeding success with this species.

The new free-flight area in *Monsoon Forest* has become home to several Indonesian bird species including Victoria crowned-pigeon, Grosbeak starling, Superb fruit-dove, Grey-capped emerald dove, White-rumped shama and Fairy bluebird.



Sumatran tiger



Bali starling

Conserving species of

UK AND EUROPE

Large Heath mating pair

The zoo works with a number of threatened native plant species, propagating and reintroducing to appropriate locations in the wild. 650 seeds, including Barberry, were sown during January and February from sites in Oxfordshire and Wiltshire where there are good populations of Barberry Carpet Moth. Five hundred plants have been grown on for planting later in the year along the Barberry Highway project and for the Wildlife Connections Project.

Four Critically Endangered Northern bald ibis bred at the zoo were sent to Jerez in southern Spain as part of a reintroduction programme with the southern Spanish authorities, whilst a male European black vulture arrived from France to accompany the female in Europe on the Edge. There is an active reintroduction programme for the species in southern Europe and birds bred at Chester may go for reintroduction in the future.

Dormouse field work continued at our Welsh study site. Chester Zoo's experience in microchipping dormice provided invaluable advice to guide future licencing of this procedure in the UK through Natural England and Natural Resources Wales.

Camera equipment funded by Chester Zoo was installed at Nantclwyd y Dre, to observe breeding behaviour in a Lesser horseshoe bat maternity roost. The bats are regularly visible on the web cam on the zoo website.

The Biodiversity Trainees project concluded, after four years, having successfully delivered 12 one year traineeships. 75% of trainees have succeeded getting into jobs in the sector. The project was funded by the Heritage Lottery Fund's Skills for the Future (SFTF) programme; developed in direct response to the UK recession and identified skills gaps in the heritage sector. It was led by Chester Zoo in partnership with Cheshire Wildlife Trust and RECORD, the local ecological records centre.

Detailed discussions with the Vincent Wildlife Trust led to our agreeing to become major partners in this exciting new project which aims to restore pine martens to England and Wales. Chester Zoo is providing technical expertise through design and construction of soft release pens, manpower for field work, and funding.

The Vincent Wildlife Trust captured the first martens in Scotland in early September. The soft release process worked well, allowing the animals to acclimatise for around a week before full release. The target of translocation of 20 martens was achieved in early November. Radio tracking has shown that most martens have stayed reasonably close to the release sites, though a few have moved significantly further.

Two zoo staff attended training to become licenced badger vaccinators, enabling us to continue to vaccinate the badgers on the zoo site without external assistance. The funding for this training came through the Wirral and Cheshire Badger group from DEFRA, and means zoo staff are now part of a team of vaccinators working in Cheshire.

We once again took part in a Bioblitz in May as part of the BIAZA initiative to encourage wildlife recording on zoo sites. A group of experts with diverse expertise attended and the species list for the event broke our 500 species target. Of particular interest were 7 bat species, some of which haven't been recorded here for over a decade, and a superb list of around 60 bryophytes; we haven't had experts on site to record mosses and lichens before.

At the zoo female Large heath butterflies captured in 2014 produced 50 pupae in the rearing facility. These were delivered to the reintroduction site at Heysham Moss in June. Excitingly, adult butterflies were seen at Heysham Moss before this year's release, proving that adults released last year did breed successfully in the wild. These are the first wild-born large heath butterflies to be seen at Heysham Moss for over 100 years.



Zoo expedition

Chester Zoo team with a women's group in Assam

EXPEDITION TO ASSAM

In February 2015 12 members of Chester Zoo staff travelled to Assam in North East India to support the work of the Assam Haathi Project (AHP) aiming to mitigate levels of conflict between communities and Asian elephants. Assamese communities in the districts of Sonitpur and Goalpara, where AHP has worked for the last ten years, chose five workshop topics that they felt would offer them the most immediate and direct benefits for living in a landscape with Asian elephants. These were: Business Skills, Bee Keeping, Horticulture, Animal Care and Electrical Skills. Members of zoo staff with relevant expertise developed interactive and adaptable workshops, which were then delivered in different villages in the two districts.

The expedition also provided an opportunity for staff from all departments of the zoo to gain first-hand experience of field conservation - so five members of staff were drawn at random from a hat. These 'volunteers' provided vital assistance to allow the smooth running of the workshops.

The expedition was led by the zoo's Managing Director. Our Curator of Horticulture and Botany, an expert bee-keeper, advised villagers

on how to set up and maintain successful and productive hives. Our Garden's Assistant Team Manager ran horticulture workshops specifically looking at how to increase variety and productivity of crops, such as spices, subsistence crops and vegetables, to increase income. A member of the zoo's Keeper Team and farmer showed villagers how to improve the care and productivity of their domestic animals including pigs, cows, goats and poultry.

Finally, the zoo's Electrician offered theoretical and practical advice on the maintenance of solar powered electric fences and spot lights, both methods used to keep elephants away from villages and croplands. As well as formal workshops, the team visited individual households looking at more specific problem solving.

All sessions were very well attended with over 925 villagers present. The expedition was an important part of our ongoing partnership in Assam and an example of how zoos can contribute diverse and valuable skillsets to conservation projects through their many different, talented staff.



DISCOVERY & LEARNING

2015 has seen learning at the zoo become ever more focused on achieving conservation impact and enhancing visitor experience, by complementing the work of Zoo Rangers with a large volunteer team, highlighting the actions visitors can take to support conservation and increasing our use of technology to support learning.

The early part of the year focused on preparations for *Islands*, in particular on developing and installing theming and interpretation to create the authentic environments of the *Islands* expedition.

Once *Islands* opened, Zoo Rangers and our new team of visitor engagement volunteers worked side by side welcoming and engaging visitors with the *Islands* storyline. Zoo Rangers delivered hands on activities at the new enclosures and in particular in *Manado Town*, where they now provide a constant presence armed with a range of bio-facts and props to engage visitors in understanding the threats South East Asian species face, our conservation work there and the actions visitors can take to make a difference.

New *Islands* based schools sessions, using the fantastic immersive technologies and 360 degree projections in the *Sumba School* have already proved popular. The whole team has increased their use of technology throughout the year with iPads being introduced into teaching sessions for schools and into our Zoo Ranger led discover activities.

Engagement work across the rest of the zoo continued with our daily programme of talks and discover sessions, and in the summer was further enhanced with Zoo Keeper Training Camp, an interactive session enabling younger children to experience some of the tasks undertaken by zoo keepers and think more about how we care for our animals at the zoo.

Also, during the summer, we worked with Warrington Academy to deliver a week long Summer School to children transitioning from primary to secondary school. The week long programme of activities in school and at the zoo, not only supported the transition process but enabled us to have significant engagement with young learners, inspiring them to think about how they can support conservation in their everyday lives.

Our work engaging schools outside the zoo continued into autumn, first with the Sustainable Palm Oil Art Project, which saw over 700 pupils from local schools work with artist Angela Sidwell to learn about palm



Learning in action

oil, its potential impact on species loss and then create an artwork for display at the zoo. This was followed by further changes to the Safari Ranger programme, traditionally a bookable service for local schools to experience workshops about zoo topics. These changes involved piloting a more project based approach, with repeat visits to the same school around the theme of threats to wildlife, culminating in an active session linked to conservation action and how we can all do something to help wildlife. The pilot programme was evaluated using repeated measures surveys, interviews and focus groups and initial results show much deeper learning was achieved than with the single visit approach.

The year closed with our Christmas event. Thanks to funding from Seaworld and Busch Gardens we were able to expand our Wild Winter offer, creating an inspiring indoor winter woodland for younger children to explore and learn.

Over the course of the year we provided 116,000 concessionary priced education visits to the zoo, of which 17,000 had free admission and 24,000 were taught by our Discovery & Learning team.



Volunteers helping with an upcycling workshop as part of the Safari Ranger outreach programme

VOLUNTEERS AT CHESTER ZOO

In advance of *Islands* opening, we recruited and trained a new team of Visitor Engagement Volunteers and by the end of the year over 150 volunteers were working across the zoo. We began with a group of 75, who joined the zoo in April and completed their training in time to spend a few weeks honing their customer service skills out in the zoo before being an integral part of *Islands* opening. In their new visitor engagement roles volunteers welcome visitors as they arrive at *Coral Sands*, give out logbooks to young children, help visitors locate animals and orientate themselves around the exhibits. Later in the year a further 80 volunteers were recruited and roles expanded to include a presence in *Spirit of the Jaguar*, *Realm of the Red Ape* and *Butterfly Journey* as well as in *Islands*. As well as increasing our capacity to talk to visitors and enhance their experience to the zoo, the new volunteering programme provides training, skills development, social and well-being benefits to the individuals taking part.

Volunteers describe their experience training and volunteering at the zoo:

"Fantastic Zoo ~ Incredible team ~ 1st class training. Highly recommended experience."

"Seeing the smile as you help improve someone's day at the zoo, now that is priceless!"

Towards the end of the year a Volunteer Manager was recruited within the Discovery and Learning team to provide dedicated support to the growing team, to lead their training and development and ensure consistency and best practice in the development of volunteering across the zoo.





OUR TEAM

At work, at the zoo

Our people focus this year has been one of proactivity, being a step ahead of needs.

We ended the year with a permanent headcount of 371; adding on our annual seasonal staff took the head count to just over 700 at its peak. We have invested in new recruitment software to enable us to deal more efficiently with the vast numbers of job applications we receive – over 5,000 during 2015.

Employee Relations

The Staff Association completely refreshed their recognition agreement and constitution which has led to the formation of a smaller much more responsive team. This helped raise the profile of the Staff Association giving greater clarity of role and responsibilities. The Staff Association continue to work very closely with human resources team and their contribution is very much valued.

Training and Development

Our in house training programme has seen a flurry of short succinct training sessions called Zaps! being added to our training repertoire, all to enable our team to provide a better service to our guests. Zaps! developed included customer service, palm oil, data protection,

effective meetings, time management, effective communication, assertiveness, presentation skills, allergens and our people values.

We continue to support our people “learning whilst they earn” by offering National Vocational Qualifications (NVQs). We have had several successes in NVQ level 2 & 3 in Customer Service, Team Leading and Hospitality Supervision.

We proudly accepted the invitation to sign the ‘Autism Charter’ for a commitment to train staff with the aspiration to be an autistic friendly site in the near future.

Recognition

Our highest people accolade this year though has to be accreditation by BIAZA for our Effective Leadership Programme. The BIAZA Education and Training Committee reviewed the whole course and feedback was extremely positive.





CREATING A SAFE ENVIRONMENT

Creating a safe environment for our visitors, employees and animals

As anticipated, 2015 delivered many technical and logistical challenges as we brought *Islands* to life, ensuring that it met our high standards.

Our zoo is a 125 acre site, which must be secure for our collection, staff, and visitors. Responsibility for this sits with the new Site Operations division.

Encompassing Security, Health and Safety, Maintenance and Environment and the management of the zoo estate, the team are putting service, site standards and safety at the forefront of everything it does.

With a significant increase in visitors and staff, 2015 saw the total number of first aid incidents increase from 727 to 930. Zoo related accidents decreased from 79 to 43, a decrease of 54%. There

were two RIDDOR reportable accidents during the year and four employee accidents that resulted in lost time. Over 215 near-miss reports were logged on our online reporting system and preventative actions taken.

Close working relationships continue with external parties including the emergency services and the positive feedback on our employee Health and Safety Awareness campaign has been welcomed.

With guest safety taking priority, this year over 100 zoo employees have attended and successfully completed specialist training from Cheshire Police. Our security infrastructure is also seeing some beneficial developments. With enhanced security systems such as upgraded CCTV, fire and Intruder alarms, the officers can detect and react to any incident in a proportionate and professional manner.



Molly Parker
Leads the school choir
and the search for the
Sumatran tiger.

Extraordinary discoveries every day
www.chesterzoo.org/islands

ISLANDS at CHESTER ZOO

YOUR
EXPERIENCE
BEGINNS
13 JULY

Marketing overview

INCREASING OUR PROFILE

During 2015 we focused on bringing *Islands* to life, calling for the first 'explorers' to experience the South East Asian habitat and the endangered species that live there. It was crucial that we enabled our potential visitors to explore some of the stories behind *Islands* so we developed a large online hub to give access to a wealth of information about the build, the animals and plants destined for *Islands* and the conservation work that we do in South East Asia.

We also developed an *Islands* app experience to support visitors to explore each of the six Islands, giving relevant educational content in the form of a series of conservation 'games' with badges to collect as a reward for completing each of the tasks.

We launched our main marketing campaign in June 2015 with national TV, online and press advertising and a large regional radio and press campaign. The campaign invited visitors to make extraordinary discoveries every day.

The response from the public was encouraging with a 71% increase in website traffic, 22% increase in membership and 26% increase in admissions during the campaign period (30 June – 31 August 2015).

We conducted visitor research throughout the year to measure the response to *Islands* and saw an increase in the number of visitors saying that they would recommend Chester Zoo as a day out and that it represented an excellent or good value for money.

The zoo's 2015 PR campaigns - through broadcast, print and online press coverage and engaging social media content - were geared towards driving visitors to the zoo, positioning us as a world class visitor attraction and conveying our charitable objectives to the public. Animal stories, from the birth of tiger cubs to the arrival of elephant calf

Nandita, received widespread positive attention from press and social media. During the launch period for *Islands* alone we received well over £1 million worth of media coverage (Advertising Value Equivalent), including a major PR event with the visit of Prime Minister David Cameron in May and widespread coverage including a live broadcast on BBC breakfast for the opening in July. The zoo successfully secured an agreement with Blast! Films and Channel 4 for the production of an observational documentary about Chester Zoo, facilitating the on-site film crew throughout the summer and autumn, ahead of the airing of the prime time programme in 2016. We also responded to the media and public interest in the sad death of two elephant calves in a constructive way, helping to raise awareness of the global virus, elephant endotheliotropic herpes virus (EEHV), and the valuable work being done to fight the disease within the zoo community.

Our sales and events activity increased during the year as we introduced new delegate packages to stimulate corporate bookings for Oakfield.

Our members

At the beginning of 2015 we had 57,835 members, by the end of the year this had increased to 76,358.

Through further research we have endeavoured to further improve experiences for our members. Initiatives include making half price Members Day tickets available to purchase on line through a new Members portal, where members can also access Z magazine and other news items.



Commercial overview

WELCOMING OUR VISITORS

This year saw a strong commercial performance in guest experience, catering and retail. Although the launch of *Islands* was a big focus for us we continued to develop the wider operation by rebranding and upgrading guest facilities, launching a number of new products aimed at meeting the needs of our guests and supporting the introduction of a new flexible pricing structure for admission tickets.

As part of *Islands* we opened a new restaurant, retail shop and boat trip. The *Manado Street Kitchen*, a 450 seat outdoor restaurant, was designed to bring a South East Asian dining experience to Cheshire. Particular attention was given to the menu planning and included researching authentic recipes from the region. The menu we launched with included traditional rice and noodle dishes such as Nasi Goreng and Pad Thai to complement the already varied food offer at the zoo.

The Manado shop, a 100m² themed retail environment, was designed to include the authentic architecture of Sulawesi and contains hints to suggest that the shop may have been a craftsman's workshop. We also introduced artefacts gathered from region which told the story of weaving, woodworking and painting. The new gift range celebrated the rich culture and beauty of the animals and people of South East Asia and included bespoke carvings and intricately decorated items sourced from craftspeople of the region.

The *Lazy River Boat Trip* provides our visitors with a different way to experience *Islands*. The journey is designed to last around 15 minutes, with the intention of bringing our guests closer to the plants and animals whilst allowing them time to relax and unwind.

Our event programme has continued to progress with the introduction of a number of private hire activities, safari evenings, and a fourth year of the very popular *Lantern Magic*. This year *Lantern Magic* saw the introduction of a new route, more animal lanterns and a fabulous array of animal puppetry and performance. Alongside this a new *Santa's Story Time* experience was launched and both events were well received.

Finally we had a record year for the number of employees recruited into the commercial team. Putting these people at the heart of the organisation and equipping them with the skills and knowledge to deliver a great day out for our guests was paramount. The management team were all involved in a new effective leadership programme whilst the wider team all received additional training in delivering excellent customer service, creating a safe environment and delivering a truly special *Islands* experience.





KEEPER FOR A DAY

Twilight lead keeper assisting with camera trap monitoring of Spectacled bears in Peru

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 generated from this scheme provides opportunities for staff to be involved with conservation projects, conferences and meetings outside of the zoo. In 2015, the fund enabled four members of staff to undertake activities around the world, as well as hosting two international vets and funding the zoo expedition to Assam.

The lead keeper of our Twilight Team travelled to Peru to visit the Spectacled Bear Conservation Project. Chester Zoo has funded this project for a number of years. Whilst in Peru, she was able to assist the team with their camera trap study which provides data on presence and habitat use of this elusive species.

Our endocrinology technician returned to Malaysia to provide further assistance to PhD student Ee Phin. Chester Zoo and the endocrinology lab have been supporting Ee Phin throughout her PhD, which is part of the larger project MEME (Management and Ecology of Malaysian Elephants), working to assess the impact of Government management policies (including translocations) on wild Asian elephants. She

assisted with analysing over 650 faecal samples collected in the tropical rainforest in Peninsular Malaysia for adrenal hormones.

The team manager of our Giraffe Team attended the Giraffe Indaba in South Africa. This six day conference brings together professions who are working with giraffid species to discuss key conservation and management themes. Another member of our giraffe team travelled to Cheyenne Mountain Zoo in the United States of America to attend a Giraffe Care Workshop. The three day workshop covered both in situ and *ex situ* topics related to giraffe care from hoof care and training to conservation.

This year the Keeper for a Day scheme also funded an international staff exchange. We invited two veterinarians from Indonesia to spend three months working alongside our Animal Health Team. Both vets are members of the Orangutan Veterinary Advisory Group (OVAG) which we have worked closely with for a number of years. Whilst here they shared knowledge and experience with many zoo teams, participated in veterinary procedures and got involved with some of our UK conservation work. They also worked with some of our partners around the UK including University of Liverpool, the International Primate Heart Project and the Natural History Museum.



Lantern Magic

OUR FINANCIAL PERFORMANCE

With a record number of visitors coming to the zoo in 2015 and an increasing membership our income rose by 20% to a record level of £35.6m. Total expenditure rose by 17% to £30.9m resulting in a £4.7m net increase in our funds.

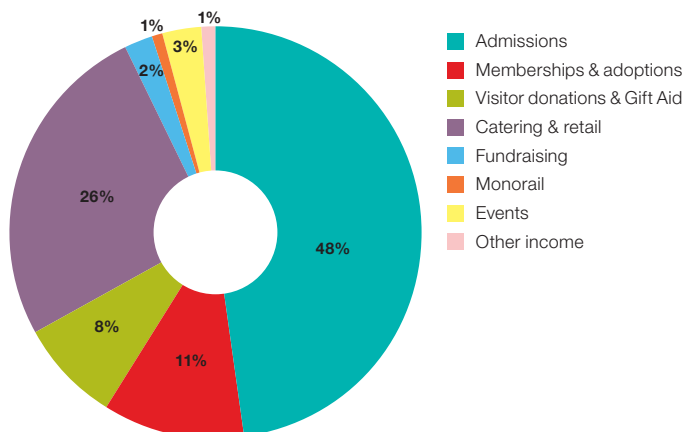
Income

The bulk of the Society's income comes from the zoo's visitors and members, in the form of admissions and other charges. With visitor numbers increasing by 18% to 1,694,115 in 2015 and membership numbers increasing by 32% to 76,358, the related income rose by 20% to £22.5m.

As a registered charity the Society generates voluntary income from visitor donations, Gift Aid, grants and other donations. In 2015 53% of our visitors chose to donate when they visited which was slightly lower than the previous year due to legislative changes in the way in which donation requests can be presented on our website. However, driven by the increase in visitor numbers together with legacies left to the Society, our voluntary income still rose by 12% to £3.1m.

The Society's trading subsidiary, Chester Zoo Enterprises Limited, which provides retail and catering across the zoo site had a turnover of £9.8m.

The chart below shows where our income comes from.



Expenditure

In 2015 we spent £30.9m, excluding capital expenditure. This expenditure includes the benefit of a £1.0m exceptional refund from

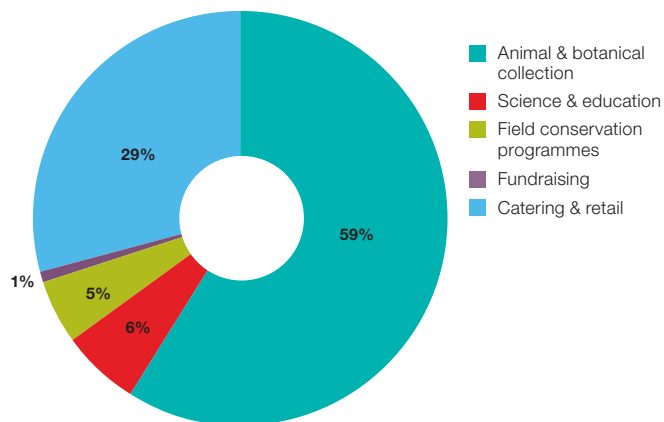
HMRC in relation to input VAT following a tribunal case, offset by a £1.5m increase in year on year depreciation following the opening of *Islands*. Costs also include a £0.9m contribution to the defined benefit pension scheme.

Resources expended on our charitable activities, including the costs of maintaining the animal & plant collection, the visitor facilities, education and science and our field programmes, together with support costs totalled £21.0m. In addition we spent £0.3m generating our voluntary income.

By far the biggest element of this expenditure relates to our employees. Our average headcount during 2015 rose to 574 from 510. 52% of these employees work directly in support of the Society's charitable objectives, either with our animal & plant collection or in education, science and research. In addition we benefitted from the hard work of over 150 volunteers.

Chester Zoo Enterprises Limited made an operating profit of £0.5m in 2015 which is donated to the Society.

The chart below shows a breakdown of the Society's expenditure.



Capital expenditure

During 2015 we spent £22m on capital expenditure, primarily delivering the *Islands* project. In total the project has cost £40.6m, excluding VAT, and has primarily been funded from the Society's cash reserves, supplemented by a borrowing facility. At 31 December 2015 the Society had a net borrowing position of £9.1m.

Full details of our financial performance can be found in the 2015 Trustee's Report and Financial Statements.

www.chesterzoo.org

Registered Charity Number 306077
Registered Company Number 287902

North of England Zoological Society
Caughall Road
Upton by Chester
Chester CH2 1LH
Tel: 01244 380280
Fax: 01244 371273
Email: info@chesterzoo.org

Chester Zoo is licensed under the Zoo Licensing Act, 1981. In the interests of conservation and educational study, this report may be freely copied without alteration or amendment and stored by electronic means without formal permission. It is also available to download from our website. The NEZS is happy to assist anyone with special needs obtain a copy in the appropriate format. Published June 2016 by the North of England Zoological Society.



The North of England Zoological Society

TRUSTEES' REPORT AND FINANCIAL STATEMENTS

Year ended 31st December 2015

CONTENTS

Reference and Administrative Details of the North of England Zoological Society, its Trustees and Advisors	4
Trustees' Report for Year Ended 31 December 2015	4
Introduction.....	4
Strategic Report	4
Objectives and Strategy	4
Achievements and Performance in 2015.....	5
Public Benefit.....	5
Financial Review 2015.....	6
Plans for Future Periods.....	7
Principal Risks and Uncertainties.....	8
Structure, Governance and Management	8
Independent Auditor's Report to the Members of The North of England Zoological Society	11
Financial Statements for Year Ended 31 December 2015	12
Consolidated Statement of Financial Activities.....	12
Consolidated & Society Balance Sheets	13
Consolidated Cash Flow Statement.....	14
Principal Accounting Policies	15
Notes to the Financial Statements.....	17

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

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

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
William Beale (Elected 08/09/2015)
Professor Malcolm Bennett
Catherine Buckley (Retired 08/09/2015)
Professor Stefan Buczacki
Brian Child (Resigned 16/12/2015)
Sandra Donnelly (Elected 08/09/2015)
Dr Simon Dowell (Retired 08/09/2015)
Robert Mee DL (Resigned 31/12/2015)
Professor Russell Newton
David Pickering (Resigned 09/09/2015)
Angela Pinnington
Dr Judith Skerritt (Retired 08/09/2015)
Bruce Ursell
Simon Venables
Tony Williams

Co-opted by the Trustees

Professor Richard Griffiths
Catherine Buckley (Co-opted on 06/11/2015)

Principal Executives

Dr Mark Pilgrim – Director General
Jamie Christon – Managing Director

Company Secretary

Aarco Services Limited represented by Nick Clarke

External Advisors to the Conservation and Education Committee

Brian Coles
Dr Caroline Evans
John Makinson
Tim Sibthorp

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

Dr Julian Chantrey
Brian Coles
Michael Stanford

External Advisors to the Ethical Review Committee

Professor Sarah Andrew
Dr Jeremy Playfer
Dr Richard Preziosi
Dr Thomas Webb

External Advisor to the Audit and Risk Management Committee

Simon Bleckly

Auditor

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
Hill Dickinson, No.1 St. Paul's Square, Liverpool, L3 9SJ

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

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2015

Introduction

The Trustees of the North of England Zoological Society ("NEZS" or "the Charity") are pleased to present their annual report together with the consolidated financial statements of the Charity and its subsidiaries for the year ended 31 December 2015 which are also prepared to meet the requirements for a directors' report and accounts for Companies Act 2006 purposes. NEZS is a conservation and education charity which runs Chester Zoo. Further information about NEZS's activities during 2015 can be found in the "Chester Zoo Annual Review" which is published separately and can be downloaded from www.chesterzoo.org.

The financial statements comply with the Charities Act 2011, the Companies Act 2006, the Memorandum and Articles of Association, and Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102) (effective 1 January 2015).

Strategic report

Objectives and Strategy

The Society's 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.

Our Vision

A diverse, thriving and sustainable natural world.

Our Mission

To be a major force in conserving the living world.

Our Strategy

"A Natural Vision" is our Trustee approved strategy which informs and guides the management team in planning, achieving and developing our mission and supporting activities. It sets out six strategic objectives as follows:

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; and
- ensuring that we consider the environmental sustainability of all that we do.

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 a year-round, high quality visitor experience;
- continuous improvement of site presentation standards.

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.

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.

5. To ensure 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.

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 affect our mission;
- ensuring greater public engagement with our science and technology, conservation and commercial activities;
- continuing liaison with our partner organisations and peers.

Achievements and Performance in 2015

2015 was a year of significant change for the North of England Zoological Society as Chester Zoo continued to grow and progress whilst making leaps forward in achieving its strategic objectives.

Following a great start to the year with good spells of weather, the ongoing legacy of the BBC series “Our Zoo” and a number of animal births, the *Islands* development opened in July 2015. The development, which had taken 5 years to plan and construct is the largest ever zoo development in UK history and will make an enormous contribution to our conservation & education activities, inspiring more people to make a visit to the zoo and in turn providing funding for our charitable activities.

As well as celebrating the opening of *Islands* the zoo saw some significant developments in its collections during 2015 including the birth of three critically endangered Sumatran tigers and two Rothschild’s giraffes. A small population of Javan green magpie, a species on the brink of extinction, was brought in to the zoo to form part of an insurance population and closer to home we supported a pine marten reintroduction programme in Mid-Wales.

The zoo received a number of accolades in 2015 including the TripAdvisor Travellers’ Choice award as best zoo in the UK, the UK Heart Safe Award and NHS Cardiac Smart Gold Award and we accepted an invitation to sign the “Autism Charter”.

In 2015 we recruited over 150 volunteers in support of our objective to connect people to wildlife. This passionate group talk and inspire our visitors about the wonders of the natural world and the actions that can be taken to secure its future. Their value to the Society is significant and appreciated.

Without the enthusiasm and dedication shown by our employees, none of this progress would have been possible. The Trustees would like to extend their gratitude for their continuing efforts in moving the Society forwards.

A full review of the Society’s achievements and Performance in 2015 can be found the “Chester Zoo Annual Review” which is published separately and can be downloaded from www.chesterzoo.org.

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.

The Society relies on income from admission fees, catering and retail sales and other charges to cover its operating costs and in setting the pricing structure, the Trustees give careful consideration to the accessibility of the zoo to those on low incomes. In 2015 we introduced a new flexible pricing structure and many visitors enjoy concessionary prices which are set to encourage visits by children, students, families, senior citizens and those with disabilities, with 37,000 receiving free admission. There were 116,000 concessionary priced education visits, of which 17,380 received free admission and 24,272 were taught by our education team.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2015 (CONTINUED)

Financial Review 2015

With a record number of visitors coming to Chester Zoo in 2015 and an increasing membership our income rose by 20% to a record level of £35.6m. At the same time our expenditure rose by 15% to £30.0m and in addition we made a £0.9m contribution to our closed defined benefit pension scheme.

As a result, the net movement in our funds for the year ended 31 December 2015 was £4.7m (2014: £3.3m). During 2015 we spent £22.0m on capital expenditure, primarily delivering the *Islands* project which has been funded from the Society's reserves and a borrowing facility. At 31 December 2015 the Society had borrowed £11.3m (2014: nil).

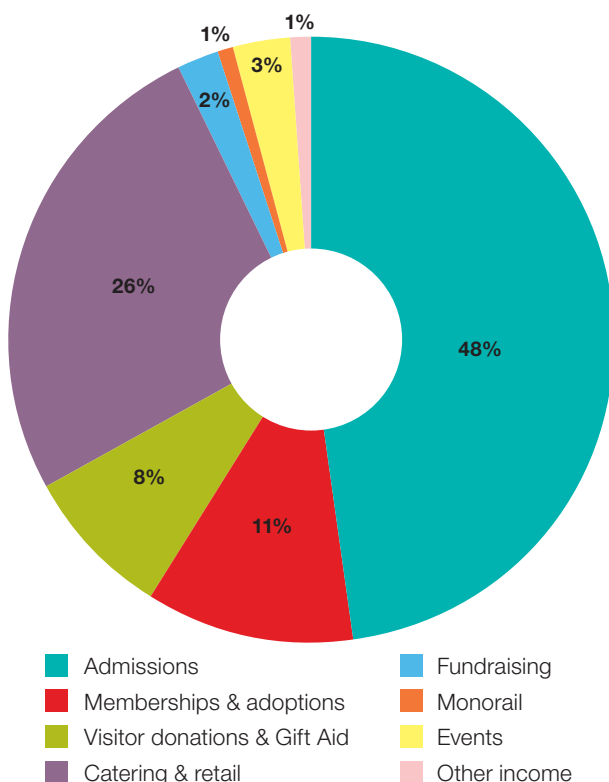
Incoming resources

The bulk of the Society's income comes from the zoo's visitors and members, in the form of admissions and other sales. With visitor numbers increasing by 18% to 1,694,115 in 2015 and membership numbers increasing by 32% to 76,358 at 31 December 2015, income from charitable activities rose to £22.5m.

As a registered charity the Society also generates voluntary income from visitor donations, Gift Aid, grants and other donations. Again, as a result of the increase in visitor numbers together with legacies left to the Society, our voluntary income rose by £0.3m to £3.1m. The Society introduced flexible pricing for on-line bookings in February 2015 which led to a doubling of on-line sales. Coupled with the introduction of the Consumer Contracts Regulations in June 2014 which meant that the elective donation box could not be pre-ticked, the Society saw a 14% fall in the level of elective donations.

The Society's trading subsidiary, Chester Zoo Enterprises Limited, which provides retail and catering across the zoo site, had a turnover of £9.8m (2014: £8.2m). The increase flowed from the increased visitor numbers and new retail and catering space within *Islands*.

A breakdown of the income in 2015 is shown in the following chart:



Resources expended

In 2015 we spent £30.0m (2014: £26.1m), excluding capital expenditure and contributions to the defined benefit pension scheme.

Resources expended on our charitable activities, including the costs of maintaining the animal & plant collection, the visitor facilities, education and science and our field programmes, together with support costs totalled £21.0m (2014: £18.8m). Information on the conservation and research field programmes funded can be found at www.chesterzoo.org and the Society's 2015 Annual Review.

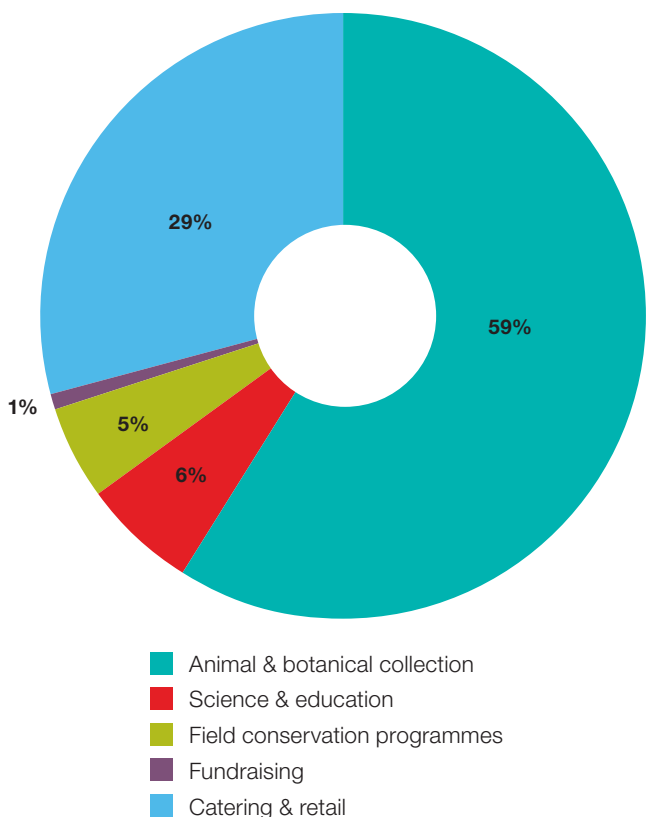
By far the biggest cost to the Society is its employees. Our average headcount during 2015 rose to 574 from 510 in 2014, 52% of whom work directly in charitable activities.

We spent £0.3m (2014: £0.2m) generating our voluntary income.

Chester Zoo Enterprises Limited made an operating profit of £0.5m in 2015 (2014: £0.5m) which is donated to the Society.

Included within the Society's results is a repayment of VAT from HMRC totalling £1.0m. This is made up of a £0.8m refund of VAT and £0.2m of interest previously paid by the Society to HMRC. This is following the conclusion of the case brought by the Society against HMRC.

A breakdown of our expenditure in 2015 is given in the following chart:



Capital expenditure

As part of the Society's objective to be a world class "must see" visitor attraction we continue to invest in the zoo estate and in 2015 spent £22.0m on capital expenditure, the bulk in relation to the *Islands* project. In total the project has cost £40.6m, excluding VAT. The project has primarily been funded from the Society's cash reserves, supplemented by a borrowing facility.

Borrowings, investments and reserves

It is the general policy of the Society to apply towards its charitable objectives as much cash as it reasonably can, to avoid accumulating excessive reserves. Where considered appropriate and being mindful not to overcommit the Charity, borrowings are undertaken to fund elements of significant capital projects.

In setting its reserves policy the Society takes account of its continuing financial commitments in terms of staffing and overheads including the costs of maintaining the animal and plant collection and funding its charitable activities. The Society also considers the risk that its income for any particular year may be impacted by a number of factors outside of the Society's control such as periods of prolonged wet weather at peak visitor times, competition from other visitor attractions, social trends, varying levels of economic prosperity and employment, alongside the potential for closure of the zoo to visitors due to the outbreak of contagious disease such as foot and mouth in 2001.

Having considered these factors, the Society maintains minimum available cash reserves of £1.5m at all times which are supplemented by a minimum £0.5m of undrawn committed borrowing facilities. Such reserves would be sufficient for the zoo to operate without significant curtailment of its activities for a period of up to one month. Similarly the Trustees consider that unrestricted 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.

At the end of 2015 the Society had borrowed £11.3m and had £2.2m cash reserves. The Society's borrowing facility, which was put in place to part fund the *Islands* development, comprises a £15m unsecured revolving credit facility, which is in place until November 2018 and a £2.0m overdraft facility which is renewable annually. At 31 December 2015 the Society had access to £5.7m of undrawn borrowings and £2.2m of cash reserves.

Pensions

The Society's defined benefit pension scheme was closed to future accrual in 2012 and, as part of an ongoing solvency deficit reduction plan, the Society contributed £0.9m to the scheme in 2015. At 31 December 2015 the Scheme had a surplus of £5.6m (2014: £3.4m) as accounted for under FRS102. However this is not recognised in the financial statements as the Society is not entitled to a refund of any surplus at the present time.

The Society now operates a defined contribution scheme which is open to all employees. For permanent employees, the Society makes a contribution that is 2% more than the employee contribution up to a maximum of 9%. In line with legislation and since our staging date of January 2013, qualifying seasonal employees are paid a 1% contribution into a NEST pension scheme.

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. Unrestricted income funds may be designated or freely available for the Society's general charitable purpose.

After setting aside restricted income funds the balance of the Society's available funds at the balance sheet date are designated as follows:

- to charitable activities which the Society intends to support over the coming year.
- to capital expenditure that is either contractually committed or is planned for the coming financial year; then
- assets held for charitable use, up to a maximum of the net book value of those fixed assets at the balance sheet date.

If, after designating unrestricted funds as above, there are funds remaining, these are treated as unrestricted free 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.

At 31 December 2015 the Society had total funds employed of £39.6m (2014: £34.9m) of which £0.4m (2014: £0.1m) were restricted and the balance of £39.2m (2014: £34.7m) were designated, including £34.6m (2014: £20.3m) tied to fixed assets. The increase in the amount tied to fixed assets relates to the completion of the *Islands* project. There were no unrestricted free reserves (2014: nil).

Plans for Future Periods

Our strategy, "A Natural Vision" sets the way forward for the foreseeable future and following the significant investment in *Islands*, the Society is now looking at next steps for development of the zoo. In 2016 we will produce a strategic development plan for investment of the Society's reserves in the short, medium and long term. The plan will link development of the zoo to the Society's strategic objectives and our experience from the *Islands* development, along with visitor feedback, will inform that plan.

Visitors to the zoo in 2016 will see a major refurbishment of one of the zoo restaurants, the return of the Dinosaurs exhibit in the summer and we will host a Christmas event for a fifth consecutive year, building on previous success.

In 2016 we are investing further in our carefully targeted conservation programmes which are making a real impact. We continue our strategic focus of managing healthy populations of threatened species, developing greater involvement in conservation efforts in the wild and, through both zoo visits and using our influence externally, we will continue to inspire and empower people to make a positive difference for wildlife.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2015 (CONTINUED)

Principal Risks and Uncertainties

The Trustees have set a risk management strategy which sets out responsibilities for risk management across the Society, the Society's risk appetite, a process for reporting, review and escalation in relation to identified risks and links to the internal control environment and external legal frameworks.

The Trustees actively review the major risks that the Society faces on a regular basis against the relevant mitigating internal controls and believe that maintaining cash reserves within defined levels, alongside appropriate insurances will provide sufficient resources in the event of most adverse conditions.

The key risks identified by the Trustees are:

- Protection of the Society's assets including its reserves and the wider zoo estate, which is addressed through having an appropriate governance structure, relevant insurances and regular audit and review;
- A major operational issue impacting public safety and causing reputational damage which is addressed through documented operational procedures which are regularly tested, health & safety training and routine checks, external audit and advice; and
- Failure to recruit, manage and retain a skilled workforce which is managed through the induction process, performance development plans, succession planning, agreement of a fair pay structure with employees and investment in training.

The effectiveness of the Society's risk assessment procedures are reviewed by the Audit & Risk Management Committee. The Society's internal auditors undertake a schedule of internal audits determined and scoped by the Audit & Risk Management Committee and report back to the committee on a regular basis. The internal auditors also provide advice and guidance on the Society's overall risk management process.

Structure, governance and management

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 distributed to the Society via Gift Aid.

Chester Zoo Foundation Nigeria ("CZFN"), an unlimited company (registered in England, no. 08904330) is a wholly owned subsidiary of Chester Zoo (Nigeria) Limited ("CZNL"), a limited company (registered in England, no. 08374657) and a wholly-owned subsidiary of the Society. Both CZNL and CZFN began operating on 1st January 2015 and will facilitate the management of the Society's conservation activities in Nigeria

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

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 teams who implement these policies.

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 and may serve for up to fifteen months from being appointed. The Trustees hold at least six 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 as Trustees in accordance with the six year maximum in this circumstance.

Key Responsibilities of the Trustees

With other Trustees manage the business of the Society and 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, its employees and for its "corporate" behaviour;
- ensuring that the Society complies with 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; and
- ensuring that the Society's governance is of the highest possible standard.

Trustee Committees

In 2015, Trustees delegated aspects of their powers to committees consisting of some of their members and specialist advisors. These committees report to the Trustees. The Trustees 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 Society's 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 & Risk Management Committee – prime 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 a senior finance team, 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.

The standing Committee structure at 31 December 2015 is indicated in the table below:

Committees	Conservation and Education	Animal Health, Welfare and Husbandry	Ethical Review	Business Operations	Audit and Risk Management	Remuneration	Trustee Nominations	Pension Scheme
Prof Peter Wheeler	x			x		Chair	x	
Rebecca Burke-Sharples	x		Chair	x		x	Chair	
Malcolm Ardron				x				
William Beale	x							
Prof Malcolm Bennett	Chair	Chair						
Catherine Buckley	x							
Prof Stefan Buczacki	x							
Sandra Donnelly	x							
Robert Mee				Chair		x	x	
Prof Russell Newton	x		x					
Angela Pinnington	x							
Bruce Ursell				x	Chair		x	x
Simon Venables					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' REPORT FOR THE YEAR ENDED 31 DECEMBER 2015 (CONTINUED)

Trustees – Recruitment

If there are vacancies in any 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. Such recommendations are made having regard to the maintenance of an appropriate mix of skills on the Trustee Board to ensure adequate management of the zoo and protection of the Society's assets.

Trustees' Training

The relationship between the executive and the Trustees is fundamental to the Society's 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 required 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.

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. All Trustees are encouraged to attend appropriate external training courses, covering 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 employees which gives them appropriate cover against the consequences of any neglect or default on their part.

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), including FRS102, The Financial Reporting Standard applicable in the UK and Republic of Ireland.

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 Trustees have decided to review the appointment of the Society's auditors and a resolution concerning the appointment will be proposed to the Annual General Meeting. KPMG LLP have held office since 2010 and have indicated their willingness to continue.

The Strategic Report on pages 4 to 8 was approved by the Trustees on the 6 May 2016 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 2015 set out on pages 12 to 29. The financial reporting framework that has been applied in their preparation is applicable law and UK Accounting Standards (UK Generally Accepted Accounting Practice), including FRS102, The Financial Reporting Standard applicable in the UK and Republic of Ireland.

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 10, 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 2015 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

6 May 2016

CONSOLIDATED STATEMENT OF FINANCIAL ACTIVITIES

(Including a consolidated income and expenditure account) for the year ended 31 December 2015

	Notes	Unrestricted Funds £'000	Restricted Funds £'000	Total 2015 £'000	Total 2014 £'000
Income from:					
Charitable activities					
Animals and botanical collection	2	22,459	-	22,459	18,688
Donations and Legacies					
Voluntary income	3	2,615	534	3,149	2,823
Other trading activities					
Subsidiary's trading turnover	4	9,822	-	9,822	8,174
Investments					
Investment income	5	196	-	196	82
Total income		35,092	534	35,626	29,767
Expenditure on:					
Charitable activities					
Animals and botanical collection	6a	17,546	40	17,586	16,742
Science and education	6a	1,601	132	1,733	881
Conservation programmes	6a	1,572	64	1,636	1,16
Raising funds					
Costs of generating voluntary income		259	-	259	194
Subsidiary's cost of goods sold and other costs	4	8,776	-	8,776	7,079
Total expenditure		29,754	236	29,990	26,061
Net income	8	5,338	298	5,636	3,706
Other gains and losses					
Actuarial losses on defined benefit scheme	2	894	-	894	361
Net movement in funds		4,444	298	4,742	3,345
Reconciliation of funds	17				
Total funds brought forward		34,744	120	34,864	31,159
Total funds carried forward		39,188	418	39,606	34,864

The above results are all in respect of continuing operations.

No Statement of Changes in Equity has been presented as all such gains and losses have been included above.

CONSOLIDATED & SOCIETY BALANCE SHEETS AS AT 31 DECEMBER 2015

	Notes	Consolidated		Society	
		2015 £'000	2014 £'000	2015 £'000	2014 £'000
Fixed Assets					
Tangible assets	11	53,356	35,781	53,356	35,781
Investment in subsidiary companies	12	-	-	-	-
		53,356	35,781	53,356	35,781
Current assets					
Stocks	13	586	476	63	50
Debtors	14	783	1,354	768	1,593
Cash at bank and in hand		2,374	3,168	2,374	3,168
		3,743	4,998	3,205	4,811
Creditors: amounts falling due within one year	15	(6,193)	(5,915)	(5,631)	(5,728)
Net current liabilities		(2,450)	(917)	(2,426)	(917)
Total assets less current liabilities		50,906	34,864	50,930	34,864
Creditors: amounts falling due after more than one year	1	(11,300)	-	(11,300)	-
Net assets		39,606	34,864	39,630	34,864
Funds Employed					
Income funds – restricted	17	418	120	418	120
Income funds - unrestricted					
Designated funds	17	39,188	34,744	39,212	34,744
Other charitable funds	17	-	-	-	-
		39,606	34,864	39,630	34,864
Total funds employed		39,606	34,864	39,630	34,864

The notes on pages 15 to 29 form part of these financial statements.

The financial statements were approved and authorised by the Trustees on the 6 May 2016 and signed on their behalf by:

Professor Peter Wheeler
Chairman of Trustees

Bruce Ursell
Chairman of the Audit & Risk Management Committee

Company number – 287902 – North of England Zoological Society

CONSOLIDATED CASH FLOW STATEMENT FOR THE YEAR ENDED 31 DECEMBER 2015

	2015 £'000	2014 £'000
Cash flows from operating activities:		
Net movement in funds as per the Statement of Financial Activities	5,636	3,706
Adjustments for:		
Interest paid	189	79
Interest received	(196)	(82)
Depreciation charge	4,400	2,882
Increase in stocks	(110)	(23)
Decrease in debtors	571	1,202
Increase in creditors due within one year	145	1,435
Difference between pension charge and cash contributions	(894)	(361)
Net cash provided by operating activities	9,741	8,838
Cash flows from investing activities:		
Interest received	196	82
Purchase of fixed assets	(21,975)	(17,492)
Net cash used in investing activities	(21,779)	(17,410)
Cash flow from financing activities:		
Cash inflows from new borrowing	11,300	-
Interest paid	(189)	(79)
Net cash provided by financing activities	11,111	(79)
Operating cash outflow in year	(927)	(8,651)
Management of liquid resources		
Increase/(decrease) in short term investments	-	(9,002)
(Decrease)/increase in net cash at bank in the year	(927)	351
Cash and cash equivalents at 1 January 2015	3,168	2,817
Cash and cash equivalents at 31 December 2015	2,241	3,168

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 financial statements comply with the Charities Act 2011, the Companies Act 2006, the Memorandum and Articles of Association, and Accounting and Reporting by Charities: Statement of Recommended Practice ("SORP") applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102).

The Society has changed the basis of preparation to reflect the guidance provided by the new SORP after publication and approval by the FRC in May 2014 and which became effective for periods commencing on or after 1 January 2015 and in accordance with FRS102. The impact on the Society's reporting has been on the presentation of the financial statements only, with no impact on the financial performance, net assets or funds employed.

The Society'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 Society and its subsidiary, its cash flows and liquidity position are shown in these financial statements. There are no significant estimates or matters of uncertainty in the accounts. The Trustees report also notes the principal risks and uncertainties that impact on the Society.

The Society has a history of generating an annual surplus and has a balance sheet showing significant reserves. As a consequence the Trustees believe that the Society is well placed to manage its risks successfully and taking into consideration the current economic conditions.

The Trustees have a reasonable expectation that the Society and its subsidiary companies have adequate resources to continue in operational existence for the foreseeable future. Accordingly, they continue to adopt the going concern basis in preparing the financial statements.

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 2015 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 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 allocated. Income, both unrestricted and restricted, is recognised at the time of receipt except where it 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. An example of this is the treatment of annual membership income.

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, or where there has been a grant of probate and the executors have established that there are sufficient assets in the estate after meeting its liabilities to pay the legacy. Grants are recognised when there is entitlement, conditions have been met and there is certainty of receipt.

Resources Expended

Expenditure is recognised when a liability is incurred. In accordance with the new SORP, support costs have been allocated to charitable activities and fundraising, apportioned by usage according to relative cost driving activities. Support costs now also include governance costs as a separate component in line with the new SORP.

VAT

Visitor admission income is treated as VAT exempt. Accordingly the Society is a partially exempt body and may not recover all VAT incurred on costs, with the exception of VAT incurred in connection with the catering, retail, and event operations for which the sales are subject to VAT. These operate through the trading subsidiary Chester Zoo Enterprises Limited and the VAT directly related to these operations can be recovered in full. The cost of irrecoverable VAT is apportioned in the SOFA under other resources expended. Any irrecoverable VAT relating to the purchase of fixed assets is capitalised as part of the asset value.

PRINCIPAL ACCOUNTING POLICIES (CONTINUED)

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.

Fixed Assets

These are included in the balance sheet at historic purchase cost less accumulated depreciation. Assets in the course of construction are stated at cost, less any recognised impairment loss.

Depreciation

The rates and method of depreciation are consistent with those used in previous years. Depreciation is calculated using a straight line basis. Freehold land is not depreciated and assets in the course of construction are only depreciated when the assets are ready for their intended use.

Asset Class	Rate of Depreciation Applied
Freehold Properties	2% to 10%
Buildings and Enclosures	4% to 25%
Machinery and Equipment	10% to 25%

No annual assessment is made of the value of the animal and plant collection. It is valued consistently at a nominal sum of £1,000 and not depreciated.

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

All leases currently held by the Society are operating leases and the rental charges are taken as expenditure when incurred. The Society has not entered into any finance leases.

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 all qualifying permanent employees and a NEST scheme for all qualifying seasonal employees. Employees are automatically enrolled on the pension scheme unless the Society is notified by the employee that they wish to opt out. The cost of these contributions is charged to the Statement of Financial Activities ("SOFA") when payable.

The defined benefit scheme was closed to future accrual in March 2012. A deficit reduction payment is made by the Society to the scheme which is an agreed percentage of the scheme's solvency deficit in order to reduce that deficit over time. This payment is recognised within actuarial gains and losses in the net movement in funds in the SOFA.

To the extent that the scheme is in surplus on a technical provisions basis, the Society does not recognise this in the financial statements as the Society is unable to recover any surplus either through reduced contributions in the future or through refunds from the scheme.

Grant-making

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 with our major conservation programmes. 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 employees.

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 reviewed internally against standardised criteria before a funding decision is made.

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

Related Party Transactions

Details of transactions with entities that are part of The North of England Zoological Society group are disclosed in the notes to the accounts.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

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. Income from Charitable Activities

	Visitor Related £'000	Unrestricted Funds		Total 2015 £'000	Total 2014 £'000
		Other unrestricted £'000	Other designated £'000		
Animals and botanical collection					
Visitor admission to zoo and gardens	17,067	-	-	17,067	14,212
Monorail and boats	430	-	-	430	501
Membership of zoo and Gift Aid thereon	4,331	-	-	4,331	3,275
Other	631	-	-	631	700
Total incoming resources from charitable activities	22,459	-	-	22,459	18,688

3. Income from Donations and Legacies

	Unrestricted 2015 £'000	Restricted 2015 £'000	Total 2015 £'000	Total 2014 £'000
Donations and Gift Aid on admission to zoo	2,088	-	2,088	2,035
Animal Adoptions	239	-	239	240
Grants and Other Donations	288	534	822	548
Total voluntary income	2,615	534	3,149	2,823

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 CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

4. Other Trading Activities

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, retail and event activities of the Zoo from outlets rented from the Society. It distributes its taxable profit via Gift Aid to the Society. A summary of its trading results is shown overleaf.

Audited financial statements for Chester Zoo Enterprises Limited for the year ended 31 December 2015 will be filed with the Registrar of Companies.

	Total 2015 £'000	Total 2014 £'000
Chester Zoo Enterprises Limited trading results		
Turnover	9,822	8,174
Resources expended		
Labour and cost of goods sold	(6,887)	(5,800)
Gross trading surplus for year	2,935	2,374
Indirect costs		
Operating and support costs paid to Society	(1,889)	(1,279)
Property rents paid to Society	(562)	(562)
Operating profit	484	533
Taxation	-	-
Profit for the financial year	484	533
Gift Aid donation to parent company	(484)	(533)
Surplus/(deficit) retained in subsidiary	-	-

5. Interest income

	Total 2015 £'000	Total 2014 £'000
Interest on cash deposits	15	82
Refund of interest previously paid to HMRC (note 20)	181	-
Total interest income	196	82

6a. Analysis of Total Expenditure

	Employee Costs £'000	Other Direct Costs £'000	Support Costs (Note 6b) £'000	Total 2015 £'000	Total 2014 £'000
Charitable activities					
Animals and botanical collection	5,232	8,794	3,560	17,586	16,742
Science and education	1,023	328	382	1,733	881
Conservation programmes	280	1,001	355	1,636	1,165
Total for Society	6,535	10,123	4,297	20,955	18,788
Raising Funds					
Costs of generating voluntary income	139	55	65	259	194
Total for Society	139	55	65	259	194
Subsidiary's cost of goods sold and other costs	2,904	3,983	1,889	8,776	7,079
Total for Society	6,674	10,178	4,362	21,214	18,982
Total expenditure for Group	9,578	14,161	6,25	29,990	26,061

Resources expended on the charitable activities of maintaining the zoo's animal and botanical collection include costs associated with marketing, provision of guest services, amenities and administration of Society membership of £4,473,000 (2014: £4,092,000).

6b. Analysis of Support Costs

	Total 2015 £'000	Total 2014 £'000
Direct Employee	2,995	2,252
Other Costs	3,256	3,137
Total of support costs	6,251	5,389

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

6b. Analysis of Support Costs (continued)

Support costs have been allocated to the activities set out in note 6a on the basis of their usage of cost driving activities attributable to each support service, as follows:

Support cost breakdown by activity	Animals and botanical collection £'000	Science and Education £'000	Conservation Programmes £'000	Generating voluntary income £'000	Subsidiary £'000	Total 2015 £'000	Total 2014 £'000
Governance	247	12	3	12	-	274	377
Human Resources	413	58	55	8	295	829	772
Information Technology	312	44	42	6	223	627	658
Directorate and Central Services	238	33	32	5	170	478	210
Finance Department	765	107	102	15	547	1,536	1,542
Security and Site operations	230	32	31	5	165	463	393
Maintenance Department	1,083	152	144	22	775	2,176	1,076
Estates and Project Planning	673	-	-	-	-	673	361
Exceptional VAT (note 20)	(401)	(56)	(54)	(8)	(286)	(805)	-
Total	3,560	382	355	65	1,889	6,251	5,389

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

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 2015 £'000	Total 2014 £'000
Conservation	842	-	842	589
Field	2	-	2	44
Scholarships	-	9	9	8
Other	17	-	17	43
Total grants payable	861	9	870	684

8. Net Income before other Recognised Gains and Losses

This is after charging:	Total 2015 £'000	Total 2014 £'000
Services provided by the Society's auditor		
Fees payable for the audit of the charity and consolidated accounts	18	18
Fees payable for the audit of the subsidiaries	8	3
Fees payable for taxation advice for the charity	2	-
Fees payable for taxation advice for the subsidiary	3	3
Operating Leases	23	-
Depreciation of tangible fixed assets	4,400	2,882

9. Trustees' Remuneration

The Trustees, being charity Trustees, received no remuneration (2014: nil). One Trustee was reimbursed £731 (2014: £1,127) during the year for travel and accommodation expenses necessarily incurred. Insurance costing £4,000 (2014: £4,000) has been taken out by the Society to protect the Society, its Trustees and other employees against the consequences of any neglect or default on their part.

10. Employee costs

The average monthly headcount employed by the Society during the year was 574 (2014: 510) including seasonal employees. The average monthly number of full-time equivalent employees (FTE) analysed by category were as follows:

	Number of FTE employees	
	2015 Number	2014 Number
Animals and botanical collection	215	194
Science and education	17	16
Conservation programmes	7	9
Fundraising	4	4
Trading subsidiary	146	135
Support and Governance	72	70
Total FTE employees	461	428

The aggregate payroll costs of these persons were as follows:

	Total 2015 £'000	Total 2014 £'000
Wages and salaries cost	10,298	9,359
Social security cost	824	763
Pension cost:		
Defined benefit pension scheme	-	-
Defined contribution pension scheme	769	779
Total employee costs	11,891	10,901

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

10. Employee costs (continued)

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 the defined contribution pension scheme. Only one had benefits accruing to them on the defined benefit scheme. Contributions to the defined contribution scheme for these employees totalled £63,000 (2014: £58,000).

	2015 Number	2014 Number
From £110,001 to 120,000	1	-
From £100,000 to £110,000	1	2
From £90,001 to £100,000	-	-
From £80,001 to £90,000	1	1
From £70,001 to £80,000	-	2
From £60,001 to £70,000	-	-

The key management personnel employed by the Society comprise the five members of the executive team, some of whom joined during 2015. Their total employee benefits for 2015, including pension contributions, were £476,681 (2014: £445,118).

11. Tangible Fixed Assets for the Group and Society

	Assets in the course of construction £'000	Freehold Property £'000	Buildings and enclosures £'000	Machinery and equipment £'000	Animals £'000	Total £'000
Cost						
At 1 January 2015	26,100	3,791	28,197	1,427	1	59,516
Additions	20,835	-	708	432	-	21,975
Disposals and Transfers	(46,935)	-	37,087	9,849	-	-
At 31 December 2015	-	3,791	65,992	11,708	1	81,492
Depreciation						
At 1 January 2015	-	2,777	19,981	977	-	23,735
Charge for the year	-	-	3,708	692	-	4,400
At 31 December 2015	-	2,777	23,689	1,669	-	28,135
Net book value						
At 31 December 2015	-	1,014	42,303	10,039	1	53,356
At 31 December 2014	26,100	1,014	8,216	450	1	35,781

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. 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 FRS102. 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

	2015 £	2014 £
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	1

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

Subsidiary undertakings	Company Number	Country of incorporation	Principal activity	Class and percentage of shares held	
				Group	Company
Chester Zoo Enterprises	2669535	UK	Catering and Retail	99% ordinary	99% ordinary
Chester Zoo (Nigeria)	08374657	UK	Protecting the biodiversity of Nigeria	100% ordinary	100% ordinary
Chester Zoo Foundation Nigeria	08904330	UK	Protecting the biodiversity of Nigeria. Wholly owned by Chester Zoo (Nigeria) Limited	100% ordinary	-

13. Stocks

	Group		Society	
	2015 £'000	2014 £'000	2015 £'000	2014 £'000
Goods for resale	523	426	-	-
Consumables	63	50	63	50
Total	586	476	63	50

14. Debtors: Amounts Falling Due Within One Year

	Group		Society	
	2015 £'000	2014 £'000	2015 £'000	2014 £'000
Trade debtors	100	199	85	181
Amount owed by subsidiary undertaking	-	-	-	257
Other debtors	26	18	26	18
VAT recoverable	24	708	24	708
Prepayments and accrued income		429	633	429
Total	783	1,354	768	1,593

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

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

15. Creditors: Amounts Falling Due Within One Year

	Group		Society	
	2015 £'000	2014 £'000	2015 £'000	2014 £'000
Bank overdraft	133	-	133	-
Trade creditors	2,022	2,697	1,460	2,510
Other taxes and social security costs	329	238	329	238
Accruals	1,764	1,122	1,764	1,122
Other creditors	95	501	95	501
Deferred income	1,850	1,357	1,850	1,357
Total	6,193	5,915	5,631	5,728

16. Creditors: Amounts Falling Due After More Than One Year

	Group		Society	
	2015 £'000	2014 £'000	2015 £'000	2014 £'000
Revolving credit facility	11,300	-	11,300	-
Total	11,300	-	11,300	-

An unsecured £15m revolving credit facility was taken out with Santander in November 2013 and will expire in November 2018 where upon it must be repaid in full. As part of compliance to the terms of the facility, the Society is obliged to meet two covenants. These are:

- (i) Interest cover – EBITDA must be at least four times the interest payable; and
- (ii) Leverage – Net debt must not exceed three times EBITDA.

As at the 31 December 2015 the Society was fully compliant with these covenants and anticipates complying with the covenants for the duration of the facility.

17. Movement in Consolidated Funds

	Balance at 31 Dec 2014 £'000	New funds £'000	Funds utilised £'000	Transfers £'000	Balance at 31 Dec 2015 £'000
Restricted income funds					
Animal collection	34	70	(39)	-	65
Education	16	315	(132)	-	199
Outreach	69	149	(64)	-	154
Events	1	-	(1)	-	-
	120	534	(236)		418
Designated funds					
Reserves tied to tangible fixed assets	20,323	-	-	14,261	34,584
Animal collection	743	-	(743)	764	764
Education	18	-	(18)	92	92
Outreach	642	-	(642)	1,411	1,411
Future capital projects	468	-	(468)	1,841	1,841
<i>Islands</i> capital project	12,550	-	(12,550)	496	496
	34,744	-	(14,421)	18,865	39,188
Other charitable funds	-	-	-	-	-
Total group funds employed	34,864	534	(14,657)	18,865	39,606

	Unrestricted			Total Funds £'000
	General £'000	Designated £'000	Restricted £'000	
Tangible Fixed Assets	16,435	36,921	-	53,356
Investments	-	-	-	-
Current Assets and Liabilities	(2,450)	-	-	(2,450)
Long Term Liabilities	(11,300)	-	-	(11,300)
	2,685	36,921	-	39,606

The restricted income funds derive from the Society's 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 and that are in line with the charitable objectives.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

18. Capital Commitments

	Group		Society	
	2015 £'000	2014 £'000	2015 £'000	2014 £'000
Capital expenditure, contracted for but not provided in the financial statements	32	12,550	32	12,550

19. Leasing Commitments

The group's future minimum non-cancellable operating lease commitments are as follows:

	Group		Society	
	2015 £'000	2014 £'000	2015 £'000	2014 £'000
Within one year	60	-	60	-
Between one and five years	159	-	159	-
	219	-	219	-

20. Exceptional VAT

In 2014 the Society was involved in a Tribunal 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. The result of the Tribunal was published in June 2015 and found in favour of the Society. Within the prior year financial statements, the Society had made a prudent assessment of the amount of historic VAT that would be recovered of £0.6m. However, following the Tribunal findings, the Society recovered an amount of £1.5m, which has therefore been allocated as follows:

	2015 £'000
To a debtor in relation to VAT recoverable, recognised in prior years	557
To resources expended in 2015 (note 6)	758
To interest income in 2015 (note 5)	181
To resources expended in 2015 (note 6)	47
Total	1,543

21. Related Party Transactions

The Society received a charitable donation by Gift Aid from Chester Zoo Enterprises Limited of £484,373 (2014: £532,643). The Society also leases retail and catering outlets to Chester Zoo Enterprises Limited for an annual lease of £562,014 (2014: £562,014).

22. 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 and closed to future accrual in March 2012. In line with FRS102, 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 recognition of the surplus at the year end.

A full actuarial valuation was carried out as at 31 December 2014 and updated to 31 December 2015 for the purpose of these disclosures by Mercer, a qualified independent actuary.

	2015 £'000	2014 £'000
Present value of funded defined benefit obligations	16,309	17,857
Fair value of plan assets	21,952	21,217
Surplus	5,643	3,360
Effect of asset ceiling	(5,643)	(3,360)
Net defined benefit asset / (liability) recognised	-	-

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

Weighted average assumptions used to determine benefit obligations at:	2015	2014
Discount rate	3.9%	3.70%
Rate of price Inflation (RPI)	3.10%	3.10%
Rate of pension increases (5% RPI)	3.05%	3.10%
Rate of pension increases (2.5% RPI)	2.05%	2.20%
Weighted average assumptions used to determine net pension cost:		
Discount rate	3.70%	4.70%
Rate of price Inflation (RPI)	3.10%	3.40%
Rate of pension increases (5% RPI)	3.10%	3.40%
Rate of pension increases (2.5% RPI)	2.20%	2.20%
Assumed life expectations on retirement at age 65:		
Retiring today (member age 65)	22.9	22.9
Retiring in 20 years (member age 45 today)	25.1	25.0

The fair value of the plan assets and return on those assets were as follows:

	Fair value at 31 Dec 2015 (£'000)	2015 %	Fair value at 31 Dec 2014 (£'000)	2014 %
Cash and cash equivalents	88	0.4	122	0.6
Equities	11,446	52.1	10,394	49.0
Debt Instruments	8,375	38.2	8,567	40.4
Property	2,043	9.3	2,134	10.0
Total	21,952	100.0	21,217	100.0

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

22. Pensions (continued)

	2015 £'000	2014 £'000
Change in defined benefit obligation		
Benefit obligation at beginning of year	17,857	15,489
Interest cost	647	716
Remeasurement: Actuarial (gain)/loss	(1,436)	2,158
Benefits and expenses paid	(759)	(506)
Benefit obligation at end of year	16,309	17,857
	2015 £'000	2014 £'000
Change in scheme assets		
Fair value of scheme assets at beginning of year	21,217	20,018
Interest income	779	933
Employer contributions (incl. employer direct benefit payments)	894	361
Benefits and expenses paid	(759)	(506)
Remeasurements – return on scheme assets less interest income	(179)	411
Fair value of scheme assets at end of year	21,952	21,217

22. Pensions (continued)

	2015 £'000	2014 £'000
Expense recognised in the profit and loss account		
Current service cost	-	-
Interest expense	647	716
Interest (income) on plan assets	(779)	(933)
Interest expense on effect of (asset ceiling)	132	217
Total net interest cost	-	-
Remeasurements:		
Effect of changes in assumptions	(1,017)	2,158
Effect of experience adjustments	(419)	-
Return on plan assets (excluding interest income)	179	(411)
Changes in asset	2,151	(1,386)
Total remeasurements included in other comprehensive income	894	361
Total pension cost recognised in the SOFA	894	361

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, Defined Contribution Scheme

Contributions to the defined contribution scheme totalled £427,331 (2014: £451,000). The expenditure is allocated to unrestricted funds.

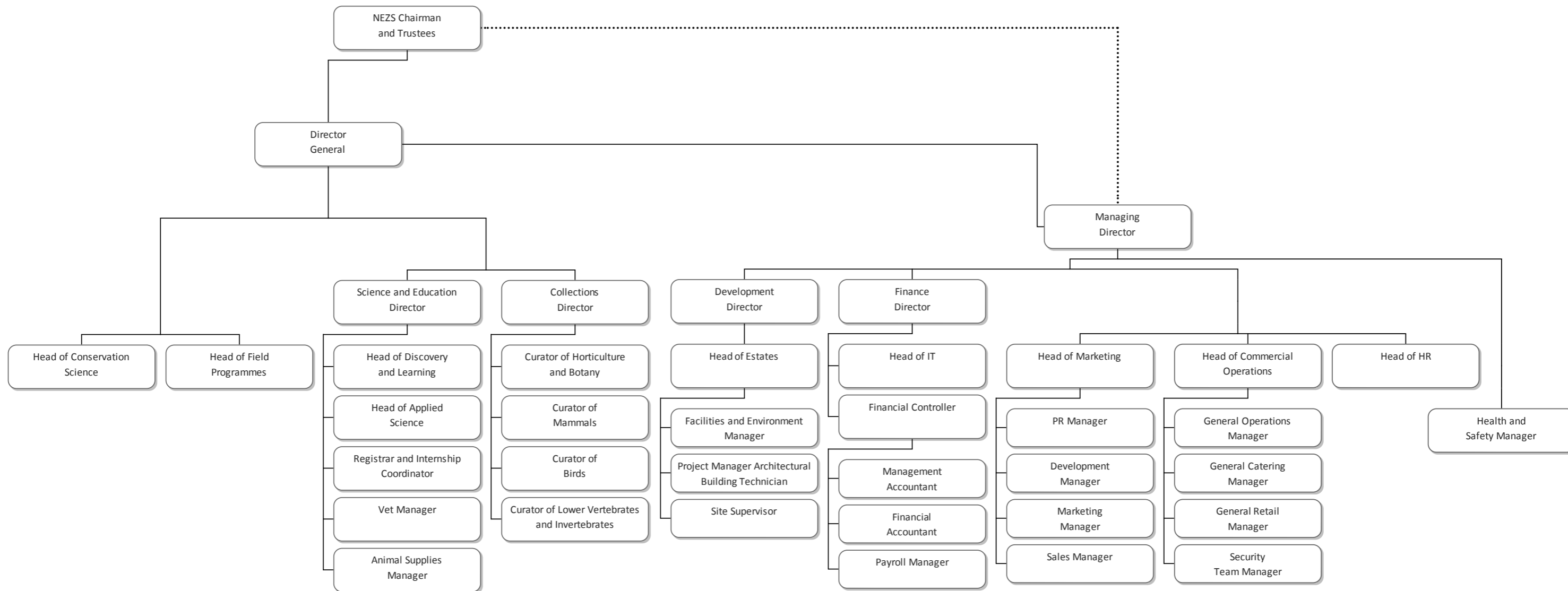
www.chesterzoo.org

Registered Charity Number 306077
Registered Company Number 287902

North of England Zoological Society
Caughall Road
Upton by Chester
Chester CH2 1LH
Tel: 01244 380280
Fax: 01244 371273
Email: info@chesterzoo.org

Chester Zoo is licensed under the Zoo Licensing Act, 1981. In the interests of conservation and educational study, this report may be freely copied without alteration or amendment and stored by electronic means without formal permission. It is also available to download from our website. The NEZS is happy to assist anyone with special needs obtain a copy in the appropriate format. Published June 2016 by the North of England Zoological Society.

NEZS/Chester Zoo ORGANISATION MANAGEMENT STRUCTURE 2014



STAFF ON EXTERNAL BOARDS (page 1 of 2)

Catherine Barton

Field Conservation Manager

Chair, BIAZA Palm Oil Sub Group

Member, BIAZA Environmental Sustainability and Climate Change Committee

Sarah Bazley

Learning Team Manager

Community School Governor, Acresfield Primary School, Upton

Becca Biddle

Technical Assistant to the Director General

Member, EAZA Felid Taxon Advisory Group

Member, EAZA Parrot Taxon Advisory Group

Member, EAZA Rhino Taxon Advisory Group

Core Member, EAZA Population Management Advisory Group

Sarah Bird

Biodiversity Officer

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

Committee Member, Cheshire Mammal Group

Member, BIAZA Native Species Working Group

Member, Cheshire Local Nature Partnership

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

Member, Plant Link UK (PLINK UK)

Kate Brankin

Education Admin Coordinator

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

Elizabeth Carnie

Finance Director

Member, Chester Growth Partnership Board

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

Chester Student Union External Trustee

Member, Business Improvement District (BID) Delivery Board

Member, Local Enterprise Partnership (LEP) Board

Veronica Cowl

EGZAC Assistant

Coordinator, EAZA Group on Zoo Animal Contraception

Coordinator, European Association of Zoo and Wildlife Veterinarians Contraception Working Group

Nick Davis

Assistant Curator of Mammals

ABWAK Vice- chair

EEP co-ordinator for Eastern Bongo

Member, EAZA Spider monkey species committee

Member, EAZA Sulawesi black crested macaque species committee

Member, BIAZA Enclosure design tool advisory board

Gabby Drake

Veterinary Resident

Member, British Veterinary Zoological Society

Veterinary Advisor, BIAZA Carnivore Focus Group

Dr Maggie Esson (until July 2015)

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

Board Member-at-Large, Comparative Nutrition Society

Adam Fryda

Assistant Team Manager Formal Education

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 Lisa Holmes

Behaviour & Welfare Scientist

Vice-Chair, EAZA Animal Welfare Working Group (Acting Chair until August 2016)

Member, BIAZA Research Committee

Member, Animal Welfare Research Network

Honorary PhD Supervisor, University of Liverpool

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 Endangered Species Programme

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

Veterinary Advisor, EAZA Blue-crowned Laughingthrush European Endangered Species Programme

Honorary Lecturer, School of Veterinary Science, University of Liverpool

Simon Mann

Development Director

Member, CBI North West Regional Council

Martin King

Head of IT

Chief Technical Officer, EAZA Group for Zoo Animal Contraception

Chartered Member, British Computer Society

Member, Charity IT Leaders Group

Ray Morrison

Facilities and Environment Manager

Vice Chair, BIAZA Environmental Sustainability and Climate Change Committee

Member, British Institute of Facilities Management

Andrew Moss

Conservation Social Scientist

Member, BIAZA Conservation Education Committee

Associate Fellow, University of Warwick

Stuart Nixon

Member, IUCN Great Ape Specialist Advisory group

Member, IUCN Giraffe and Okapi Specialist Advisory group

STAFF ON EXTERNAL BOARDS (page 2 of 2)

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, Threatened Asian Songbird Alliance and the Bali Myna International Advisory Board

ESB Studbook Keeper, Sumatran Laughingthrush

EEP Studbook keeper, Javan Green Magpie

Member, BIAZA Bird Working Group Steering Committee

Member, EAZA Passerine Taxon Advisory Group

Member, EAZA Galliformes Taxon Advisory Group

Member, EAZA Hornbill Taxon Advisory Group

Member, EAZA Parrot Taxon Advisory Group

Member, EAZA Waterfowl Taxon Advisory Group

Member, EAZA Pigeon and Dove Taxon Advisory Group

Member, EAZA Phoenicopteriformes and Ciconiiformes Taxon Advisory Group

Dr Mark Pilgrim

Director General

Member of Council, EAZA

Member of Council, BIAZA

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

Sarah Roffe

Team Manager – Giraffes

Member, BIAZA Hoofstock Focus Group

Tim Rowlands

Curator of Mammals

Member, EAZA Giraffe species committee

Member, EAZA African wild dog species committee

Member, EAZA Spectacled bear species committee

Member, EAZA Babirusa species committee

Member, EAZA Bongo species committee

Member, EAZA Vissayan warty pig species committee

Member, EAZA Black rhino species committee

Member, EAZA Greater one horned rhino species committee

Member, EAZA Northern cheetah species committee

Member, EAZA Chimpanzee species committee

Member, EAZA Giant otter species committee

Member, EAZA Red river hog species committee

Member, EAZA Okapi species committee

Member, EAZA Rodrigues fruit bat species committee

Member, EAZA Roan antelope species committee

Member, EAZA Lowland anoa species committee

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 (until March? 2015)

Director of Science and Education

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, DEFRA /BIAZA 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 (until June? 2015)

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

Cathrine Sauer

Nutrition Officer

Member, EAZA Nutrition Group

Member, AZA Nutrition Advisory Group

Member, Comparative Nutrition Society

Steve Unwin

Veterinary Officer

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

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

Member – Science Committee, European College of Zoological Medicine

Animal Health Consultant - Wildlife Impact

Dr Susan L Walker

Head of Applied Science

Co-Chair, European Group on Zoo Animal Contraception

Member, International Society of Wildlife Endocrinology

Reporting Member, BIAZA Research Group

Honorary Lecturer, University of Liverpool

David White

Co-chair, BIAZA Small Mammal Focus Group

Member, EAZA Small Mammal Taxon Advisory Group

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

Member, IUCN-SSC Asian Elephant 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.

Mr William Beale MA (Cantab), MEng

Will is Head of Programme Operations, WWF-UK. After working for 10 years with Unilever as a Chartered Chemical Engineer in various innovation, development and manufacturing roles, Will joined World Wildlife Fund (WWF-UK) in 2003. His work focuses on developing the organisation, its processes and people, to achieve increased impact and value for money from conservation programmes overseas and in the UK. Will represents WWF on the Conservation Measures Partnership, a partnership of conservation organisations that seek better ways to design, manage, and measure the impacts of their conservation actions.

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.

Sandra Donnelly BSc, PGCE

Following a career in financial services, Sandra teaches Economics and Business Studies at the Fallibroome Academy and is also pursuing a MA in Education. Formerly the Chief Executive of the Economics, Business and Enterprise Association she was responsible for building relationships with a range of stakeholders including government bodies, academics and education professionals. She also has co-ordinated partnerships with schools in South Africa, China and Australia. A regular visitor of Chester Zoo since childhood, Sandra credits the zoo for inspiring a lifelong love of wildlife. She has travelled widely to experience wildlife habitats and has visited zoos and conservation projects across the world. Through these experiences and close links to Port Moresby Nature Park, in Papua New Guinea, she has gained a practical understanding of the challenges facing zoos and conservationists.

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.

ZOO RESEARCH AND SCIENTIFIC PUBLICATIONS

(page 1 of 2)

Antwis, R. E., **Fidgett, A. L.**, & Preziosi, R. F. (2015). *Using science to improve ex situ husbandry of amphibians*. [Oral presentation]. The 8th European Zoo Nutrition Conference, 22-25 January 2015, Arnhem, The Netherlands.

Antwis, R. E., Michaels, C. J., Preziosi, R. F., & **Fidgett, A. L.** (2015). *Understanding the interactions of diet and lighting on frogs and their symbiotic bacteria to improve ex situ husbandry of amphibians* [Oral presentation]. 11th AZA Nutrition Advisory Group Conference on wild animal nutrition, 27-30 September 2015, Portland, USA.

Atencia, R., Stohr, E., Drane, A., Stenbridge, M., Howatson, G., Lopez del Rio, P. R., Feltre, Y., Tafon, B., Redrobe, S., Peck, B., Eng, J., **Unwin, S.**, Sanchez, C., & Shave, R. (2015). Hemodynamic responses to four different anaesthetic protocols in wild-born captive chimpanzees. *Journal of the American Veterinary Medical Association, In Press*.

Barton, C. (2015). *Influencing the palm oil sector through effective partnerships* [Poster presentation]. BIAZA Research Conference, 7-8 July 2015, Dublin.

Barton, C. (2015). *Influencing the palm oil sector through effective partnerships* [Poster presentation]. Zoos & Aquariums Committing to Conservation (ZACC), October 2015, Denver.

Barton, C., & **Unwin, S.** (2015). *Influencing the palm oil sector through effective partnerships* [Oral presentation]. UN-GRASP Regional congress on Orangutan conservation <http://www.un-grasp.org/regionalmeeting/> Kota Kinabalu, Sabah, Malaysia.

Bazley, S. (2015). Investigating the impact of interactive educational initiatives on visitors in a UK Zoo [MSc dissertation]. The Open University.

Bird, S. (2015). *Partners for Pine Martens* [Oral presentation]. BIAZA Conservation Conference, 7-8 December 2015, Bristol.

Chatterton, J., **Unwin, S.**, Rehman, I. u., & Bridson-Walton, J. M. (2015). Successful surgical treatment of obstructive liver disease caused by a biliary calculus in a captive chimpanzee (*Pan troglodytes*). *Journal of Zoo and Wildlife Medicine*, 46(4), 925-928.

Cunningham, E. P., **Unwin, S.**, & Setchell, J. M. (2015). Darting Primates in the Field: A Review of Reporting Trends and a Survey of Practices and Their Effect on the Primates Involved. *International Journal of Primatology*, 1-22.

D'souza, N. A. (2015). Population Viability Analysis of the Captive Mountain Chicken Frog (*Leptodactylus fallax*) in European Zoos [MSc Dissertation]. University of Kent.

Drane, A., Feltre, Y., **Unwin, S.**, & Shave, R. (2015). *Comparison of echocardiographic parameters between zoo and sanctuary captive chimpanzees* (*Pan troglodytes*) [Oral presentation]. 17th Annual BIAZA Research Conference, Dublin Zoo, Ireland.

Durant, S. M., Becker, M. S., Bashir, S., Creel, S., Dickman, A. J., Beudels-Jamar, R. C., Lichtenfeld, L., Hilborn, R., Wall, J., Wittemyer, G., Badamjav, L., Blake, S., Boitani, L., Breitenmoser, C., Broekhuis, F., Christianson, D., Cozzi, G., Davenport, T. R. B., Deutsch, J., Devillers, P., Dollar, L., Dolrenny, S., Douglas-Hamilton, I., Droge, E., Fitzherbert, E., Foley, C., Hazzah, L., Hopcraft, J. G. C., Ikanda, D., Jacobson, A., Joubert, D., Kelly, M. J., Milanzi, J., Mitchell, N., M'Soka, J., Msuha, M., Mweetwa, T., Nyahongo, J., Rosenblatt, E., Schuette, P., Sillero-Zubiri, C., Sinclair, A. R. E., Stanley-Price, M. R., **Zimmerman, A.**, & Petteorelli, N. (2015). Developing fencing policies for dryland ecosystems. *Journal of Applied Ecology*, 52(3), 544-551.

Edwards, K. L., Shultz, S., **Pilgrim, M.**, & **Walker, S. L.** (2015). Male reproductive success is correlated with testosterone in the eastern black rhinoceros (*Diceros bicornis michaeli*). *General and comparative endocrinology*, 213, 40-49.

Edwards, K. L., Trotter, J., Jones, M., Brown, J. L., Steinmetz, H. W., & **Walker, S. L.** (2015). Investigating temporary acyclicity in a captive group of Asian elephants (*Elephas maximus*): Relationship between management, adrenal activity and social factors. *General and comparative endocrinology*, 225, 104-116.

Edwards, K. L., **Walker, S. L.**, Dunham, A. E., **Pilgrim, M.**, Okita-Ouma, B., & Shultz, S. (2015). Low birth rates and reproductive skew limit the viability of Europe's captive eastern black rhinoceros, *Diceros bicornis michaeli*. *Biodiversity and Conservation*, 24(11), 2831-2852.

Esson, M., & **Moss, A.** (2015). Hope taking root at Chester Zoo. *Journal of the International Zoo Educators Association*, 51, 33-37.

Fidgett, A. L., Edwards, M. S., Peterson, I., & Webster, M. (2015). *Designing diet management software for healthy zoo animals* [Oral presentation]. British Society of Animal Science Annual Meeting, Chester, U.K.

Fidgett, A. L., Edwards, M. S., Peterson, L., & Webster, M. (2015). *Format FAUNA™ - diet management software for healthy animals* [Oral presentation]. The 8th European Zoo Nutrition Conference, 22-25 January 2015, Arnhem, The Netherlands.

Fidgett, A. L., & Partington, C. (2015). *Feeding, nutrition and body condition of UK elephants*. [Oral presentation]. The 8th European Zoo Nutrition Conference, 22-25 January 2015, Arnhem, The Netherlands.

Harris, E. W., Combe, F. J., & **Bird., S.** (2015). Using integrated population modelling in conservation monitoring: a case study in the common dormouse (*Muscardinus avellanarius*). *Folia Zoologica*, 64(4), 330-336.

Hatton, L. (2015). Behavioural observations, enclosure use and visibility of Javan rhinoceros hornbills (*Buceros rhinoceros silvestris*) and Southern Cassowary (*Casuarius casuarius*): a pre-occupancy of 'Islands' evaluation [BSc dissertation]. University of Manchester.

Hatton, L., **Owen, A.**, **Mcleod, W.**, **Holmes, L.**, & **Moss, A.** (2015). *Behavioural observations, enclosure use and visibility of Javan rhinoceros hornbill* (*Buceros rhinoceros silvestris*) and *Southern cassowary* (*Casuarius casuarius*) [Poster presentation]. 17th Annual BIAZA Research Conference, Dublin Zoo, Ireland.

Hewitt, R. (2015). *An update on the planting of Islands* [Oral presentation]. The EAZA Horticulture Conference, 26-29 May 2015, Nuremberg.

Holmes, L. (2015). *Early development and environmental influences on animal behaviour on welfare* [Invited speaker]. LASA 3Rs section/UFAW meeting, 23/09/15, GSK, Stevenage.

Holmes, L. (2015). *The whole animal approach: why careful application of endocrinology can be instrumental in animal behaviour studies* [Oral presentation]. 17th Annual BIAZA Research Conference, Dublin Zoo, Ireland.

Jaffe, J. E., Flach, E. J., Feltre, Y., Rivers, S., **Lopez, J.**, & Cunningham, A. A. (2015). Intestinal adenocarcinoma in a Montserrat Mountain chicken (*Leptodactylus fallax*). *Journal of Zoo and Aquarium Research*, 3(1), 21-24.

Johnson, A. (2015). Quantifying enclosure useage of Banteng (*Bos javanicus*) at Chester Zoo [BSc Dissertation]. Harper Adams University.

Leclerc, A., Lécu, A., Bechstein, N., Lemberge, K., **Drake, G. J.**, Magnone, W., Pin, D., Einspanier, P. D. A., Nevado, E. M., Barbon, A., Nicolau, A., & Kolter, L. (2015). *Spectacled bear* (*Tremarctos ornatus*) *alopecia syndrome: an update*. The American Association of Zoo Veterinarians, Portland.

Lopez, J., **McKenzie, A.**, & Dastjerdi, A. (2015). *An alternative blood sampling technique in elephants for EEHV PCR testing* [Oral presentation]. 10th International Elephant Endotheliotropic Herpesvirus (EEHV) workshop, Houston, Texas, USA.

Lopez, J., **Unwin, S.**, Ford, L., & Sanderson, S. (2015). *Practical Zoonosis Management for Zoos* [Oral presentation]. International Conference on Diseases of Zoo and Wild Animals, Barcelona, Spain.

Lowman, T. (2015). Activity budgets and spatial utilisation of Sumatran tigers (*Panthera tigris sumatrae*) [MSc dissertation]. Manchester Metropolitan University.

Martell, S. (2015). A 24-hour time budget study of two-toes sloth at Chester Zoo [Nuffield Report]. Nuffield Foundation.

Mayes, A. (2015). A preliminary study into the determination of a zoological soundscape- elephants. University of Salford.

McNally, R. (2015). Evaluating the effectiveness of current enrichment practices used with three monitor lizard species (*Varanus komodoensis*, *V. prasinus*, *V. salvadori*) at Chester Zoo [BSc Dissertation]. University of Manchester.

McNally, R., **Holmes, L.**, **Garcia, G.**, **Baker, B.**, **Cook, M.**, & **Fidgett, A.** (2015). *Evaluating the effectiveness of current enrichment practices used for three monitor lizard species* (*Varanus komodoensis*, *V. salvadorii*, *V. prasinus*) at Chester Zoo [Poster presentation]. EAZA Annual Conference, 15-19 September 2015, Wroclaw Zoo, Poland.

McNally, R., **Holmes, L.**, **Garcia, G.**, **Baker, B.**, **Cook, M.**, & **Fidgett, A. L.** (2015). *Evaluating the effectiveness of current enrichment practices used with three monitor lizard species* (*Varanus komodeonsis*, *V. salvadorii*, *V. prasinus*) at Chester Zoo [Poster presentation]. 17th Annual BIAZA Research Conference.

Micheletti, T., Brown, J. L., **Walker, S. L.**, Cubas, Z. S., Furtado, P. V., Putman, S. B., de Moraes, W., de Oliveira, M. J., de Oliveira, C. A., & Moreira, N. (2015). The use of altrenogest to avoid hyperestrogenism after eCG-hCG ovulation induction in southern tigrina (*Leopardus guttulus*). *Theriogenology*, 84(4), 575-582.

Molenaar, F. M., La Rocca, S. A., Khatri, M., **Lopez, J.**, Steinbach, F., & Dastjerdi, A. (2015). Exposure of Asian Elephants and Other Exotic Ungulates to Schmallenberg Virus. *PLoS one*, 10(8).

Moss, A. (2015). *The difficulties in measuring biodiversity-friendly behaviour change in zoo and aquarium visitors*. EAZA Zoo Educators Conference, Lisbon, Portugal.

Moss, A. (2015). *Horizon scanning for zoo educators*. EAZA Zoo Educators Conference, Lisbon, Portugal.

Moss, A., Jensen, E., & Gusset, M. (2015). Evaluating the contribution of zoos and aquariums to Aichi biodiversity target 1. *Conservation Biology*, 29(2), 537-544.

Nixon, S., Amube, J., Boji-Mungu, D., Kaghoma, C., & Vyalengerera, M. (2015). *An Update on the Conservation Status of the Okapi* (*Okapia johnstoni*) in the Maiko-Tayna Region of Eastern Democratic Republic of Congo. Giraffe Indaba meeting 2015, South Africa.

Nixon, S., Kaghoma, C., & Vyalengerera, M. (2015). The status of Grauer's gorilla in the Usala Forest. *Gorilla journal (Journal of Berggorilla and Regenwalk Direkthilfe)*, 50.

Passos, L. (2015). Are captive Golden Mantella frogs (*Mantella aurantiaca*) fit to be wild? How captivity is affecting individuals' survival skills [PhD field report]. University of Salford.

Pilgrim, M., & **Biddle, R.** (2015). *Eastern black rhinos and Chester Zoo*. 9th Biennial Rhino Keeper Workshop 14th-18th June Chester.

Rakotondrasoa, E. F., Razafimanahaka, J., C., R. J., Griffiths, R. A., Jenkins, R. K. B., & **Garcia, G.** (2015). *Conservation status of the golden mantella frog in eastern Madagascar: how do protected areas contribute?* [Poster]. Student Conference on Conservation Science, Cambridge, U.K.

Roberts, P. S. (2015). Identifying factors influencing zoo visitor behaviour and knowledge: A mixed methods approach [MSc dissertation]. University of Leeds.

Rosa G.M., Cadle J.E., Crottini A., Dawson J., Edmonds D., Fisher M.C., **Garcia G.**, Glaw F., Glos J., Harris R.N., Köhler J., Rabemananjara F., Rabesihanaka S., Rabibisoa N., Randrianantoandro J.C., Raselimanana A.P., Raxworthy C.J., Razafindraibe H., Vallan D., Vences M., Weldon C., Wright P.C., & F., A. (2015). *ACSAM2, A Conservation Strategy for the Amphibians of Madagascar 2: abstract book*. Museo Regionale di Scienze Naturali, Regione Piemonte, Torino.

Rose, E. (2015). Evaluation of current enrichment for aquatic turtle species at Chester Zoo [BSc Dissertation]. University of Manchester.

Rose, E., **Holmes, L.**, **Garcia, G.**, **Baker, B.**, **Cook, M.**, & **Fidgett, A.** (2015). *Evaluation of current enrichment for aquatic turtle species at Chester Zoo* [Poster presentation]. EAZA Annual Conference 2015, 15 - 19 September Wroclaw Zoo, Poland.

Rose, E., **Holmes, L.**, **Garcia, G.**, **Baker, B.**, **Cook, M.**, & **Fidgett, A. L.** (2015). *Evaluation of current enrichment for aquatic turtle species at Chester Zoo* [Poster presentation]. 17th Annual BIAZA Research Conference, Dublin Zoo, Ireland.

Sanderson, J. L., Nichols, H. J., Marshall, H. H., Vitikainen, E. I. K., Thompson, F. J., **Walker, S. L.**, Cant, M. A., & Young, A. J. (2015). Elevated glucocorticoid concentrations during gestation predict reduced reproductive success in subordinate female banded mongooses. *Biology Letters*, 11(10).

Stanton, D. W. G., Hart, J., Kumpel, N. F., Vosper, A., **Nixon, S.**, Bruford, M. W., Ewen, J. G., & Wang, J. (2015). Enhancing knowledge of an endangered and elusive species, the okapi, using non-invasive genetic techniques. *Journal of Zoology*, 295(4), 233-242.

Tapley, B., Rendle, M., Baines, F. M., Goetz, M., Bradfield, K. S., Rood, D., **Lopez, J.**, **Garcia, G.**, & Routh, A. (2015). 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*, 34(1), 46-52.

Titchard, R., **Parry, C.**, **Lenihan, A.**, **Rowlands, T.**, **Purcell, R.**, & **Holmes, L.** (2015). *Assessing the behavioural and physiological impacts of housing changes in Bornean orangutans* (*Pongo pygmaeus*) at Chester Zoo [Poster presentation]. 17th Annual BIAZA Research Conference, Dublin Zoo, Ireland.

ZOO RESEARCH AND SCIENTIFIC PUBLICATIONS

(page 2 of 2)

Turnock, S., & **Moss, A.** (2015). Quality vs. quantity: assessing the visibility of the jaguars housed at Chester Zoo. *Zoo Biology*, 34(2), 189-192.

Unwin, S. (2015a). *An Introduction to Disease Risk Analysis and Oranguatan Medicine*. Orangutan Veterinary Advisory Group (OVAG) AGM, Yogyakarta, Indonesia.

Unwin, S. (2015b). *Linking Conservation to Wildlife Medicine: 'You're saying my sick Orangutan has nowhere to go?' [Symposium]*. Symposium as CPD for staff and students of Shyria Kuala University, Shyria Kuala University, Sumatra.

Walker, S. (2015). *Non-invasive adrenal analysis: How many samples should I collect and what will it tell me? [Oral presentation]*. 17th Annual BIAZA Research Conference, Dublin Zoo, Ireland.

Wilson, S. (2015). *Initiating field conservation projects: lessons learnt. Collective wisdom from BIAZA members [Oral presentation]*. BIAZA Conservation Conference, 7-8 December 2015, Bristol.

Yarnell, K., Hall, C., Royle, C., & **Walker, S. L.** (2015). Domesticated horses differ in their behavioural and physiological responses to isolated and group housing. *Physiology & Behavior*, 143, 51-57.

Zimmerman, A. (2015). *Jaguars and people: a range-wide analysis of human-wildlife conflict*. International Conference on Conservation Biology (ICCB), Montpellier, France.

Zimmerman, A. (2015). *Jaguars and people: a range-wide analysis of human-wildlife conflict [Oral presentation]*. Zoos & Aquariums Committing to Conservation (ZACC), October 2015, Denver.

MAMMALS STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/14			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/15		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Echinops telfairi</i>	Lesser Madagascar hedgehog tenrec	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Macroscelides proboscideus</i>	Short-eared elephant shrew	0	3	0	1	3	0	1	2	0	0	0	0	0	3	0	2	5	0
<i>Orycteropus afer</i>	Aardvark	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<i>Procavia capensis</i>	Rock hyrax	4	3	0	0	0	0	3	1	0	1	0	0	5	0	0	1	4	0
<i>Elephas maximus</i>	Asian elephant	2	5	0	0	0	0	0	1	0	1	1	0	0	0	0	1	5	0
<i>Choloepus didactylus</i>	Linne's two-toed sloth	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Myrmecophaga tridactyla</i>	Giant anteater	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tupaia belangeri</i>	Northern tree shrew	2	2	0	0	0	0	3	0	1	1	0	1	3	1	0	1	1	0
<i>Eulemur rufus</i>	Red-fronted lemur	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
<i>Hapalemur alaotrensis</i>	Alaotran gentle lemur	2	1	0	0	0	0	0	0	2	1	0	2	0	0	0	1	1	0
<i>Lemur catta</i>	Ring-tailed lemur	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
<i>Daubentonia madagascariensis</i>	Aye-aye	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Callithrix pygmaea niveiventris</i>	Eastern Pygmy marmoset	0	1	1	1	0	0	0	0	1	0	0	2	0	0	0	1	1	0
<i>Leontopithecus chrysomelas</i>	Golden-headed lion tamarin	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<i>Saguinus bicolor</i>	Pied tamarin	2	2	0	0	0	0	0	0	4	0	0	0	0	0	0	2	2	4
<i>Saguinus imperator</i>	Emperor tamarin	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
<i>Cebus xanthosternus</i>	Buffy-headed capuchin	4	1	3	0	0	0	0	0	0	1	0	0	0	0	0	3	1	3
<i>Callicebus cupreus</i>	Coppery titi	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Pithecia pithecia</i>	White-faced saki	2	1	1	0	1	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Alouatta caraya</i>	Black howler	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Ateles fusciceps rufiventris</i>	Black-headed spider monkey	3	4	0	0	0	0	2	1	0	1	0	0	0	1	0	4	4	0
<i>Macaca nigra</i>	Sulawesi crested macaque	9	12	0	1	0	0	0	0	0	7	1	0	0	0	0	3	11	0
<i>Macaca silenus</i>	Lion-tailed macaque	6	12	0	0	0	0	0	0	0	3	2	0	0	0	0	3	10	0
<i>Mandrillus sphinx</i>	Mandrill	7	10	0	0	0	0	0	0	0	3	0	0	1	0	0	3	10	0
<i>Hylobates lar</i>	Lar gibbon	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Hylobates moloch</i>	Moloch gibbon	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Pan troglodytes</i>	Chimpanzee	7	17	0	0	2	0	0	0	0	0	2	0	0	4	0	7	13	0
<i>Pongo pygmaeus pygmaeus</i>	Bornean orangutan	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0
<i>Pongo abelii</i>	Sumatran orangutan	2	5	0	0	0	0	0	1	0	0	1	0	0	0	0	2	5	0
<i>Cricetomys gambianus</i>	Gambian giant pouched rat	1	1	0	0	0	0	1	0	2	0	0	2	0	0	0	2	1	0
<i>Acomys cilicicus</i> *	Turkish spiny mouse	5	10	29	0	0	0	0	0	223	22	29	166	15	25	0	20	30	2
<i>Phloeomys pallidus</i>	Slender-tailed cloud rat	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1
<i>Heterocephalus glaber</i> *	Naked mole-rat	1	4	32	0	0	0	0	0	34	2	1	8	0	0	0	2	1	57
<i>Hystrix africaeaustralis</i>	Cape porcupine	2	2	0	0	0	0	2	0	1	0	0	1	1	1	0	3	1	0
<i>Hydrochoerus hydrochaeris</i>	Capybara	4	3	0	1	0	0	0	0	1	1	0	0	3	0	0	1	3	1
<i>Pteropus livingstonii</i>	Livingstone's fruit Bat	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
<i>Pteropus rodricensis</i>	Rodrigues Fruit Bat	57	66	0	0	0	0	36	30	1	3	4	1	15	0	0	75	92	0
<i>Carollia perspicillata</i> *	Seba's short-tailed bat	0	0	264	0	0	0	39	8	26	132	99	49	20	20	0	61	112	0
<i>Acinonyx jubatus soemmeringii</i>	Central African Cheetah	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0
<i>Felis silvestris grampia</i>	Scottish Wild cat	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Leptailurus serval</i>	Serval	1	1	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	0
<i>Panthera leo persica</i>	Asiatic Lion	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0

MAMMALS STOCKLIST (page 2 of 2)

<i>Panthera onca</i>	Jaguar	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Panthera tigris sumatrae</i>	Sumatran Tiger	1	3	0	0	0	0	2	1	0	0	0	0	1	2	0	2	2	0
<i>Mungotictis decemlineata</i>	Narrow-striped mongoose	1	1	0	1	1	0	0	0	0	0	0	0	1	1	0	1	1	0
<i>Helogale parvula</i>	Dwarf mongoose	2	4	0	0	0	0	0	0	1	0	0	1	0	1	0	2	3	0
<i>Mungos mungo</i>	Banded mongoose	1	4	0	0	0	0	0	0	0	0	1	0	1	3	0	0	0	0
<i>Suricata suricatta</i>	Slender-tailed meerkat	3	9	0	0	0	0	0	0	9	0	1	3	1	0	0	2	8	6
<i>Lycaon pictus pictus</i>	African hunting dog	5	1	0	0	0	0	0	0	0	1	0	0	0	0	0	4	1	0
<i>Speothos venaticus</i>	Bush dog	6	2	0	1	0	0	1	3	1	0	1	1	6	0	0	2	4	0
<i>Helarctos malayanus</i>	Malayan sun bear	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tremarctos ornatus</i>	Spectacled bear	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
<i>Aonyx cinerea</i>	Oriental small-clawed otter	2	2	0	0	1	0	0	0	0	0	0	0	1	2	0	1	1	0
<i>Pteronura brasiliensis</i>	Giant otter	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<i>Nasua nasua</i>	Brown-nosed coati	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
<i>Ailurus fulgens</i>	Red panda	2	2	0	0	0	0	1	1	0	1	1	0	1	0	0	1	2	0
<i>Equus grevyi</i>	Grevy's zebra	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	1	3	0
<i>Equus hemionus onager</i>	Persian onager	1	4	0	0	1	0	2	1	0	0	0	0	0	0	0	3	6	0
<i>Tapirus indicus</i>	Malayan tapir	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tapirus terrestris</i>	South American tapir	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2	1	1
<i>Diceros bicornis michaeli</i>	Eastern Black rhinoceros	3	7	0	0	0	0	0	1	0	0	1	0	0	1	0	3	6	0
<i>Rhinoceros unicornis</i>	One-horned rhinoceros	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Babyrousa babyrussa</i>	Babirusa	1	4	0	0	0	0	1	1	0	0	0	0	0	0	0	2	5	0
<i>Phacochoerus africanus</i>	Warthog	4	4	0	0	0	0	2	1	1	0	0	1	3	0	0	3	5	0
<i>Potamochoerus porcus</i>	Red River hog	1	1	0	0	0	0	0	0	2	0	0	2	0	0	0	1	1	0
<i>Sus cebifrons negrinus</i>	Visayan warty pig	2	3	0	0	0	0	0	0	8	0	0	6	0	0	0	2	3	2
<i>Camelus bactrianus</i>	Bactrian camel	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<i>Tragulus nigricans</i>	Philippine mouse-deer	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Pudu puda</i>	Southern pudu	3	2	0	0	0	0	0	0	1	0	0	1	0	1	0	3	1	0
<i>Rucervus eldii thamin</i>	Burmese Brow-antlered deer	2	18	1	0	0	0	0	0	0	2	2	1	0	0	0	0	16	0
<i>Rusa alfredi</i>	Philippine Spotted Deer	3	2	0	0	0	0	0	0	1	0	0	1	0	0	0	3	2	0
<i>Giraffa camelopardalisrothschildii</i>	Rothchild's Giraffe	1	7	0	0	0	0	2	0	1	0	1	1	0	0	0	3	6	0
<i>Okapia johnstoni</i>	Okapi	2	3	0	0	0	0	1	0	0	0	0	0	1	1	0	2	2	0
<i>Antilope cervicapra</i>	Blackbuck	0	7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6	0
<i>Madoqua kirkii</i>	Kirk's dik-dik	1	2	0	0	0	0	1	2	0	1	1	0	0	0	0	1	3	0
<i>Bos javanicus</i>	Javan Banteng	3	4	0	0	0	0	0	1	1	0	0	0	0	0	0	3	5	1
<i>Bubalus depressicornis</i>	Lowland Anoa	1	2	0	1	0	0	0	0	0	1	0	0	0	0	0	1	2	0
<i>Syncerus caffer nanus</i>	Dwarf forest buffalo	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0
<i>Tragelaphus eurycerus</i>	Bongo	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
<i>Tragelaphus imberbis</i>	Lesser kudu	1	2	0	0	0	0	1	1	0	1	1	0	0	0	0	1	2	0
<i>Tragelaphus spekii gratus</i>	West African Sitatunga	2	19	0	0	0	0	0	0	1	1	2	1	0	2	0	1	15	0
<i>Cephalophus natalensis</i>	Red forest duiker	1	1	0	0	0	0	0	1	1	0	1	1	0	0	0	1	1	0
<i>Hippotragus equinus</i>	Roan antelope	1	7	0	0	0	0	2	1	1	0	0	1	0	0	0	3	8	0
<i>Oryx dammah</i>	Scimitar-horned oryx	0	6	0	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0
		225	353	331	10	15	0	103	59	328	187	160	254	83	73	1	297	489	78
			909			25			490			601		157			864		

* denotes managed in groups

BIRD STOCKLIST (page 1 of 4)

Preferred Scientific Name	Common Name	Stock 31/12/14			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/15		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Casuarus casuarius</i>	Southern cassowary	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Crax blumenbachii</i>	Red-billed curassow	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Guttera pucherani</i>	Kenya crested guineafowl	2	2	1	0	0	0	2	1	1	0	0	2	0	0	0	4	3	0
<i>Arborophila gingica</i>	Collared Partridge	3	3	0	0	0	0	2	1	6	0	0	3	0	1	0	5	3	3
<i>Rollulus rouloul</i> *	Crested wood partridge	10	8	1	0	0	0	1	2	21	3	2	22	0	1	0	8	7	0
<i>Tragopan temminckii</i>	Temminck's tragopan	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tragopan caboti</i>	Cabot's tragopan	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	2	3	0
<i>Lophophorus impejanus</i>	Himalayan impeyan pheasant	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Lophura inornata</i>	Salvadori's pheasant	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Lophura hatinhensis</i>	Vietnamese pheasant	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Chrysolophus amherstiae</i>	Lady Amherst's pheasant	2	3	0	0	0	0	0	0	2	0	0	2	1	1	0	1	2	0
<i>Polyplectron emphanum</i>	Palawan peacock pheasant	4	7	0	0	1	0	1	4	0	0	0	0	1	4	0	4	8	0
<i>Argusianus argus</i>	Great argus	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Afropavo congensis</i>	Congo peacock	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Anser erythropus</i>	Lesser white-fronted goose	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Branta ruficollis</i>	Red-breasted goose	2	3	4	0	0	0	3	4	1	0	0	1	2	4	0	3	3	4
<i>Dendrocygna viduata</i> *	White-faced whistling duck	1	1	54	0	0	0	1	0	11	0	4	8	1	0	4	1	0	50
<i>Anas capensis</i>	Cape teal	1	1	9	0	0	0	0	0	2	0	0	0	0	0	2	1	1	9
<i>Anas erythrorhyncha</i> *	Red-billed pintail	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
<i>Aythya baeri</i>	Baer's pochard	8	8	1	0	0	0	12	10	3	0	0	2	8	8	0	12	10	2
<i>Aythya fuligula</i>	Tufted duck	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3	2	0
<i>Aythya nyroca</i> *	Ferruginous Duck	0	0	7	0	0	0	1	2	1	0	0	1	0	0	0	1	2	7
<i>Marmaronetta angustirostris</i> *	Marbled teal	1	4	4	0	0	0	0	0	0	0	0	1	0	0	0	1	4	3
<i>Netta rufina</i>	Red-crested pochard	4	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3	1	0
<i>Oxyura leucocephala</i> *	White-headed duck	4	5	5	0	0	0	0	0	10	1	0	8	0	0	0	2	6	6
<i>Sarkidiornis melanotos</i>	African comb duck	2	2	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0
<i>Tadorna ferruginea</i>	Ruddy shelduck	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	1	3	0
<i>Thalassornis leuconotus leuconotus</i>	African white-backed duck	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Spatula hottentota</i> *	Hottentot teal	5	4	1	0	0	0	1	0	6	0	0	4	2	0	4	1	1	5
<i>Spatula querquedula</i>	Garganey	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Asarcornis scutulata</i>	White-winged duck	1	1	0	0	0	0	0	2	3	0	0	3	0	0	0	1	3	0
<i>Lophodytes cucullatus</i>	Hooded merganser	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Mergellus albellus</i>	Smew	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4
<i>Spheniscus humboldti</i>	Humboldt penguin	6	7	29	0	0	0	0	0	9	0	0	5	0	0	5	6	7	28
<i>Phoenicopterus</i>	Flamingo	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Phoenicopterus chilensis</i>	Chilean flamingo	46	50	10	0	0	0	0	0	0	0	0	4	0	0	4	46	50	2
<i>Phoenicopterus ruber</i>	Caribbean Flamingo	52	45	10	0	0	0	0	0	0	1	1	1	0	0	0	51	44	9
<i>Ciconia nigra</i>	Black stork	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Geronticus eremita</i>	Waldrapp ibis	12	8	6	0	0	0	1	3	3	0	0	4	1	3	0	12	8	5
<i>Platalea leucorodia</i>	Eurasian spoonbill	5	3	2	0	0	0	0	0	0	0	0	1	0	0	0	5	3	1
<i>Egretta garzetta</i>	Little egret	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
<i>Scopus umbretta</i>	Hamerkop	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Aegypius monachus</i>	European Black Vulture	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Coragyps atratus</i>	Black vulture	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Vultur gryphus</i>	Andean condor	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

#

BIRD STOCKLIST (page 2 of 4)

<i>Eurypyga helias</i>	Sunbittern	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Balearica pavonina pavonina</i>	West African Crowned Crane	3	3	0	0	0	0	0	0	2	0	0	2	1	1	0	2	2	0
<i>Balearica regulorum</i>	Grey-crowned crane	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Balearica regulorum gibbericeps</i>	East African grey-crowned crane	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Anthropoides paradiseus</i>	Stanley crane	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
<i>Bugeranus carunculatus</i>	Wattled crane	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Caloenas nicobarica</i>	Nicobar pigeon	2	4	1	0	0	0	0	0	0	0	0	0	0	0	0	2	4	1
<i>Chalcophaps indica</i>	Emerald Dove	2	4	3	0	0	0	0	0	6	0	1	3	0	0	0	2	3	6
<i>Columba livia</i> *	Rock dove	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Columba mayeri</i>	Pink Pigeon	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Ducula bicolor</i> *	Pied imperial pigeon	0	0	22	0	0	0	0	0	0	0	0	1	3	4	6	2	2	5
<i>Gallicolumba criniger</i>	Mindanao bleeding heart dove	3	3	0	0	0	0	0	1	3	0	0	1	2	1	0	1	3	2
<i>Gallicolumba luzonica</i>	Luzon bleeding heart dove	2	3	0	0	0	0	0	0	3	0	0	0	0	0	0	2	3	3
<i>Gallicolumba rufigula</i>	Golden heart dove	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	1
<i>Goura victoria</i>	Victoria crowned pigeon	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	4	1	0
<i>Otidiphaps nobilis nobilis</i>	Green-naped pheasant pigeon	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0
<i>Otidiphaps aruensis</i>	White-naped pheasant-pigeon	3	3	0	0	0	0	0	1	1	0	0	1	0	0	0	3	4	0
<i>Ptilinopus melanospilus</i>	Black-naped fruit-dove	2	4	0	0	0	0	2	1	2	0	0	2	0	0	0	4	5	0
<i>Ptilinopus porphyrea</i>	Pink-headed fruit dove	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	2	1
<i>Ptilinopus superbus</i>	Superb fruit dove	5	5	0	0	0	0	0	0	6	0	0	2	0	1	0	5	4	4
<i>Streptopelia risoria</i> *	Java (Barbary) Dove	4	4	0	5	3	8	1	0	9	4	5	1	0	0	0	6	2	16
<i>Zenaida graysoni</i>	Socorro dove	2	0	0	0	1	0	3	3	0	0	0	0	1	0	0	4	4	0
<i>Eos histrio</i>	Red-and-blue lory	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Trichoglossus johnstoniae</i>	Mount Apo Lorikeet	3	5	0	0	0	0	0	0	2	0	1	0	0	0	0	3	4	2
<i>Lorius garrulus flavopalliatu</i>	Yellow-backed chattering lory	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Lorius domicella</i>	Purple-naped lory	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
<i>Psittacula derbiana</i>	Derbyan parakeet	5	5	0	0	0	0	0	0	7	2	1	1	0	0	0	3	4	6
<i>Loriculus galgulus</i>	Blue-crowned parrot	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Anodorhynchus hyacinthinus</i>	Hyacinth macaw	2	3	0	0	0	0	0	0	0	0	1	0	0	0	0	2	2	0
<i>Ara glaucogularis</i>	Blue-throated macaw	2	2	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
<i>Pyrrhura leucotis griseipectus</i>	Grey-breasted Parakeet	10	6	1	0	0	0	0	0	7	2	0	3	2	2	0	6	4	5
<i>Amazona viridigenalis</i>	Green-cheeked amazon	3	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0
<i>Amazona lilacina</i>	Lilacine amazon	4	4	0	1	0	0	0	0	0	1	0	0	2	0	0	2	4	0
<i>Guaruba guarouba</i>	Golden conure	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Cacatua haematuropygia</i>	Red-vented cockatoo	2	2	0	1	0	0	0	0	0	0	0	0	1	0	0	2	2	0
<i>Cacatua sulphurea</i>	Lesser sulphur-crested cockatoo	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
<i>Tauraco schalowi</i>	Schalow's turaco	3	2	0	0	0	0	1	0	2	0	0	1	2	0	1	2	2	0
<i>Tauraco corythaix fischeri</i>	Fischer's turaco	3	1	0	0	0	0	1	2	0	0	0	0	2	0	0	2	3	0
<i>Tauraco leucolophus</i>	White-crested turaco	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0
<i>Musophaga violacea</i>	Violet turaco	3	1	0	0	0	0	0	2	1	0	0	1	2	1	0	1	2	0
<i>Otus megalotis</i>	Luzon Lowland Scops Owl	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
<i>Ptilopsis leucotis</i>	Northern white-faced owl	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
<i>Pulsatrix perspicillata</i>	Spectacled owl	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0
<i>Strix leptogrammica</i>	Brown wood owl	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Strix nebulosa lapponica</i>	Great grey owl	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
<i>Strix uralensis</i>	Ural owl	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Sumia ulula</i>	Northern Hawk owl	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0

#

#

BIRD STOCKLIST (page 3 of 4)

<i>Podargus strigoides</i>	Tawny frogmouth	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Coracias caudatus</i>	Lilac-breasted roller	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
<i>Tockus deckeni</i>	Von der Decken's hornbill	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Buceros rhinoceros silvestris</i>	Rhinoceros hornbill	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Buceros bicornis</i>	Great Hornbill	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Penelopides panini panini</i>	Visayan tarictic hornbill	2	4	0	0	0	0	1	3	0	1	0	0	0	2	0	2	5	0
<i>Aceros leucocephalus</i>	Mindanao Writhe-billed Hornbill	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Rhabdotorhinus corrugatus</i>	Wrinkled hornbill	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Lybius melanopterus</i>	Brown-breasted barbet	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Pteroglossus viridis</i>	Green aracari	0	0	0	1	1	0	0	2	1	0	0	1	0	2	0	1	1	0
<i>Cissa thalassina thalassina</i>	Short-tailed green magpie	0	0	0	6	6	0	0	0	0	0	0	0	2	2	0	4	4	0
<i>Cyanocorax mystacalis</i>	White-tailed jay	0	0	0	1	1	0	0	0	2	1	0	2	0	1	0	0	0	0
<i>Cyanocorax yncas</i>	Green jay	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Cyanopica cyanus</i>	Azure-winged magpie	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
<i>Pyrhacorax pyrrhocorax</i>	Red-billed Chough	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Urocissa erythrorhyncha</i>	Red-billed Blue Pie	3	2	0	0	0	0	0	1	4	0	0	4	1	1	0	2	2	0
<i>Pycnonotus jocosus</i>	Red-whiskered bulbul	4	4	5	0	0	0	0	0	2	0	0	1	0	0	0	4	4	6
<i>Zosterops eurycricotus</i>	African montane white-eye	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Irena puella</i>	Fairy bluebird	3	3	0	0	0	0	1	0	4	0	0	4	0	0	0	4	3	0
<i>Sturnidae</i>	Starlings & oxpeckers	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
<i>Aplonis panayensis</i> *	Asian Glossy Starling	0	0	40	0	0	0	0	0	11	0	0	9	0	0	12	0	0	60
<i>Cinnyricinclus leucogaster</i>	Amethyst Starling	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
<i>Cosmopsarus regius</i>	Royal Starling	2	0	0	0	1	0	0	1	1	0	0	1	1	0	0	1	2	0
<i>Lamprotornis iris</i> *	Emerald starling	0	0	45	0	0	0	0	0	0	0	0	1	0	1	0	0	0	43
<i>Leucopsar rothschildi</i>	Bali mynah	1	8	0	0	4	0	3	0	3	0	0	2	0	0	0	4	12	1
<i>Onychognathus morio</i>	Red-winged starling	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Scissirostrum dubium</i>	Scissor-billed Starling	6	4	1	0	0	0	3	3	5	0	0	5	0	0	0	9	7	1
<i>Spreo bicolor</i>	Pied starling	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Spreo superbus</i>	Superb starling	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Copsychus malabaricus</i>	White-rumped Shama	2	4	0	0	0	0	1	1	7	2	0	2	0	1	1	1	4	4
<i>Cossypha niveicapilla</i>	Snowy-headed robin chat	3	3	0	0	0	0	1	1	1	0	0	1	2	2	0	2	2	0
<i>Turdus boulboul</i>	Grey-winged blackbird	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	3	3	0
<i>Zoothera citrina</i>	Orange-headed thrush	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0
<i>Zoothera dohertyi</i>	Chestnut-backed thrush	2	7	0	0	0	0	0	0	0	1	2	0	1	2	0	0	3	0
<i>Dryonastes courtoisi</i>	Blue-crowned laughing thrush	4	3	0	0	1	0	0	1	0	0	0	0	0	0	0	4	5	0
<i>Garrulax bicolor</i>	Black & White Laughingthrush	4	4	0	4	3	0	2	1	7	1	1	7	4	3	0	5	4	0
<i>Leiothrix lutea</i> *	Pekin robin	2	2	34	0	0	0	0	0	38	0	0	14	0	0	0	2	2	30
<i>Liocichla omeiensis</i>	Grey-cheeked Liocichla	7	4	0	0	0	0	4	1	2	1	0	2	3	2	0	7	3	0
<i>Trochalopteron milnei</i>	Red-tailed laughing thrush	3	3	0	0	0	0	0	6	9	0	0	9	0	6	0	3	3	0
<i>Foudia madagascariensis</i> *	Red fody	0	0	19	0	0	0	0	0	4	0	0	6	0	0	1	0	0	25
<i>Ploceus cucullatus cucullatus</i> *	Village Weaver	0	1	28	0	0	0	0	0	0	0	0	2	3	3	2	0	0	28
<i>Ploceus nigricollis nigricollis</i>	Black-necked weaver	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Taeniopygia guttata guttata</i> *	Timor Zebra Finch	18	20	0	0	0	0	0	0	0	2	0	0	6	7	0	10	13	0
<i>Lonchura oryzivora</i> *	Javan sparrow	0	0	217	0	0	0	0	0	11	0	0	31	0	0	28	0	0	208
<i>Lonchura fuscata</i>	Timor sparrow	1	1	14	0	0	0	0	0	2	0	0	6	0	0	0	1	1	6
<i>Coccothraustes affinis</i>	Collared grosbeak	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Icterus oberi</i>	Montserrat oriole	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0

#

#

BIRD STOCKLIST (page 4 of 4)

<i>Paroaria dominicana</i>	Pope cardinal	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Ramphocelus bresilius</i>	Brazilian tanager	2	2	0	0	0	0	0	0	3	2	1	3	0	0	0	0	0	1	0
		372	375	596	28	32	8	50	63	252	31	27	207	61	69	70	362	384	619	
		1343			68			365			265			200			1365			

* denotes managed in groups

REPTILES STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/14			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/15		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Batagur borneoensis</i>	Malaysian painted river terrapin	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
<i>Cuora galbinifrons</i>	Flower-backed Box turtle	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	1	2	4
<i>Cuora trifasciata</i>	Chinese three-striped box turtle	1	2	5	0	0	0	0	0	0	0	0	0	0	0	0	1	2	5
<i>Cuora zhoui</i>	Zhou's box turtle	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Geoclemys hamiltonii</i>	Spotted pond turtle	0	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4
<i>Geoemyda spengleri</i>	Black-breasted leaf turtle	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0
<i>Heosemys grandis</i>	Giant Asian pond turtle	2	1	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0
<i>Heosemys spinosa</i>	Spiny hill turtle	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0	2	4	4
<i>Mauremys annamensis</i>	Annam leaf turtle	12	6	11	0	0	0	0	0	0	1	0	0	2	0	0	9	6	11
<i>Orlitia borneensis</i>	Malaysian giant pond turtle	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
<i>Astrochelys radiata</i>	Radiated tortoise	5	5	2	0	2	0	0	0	0	0	0	0	0	0	0	5	7	2
<i>Astrochelys yniphora</i>	Ploughshare tortoise	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Chelonoidis nigra</i>	Galapagos tortoise	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0
<i>Manouria emys emys</i>	Asian brown tortoise	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2
<i>Chelodina mccordi</i>	McCord's snake-necked turtle	2	3	0	0	0	0	0	0	0	1	1	0	0	0	0	1	2	0
<i>Podocnemis unifilis</i>	Yellow-spotted Amazon River turtle	2	0	8	0	0	0	0	0	0	0	0	0	0	0	0	2	0	8
<i>Sphenodon punctatus</i>	Tuatara	1	5	0	0	0	0	0	0	1	0	0	0	0	0	0	1	5	1
<i>Acanthosaura capra</i> *	Mountain Horned Lizard	0	0	16	0	0	16	0	0	16	1	2	20	0	0	2	4	5	14
<i>Bronchocelea cristatella</i> *	Green Crested Lizard	2	2	42	0	0	0	0	0	1	0	0	8	0	0	0	2	2	35
<i>Gonocephalus bellii</i>	Bell's angle-headed dragon	1	2	1	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0
<i>Gonocephalus chamaeleontinus</i> *	Chameleon forest dragon	1	3	2	0	0	0	0	0	1	1	0	4	0	0	0	0	1	1
<i>Hypsilurus magnus</i> *	Arboreal agamid lizard	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0
<i>Physignathus cocincinus</i>	Asian water dragon	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Pogona barbata</i>	Bearded dragon	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Calumma parsonii</i>	Parson's chameleon	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Furcifer pardalis</i>	Reunion chameleon	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	2	4
<i>Anolis grahami</i>	Jamaican anole	0	0	0	18	14	0	0	0	0	3	3	0	0	0	0	15	11	0
<i>Anolis leachii</i> *	Antigua anole	0	0	0	4	2	6	0	0	0	0	1	0	0	0	0	4	1	6
<i>Anolis roquet summus</i> *	Martinique Anole	1	6	1	0	0	0	0	0	1	1	0	2	0	0	0	2	3	1
<i>Laemancus serratus</i> *	Casque-headed iguana	4	5	3	0	0	0	0	0	0	2	0	1	0	0	0	3	5	2
<i>Oplurus cuvieri cuvieri</i>	Cuvier's Madagascar swift	2	1	4	0	0	0	0	0	4	1	0	4	0	0	0	1	1	4
<i>Dracaena guianensis</i>	Caiman lizard	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1
<i>Lacerta agilis</i> *	Sand lizard	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	10	3	0
<i>Takydromus sexlineatus</i> *	Six-lined grass lizard	0	0	121	0	0	0	0	0	25	0	0	66	0	0	0	0	0	76
<i>Dasia olivacea</i> *	Olive tree skink	0	0	0	1	0	5	0	0	0	2	1	2	0	0	0	1	0	0
<i>LAMPROLEPIS SMARAGDINA</i> *	Philippine tree skink	0	0	0	0	0	14	0	0	0	0	0	7	0	0	0	0	0	7
<i>Mabuya macularia</i> *	Orange-throated skink	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	0	3
<i>Mabuya multifasciata</i> *	Oriental brown-sided skink	1	5	7	0	0	0	0	0	15	0	0	6	0	0	0	1	5	16
<i>Plestiodon longirostris</i>	Bermuda skink	0	2	0	6	4	0	0	0	0	0	0	0	0	0	0	6	6	0
<i>Varanus komodoensis</i>	Komodo Dragon	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0
<i>Varanus prasinus</i>	Emerald monitor	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Varanus salvadorii</i>	Crocodile monitor	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Corallus caninus</i>	Emerald tree boa	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0

#

#

#

#

#

REPTILES STOCKLIST (page 2 of 2)

<i>Corallus cookii</i>	Cook's tree boa	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
<i>Broghammerus reticulatus</i>	Reticulated python	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
<i>Morelia boeleni</i>	Boelen's python	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	
<i>Boiga dendrophila</i>	Mangrove snake	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
<i>Chrysopelea ornata</i>	Flying snake	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
<i>Erpeton tentaculatum</i> *	Tentacled snake	0	5	9	1	0	0	0	0	6	0	0	7	0	0	0	0	1	5	8
<i>Gonyosoma oxycephala</i>	Red-tailed ratsnake	5	3	4	0	1	0	0	0	0	0	0	1	4	3	3	1	1	0	
<i>Orthriophis moellendorffi</i>	Flower snake	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
<i>Pantherophis guttatus</i>	Corn snake	0	5	0	0	0	0	0	0	0	0	1	0	0	4	0	0	0	0	
<i>Pantherophis obsoletus obsoletus</i>	Western ratsnake	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco gartersnake	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	
<i>Bothriechis schlegelii</i> *	Eyelash Viper	4	2	0	0	0	0	0	0	12	0	0	9	0	0	0	0	4	2	3
<i>Cryptelytrops albolabris</i>	White-lipped Viper	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
<i>Cryptelytrops venustus</i> *	Beautiful pitviper	0	0	0	1	5	0	0	0	75	0	1	67	0	0	0	1	4	8	
<i>Bitis gabonica rhinoceros</i>	West African gaboon viper	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
<i>Caiman crocodilus</i>	Spectacled caiman	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
<i>Tomistoma schlegelii</i>	False gharial	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	
		74	107	288	32	31	53	0	0	157	16	13	207	8	7	5	101	125	238	
		469			116			157			236			20			464			

* denotes managed in groups

#

AMPHIBIAN STOCKLIST

Preferred Scientific Name	Common Name	Stock 31/12/14			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/15				
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U		
<i>Typhlonectes natans</i> *	Rio Cauca Caecilian	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	#
<i>Ambystoma dumerilii</i> *	Lake Patzcuaro salamander	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	12	
<i>Duttaphrynus melanostictus</i> *	Asian common toad	0	0	0	0	0	12	0	0	0	0	0	12	0	0	0	0	0	0	0	
<i>Ingerophrynus divergens</i> *	Toad	0	0	0	0	0	15	0	0	0	0	0	1	0	0	0	0	0	0	14	
<i>Pedostibes hosii</i>	Climbing toad	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
<i>Dendrobates auratus</i>	Green & black poison dart frog	8	6	2	0	0	0	0	0	1	0	0	1	0	0	0	8	6	2		#
<i>Dendrobates azureus</i> *	Dyeing Poison Dart Frog	11	8	0	0	0	6	0	0	1	0	0	0	0	0	0	11	8	7		
<i>Phyllobates terribilis</i> *	Golden poison dart frog	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	40		
<i>Oophaga pumilio</i>	Strawberry poison frog	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7		
<i>Excidobates mysteriosus</i> *	Marañón poison frog	0	0	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47		
<i>Trachycephalus resinifictrix</i>	Mission golden-eyed tree frog	2	7	3	0	0	0	0	0	0	2	4	1	0	0	0	0	3	2		#
<i>Agalychnis moreletii</i> *	Morelet's tree frog	7	7	10	0	0	0	0	0	0	1	1	3	0	0	0	6	6	7		
<i>Leptodactylus fallax</i>	Mountain chicken frog	13	17	0	0	0	0	0	0	0	8	3	0	0	0	0	5	14	0		#
<i>Mantella aurantiaca</i> *	Golden mantella	0	0	84	33	17	8	0	0	6	0	0	2	0	0	0	33	17	96		#
<i>Mantella expectata</i> *	Blue-legged mantella	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19		
<i>Mantella madagascariensis</i> *	Malagasy mantella	0	0	0	2	3	3	0	0	0	0	0	7	0	0	0	0	0	1		
<i>Mantella ebenauai</i> *	Ebenauai mantella	0	0	0	1	1	17	0	0	0	0	0	0	1	16	0	0	0	0		
<i>Dyscophus guineti</i>	Sambava tomato frog	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0		
<i>Scaphiophryne gottlebei</i> *	Red rain frog	0	0	46	0	0	2	0	0	0	0	0	8	0	0	0	0	0	40		
<i>Sylvirana maasonensis</i> *	Mao-Son frog	2	2	135	0	0	25	0	0	0	0	0	12	0	0	0	2	2	111		
<i>Fejervarya limnocharis</i> *	Frog	0	0	9	0	0	0	0	0	0	0	0	2	0	0	0	0	0	7		
<i>Staurois guttatus</i> *	Black-spotted rock frog	0	0	23	0	0	10	0	0	0	0	0	1	0	0	0	0	0	32		
<i>Staurois parvus</i> *	Splash frog	0	0	2	0	0	30	0	0	0	0	8	7	0	0	0	0	0	17		
<i>Nyctixalus pictus</i> *	Painted Indonesian tree frog	1	6	33	0	0	0	0	0	6	0	0	10	0	0	0	1	6	29		
<i>Polypedates dennysi</i> *	Denny's tree frog	0	0	24	0	0	0	0	0	0	0	0	4	0	0	0	0	0	20		
<i>Polypedates otlophus</i> *	Bornean eared frog	3	2	46	0	0	20	0	0	0	0	0	6	0	0	0	3	2	60		#
<i>Rhacophorus exechopygus</i> *	Tree frog	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3		#
<i>Rhacophorus prominanus</i> *	Jade gliding tree frog	0	0	0	0	0	10	0	0	0	0	0	9	0	0	0	0	0	1		
<i>Rhacophorus reinwardtii</i> *	Reinwardt's flying frog	0	0	0	0	0	8	0	0	0	1	1	6	0	0	0	0	0	0		#
		49	57	504	36	21	218	0	0	14	14	17	93	0	1	16	69	66	584		
		610			275			14			124			17			719				

denotes managed in groups

FISHES STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/15		
		M	F	U
<i>Hemiscyllium ocellatum</i>	Epulette shark	1	1	0
<i>Acipenser baerii</i> *	Siberian sturgeon	0	0	5
<i>Arapaima gigas</i> *	Arapaima	0	0	1
<i>Campylomormyrus elephas</i> *	Blunt Jaw Elephant Trunkfish	0	0	4
<i>Echidna nebulosa</i> *	Snowflake moray	0	0	2
<i>Barbus hulstaerti</i> *	Butterfly barb	1	1	0
<i>Boraras Brigittae</i> *	barb	0	0	2330
<i>Boraras merah</i> *	Phoenix rasbora	0	0	173
<i>Celestichthys margaritatus</i> *	Celestial pearl danio	0	0	14
<i>Danio malabaricus</i> *	Giant Danio	0	0	247
<i>Eirmotus</i> *	Barb	0	0	10
<i>Garra barreimiae</i> *	Omani Blind Cave Fish	0	0	31
<i>Microrasbora</i> *	Dwarf rasbora	0	0	167
<i>Notropis chrosomus</i> *	Rainbow shiner	0	0	160
<i>Puntius</i> *	Barb	0	0	3085
<i>Puntius bandula</i> *	Barb	2	2	69
<i>Puntius cumingii</i> *	Two spot barb	0	0	9
<i>Puntius foerschi</i> *	Barb	0	0	46
<i>Puntius hexazona</i> *	Barb	0	0	80
<i>Puntius nigrofasciatus</i> *	Black ruby barb	0	0	50
<i>Puntius rhomboocellatus</i> *	Barb	0	0	38
<i>Puntius titteya</i> *	Cherry barb	0	0	186
<i>Rasbora caudimaculata</i> *	Greater scissortail	0	0	41
<i>Rasbora dorsiocellata</i> *	Eyespot rasbora	0	0	588
<i>Rasbora kalochroma</i> *	Clown rasbora	0	0	24
<i>Rasbora trilineata</i> *	Threelined scissortail rasbora	0	0	2178
<i>Sundadanio axelrodi</i> *	Neon green rasbora	0	0	1873
<i>Chromobotia macracanthus</i> *	Clown loach	0	0	5
<i>Yasuhikotakia sidthimunki</i> *	Dwarf Loach	0	0	22
<i>Acantopsis choirorhynchus</i> *	Horseface loach	0	0	18
<i>Gastromyzon borneensis</i> *	Loach	0	0	63
<i>Nannostomus mortenthaleri</i> *	Coral red pencilfish	1	0	0
<i>Hemigrammus rhodostomus</i> *	Rummynose tetra	0	0	42
<i>Hyphessobrycon erythrostigma</i> *	Bleeding heart tetra	0	2	93
<i>Hyphessobrycon herbertaxelrodi</i> *	Black neon tetra	0	0	12
<i>Hyphessobrycon pulchripinnis</i> *	Lemon tetra	0	0	14
<i>Hyphessobrycon pyrrhonotus</i> *	Flame-back Bleeding Heart Tetra	0	0	61
<i>Iguanodectes geisleri</i> *	Lizard tetra	0	0	25
<i>Inpaichthys kerri</i> *	Purple Emperor Tetra	3	1	0
<i>Moenkhausia pittieri</i> *	Diamond tetra	5	4	143
<i>Moenkhausia sanctaefilomenae</i> *	Redeye tetra	0	0	12
<i>Nematobrycon palmeri</i> *	Emperor tetra	1	0	0
<i>Paracheirodon axelrodi</i> *	Cardinal tetra	0	0	100

**

**

**

**

<i>Pristella maxillaris</i> *	X-ray tetra	0	0	9
<i>Thayeria boehlkei</i> *	Penguin Tetra	0	0	5
<i>Synodontis angelicus</i> *	Polka-dot Upside-down Catfish	0	0	1
<i>Synodontis njassae</i> *	Lake Malawi Upside-down Catfish	0	0	6
<i>Synodontis polli</i> *	Poll's upsidedown catfish	0	0	2
<i>Brochis splendens</i> *	Brochis Catfish	0	0	14
<i>Corydoras panda</i> *	Panda catfish	0	0	2
<i>Corydoras reticulatus</i> *	Reticulated Corydoras	0	0	7
<i>Corydoras sterbai</i> *	Sterba's catfish	0	0	114
<i>Baryancistrus demantoides</i> *	Catfish	0	0	5
<i>Hemiancistrus dolichopterus</i> *	Bristlenoe Plecostomus	9	3	58
<i>Hypostomus plecostomus</i> *	Plecostomus	0	0	1
<i>Melanotaenia</i> *	Rainbowfish	3	0	0
<i>Melanotaenia boesemani</i> *	Boeseman's rainbowfish	3	0	0
<i>Melanotaenia lacustris</i> *	Lake Kutubu Rainbow Fish	0	0	16
<i>Pachypanchax sakaramyi</i> *	Killiefish	0	0	49
<i>Ameoca splendens</i> *	Butterfly Goodeid	0	0	654
<i>Characodon audax</i> *	Bold characodon	14	0	16
<i>Skiffia francesae</i> *	Golden Saw-finned Goodeid	0	0	13
<i>Zoogoneticus tequila</i> *	Crescent Zoe	0	0	67
<i>Hemirhamphodon</i> *	Halfbeak	0	1	1
<i>Oryzias sarasinorum</i> *	Duck-billed Fish	0	0	7
<i>Aeoliscus strigatus</i> *	Shrimpfish	0	0	3
<i>Doryichthys boaja</i> *	Asian River Pipefish	0	0	16
<i>Hippocampus abdominalis</i> *	Big-bellied Seahorse	8	10	98
<i>Cephalopholis urodeta</i> *	Flagtail Grouper	0	0	1
<i>Pseudochromis fridmani</i> *	Orchid dottyback	0	0	6
<i>Pterapogon kauderni</i> *	Emporor/Banggai Cardinal Fish	0	0	36
<i>Chelmon rostratus</i> *	Copperband butterflyfish	0	0	1
<i>Centropyge bicolor</i> *	Bicolor angelfish	0	0	1
<i>Centropyge tibicen</i> *	Keyhole angelfish	0	0	1
<i>Cichlidae</i> *	Cichlid	0	0	274
<i>Cichlasoma bocourti</i> *	Golden mojarra	0	0	6
<i>Geophagus</i> *	Redhead Tapajos	0	0	1
<i>Heros severus</i> *	Banded cichlid	0	1	0
<i>Paretroplus menarambo</i> *	Pin Striped Damba	0	0	15
<i>Pterophyllum scalare</i> *	Freshwater angelfish	0	0	22
<i>Symphysodon aequifasciatus</i> *	Discus	0	0	3
<i>Amphiprion frenatus</i> *	Tomato Clown Fish	0	0	1
<i>Amphiprion ocellaris</i> *	Common Clownfish	0	0	13
<i>Chrysiptera parasema</i> *	Goldtail damselfish	0	0	2
<i>Macropharyngodon bipartitus</i> *	Vermiculate Wrasse	0	0	1
<i>Lipophrys pholis</i> *	Shanny blenny	0	0	5
<i>Hypseleotris compressa</i> *	Empire gudgeon	2	2	0
<i>Gobiodon okinawae</i> *	Golden goby	0	0	5

**

**

**

**

**

**

**

FISHES STOCKLIST (page 2 of 2)

<i>Pomatoschistus minutus</i> *	Sand goby	0	0	1
<i>Stiphodon semoni</i> *	Goby	0	0	81
<i>Ctenochaetus tominiensis</i> *	Bristle-tooth Tang	0	0	1
<i>Zebrasoma flavescens</i> *	Yellow tang	0	0	1
<i>Ctenopoma ansorgii</i> *	Ornate ctenopoma	0	1	3
<i>Betta albimarginata</i> *	White Seam Betta	0	1	0
<i>Betta channoides</i> *	Betta	0	1	0
<i>Betta dimidiata</i> *	Betta	2	0	0
<i>Betta macrostoma</i> *	Spotfin betta	1	1	0
<i>Betta rubra</i> *	Toba betta	0	1	0
<i>Betta pallifina</i> *	Pallifina betta	3	2	11
<i>Betta hendra</i> *	Betta	2	1	0
<i>Parosphromenus</i> *	Licorice gourami	0	0	32
<i>Parosphromenus linkei</i> *	Liquorice Gourami	0	0	28
<i>Parosphromenus nanyi</i> *	Nagy's licorice gourami	0	0	119
<i>Trichogaster leerii</i> *	Pearl Gourami	3	0	276
<i>Luciocephalus pulcher</i> *	Giant pikehead	1	0	2
<i>Canthigaster valentini</i>	Saddled puffer	0	0	1
		65	36	14135
		14236		

**

**

**

**

**

* denotes managed in groups

** denotes bred in the collection in 2015

INVERTEBRATES STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/15		
		M	F	U
<i>Cassiopea</i> *	Frilled upside-down jellyfish	0	0	2
<i>Euplexaura</i> *	Gorgonian	0	0	3
<i>Plexaura</i> *	Tan bushy soft coral	0	0	1
<i>Lobophytum</i> *	Leather coral	0	0	3
<i>Sinularia</i> *	Soft Coral	0	0	5
<i>Heteractis</i> *	Sea Anemone	0	0	98
<i>Actinodiscus</i> *	Mushroom Polyp	0	0	195
<i>Acropora</i> *	Staghorn coral	0	0	3
<i>Acropora aculeus</i> *	Staghorn coral	0	0	3
<i>Acropora cervicornis</i> *	Staghorn coral	0	0	5
<i>Acropora gomezi</i> *	Coral	0	0	6
<i>Acropora millepora</i> *	Staghorn coral	0	0	15
<i>Acropora prostrata</i> *	Coral	0	0	5
<i>Acropora tenuis</i> *	Staghorn coral	0	0	5
<i>Acropora turaki</i> *	Coral	0	0	5
<i>Acropora yongei</i> *	Staghorn coral	0	0	5
<i>Montipora capitata</i> *	Coral	0	0	5
<i>Montipora confusa</i> *	Encrusting coral	0	0	3
<i>Montipora danae</i> *	Coral	0	0	2
<i>Montipora digitata</i> *	Finger coral	0	0	3
<i>Montipora foliosa</i> *	Hard coral	0	0	3
<i>Montipora friabilis</i> *	Orange plating coral	0	0	5
<i>Montipora monasteriata</i> *	Montipora coral	0	0	2
<i>Montipora orientalis</i> *	Montipora coral	0	0	2
<i>Seriatopora</i> *	Bird nest coral	0	0	4
<i>Stylophora</i> *	Cauliflower coral	0	0	3
<i>Plerogyra sinuosa</i> *	Bubble coral	0	0	2
<i>Turbinaria peltata</i> *	Bowl Coral	0	0	2
<i>Hydnophora</i> *	Horn coral	0	0	4
<i>Clithon diadema</i> *	Tooth snail	0	0	4
<i>Clithon corona</i> *	Horned nerite	0	0	7
<i>Neritina</i> *	Olive nerite	0	0	8
<i>Neritina natalensis</i> *	Zebra nerite snail	0	0	7
<i>Vittina</i> *	Tooth snail	0	0	2
<i>Marisa cornuarietis</i> *	Giant ramshorn snail	0	0	35
<i>Tylomelania</i> *	Freshwater snail	0	0	157
<i>Brotia pagodula</i> *	Pagoda snail	0	0	1
<i>Partula taeniata nucleola</i> *	Partula snail	0	0	33
<i>Partula varia</i> *	Partula snail	0	0	153
<i>Hirudinaria manillensis</i> *	Buffalo leech	0	0	28
<i>Heterometrus longimanus</i> *	Asian forest scorpion	0	0	7
<i>Damon diadema</i> *	Giant banded tailless whipscorpion	1	0	17
<i>Cyrtopholis femoralis</i> *	Montserrat tarantula	0	0	27

<i>Lampropelma violaceopes</i> *	Singapore blue tarantula	0	0	2
<i>Lasiodora parahybana</i> *	Brazilian salmon tarantula	1	1	0
<i>Stegodyphus sarasinorum</i> *	Indian social spider	0	0	10
<i>Nephila inaurata madagascariensis</i> *	Golden silk spider	0	10	200
<i>Atyopsis moluccensis</i> *	Bamboo shrimp	0	0	5
<i>Caridina</i> *	Shrimp	0	0	6
<i>Caridina gracilirostris</i> *	Mosquito Shrimp	0	0	4
<i>Caridina caerulea</i> *	Blue leg poso	0	0	40
<i>Caridina dennerli</i> *	Cardinal shrimp	0	0	10
<i>Caridina multidentata</i> *	Yamato shrimp	0	0	110
<i>Neocaridina</i> *	Red Cherry Shrimp	0	0	20
<i>Atyoida pilipes</i> *	Green lace shrimp	0	0	6
<i>Lysmata amboinensis</i> *	Cleaner Shrimp	0	0	5
<i>Pagurus bernhardus</i> *	Bernhard's hermit crab	0	0	2
<i>Geosesarma</i> *	'Red Devil' Vampire Crab	7	8	130
<i>Periplaneta americana</i> *	American cockroach	10	10	40
<i>Gromphadorhina portentosa</i> *	Madagascar hissing cockroach	10	10	30
<i>Hymenopus coronatus</i> *	Pink orchid mantis	3	4	0
<i>Hierodula membranacea</i> *	Giant Asian Mantis	9	21	7
<i>Stilpnochlora coulouiana</i> *	Florida Leaf Katydid	10	10	200
<i>Ancylecha fenestrata</i> *	Malaysian Leaf Katydid	0	0	6
<i>Homoeogryllus xanthographus</i> *	Cricket	10	10	30
<i>Areataon asperimus</i> *	Sabah thorny stick insect	15	30	50
<i>Epidares nolimetangere</i> *	Walkingstick	10	1	5
<i>Heteropteryx dilatata</i> *	Malaysian Jungle Nymph	14	16	200
<i>Phyllium giganteum</i> *	Giant leaf insect	0	4	0
<i>Eurycantha calcarata</i> *	Giant stick insect	10	45	200
<i>Pharnacia ponderosa</i> *	Giant walkingstick	0	0	40
<i>Phobaeticus magnus</i> *	Walkingstick	0	6	0
<i>Ramulus</i> *	Walkingstick	9	6	50
<i>Myronides</i> *	Walkingstick	15	20	50
<i>Phasma gigas</i> *	Giant stick insect	3	1	30
<i>Chalcosoma caucasus</i> *	Atlas beetle	0	0	8
<i>Mecynorrhina polyphemus</i> *	Polyphemus flower beetle	0	0	23
<i>Mecynorrhina ugandensis</i> *	Beetle	0	0	10
<i>Smaragdesthes africana oertzeni</i> *	Flower Beetle	0	0	94
<i>Xylotrupes gideon</i> *	Elephant beetle	15	20	0
<i>Graphium agamemnon</i> *	Tailed Jay	0	0	2
<i>Papilio demoleus</i> *	Lime Swallowtail	0	0	8
<i>Papilio memnon</i> *	Great Mormon	0	0	21
<i>Papilio polytes</i> *	Common Mormon	0	0	12
<i>Papilio rumanzovia</i> *	Scarlet swallowtail	0	0	4
<i>Parides iphidamus</i> *	Transandean Cattleheart	0	0	7
<i>Hebomoia glaucippe</i> *	Giant Asian Orange Tip	0	0	9
<i>Idea leuconoe</i> *	Giant Wood Nymph	0	0	9

**

**

**

**

**

**

INVERTEBRATES STOCKLIST (page 2 of 2)

<i>Coenonympha tullia</i> *	Large heath butterfly	2	14	10
<i>Caligo memnon</i> *	Giant Owl	0	0	8
<i>Morpho peleides</i> *	Blue Morpho	0	0	57
<i>Heliconius charitonius</i> *	Zebra Longwing	0	0	1
<i>Heliconius erato</i> *	Red Postman	0	0	2
<i>Heliconius ismenius</i> *	Tiger Longwing	0	0	1
<i>Heliconius melpomene</i> *	Postman	0	0	15
<i>Anartia amathea</i> *	Scarlet Peacock	0	0	14
<i>Doleschallia bisaltide</i> *	Leafwing	0	0	9
<i>Hamadryas amphinome</i> *	Cracker	0	0	2
<i>Hypolimnas bolina</i> *	Great Eggfly	0	0	9
<i>Parthenos sylvia</i> *	Clipper	0	0	10
<i>Siproeta stelenes</i> *	Malachite	0	0	7
<i>Attacus atlas</i> *	Atlas moth	0	0	1
<i>Atta cephalotes</i> **	Leafcutter ant	0	0	2
<i>Ampulex compressa</i> *	Emerald cockroach wasp	15	4	4
<i>Asterina gibbosa</i> *	Cushion Starfish	0	0	1
<i>Asterias rubens</i> *	Common Starfish	0	0	2
<i>Ophiarachna incrassata</i> *	Green Brittle Starfish	0	0	22
<i>Eucidaris tribuloides</i>	Slate-pencil sea urchin	0	0	1
<i>Diadema antillarum</i> *	Long Spined Urchin	0	0	1
		169	251	2759
		3179		

colonies

* denotes managed in groups

** denotes bred in the collection in 2015

PLANT STOCKLIST

Scientific Name	Common Name	No. of Species / sub-species	No. of Specimens
National Plant Collections			
<i>Copiapoa spp</i>	Cacti	46	115
<i>Matucana spp</i>	Cacti	25	118
<i>Nepenthes spp</i>	Pitcher Plants	121	179
<i>Turbinicarpus spp</i>	Cacti	22	38
<i>Pluerothallidinae</i>	Orchids		
<i>Acianthera spp</i>	Orchids	12	12
<i>Acronia spp</i>	Orchids	24	25
<i>Anathallis spp</i>	Orchids	9	9
<i>Ancipitia spp</i>	Orchids	2	3
<i>Anthereon spp</i>	Orchids	1	1
<i>barbosella spp</i>	Orchids	6	6
<i>Dracula spp</i>	Orchids	48	49
<i>Drayadella spp</i>	Orchids	18	20
<i>Echinosepala</i>	Orchids	2	2
<i>Lepanthes</i>	Orchids	21	21
<i>Lepanthopsis spp</i>	Orchids	6	6
<i>Masdevallia spp</i>	Orchids	182	215
<i>Myoxanthus spp</i>	Orchids	13	15
<i>Octomeria Spp</i>	Orchids	10	10
<i>Ophidion spp</i>	Orchids	1	1
<i>Orbis spp</i>	Orchids	1	1
<i>Pabstiella spp</i>	Orchids	3	3
<i>Phloeophila spp</i>	Orchids	2	2
<i>Platystele spp</i>	Orchids	11	12
<i>Pleurothallis spp</i>	Orchids	151	158
<i>Pleurothallopsis spp</i>	Orchids	2	2
<i>Porroglossum spp</i>	Orchids	11	11
<i>Restrepia spp</i>	Orchids	36	36
<i>Restrepiopsis spp</i>	Orchids	2	2
<i>Scaphosepalum spp</i>	Orchids	21	21
<i>Specklinia spp</i>	Orchids	11	11
<i>Stelis spp</i>	Orchids	60	61
<i>Trichosalpinx spp</i>	Orchids	11	11
<i>Trisetella spp</i>	Orchids	6	6
<i>Zootrophion spp</i>	Orchids	10	10
Other Notable Plant Species			
<i>Achyranthes arborescens</i>	Chaff Tree		1
<i>Amesiella monticola</i>	Orchid		1
<i>Amesiella philipensis</i>	Orchid		1
<i>Amorphophallus titanum</i>	Titan Arum		5
<i>Ansellia africana</i>	Orchid		2
<i>Araucaria araucana</i>	Monkey Puzzle Tree		5
<i>Butia eriospatha</i>	Palm		1

<i>Coincya monensis ssp. Monensis</i>	Isle of Man Cabbage		20
<i>Cotoneaster cambricus</i>	Wild Cotoneaster		8
<i>Dionaea muscipula</i>	Venus Flytrap		12
<i>Diospyros egrettarum</i>	Ebony		2
<i>Doricera trilocularis</i>			1
<i>Dracaena concinna</i>	Bois De Chandelle		15
<i>Equisetum x meridionale</i>	Southern Horsetail		3
<i>Fuchsia loxensis</i>	Fuchsia sp		1
<i>Fuchsia steyermarkii</i>	Fuchsia sp		1
<i>Gastonia mauritiana</i>	Ox Tree		3
<i>Ginkgo biloba</i>	Maidenhair Tree		1
<i>Hibiscus fragilis</i>	Mandrinette		5
<i>Hibiscus insularis</i>	Philip Island Hibiscus		2
<i>Hyophorbe lagenicaulis</i>	Bottle Palm		10
<i>Hyophorbe verschaffeltii</i>	Spindle palm		10
<i>Juniperus communis</i>	Common Juniper		28
<i>Latania loddigesii</i>	Palm		7
<i>Latania verschaffeltii</i>	Palm		15
<i>Lobelia digitalifolia</i>			2
<i>Luronium natans</i>	Floating Water Plantain		400
<i>Magnolia wilsonii</i>	Wilson Magnolia		1
<i>Mammillaria spp</i>	Cacti	128	163
<i>Metasequoia glyptostroboides</i>	Dawn Redwood		2
<i>Neobenthamia gracilis</i>	Orchid		1
<i>Olearia hectorii</i>	Hector's Tree Daisy		1
<i>Palicourea crocea</i>			2
<i>Paphiopedilum spp</i>	Slipper orchids	46	48
<i>Pholidota chinensis</i>	Orchid		1
<i>Pilularia globulifera</i>	Pilwort		20
<i>Pleione formosana</i>	Orchid		1
<i>Populus nigra ssp. betulifolia</i>	Black Poplar		60
<i>Potamogeton compressus</i>	Grasswrack Pondweed		770
<i>Sarcanthemum coronopus</i>			2
<i>Sarcochilus falcatus</i>	Orchid		1
<i>Sequoiadendron giganteum</i>	Giant Sequoia		2
<i>Stachys alpina</i>	Limestone woundwort		3
<i>Vanda tessellata</i>	orchid		1
<i>Veronica bahamensis</i>			1
<i>Zanthoxylum heterophyllum</i>			1
Number of species		1081	

SUMMARY OF CONSERVATION STATUS OF THE COLLECTION

Table 1. Animal Stock

As of 31st December 2015

	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 2015

*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 2015

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 2015

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 2015

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 of the assigned roles 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.