



2018 ZOO REVIEW

Annual Review of the North of England Zoological Society

www.chesterzoo.org



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Chairman: Bruce Ursell

CHAIRMAN'S STATEMENT



2018 was a year of records, disappointments and disruption. Despite our best efforts and our research work with the University of Surrey and the Animal & Plant Health Agency we lost young elephants to the elephant endotheliotropic herpesvirus (EEHV). We continue our research to try to find a solution to this problem which is a growing threat not just to elephants in zoos but to the wild population. On a more positive note, the skill and dedication of our various animal teams was demonstrated by the notable breeding successes we have had and which are mentioned later in this review.

The professionalism of our teams was further shown in the manner in which they coped with the fire in Monsoon Forest. The emergency services were certainly impressed by them. Although we lost some of our collection, we were fortunate that the damage did not harm more of our iconic species. The zoo continued with scarcely any interruption with The Lanterns opening as usual the next evening and Islands within two weeks. Sadly, Monsoon Forest, our largest investment, which had matured into a spectacular rainforest habitat, will be out of commission during all of 2019.

We are grateful to all of those supporters who, unbidden by us, have made donations following the fire. We are fully insured so those donations will go towards various conservation projects that we will undertake to commemorate those species that perished.

Despite Brexit uncertainties, disappointing trading results on the high street and at some tourist destinations, Chester Zoo enjoyed another successful year in terms of visitor numbers, ratings and revenues. We ended the year well on track in our campaign to make the city of Chester a Sustainable Palm Oil City. We do not sit on our laurels though and whilst our main planned development goes on as in our Strategic Development Plan we have a number of notable events and openings planned for 2019. In addition to those that visitors will see, we have commenced work on a significant off show facility that is required to allow us to move species around as we develop new areas, including Grasslands. As part of those plans I am sorry to say that the monorail, after 28 years, is reaching the end of its life.

In common with my Trustee colleagues, I remain excited by our plans, proud to be involved with one of the best conservation zoos in the world and ever grateful to our superb team who continue to impress us with their dedication and professionalism.



OUR TRUSTEES



Chair of Trustees - Bruce Ursell

Bruce lived for five years in West Africa at the start of his career and then was based in London eventually heading two merchant banks and joining the board of a FTSE 100 company. Most recently he was a non-executive director of Standard Bank plc, during which time he was also chairman of entities managing government, World Bank and private investments into emerging markets, mainly in Africa.



Edwin Christmas

Edwin is a property consultant and Fellow of the Royal Institution of Chartered Surveyors practising in the commercial and rural property sectors. Formerly the Estate Director at Eaton Estate, Chester, and Agent to the 6th Duke of Westminster, he was responsible for the stewardship and management of this 4,000-hectare diverse estate.



Russell Newton

Russell was Professor of Biochemistry at Swansea University until retirement in 2008, when he was elected Emeritus Professor. He was also Lead Director of the Biomolecular Analysis Mass Spectrometry Facility. He is currently Chair of the Scientific Advisory Board of Endocrine Pharmaceuticals.



Simon Venables

Simon is Group Financial Controller at Renold plc, having trained as a Chartered Accountant at KPMG in Liverpool after graduating from the University of Cambridge. After 13 years in audit at KPMG Simon spent four years as Group Financial Controller at Bibby Line Group. Simon chairs the Audit & Risk Management Committee at the zoo.



Vice Chair (Mission Enabling) - Malcolm Ardron

Malcolm is a company managing director and Fellow of the Institution of Mechanical Engineers. After studying Engineering Science at the University of Oxford a career in both public and private sectors followed. He is currently Managing Director of a company providing engineering and construction services.



Penny Coates

Former Managing Director of the Manchester Airports Group, Director of Asda and Non Executive Director of the Cooperative Society Specialist Businesses, Penny has held senior roles in retail, aviation, manufacturing and financial services. Penny is now semi-retired to allow her to focus on Non-Executive Director and Trustee roles.



Professor Richard Griffiths

Richard is based at the Durrell Institute of Conservation and Ecology (DICE) at the University of Kent. An advocate of the powerful role that zoos can play in conservation, education and applied research, he is a member of the IUCN Reintroductions Specialist Group, and has chaired several working groups on translocation and reintroduction themes.



David Macdonald

David is the Director and founder (1986) of the world renowned Wildlife Conservation Research Unit (WildCRU) at the University of Oxford, the world's first university-based institute focusing on wildlife conservation research. David has a strong record of public service, having been on the Board of almost every major conservation body – WWF, FFI, ZSL, WWT, RSPB and Chairman of Earthwatch. He was the founding Chairman of Natural England's Science Advisory Committee and was the Chairman of the UK Government's Darwin Initiative for a decade. Currently he is Chairman of Action for Conservation, a new education charity taking conservation into schools.



Vice Chair (Mission Delivery) - William Beale

Will is Head of Network Operations Development, 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.



Sandra Donnelly

Director of Teaching & Learning and Head of Economics at William Hulme's Grammar School in Manchester, Sandra is also a senior examiner and previously served as the Chief Executive of the Economics, Business and Enterprise Association. She has co-ordinated partnerships with schools in South Africa, China and Australia.



Angela Pinnington

Angela was a Management Consultant for almost 20 years, being a partner in a US based global organisation. She is experienced in the design and delivery of strategy, project management, business improvement and people development projects. Now working part time, she specialises in executive coaching and training with a wide variety of clients.



Dr Mark Pilgrim

CHIEF EXECUTIVE'S REVIEW

A record number of visits to the zoo in 2018, just short of the 2 million mark was a fantastic achievement by everyone involved and was just reward for the enormous effort that has gone into improving the zoo, the service to visitors and promoting our reputation as a tremendous visitor attraction and global conservation charity.

Our number of yearly visits is of course an extremely important measure of our success, as our visitors provide 97% of the income we require to invest in developing all aspects of the zoo further and increasing our impact in our regional field programmes. We also hope that many of them become advocates for wildlife.

This is incredibly important as the future for wildlife continues to look bleak, the global human population has grown from 1 billion in 1800 to around 7.6 billion in 2018. This is placing an enormous pressure on wildlife and wild places. Additionally it is now widely recognised that during the last few years a tipping point was reached when for the first time in history, more the half of the world's human population live in urban rather than rural areas. While there may be many advantages to this, one major disadvantage is more and more people losing their connection to nature. Progressive zoos around the world, which are well placed in urban areas, have a pivotal part to play in reconnecting people to nature, encouraging a respect and love of wildlife and empowering people to make positive changes to protect it. This is vital, not only for wildlife but for all of us. We all ultimately depend of clean water, clean air and a healthy thriving environment in which to live; we cannot achieve this without conserving the natural world in all its complexity.

It's certainly not all doom and gloom however, we are seeing people around the world becoming ever more concerned about environmental issues including plastics in our oceans, the loss of forests and young people uniting to demand action on climate change. This growing movement will inevitably push

politicians and decision makers to ensure that environmental issues are high on the political agenda.

While the challenges may appear overwhelming at times, it is extremely important that we recognise our successes. Working in partnership is crucial to us having an impact and our highest award, the Gold medal, recognises a long term partnership with people who assist us in preventing extinction. I was absolutely delighted that our partners and founders of the Philippine Cockatoo Conservation Programme, Dr Peter and Indira Widmann, were our 2018 recipients. Peter and Indira implemented the Philippine Cockatoo Conservation Programme in 1998 focussing on a critical breeding site for the species, Rasa Island. Through their dedicated work, the Philippine cockatoo is now secured at a national level.

Throughout the pages of this annual review there are many other examples of how we are achieving our strategic objectives towards delivering our mission of Preventing Extinction.



Dr Peter and Indira Widmann receive the North of England Zoological Society's Gold Medal



Jamie Christon

CHIEF OPERATING OFFICER'S REVIEW

2018 was a year of many significant highs and some low points. To exceed the 2016 record of visitations to the zoo with 1.9m of you being welcomed onto the site was a credit to all of the staff at the zoo and your continued support in our mission of Preventing Extinction.

The value of the work done here at Chester and the richness of the experience was proven yet again in 2018 with another increase in the number of members. At one point it peaked at over 115,000 but at the year end has settled at well over 114,000.

There were some significant areas of building work around the zoo throughout 2018. Oakfield House went through a major refurbishment during the winter and spring and adjacent to that we continued working on the development of a Madagascar Forest habitat.

The Oakfield, which opened in July as a pub/restaurant, has been applauded by visitors and stakeholders, and has recently won an award for its refurbished state. Madagascar Forest will open in the spring of 2019 and make a significant difference to the area of the zoo it is in.

The zoo's strategic plan continued to develop in 2018, with significant work being undertaken in the planning stages of Grasslands. This large-scale project, due to begin in 2020, has involved input from many of the zoo team.

The long, hot summer helped attract consistently high numbers of visitors and members to the zoo. This coupled with new arrivals to the animal and plant collection and the season long campaign – Wild Worlds meant many parts of the site were thronged with visitors enjoying new experiences. The prolonged periods of very warm weather tested many of our teams but as usual they rose to the occasion.

After some detailed changes in the route and content we opened The Lanterns in late November. It's sometimes difficult to get a true feeling of its success until the first visitors have walked the route, but there were some rather large sighs of relief when we saw the first sets of amazingly positive feedback on social media and in person. The capabilities of both the zoo team and our partners Wild Rumpus

ensured a special experience after every turn on the route around the zoo. The improved food and beverage offer and the opening of The Oakfield ensured a very magical night for the 90,000 people who attended the event at the end of the year.

On 15 December, a large fire broke out in Monsoon Forest. As a large visitor attraction, we often train our teams to manage both large-scale incidents and the subsequent aspects of business continuity.

Despite the training, the sight of the building, arguably the jewel in the crown of Islands, which we opened in 2015, with smoke and fire billowing from the roof was sickening.

What was text book though was the dynamic and immediate response of the our teams in ensuring the safety of the public, our staff, our animals, our reputation and our assets.

Our response teams, in conjunction with outside services including Cheshire Fire and Rescue, worked tremendously well in difficult circumstances within a complex building which housed many animals and plants. The media interest was intense and ran into the days after the fire broke out.

What was clear however was the love for the zoo and our mission. A JustGiving page was set up to respond directly to those individuals who were in touch with the zoo almost immediately pledging money and support to our cause. With over £200k raised, these funds will help develop work we do here at Chester and in the field tackling issues related to some of those species affected by the fire.

Before we ended the year, work had already begun in planning the rebuild of Monsoon Forest and although this is likely to take some time, we look forward now to reopening this amazing habitat in the future.

The fire was a significant low in what was a year of some considerable highs, and its impact has been felt by the team here at Chester, however we are determined to ensure it doesn't affect our mission and I am confident 2019 will be yet another year of achievement and progression.

Our Mission: Preventing Extinction

STRATEGIC OBJECTIVES

Our strategic objectives continue to inform and guide our teams working towards our mission of "Preventing Extinction".

Strategic objective

1

Preventing Extinction - by achieving the greatest conservation impact.

Strategic objective

2

Preventing Extinction - by being a world class visitor attraction.

Strategic objective

3

Preventing Extinction - by providing exceptional animal and plant care.

Strategic objective

4

Preventing Extinction - by ensuring financial sustainability.

Strategic objective

5

Preventing Extinction - by developing our people to be the best.

Strategic objective

6

Preventing Extinction - by being a voice for change.



Development of "Madagascar"

Strategic Development Plan

The SDP sets out our plans for the physical development of the zoo, reflecting our work in the world's biodiversity hotspots, as described in the following pages. It also builds on our proud heritage and current achievements to ensure that the physical site of the zoo supports our work to achieve our mission.

The plan improves infrastructure to meet the changing needs of the zoo and all of its stakeholders, including the visitors, staff, trustees and of course its animals, while keeping the zoo's unique character and values. It sets out the development of new zones: Grasslands, Forests, Foothills and Floodplains, to accompany Islands, and promises to create exciting and engaging experiences for our visitors, seeing existing species alongside those coming in to the collection, in world class habitats.

One of the most recent developments saw The Oakfield being opened to visitors in its new form, following extensive redevelopment. The Oakfield is a grade II listed house dating from the 19th century. A report by Donald Insall Architects considered its heritage and outlined proposals for its future; developed plans included a new single storey kitchen, a new Garden Room to the south elevation, and a sympathetic opening up of the interior spaces. With the work completed in 2018 we now have a stunning pub and restaurant which provides an alternative option for visitors dining at the zoo, and also gives us excellent function rooms and event spaces.



Key projects of 2018

- Enhanced viewing of Humboldt penguins
- Goodfellow's tree kangaroo, pademelon and Prevost's squirrel habitats in Islands
- New staff canteen
- Wildlife Wood play area
- The Oakfield renovation
- Construction of Madagascar (phase 2)
- Additional office space within Cedar House



Celebration of Service event

OUR PEOPLE

At our peak in 2018 we had a headcount of 971 (452 permanent, 37 fixed term and 482 seasonal) employees in the organisation.

Employee Relations

Working closely with the Staff Association, a number of initiatives were discussed and introduced during 2018. These included the option to buy or sell annual leave, an annual Celebration of Service event, a revised sickness absence policy and the introduction of a staff recognition scheme. We also took steps to rectify the pay differences and equalised salaries within pay grades. All employees within the same pay grade are now paid the same salary, regardless of length of service.



MISSION MOTIVATED | PASSIONATE PEOPLE | WORKING TOGETHER | TO BE THE BEST

Recognition

People are at the heart of everything we do and we wanted to create a really special evening for our wonderful long-serving staff who have given so much to the zoo.

More than 100 members of our zoo team with ten or more years' service were treated to fabulous food, free bubbly and a great atmosphere on a relaxed sunny June evening on Islands. The event was truly collaborative with our Food & Beverage team putting on a magnificent spread, our retail artists gave the celebrants the opportunity for a personalised "Handimal", sales & events organised the venue, IT helped with the background ambience, and security made sure everyone went home safe; to name but a few who made this a truly memorable occasion.

Training and Development

We continue to invest more into personal growth, making it easier for managers and staff to look ahead and plan for the future. A Performance Development Planner was issued to all staff alongside our first training syllabus offering just under a 100 courses.

With ever increasing legislation comes compliance so we've focused training with sessions on cyber security, the Modern Slavery Act and the General Data Protection Regulations.

Wellbeing

Under the banner 'Health, Wealth & Happiness' we have run Pilates classes, had 'fruity Fridays', physiotherapy back awareness sessions, pension awareness training, and held themed health events including National Walking Week. Our Occupational Health Advisor ran a very well-attended 'time to talk' event which saw people promising to make the time to talk and make a difference to someone's day, week or life.



VOLUNTEERING

2018 was another strong year for our volunteer programme, with 227 active volunteers donating a record 25,548 hours between them over the year.

Alongside long-standing roles engaging visitors within Islands and across the core zoo, our visitor engagement volunteers took on new roles supporting the welcoming of school visitors at the front entrance, as well as facilitating play activities for families throughout the summer holidays. They engaged with 332,093 visitors, talking to them about conservation, Chester Zoo's work and our collections, and providing orientation and other visitor information. Taking on new more specialist roles, volunteers also supported our Safari Ranger

outreach work, the delivery of workshops to schools at the zoo and the collection of research data about our learning programmes.

In the Autumn, we delivered our first youth focused volunteer programme, working with Upton High School pupils to provide them with a volunteering experience designed to meet the requirements of their Duke of Edinburgh bronze award. The programme combined practical training about our major conservation campaigns and experience volunteering out in the zoo, alongside learning visitor engagement and multimedia skills to enable them to share their campaign messages with others.



AWARDS

In 2018, we were delighted to be awarded the following accolades:

- **BIAZA Gold Award for Education: Wildlife champions**
- **BIAZA Gold Collaborative Zoo Award (for our shared workings with the wider zoo community)**
- **BIAZA Gold Award for Conservation: Pine marten recovery project**
- **BIAZA Gold Award for Research: Fitness for the ark: Are zoo bred amphibians ready to go back to the wild?**
- **Sabin Conservation Prizes: Dr Gerardo Garcia awarded the 2018 Sabin Amphibian Conservation Prize**
- **North West in Bloom: Gold Award in the Large Tourist Attraction Category**
- **North West in Bloom: Conservation & Environmental Award**
- **Days Out With The Kids: Best Event at an attraction North West (Wild Worlds)**



Gerardo Garcia, Curator of Lower Vertebrates & Invertebrates, in Mexico

Conserving species of

LATIN AMERICA

The zoo's work with the Bermudan Government has had another hugely successful year. The greater Bermuda snails that we brought to the zoo have multiplied in their thousands and plans are underway early in 2019 to move the first 4,000 snails back to Bermuda for reintroduction. On the back of this success we have started keeping and breeding the only other and equally threatened, endemic species in this group, the lesser Bermuda snail and hope to repeat the breeding success with this species. Again we had further successes with breeding the Bermuda killifish during the year.

The zoo's national plant collection of Pleurothallidinae orchids continues to expand and we are getting close to holding over a thousand different species of this group. In the zoo both our pied tamarins and Azara's agoutis produced babies during the year.

Our work with the Lake Patzcuaro salamander continues with us not only coordinating the European breeding programme for this critically endangered Mexican salamander, but also our staff have been working out in Mexico with the Michoacana University and a nunnery in the town of Patzcuaro where the salamanders have been kept for over 150 years to use in traditional medicine. Meanwhile on Guadeloupe we have been conducting preliminary surveys of chytrid

fungus, the major cause of extinction of the mountain chicken frog, as a pre-cursor to developing facilities capable of returning the frog to the island.

In Ecuador our field work on the ecology and conservation of the Ecuadorian Amazon parrot continues where staff have been looking at habitat use, nest sites and roosting dynamics, as well as working on a community education project about the threats to the species and its habitat.

Building on our expertise in human-wildlife conflict and sustainable livelihoods we were delighted to receive a Darwin Initiative grant for our work on Andean bears in Bolivia, delivered with our partners at Oxford University's Wildlife Conservation Research Unit and the Bolivian NGO, PROMETA. Together we are monitoring bears and looking at community tolerance to bears who are blamed for livestock and crop losses. Ultimately we want to improve the wellbeing of communities and the populations of Andean bears by promoting coexistence. We were delighted when we heard in October that the municipality of San Lorenzo in Bolivia signed an agreement to create a new protected area for the conservation of the Andean bear, largely as a result of the profile raised for this species by our project.



Conserving species of

AFRICA

Eastern black rhino Malindi and calf

What an incredibly busy year for our Africa regional programme. A highlight was surely the birth of Stevie our first successful Western chimpanzee birth for ten years in the zoo. Baby Stevie and mum Zeezee are doing well and have brought a new atmosphere to our group of critically endangered Western chimpanzees.

Eastern black rhino continue to be at the fore of our fight to prevent extinction in Africa and 2018 again saw the birth of a new calf at the zoo; mum Malindi delighted visitors by giving birth in the Tsavo rhino house around lunch-time on the 31 July. Excitingly the European breeding programme for the species, which we coordinate at Chester Zoo, continues to flourish and it moved closer in its plans to send five zoo-born Eastern black rhinos to Rwanda to join the growing population that has been reintroduced to Akagera National Park. We continue to support efforts to combat poaching of rhinos and other wildlife in both eastern and southern Africa, providing finances, equipment, advice and training. We are also working with some of the conservancies in the central and northern areas of Kenya to apply our endocrinology work to the monitoring of black rhino breeding performance in the wild.

Another momentous event was the birth in May of an okapi. The youngster was named Semuliki in recognition of the work we have been carrying out in Semuliki National park in Uganda with our partners the Uganda Wildlife Authority (UWA) to search for okapi. We continued our search for elusive wildlife there using camera traps and although these have not yet detected okapi, they did record lowland bongo which is a new record for this site. We have also been supporting rural communities in the Maiko region of Democratic Republic of Congo (DRC) to monitor and conserve okapi populations

which occur in their ancestral forests outside of protected areas. The year again saw the birth of red river hogs and following on from 2017's twins, this year we had triplets!

In the field our research on giant pangolins has been growing and following on from survey work in previous years in Nigeria we have now begun surveys in Uganda and Gabon, where our camera traps are revealing new populations of this very poorly known species. We are following up on the surveys with more detailed ecological work which will help to establish the habitat requirements for the Giant pangolin, vital information to inform conservation strategies for the species.

Similarly we have been working on butterfly, moth and beetle surveys and training in Kenya and South Africa in an effort to assist local governments to better understand populations of such poorly known species.

In Kenya we further strengthened our support for the Big Life Foundation through exchange of staff and expertise in conservation education and through our sponsorship of a major prize at the biennial Maasai Olympics which was held in December. Started by Big Life Foundation in 2012, the Maasai Olympics is part of a major programme of work with the Maasai people that aims to use sport as an alternative to hunting lions and other large animals as a means of demonstrating bravery and courage. When the first Maasai Olympics were held in 2012 there were fewer than 20 lions left in the Maasai territories situated between Tsavo and Amboseli in south-east Kenya. Now, after six years of protection from hunting by the Maasai there are over 200! The Maasai Olympics are central to this achievement and we are proud to have been a supporter from the beginning.



Camera trap image, Nepal

Conserving species of

SOUTH ASIA

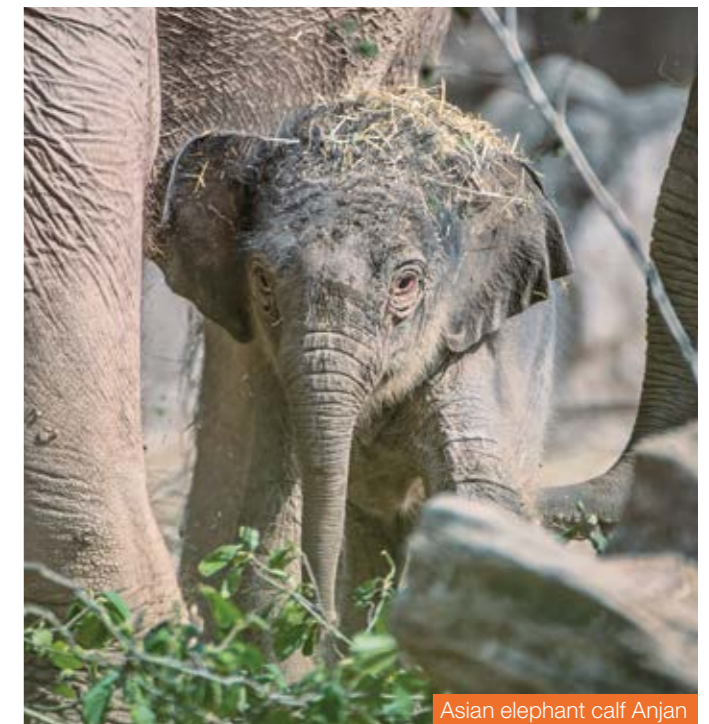
Asian elephants continued to be a flagship for our South Asian regional programme and our fight to prevent extinction. This year was a year of highs and lows as we continue the fight to better understand elephant endotheliotropic herpesvirus (EEHV) and work towards better treatments and ultimately a vaccine. May brought the arrival of a long overdue calf for mum Thi; having originally been expected in March the new male, Anjan was finally born in May. Sadly though in the autumn two of our calves, Nandita and Aayu both succumbed to EEHV and despite the best efforts of all concerned and a number of new therapies, both died. Our research continues to try to fully understand the disease and our post-doctoral and post-graduate researchers with the assistance of our partners are closer than ever to producing a vaccine.

Meanwhile in October we signed an exciting new collaboration agreement with the Wildlife Trust of India to develop our elephant project in Assam. The new project builds on the success of our Assam Haathi project and focuses on creating human-elephant coexistence in the region by using a landscape-scale approach to integrate a range of different land uses in a way that is both beneficial for people and wildlife.

We were delighted during the summer of 2018 to have another calf born to our pair of greater one-horned rhino. The species once widespread across the southern foothills of the Himalayas is now restricted to a few regions in India and Nepal, where its populations are now slowly increasing due to protection.

As part of our Living with Tigers project in Nepal our camera traps in and around the Chitwan and Bardia National Parks continue to reveal an abundance of wildlife and show how tigers and leopards

are moving into community forest and posing a potential threat to people. We have been conducting workshops in four communities there looking at horticultural techniques to help villagers to be more productive in growing crops and find ways to become less dependent on the forest for their livelihoods, thus reducing their risk of attack.



Asian elephant calf Anjan



Conserving species of

MADAGASCAR & MASCARENES

View of camp at Mangabe forest area

It has been a productive year for our work on a wide variety of threatened endemic species from Madagascar. Construction of our major new Madagascar forest zone continued apace and alongside this we have been strengthening our partnership with Madagasikara Voakajy (MaVoa) to develop our support for projects in the field. The latest parts of the new Madagascar zone have been designed and built ready to open during 2019, including an exciting new walk-through experience, landscaped to provide habitat for lemurs and a habitat for Fossa, an unusual carnivore, related to the mongoose but more cat-like in appearance and found only in the forests of Madagascar.

We have undertaken a major camera trapping study with field partners MaVoa in the Mangabe forest area of eastern Madagascar and this has confirmed the presence of aye-ayes, Geoffroy's dwarf lemurs, Goodman's mouse lemurs, woolly indris, diademed sifakas and brown lemurs, demonstrating that this forest is richer in lemurs than we first realised. This survey is helping us to identify habitat most used by these species which will then inform future conservation efforts as well as the development of ecotourism opportunities in the region.

In December our expedition team of 15 Chester Zoo staff and one trustee travelled to Madagascar to carry out two weeks of intensive fieldwork with our partners in the Mangabe New Protected Area. Tapping into the range of expertise from the zoo and working in close collaboration with MaVoa staff and local guides, the teams focused on amphibians and reptiles, birds, small mammals and lemurs – further details can be found on page 28 of this review.

A pair of critically endangered Pronk's day gecko arrived at the zoo. This species is right on the edge of extinction and our pair are the only individuals of the species in any EAZA zoo and therefore a vital part of preventing the extinction of the species. Two greater Madagascar tenrecs were also added to the collection this year to assist our staff in learning the techniques required for the husbandry of this unique group of mammals that are totally endemic to Madagascar. Our Madagascar giant jumping rats gave birth to twins in the spring, adding to the important conservation insurance breeding programme for this threatened species.

In Rodrigues we provided technical expertise for our partners at the Mauritian Wildlife Foundation to help protect the Grande Montagne Nature Reserve, one of the last strongholds for native flora and fauna on the island, assisting them in evaluating their environmental education programme and their interpretation of the reserve to their visitors.

Meanwhile, we continued our work with endemic birds from Mauritius. Our bird keepers contributed to the hand-rearing of 11 Mauritius cuckoo-shrikes this year and five birds were released at a new site in the east of the island as part of efforts to establish a new population in the wild. In the zoo, we added a new female pink pigeon to our collection, making a second pair to add to the vital breeding programme for this species. Despite increasing in numbers there are still plans for further releases on Mauritius.



Diademed sifaka



The opening of the Nature Reserve

Conserving species of

UK AND EUROPE

In April we unveiled the six hectare extension to our Nature Reserve which includes an extensive wildflower meadow, new wetlands, hedgerows and interpretation. The site is already home to a variety of species of local and national significance including hedgehogs, harvest mice, kingfishers and reed buntings. Our reserve includes the 91st Coronation Meadow, part of a scheme initiated by Prince Charles to create new wildflower meadows in every county of the UK and provide a source of seeds for further habitat creation locally. At the opening ceremony in April, our guest speakers, botanist and broadcaster Trevor Dines and Cheshire West and Chester Council Leader Sam Dixon planted a black poplar in the reserve, adding to the population of one of the UK's rarest native trees.

Our conservation work with the Vincent Wildlife Trust aims to restore viable populations of pine martens to Wales and has already resulted in the translocation of 51 pine martens from expanding populations in Scotland, to reinforce relict populations in mid-Wales. The next phase of the project is to promote the area as an eco-tourism destination for seeing Welsh pine martens. One idea is to encourage local hotels and attractions to set up their own viewing-hides where people can come and watch the martens as they investigate tasty treats. We have built a new demonstration hide overlooking feeding platforms where local businesses could come and see 'best practice' for making their own hides in future. The hide is in a location right in the heart of a known marten territory and the pine martens are now regularly visiting the platforms providing opportunities for viewing.

We also made an important contribution to the conservation of another threatened British mammal when our female British wildcat surprised everyone with a kitten born late in the season in summer. Hybridisation with domestic cats is a major threat to the survival of this unique species. The number of British wildcats, which are now completely confined in the wild to Scotland, is probably now less than 400, making each new birth especially important.

We have started working with Barcelona Zoo and the Torreferrusa Wildlife Centre in Catalonia to conserve one of Europe's most endangered amphibians, the Montseny brook newt. Found only in a few streams in the mountains of the Montseny nature park, about 100km north of Barcelona, a combination of habitat loss and climate

change has brought this critically endangered European amphibian to the brink of extinction. We are the first zoo outside of Spain to breed these amphibians and our careful efforts paid off in the autumn when 12 tadpoles successfully hatched. In parallel with the breeding programme, conservation efforts are also being made to improve the newts' habitat in the wild in preparation for their reintroduction – including improving the water quality and ecological flow of the streams it lives in.

Our important work with a variety of scarce British plant species continues, including work with the Canal & River Trust to care for and propagate two native aquatic plant species, Floating water plantain and Grass-wrack pond weed. Both species are declining in the UK due to degradation of wetland habitats. During May, specimens grown in the zoo were translocated into the Aston Nature Reserve near the Montgomery canal in Shropshire. Further work on the endemic tree, the Llangollen whitebeam was also carried out with propagation of seeds collected from the wild, new surveys of suitable location in north-east Wales and a 'Whitebeam walk' in June to raise awareness of the species.



Llangollen whitebeam



Banteng calf

Conserving species of

SOUTH EAST ASIA

A real highlight of our South East Asia programme this year was the birth of our Malayan sun bear cub, the first to be successfully born in the UK. This is a major achievement for this species which is declining across its range, and a real seal of approval from the bears for the design of our new habitat for them on Islands.

Conservation breeding efforts for our South East Asian primates were significantly boosted this year with the birth of a female Sumatran orangutan, two Javan gibbons and a Sulawesi crested macaque. Two of our collections team travelled in Malaysian Borneo to work with our field partners from the Hutan Foundation where they repaired and constructed rope bridges that will help connect the fragmented habitat for primates in the Kinabatangan wildlife sanctuary. Also in the same sanctuary, members of our bird team assisted Hutan with installing another four nest boxes for hornbills, complete with data loggers and cameras so that we can monitor them closely without disturbing the birds.

Four calves were born to our banteng herd in early spring and another in the autumn, which was a welcome boost for the European

Endangered Species Breeding Programme (EEP) for this species which we manage and coordinate from Chester Zoo. Our Northern babirusa also gave birth to triplets and we continue to be the key participant in this breeding programme. These births and the knowledge that we gain from them contribute to the Global Species Management Plan (GSMP) for both these species which we are coordinating together with partners from the IUCN Specialist Groups covering Asian wild cattle and pigs. Along with similar plans that we are involved in for lowland anoa and for Sumatran tiger, this integrated planning process brings together experts from the conservation breeding, science and field conservation communities to develop 'one plan' solutions to their population management. Education work is a critical component of this and members of our Discovery and Learning team joined our field conservation and collections experts in three major workshops held in Indonesia throughout the year as part of the GSMPs for these four species.

We are supporting the Javan Species Recovery Programme (JaSpeR) which is half-way through its two-year project plan. The team has completed three of the five planned camera trap rounds and covered 150 of 250 independent camera trap locations in a 2,000 km² area

of West and Central Java, Indonesia. One of the main objectives is to provide a population estimate for the endangered Javan warty pig but this is hampered by the fact that European wild boars are roaming the last forested places on Java and competing and hybridising with the endemic warty pigs. Nevertheless, our surveys have revealed that there are still some pure populations of Javan warty pigs around with one of our photos showing a lactating female and her piglet on another image. The camera traps have also revealed several individuals of the critically endangered Javan leopard as well as pangolin, Javan chevrotain, Sunda porcupine and Javan slow loris. These surveys are encouraging as they show there is still room for wildlife on the crowded island of Java and will help inform protection efforts in future.

We assisted our partners at the Katala Foundation in the Philippines in mitigating against the risks of disease in both captive and wild populations of the critically endangered Philippine cockatoo. Using PCR techniques developed in the zoo and with colleagues at the Durrell Institute of Conservation Ecology at the University of Kent, field trials proved successful in providing reliable testing for diseases for cockatoos held by our field partner, the Katala Foundation. They are planning translocations of individuals between sub-populations in order to increase numbers so this information is vitally important in order to minimise the risk of transmission.

Our Asian songbird work continued with more successful breeding of Javan green magpie and Sumatran laughingthrush amongst other species. This success also enabled the transfer of birds from Chester to other collections, thus expanding the conservation breeding populations for both species. In Java we have started a new study looking at understanding the Asian songbird crisis in terms of both supply and demand within Java's huge captive bird market. Through this we hope to be able to work with communities to find practical and sustainable solutions to the problem of uncontrolled trapping of birds from the wild to feed the demand for cage birds.

Our national collection of pitcher plants (Nepenthes) is one of the most significant in the world from a conservation standpoint and we are now sharing knowledge and working with the Indonesian Institute of Sciences to survey some of the most threatened species in the wild in Indonesian Borneo. Their survey found 11 species of Nepenthes in the Mandor and Mount Kelam areas, both in West Kalimantan and further surveys of other areas are planned.



Goodfellow's tree kangaroo

An exciting new addition to Islands this year was the display, once again, of marsupials in the zoo with the opening of our new tree kangaroo habitat, where Goodfellow's tree kangaroo and dusky pademelon share a habitat. Both species are from the South East Asian island of New Guinea where both they and their forest habitat are under threat.



Pitcher plants



Our specialisms

CONSERVATION BREEDING AND MANAGEMENT

Lab work in Kenya

Each and every year the importance of Chester Zoo in preventing extinction of the plants and animals we work with grows. During the year we worked with more than 570 species of animals and more than 2500 important species of plants at the zoo in Chester. We are an acknowledged world leader in conservation breeding and management. This specialism is the core of what we do and an essential tool in saving many threatened species.

This year has seen several new species which are right on the edge of extinction included in the work we do, especially with a focus on Madagascar as we work towards developing the Madagascar Forests zone of the zoo; Pronk's day gecko, black lemur, Granddier's mongoose and greater hedgehog tenrec all came newly into the collection.

We achieved some highly significant births amongst our conservation breeding programmes; not only in high profile species such as Eastern black rhino, greater one-horned rhino, okapi, Sumatran orang-utan, Javan gibbon, Sulawesi macaque, Western chimpanzee and Javan green magpie, but also equally amongst many of our less well known species such as partula snails, and Vietnamese magnolia snail. Early in the year we began working with Montseny brook newt, sand lizard and Omani blind cavefish. Equally our plant staff worked successfully

to propagate important species including many of our cacti, pitcher plants and orchids.

Managed and coordinated breeding programmes are of growing importance for many species to prevent their extinction and during this year we have been involved in more than 140 animal breeding programmes. These are run under the coordination of the European Association of Zoos and Aquaria (EAZA) and we participate as part of a large network of zoos across Europe to manage these international cooperative breeding programmes. We also continue to manage five National collections of plants; orchids (Pleurothallidinae), pitcher plants (Nepenthes) and cacti (Copiapoa, Matucana and Turbinicarpus).

We are also applying techniques developed in the zoo to wildlife population management in the field, especially in Kenya where our Science team have set up a new satellite endocrinology laboratory to monitor wild herbivore hormones from animal dung. The new lab will focus on using endocrinology to help answer key questions in the conservation of Kenya's iconic megaherbivore fauna (including black rhinos and Grevy's zebra) as part of our new research partnership with the University of Manchester. This satellite endocrinology lab has also been established in collaboration with the Kenya Wildlife Service, the Mpala Research Station and the Lewa Wildlife Conservancy.



Our specialisms

Penguin health check

WILDLIFE HEALTH AND WELLBEING

We pride ourselves in having staff that are totally committed to and acknowledged experts in the health and wellbeing of wildlife. In the zoo we care for over 27,000 animals of more than 570 species on a daily basis. This also gives us exceptional skills to support and advise our partners around the world and to deploy for our field programmes.

We continue to focus intently on the issues of EEHV and our research to find effective preventions and treatments for EEHV to safeguard the future of Asian elephants both in zoos and the wild. This year more than any with the sad deaths of Nandita and Aayu, two of our Asian elephant calves here in the zoo, this has been a passionate focus of our teams and partners to progress this work. Funded through our 'Never Forget' campaign we are investigating the use of alternative immune boosting therapies as well as being closer than ever to the production of a trial vaccine.

Veterinary advice and support for orangutan conservation has continued through 2018 with our continued support for the Orangutan Veterinary Advisory Group (OVAG).

The veterinary team has had another exceptionally busy year working both abroad and of course within the zoo. As part of our support to the global zoo community we act as veterinary advisors for a multitude of conservation breeding programmes and Taxon Advisory Groups (TAGs) of the zoo associations in which we participate; giving valuable support to BIAZA, EAZA, WAZA and other partners both at home and abroad.

Finally the skills and passion of our teams was put to the test at the end of the year with the sad events of the Monsoon Forest fire on 15th December 2018. Most of the animals that could have been affected were saved as a result of the commitment and dedication of all concerned working tirelessly through the day and night of the fire as well as the following weeks to ensure that they had the utmost care.



Our specialisms

BIODIVERSITY SURVEYS AND MONITORING

Setting a camera trap

Understanding the distribution and abundance of plants and animals is absolutely central to being able to prioritise the most pressing conservation needs and ensure that our efforts to prevent extinction are targeted in the right places. Staff at the zoo have unique skills and extensive experience in surveying and monitoring. The ability to work so closely with our plant and animal collections gives us a unique opportunity to learn and practice these skills that are so important for our work in the field with wildlife.

We have been incredibly busy carrying out surveys at many of our field sites and at the same time training others in our unique skills to build the capacity of many of our partners to carry out such work themselves. Camera trapping has again been a key technique that we have deployed in many of our projects on larger mammals; working

in Indonesia, Nepal, Uganda and Gabon to detect elusive wildlife such as giant pangolins, Javan warty pigs and lowland bongo. We have been trapping for butterflies, moths and beetles in a number of African countries to build the baseline knowledge of which species are present as well as carrying out bird survey work in Ecuador and Indonesia. In Indonesia we have also once again been supporting survey work on the many species of endemic pitcher plants.

Late in the year our staff expedition worked with our partners in Madagascar to carry our rapid biodiversity surveys on many groups of species from nocturnal lemurs to birds and amphibians in order to build vital information on species remaining in valuable patches of habitat; also carrying out detailed population surveys of key threatened species such as golden mantella frog.



Andean bear (camera trap image)

Our specialisms

HUMAN-WILDLIFE CONFLICT

With space for wildlife under increasing pressure human wildlife conflict is rapidly becoming one of the biggest conservation challenges. We are helping to tackle this by focusing a number of our field projects on this issue and through our research partnership with the Wildlife Conservation Research Unit (WildCRU) at the University of Oxford. The partnership was strengthened this year with the addition of two new Chester Zoo Conservation Fellows who started their postdoctoral research at Oxford. Covering topics on social attitudes towards species involved in conflict and developing a policy framework for solving human-wildlife conflict in Latin America, our new Conservation Fellows will contribute substantially to a greater understanding of both the causes of and solutions to human-wildlife conflict across the globe.

Our Darwin Initiative funded Living with Tigers project in Nepal has been developing innovative and practical ways of supporting communities living adjacent to tiger habitat. In 2018 we hired street performers to deliver a behavioural change campaign by bringing theatre to our project site communities. A thirty minute performance followed the lives of several families who had experienced human-tiger conflict and discovered what kind of human behaviours led to the encounter. Using a mixture of humour and local folklore, the stories provided messages about practical mitigation measures to

keep people and livestock safe. These have been evaluated to assess their effectiveness in bringing about positive behaviour change to reduce conflict. A member of our maintenance team also travelled to Nepal to give workshops and advice on installing and maintaining electric fences to mitigate human-wildlife conflict. The workshops were delivered alongside staff from our elephant project in neighbouring India, showing how lessons learned in one country can be applied to another.

In Latin America, our Andean bear project was awarded a prestigious Darwin Initiative grant for work with local communities in the range of the bear in the Bolivian Andes, worth over £260,000 over 3 years. In addition to monitoring the bears, and improving livelihoods for the local communities, this collaborative project is also providing crucial information on the ecological and social dynamics of human-wildlife conflict in the region.

Our continued support for the IUCN human-wildlife conflict task force led to a collaboration between the task force and the World Bank for a global information exchange and peer-to-peer training initiative. There was also further work on human-elephant conflict with the Asian Elephant Specialist Group to develop IUCN guidelines for human-elephant conflict in Asia.



Our specialisms

LIVELIHOODS & SUSTAINABLE DEVELOPMENT

Community work in Nepal

In order to tackle the causes of extinction we must work with communities who make their living in the landscapes that we want to protect for wildlife. We try to take a practical approach to this and work to improve the livelihoods of local people in ways that reduce damaging effects on wildlife and habitats.

In 2018 members of our botany and horticulture team helped villagers in Nepal to grow more productive crops using organic methods as part of our Living with Tigers project. They made two visits to the area to train local farmers in techniques including growing oyster mushrooms, seed propagation, vermicomposting and organic pest control. These workshops have proved hugely popular with over 250 people trained so far and this is already enabling them to improve their income and livelihoods and reduce their dependency on neighbouring forests, which in turn reduces their risk of encountering dangerous wild animals whilst out foraging.

We showcased our livelihoods work with the Living with Tigers project at the Communities, International Conservation & Livelihoods Conference in Halifax, Canada. The conference, organised by the

Community Conservation Research Network and the IUCN focused on local communities' environmental conservation efforts supporting sustainable livelihoods, and strengthening policies and legislation for indigenous people and their traditional/cultural practices.

In Mauritius we have re-doubled our efforts to find solutions to the problem posed by Mauritius fruit bats raiding local fruit crops and threatening the livelihoods of fruit growers, after learning that the Mauritian Government agreed to sanction another cull of the species. Following the successful stakeholder workshop on fruit tree netting and management of fruit bat damage to orchards conducted last year, a team of our scientists and conservationists travelled to Mauritius to co-lead a Fruit Bat Research Strategy Workshop. This workshop was jointly prepared by Chester Zoo, National Parks and Conservation Service, the IUCN SSC Human-Wildlife Conflict Task Force, the IUCN SSC Bat Specialist Group and the Mauritian Wildlife Foundation. The workshop shared knowledge on topics including ecology, behaviour and conservation of fruit bats, as well as the social, political and economic components of the human-bat conflict issue.



Visitors at Chester Zoo

Our specialisms

VISITOR AND COMMUNITY ENGAGEMENT

Through our conservation social science work that is evaluating our educational and visitor engagement activities we are establishing ourselves as leaders in this important field of applied conservation science.

Our social scientists have developed a method for analysing open text comments from our visitor feedback on Twitter and TripAdvisor. Their algorithm is designed to recognise the range of sentiment in each comment and assess the messages that they convey. This should enable us to assess large quantities of text data in just a few seconds. Currently sense checking is revealing between 70-90% accuracy, depending on the data source. The idea behind this research is to train algorithms to try to recognise things like patterns of illegal wildlife trade or whether or not people are discussing conservation or not when responding to our tweets. This should be useful in helping us to evaluate and enhance our visitor engagement activities in the future.

We also began a study with partners at the University of Kent looking into the effect of anthropomorphic language on the interpretation signs to see if it has an effect on uptake of pro-conservation behaviour.

The Convention on Biological Diversity was signed by most of the world's governments, committing them to striving to meet 20 targets

for biodiversity, named the 'Aichi targets' after the city in Japan where the last convention was signed in 2010. The first of these targets (Aichi 1) states that by 2020, people will be aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. This is central to our visitor engagement work and we have been working in collaboration with WAZA and the University of Warwick to develop a measure of how well this has been achieved through zoo visits using visitor surveys. As a result we have become an official partner of the Biodiversity Indicators Partnership, an influential group of over 60 academic, environmental and international bodies and organisations who together are determining the measures that will be used to assess how far the CBD targets have been achieved and influencing the development of the new targets when the treaty is renewed in 2020.

Our social scientists, interpretation and visitor engagement staff were in demand to present and disseminate their work at conferences both at home and abroad. These included a keynote speech at Melbourne Zoo as part of 'The Human Factor in Conservation', a forum on how social science research can inform conservation initiatives to engage communities and encourage social change, and a plenary speech on 'What's not being said? Interpretation and the UK's largest zoo exhibit' at the Association for Heritage Interpretation (AHI) Annual Conference held in Chester.



Duke of Edinburgh students at the zoo

DISCOVERY & LEARNING

2018 was a record year for engaging with school children both on site and through our Safari Ranger outreach programme. 127,810 people visited the zoo as part of an organised educational visit. Of those, 37,608 were offered free tickets as part of our free winter tickets offer, which now in its second year, enables schools to book free places during November, December, January and February. Record numbers of educational visitors on site also resulted in record numbers participating in taught workshops with our education officers. 29,551 students took part in one of our curriculum linked workshops. Throughout the year our workshop programme continued to be developed to meet the needs of schools, with a particular highlight being the introduction of new more scientifically focused workshops for post-16 students as well as further collaboration with the Geographical Association to develop resources for geography, which were then also presented at the Geographical Association conference.

Our Safari Ranger outreach programme also engaged record numbers – generating a total of 86,164 participations – and we continued to develop our approach to engaging young people from low income areas in conservation focused projects. Outreach projects during 2018 focused on the Sing for Songbirds and Sustainable Palm Oil Challenge campaigns, with young people involved in learning about and then raising awareness of the issues in their communities, as well as taking their own actions for UK songbirds or looking at how they could drive demand for sustainable palm oil. During the year, 9,167 pupils from 45 different schools took part in these campaign focused projects. Following participation in a Safari Ranger project each child was given a family ticket to the zoo. 6,706 people visited the zoo through this free family ticket scheme.

Throughout the year we collaborated with pedagogical experts and Ignite Teaching School Alliance to deliver a programme of teacher professional development designed to support the staff from 30 participating schools to develop their own conservation focused curricula. Pre and post-test evaluations with the pupils who took part in the resulting projects demonstrated positive results in relation to young people's knowledge of actions to prevent biodiversity decline. The projects also resulted in tangible conservation actions being taken, including the development of more wildlife friendly school grounds, whole school exhibitions sharing conservation messaging with the wider community and letters to politicians and business leaders calling for more sustainable practices, particularly in relation to palm oil usage. In the 2018/2019 academic year the programme is running with a further 24 schools.

Zoo visitors were also educated in new and exciting ways. New interpretation schemes were installed across the zoo, increasing focus on our field programmes and on the actions that visitors can take to protect wildlife themselves. Our approach to interpretation and its evaluation was the focus of a keynote speech delivered by our exhibitions and interpretation officer at the Association for Heritage Interpretation annual conference which was hosted in Chester in October. Our Exhibitions and Interpretation Manager also shared expertise with partners at the Mauritius Wildlife Foundation when she travelled to Rodrigues to advise on the interpretation of their nature reserve and worked with them to develop a completely new interpretation scheme for their visitor centre.

As in previous years zoo visitors could also join our zoo rangers every day for talks about our animal collections and hands on activities

about our campaigns, our field programmes, our animal and plant care or the scientific work we do.

In addition to the daily programme, zoo rangers led and collaborated on a wide variety of special events aiming to appeal to specific audiences, highlight different learning focuses or drive visitor engagement. Dementia Coffee mornings hosted twice monthly in Bembe Coffee Shop provided opportunities for engagement with a specific, predominantly older, audience, whilst new activity sessions were also developed for children under 5 and their carers.

Creative and scientific events featured heavily across the main season, in support of our Wild Worlds campaign, including a strand of 'meet the scientist' style events enabling zoo audiences to meet our science and conservation teams and find out more about the science we do at the zoo. Throughout the year, collaborations with a variety of performers brought a creative approach to communicating our conservation work. This included working with Jon Chase on a rap-based performance linked to our sustainable palm oil campaign and with the Hallé orchestra on a musical storytelling experience which also made full use of the immersive projection environment of the Sumba Schoolroom. Across all activity the zoo ranger team engaged with 209,921 visitors during the year.



New signage in Realm of the Red Ape



New signage in Realm of the Red Ape



The work of Childer Thornton Primary School

Outside the zoo, we communicated our science work to new audiences at the Blue Dot Festival and through a major presence at Manchester Science Festival highlighting our research partnership with University of Manchester, through a pop up lab style installation.

Further afield, we continued to support a variety of in situ partners to develop their education practice. In February, our Head of Discovery and Learning led the first Education Working Group meeting of the Global Species Management Plans for anoa, babirusa, banteng and Sumatran tiger, which led to the development of a global education plan for these species. As part of this plan, our Community Engagement Officer travelled to Java to deliver training focused on education delivery skills to educators from Indonesian zoos, as well as creating a range of resources for educators around the globe to use to engage people with these species. Our Community Engagement Manager travelled to work with ICAS in Brazil and Big Life Foundation in Kenya, working with them to develop new strategies for education and community engagement. In October, 12 educators, from these and other international projects we work to support, congregated at Chester Zoo for a week long training experience led by zoo staff, developing their skills as educators and sharing practice with the zoo based team.



Lazy River Boat Trip, Islands

MAINTAINING A SAFE ENVIRONMENT

As the zoo grows and the complexity of operations increases, the challenge to maintain exemplary levels of health and safety grows in parallel. In mid-2018 we began a transformation of our health and safety strategy, recruiting several additional staff within the department and re-focusing our approach to become a truly 'world class' example of operational health and safety within the leisure, tourism and conservation sectors.

Our Health and Safety team have been integrating with zoo colleagues and have started to introduce enhancements to daily operations and in collaboration with external specialists we have benchmarked our performance against OHSAS 18001. Whilst we meet the criteria for the standard our desire for continual improvement drives us forward and allowed us to focus on several key actions to further enhance our approach to Health and Safety and its culture too.

During the year the Health and Safety team have also carried out specialist training to equip our staff with the knowledge to develop our safety culture. Starting with our bespoke online Health and Safety inductions for our new starters, to in-house delivery of IOSH Managing Safely to supervisors and managers combined with trainer led classroom sessions which have proven to be very popular with our teams.

We have also reviewed and enhanced our internal processes for our staff who wish to travel overseas to work in or visit our field projects. Alongside this we have worked closely with external contractors such as the BBC when the Rickshaw Challenge visited the zoo as part of Children in Need to ensure that such a complex event was delivered professionally.

Finally, to support the Strategic Development Plan and the daily maintenance of the zoo estate we have taken steps to review our contractors and we now have over 140 contractors being successfully managed under our accreditation scheme.



Treetop Challenge



The Oakfield

WELCOMING OUR VISITORS

Creating a world class visitor attraction is a challenge especially as visitor expectations are constantly evolving leaving them thirsty for new and unique experiences. However, the reward for getting it right is more than enough motivation for us here at the zoo especially as we know that it directly supports our mission, to prevent extinction.

The year proved another record breaker for the zoo when it comes to visitor attendance, which grew to more than 1.97m visitors in 2018. Key factors included new play activity, a new event and the introduction of an exciting new food concept for the zoo all supported by some lovely warm and sunny summer days.

Next to one of our most popular food eateries, June's Food Court, we launched a new play space called Wildlife Wood. This was as a replacement for the previously existing Ark Play Area which had come to the end of its practical life and was due for an upgrade. The new play area has proved immensely popular retaining lots of exciting physical play experiences as before but adding a whole host of new ones too. It also provided an opportunity to introduce wheelchair accessible experiences including a rocking bridge and a slide.

Wild Worlds, a brand new festival concept, opened in May and ran all the way through the summer holidays. Working in collaboration with talented artists, landscape designers, scientists and entertainers, the festival transformed some of our favourite spaces around the zoo into unique worlds, all of which have been inspired by the incredible work of our conservationists, scientists and the amazing wildlife found right here at the zoo.

The Oakfield, which was the original manor house bought by George Mottershead when creating the zoo many years ago, has undergone a huge amount of work over the last few years. In July we were delighted to reopen it to the public following a major transformation. The Oakfield is now a traditional pub which serves a hearty blend of British classics, and modern contemporary cuisine – all accompanied by an exciting wine list and great beer. Its interior is welcoming and warm and offers another unique dining experience for our visitors.

The retail team has worked closely with new suppliers to keep our product range up to date and exciting. One of the big successes this year was the introduction of a new personalisation range – Adventa. Our visitors are now able to personalise items such as keyrings, lunch bags and notepads to remember their day out at the zoo or to give as a lovely gift. A new range of jewellery was designed in collaboration with

the Swarovski Group and each piece contains a beautiful Swarovski® crystal. Giraffes, penguins and elephants are featured in this special collection and importantly, proceeds from the sales of our elephant range, which includes a necklace, bracelet and earrings, will directly support our Never Forget fundraising campaign.

A major focus for the teams during the year was to continue to source sustainably and to find the balance between providing a great guest experience and protecting the environment. Two million fewer pieces of single use plastic were given out to guests as part of their purchases. Although there is still some work to do this is a great step in the right direction.

In addition deliveries to the zoo's pre-existing restaurants were reduced by more than 30% compared to last year, resulting in a 20% reduction in food miles. In retail shops, Chester Zoo 'bags for life' and pens are now made from recycled plastic bottles, while sweets that were previously wrapped in plastic are now sold in compostable bags.

Finally, supporting the zoo's Environmental Management System the team successfully achieved and migrated onto the new version of ISO 14001:2015 which further challenges control measures being undertaken. Free electric car charging pods were also installed in our visitor and employee car parks and 97% of the electrical energy used in the zoo is now sourced from renewable sustainable sources, such as wind and solar power – whether from the national grid or from the zoo's own solar panels.





The staff expedition team with some of the Madagasikara Voakajy team

EXPEDITION 2018

A team of 15 people travelled to Madagascar in December, to work with our field partner Madagasikara Voakajy (MV) as part of the annual Chester Zoo expedition. The team consisted of curators, keeping staff, educators and scientists, who assisted with the delivery of research and conservation activities. Additionally, a number of volunteering staff from other zoo divisions joined the team to gain first-hand experience of field conservation work.

Chester Zoo has worked with MV since 2011 when it began providing technical advice and funds to support the conservation of the critically endangered golden mantella frog. More recently this partnership has expanded to include the support of activities to assess the diversity and abundance of diurnal and nocturnal lemurs in the same habitat.

The focus of this conservation support is Mangabe New Protected Area in East Madagascar. This area has been heavily impacted by gold mining and logging in the past and thus the work of MV to protect this forest, engage with local communities, and carry out research to assess the full extent of biodiversity in the region, is vital.

The Chester Zoo expedition team joined MV for two weeks, camping in Mangabe NPA, to run intensive biodiversity surveys of amphibians, reptiles, birds, lemurs and small mammals. The team were also joined by biology students from the University of Antananarivo and members of the local community. During this time they recorded at least 87 bird species, gathering over 800 sightings, they gained morphometric data for 26 reptile and amphibian species. They ran an intensive study to assess the number and diversity of small mammals present, and conducted lemur surveys to record behaviour during both day and night, confirming the



The expedition team

presence of the following species: diademed sifaka, indri, brown lemur and Eastern lesser bamboo lemur.

The team also spent time with two local schools, running interactive workshops and games to highlight the importance of Mangabe's local biodiversity. MV work closely with local communities, in particular young people as part of their 'Youth for Lemurs' project which aims to promote protection of lemurs and encourage sustainable livelihoods by creating young ambassadors for lemur conservation. Staff from the zoo's Discovery and Learning team ran workshops with these young people during the expedition. They ran fun team building activities to teach theory of change, and focused on equipping teams with the skills to help achieve their goals. Laughter, songs, poems and dances marked each of those days of activities.

Overall the expedition was a huge success. Not only gaining vital information about the forest and its biodiversity, but building and strengthening friendships between Chester Zoo, MV and local communities. This represents an ongoing partnership, and members of the Chester Zoo team hope to be back out to Mangabe soon!



Zoo staff share their expertise

KEEPER FOR A DAY

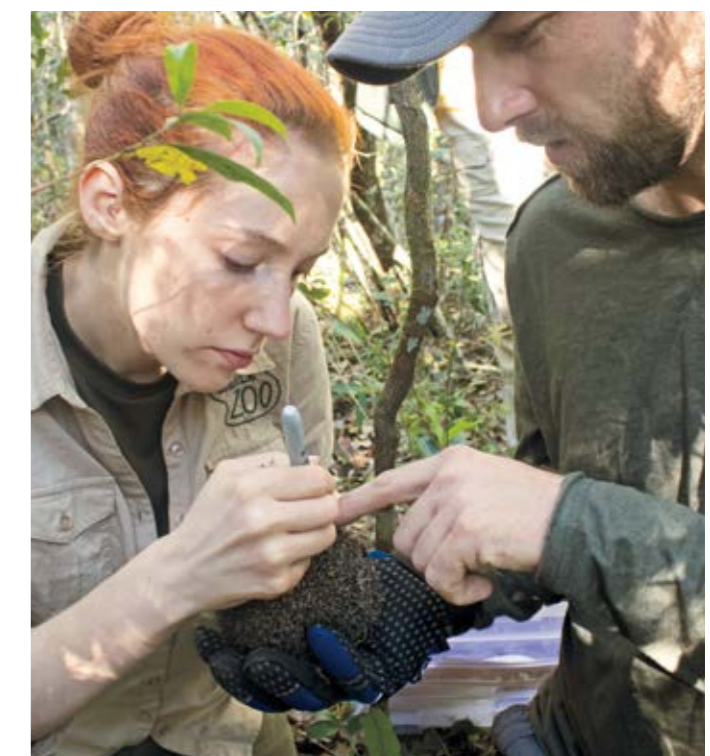
The Chester Zoo 'Keeper for a Day' initiative provides a unique opportunity for the public to experience a day in the life of a zookeeper. In 2018, the income generated through this scheme supported 16 staff to participate in a variety of projects, conferences and meetings; this is in addition to the staff travel that usually occurs as part of our on-going conservation work. The scheme also supported four overseas partners to visit Chester Zoo, and a further 15 staff to participate in the annual expedition to Madagascar.

Keeper for a Day supported activities allow staff to share specialist skills to support field projects, to learn new skills and to develop a better understanding and appreciation of conservation projects. These trips play a valuable part in promoting relationships with conservation partners, and often result in staff returning as 'project champions'.

This year staff from a huge variety of zoo teams travelled far and wide to projects around the world. As part of our Living with Tigers project in Nepal, they helped develop local community expertise in horticulture and electric fence construction and maintenance, and assisted with tiger monitoring. In Uganda, they got stuck in monitoring giraffe and giant pangolin, in Mexico worked with nuns to save salamanders, and in Brazil learnt how sustainable fishing is supporting local communities and saving the forest.

The Keeper for a Day scheme also funded staff attendance at various training events including a volunteer conference in Germany, okapi management training in the Netherlands, elephant management training in Belgium and small mammal management training in the Czech Republic. It also supported one of our conservation scholars from Kenya to attend our Connect! Symposium, and for a Malagasy colleague to spend a week training with our Discovery & Learning team.

Elsewhere, staff attended the annual Orangutan Veterinary Advisory Group conference in Sumatra to provide training in record keeping and management. Whilst in Kenya staff helped develop interpretation for schools and visitors at a rhino reserve; and in Laos managed local teams to design and build facilities to support rescued black bears.





Wild Worlds: Talking Chair, designed by Jane Revitt

OUR CAMPAIGNS AND PARTNERSHIPS

Our lead marketing campaign for 2018 was Wild Worlds, where we stepped into a new cultural landscape, working with artists, scientists, horticulturalists, and cultural programmers to create and bring to life fresh spaces across the zoo. Taking tired, unloved patches of land, or repurposing existing spaces, we were able to create a range of new gardens and points of interest, animating them with a lively event programme to appeal to a range of visitors.

Our PR team shared news far and wide of our animal births, and visitors clamoured to see the sun bear cub and rhino calf amongst many others.

Of course, we were also at the front line when dealing with media interest in the Monsoon Forest fire. Media coverage was extensive, with all UK national and regional outlets (as well as a high volume of international outlets) covering the story. Day one necessitated a crisis communications response to a live incident, delivered in accordance with the zoo's well-rehearsed crisis communications procedure, including a regular flow of factual statements issued by the zoo PR team to effectively manage media and public interest. On day two, we held a live press conference, confirming details about the loss of animals and clarifying the zoo's fundraising objectives. Further along, the PR team were focused on resolving the 'story' for media, releasing images of animals safely re-settled into new habitats.

Ultimately, the overwhelming public (and media) response to the fire was extremely empathetic, with thousands of supportive messages across social media and other channels. Prior to this event, the zoo PR strategy has been primarily focused for a number of years on growing our reputation as a world leading wildlife conservation charity, and in turn increasing the number

of vocal advocates for the zoo. This, allied to the delivery of the crisis communications procedure during the incident, was a significant factor in ensuring successful reputation management during December.

Filming of The Secret Life of The Zoo for Channel 4 continued during 2018. Series six reached its conclusion in December, with a Christmas special alone watched by more than 2 million viewers. The programme continues to be one of Channel 4's most viewed programmes.

We ended 2018 with a fantastic 114,680 members. We saw strong growth in membership numbers with a 20% increase throughout the year and a 6% increase on the budgeted member numbers. With 85% of members now paying by direct debit strong retention rates are promised during 2019.

2018 was a challenging year for event sales with the refurbishment of The Oakfield but it gave us an opportunity to review our event products and packages, and we were delighted to see the interest in The Oakfield when it re-opened.

It was a very busy year for our Sustainable Palm Oil campaign. Despite calls from some for a palm oil ban to protect rain forest, we strongly maintain that the solution lies with supporting sustainable palm oil production, especially by small holders in countries like Indonesia and Malaysia for whom palm oil is a key part of their livelihoods. We were delighted when in November, the Round Table on Sustainable Palm Oil agreed to strengthen its standards and include a 'no deforestation' rule in an effort to stop further rain forest destruction to make way for intensive plantations, and even more thrilled when all the delegates celebrated their decision at the end of their meeting by dancing to our Chester Zoo sustainable palm oil conga! We are also involved in efforts to extend the sustainable production model to another tropical crop, soy, which also threatens rain forest from intensive production.

Team leader Ben Baker with a sign for auction



Fundraising

THANK YOU FOR YOUR SUPPORT

This year saw some of the most difficult times in our zoo's illustrious history. In October we lost two of our much-loved elephants to the deadly EHV virus, and December saw fire ravage Monsoon Forest. But from these devastating events came an outpouring of immense compassion and generosity.

In both cases, we were literally overwhelmed with the love shown to us by our community. Over £50,000 was donated to our Never Forget campaign in memory of Aayu and Nandita, and together our supporters raised over £250,000 for the Monsoon Forest Conservation Fund which will support the species represented in the habitat.

We were shown a lot of love throughout the year as well. Our Summer Stampede saw little herds dashing through the zoo once again for our Never Forget campaign, whilst others took on their own personal challenges; baking, swimming, drawing, running and cycling in aid of our vital conservation work. And for the ultimate Chester Zoo fan looking for something a little bit different, the Me, You & the Zoo eBay auction of historic interpretation raised over £40,000 towards preventing extinction, with over 400 people being able to say #ThisSignIsMine!

New and renewed philanthropic relationships with grant giving trusts and companies have allowed us to achieve some wide-ranging and amazing feats of conservation and learning; establishing a laboratory in Kenya to monitor black rhino; providing extra resource for our Safari Rangers to travel further across the North West to inspire communities about wildlife; and allowing us to progress the next stage of our crucial research into EHV.

We are so lucky to be an important part of many people's lives. This year we saw more people than ever choose to dedicate a leaf on the Giving Tree and leave a legacy to the zoo in their will. Thanks to this generosity, we can ensure that the memory of their loved ones live on, both at the very heart of the zoo and through the conservation impact made possible.

The most treasured message we have taken away from 2018 has been the knowledge that we are supported by so many incredibly caring people and organisations; who are willing and prepared to step up and make an impact for wildlife all across the world. This is an extraordinary thing, and we do not take it for granted. Thank you!

With thanks to all our supporters throughout 2018! And to those who wish to remain anonymous,

Corporate Champions

Airbus
Bank of America Merrill Lynch
Craghoppers
MBNA
Rhino Products Ltd

Retail Partners

Charlie Bears
Steven Brown
Joe Davies Ltd
Royal Crown Derby

Corporate Supporters

3D Squared
Barclays Bank PLC
Darwin Escapes
M&S Bank
Stagecoach
Sykes Cottages Ltd
Toyota Motor Manufacturing Ltd

Trusts, Grants and Incredible Gifts

The Ampelos Trust
Carole & Mike Brown
The Eric & Dorothy Leach Charitable Trust
Heritage Lottery Fund North West
Marjorie Coote Animal Charity Trust
Chris McDermott
The Philip Barker Charity
The Ronald & Kathleen Pryor Charity
The William Dean Countryside and Educational Trust
The Thriplow Charitable Trust

Corporate Adopters

Adlington Hall
Caninecottages.co.uk
DoubleTree Chester Hotel & Spa
FMC Agro Ltd
Holidaycottages.co.uk
Investec Wealth & Investment
John Lewis at Home
Stagecoach
Thew Arnott
Tower Supplies
Waters Corporation
Zarafa Group Ltd

And all those celebrated and remembered with love on the Chester Zoo Giving Tree

AIRBUS

Bank of America
Merrill Lynch

CRAGHOPPERS

mbna

PHILIP BARKER CHARITY

HERITAGE FUND

FCC Communities Foundation

Rhino PRODUCTS



OUR FINANCIAL PERFORMANCE

The year ending 31st December 2018 was a record year for The North of England Zoological Society (the Society) in terms of zoo visitor numbers, income and expenditure on our charitable activities. Our underlying income rose to £44.3m (2017: £41.3m) whilst underlying expenditure rose to £40.9m (2017: £38.5m). These figures exclude exceptional income and expenditure relating to the Monsoon Forest fire. Having taken account of the £0.4m net impact of these exceptional items the Society reported a £3.0m net increase in our funds (2017: £2.9m increase).

Exceptional income and expenditure

On 15th December 2018, a fire broke out in the Monsoon Forest building within the zoo's Islands zone. Included within the 2018 accounts is an exceptional impairment charge of £5.2m reflecting damage to the building, together with £0.4m of costs associated with the fire which cannot be recovered from insurers. These charges are offset by £5.2m of other income, sitting as a debtor at year end, to reflect the recovery of the costs of the damage from insurers. Work is ongoing to confirm the extent of damage and repairs, and to the extent that the income received from insurers is higher, a gain will be recognised when it becomes virtually certain. The net impact on the 2018 financial statements is an expense of £0.4m.

Income

The bulk of the Society's income comes from the zoo's visitors and members, in the form of admissions and other charges. Visitor numbers reached a record 1,969,768 in 2018, up nearly 6% from 1,866,628 in 2017, with nearly a third of those visits made by our members. Membership numbers increased by 20% to 114,007 during the year and have grown by 130% in the last 5 years.

Our winter event, The Lanterns, attracted over 90,000 visitors and we welcomed 128,000 education visitors, 36,000 of whom visited the zoo for free during the winter months under an initiative launched in 2017. Total visitor related income for 2018, which includes admission fees and membership income, rose by 7% to £28.1m (2017: £26.3m).

As a registered charity the Society generates voluntary income from visitor donations, Gift Aid, animal adoptions, grants, legacies and other donations. With increases in visitor numbers, the related donations and Gift Aid on admission increased to £2.9m (2017: £2.8m). Fundraising income, which includes animal adoptions, grants, legacies and other donations was £1.3m (2017: £1.3m).

This fundraising figure includes £0.2m of generous donations by the public following the Monsoon Forest fire. Since the year end this fund has grown to £0.3m and will be used in the coming years to fund a number of conservation projects both in the zoo and in the field.

The Society's trading subsidiary, Chester Zoo Enterprises Limited, which provides retail and food & beverage offerings across the zoo site had a turnover of £12.0m in 2018 (2017: £11.0m). This performance was impacted by the closure of Oakfield House for redevelopment during the first half of the year. The Oakfield opened to visitors as a restaurant and pub in July 2018.

Exceptional income of £5.2m reflects the estimated income to be recovered from insurers for the rebuild of the Monsoon Forest which offsets the impairment charge recognised.

The chart to the right shows where how we generate our income (excluding exceptional income).

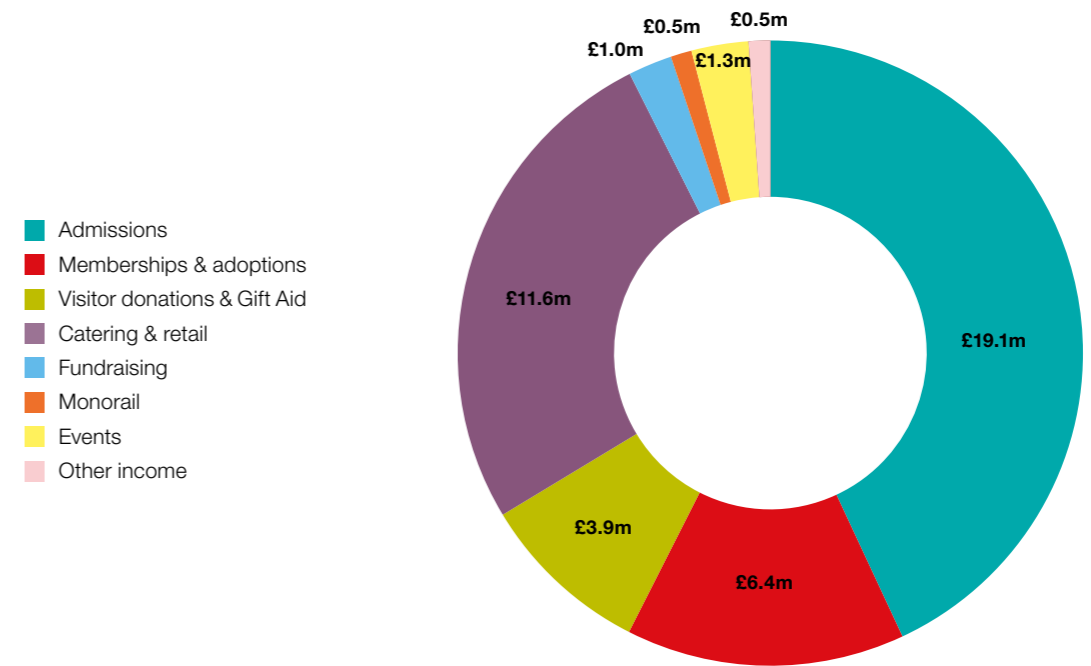
Expenditure

In 2018 we spent £40.9m (2017: £38.5m), excluding capital expenditure and exceptional costs relating to the Monsoon Forest fire.

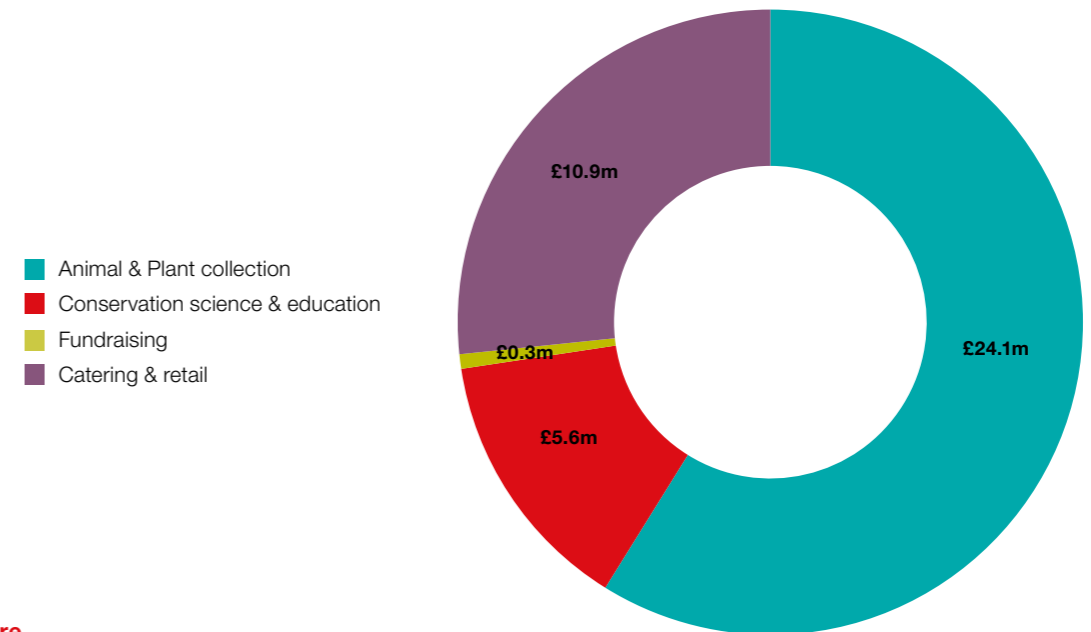
Resources expended on our charitable activities, including the costs of maintaining the animal & plant collection, the visitor facilities, science and education and our field conservation programmes, together with related support costs totalled £30.1m (2017: £26.8m). In addition we spent £0.3m (2017: £0.2m) generating our voluntary income.

Chester Zoo Enterprises Limited had costs of £10.9m, excluding £0.7m of rents paid to the Society, and it made an operating profit of £0.4m in 2018 (2017: £0.4m) which is donated to the Society.

By far the biggest element expenditure relates to our employees and the cost continues to be impacted by both increases in the number of employees and the ongoing increases to the national living wage and to auto-enrolment pension contributions. Our average Full Time Equivalent (FTE) headcount for 2018 rose to 579 from 555 in 2017. A third of these employees worked 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 a team of over 220 passionate volunteers.



Income



Expenditure

Exceptional costs in relation to the fire in the Monsoon Forest total £5.6m, £5.2m is an impairment charge in relation to certain elements of the building structure, its fixtures and fittings, which were damaged in the fire. These elements are fully insured. A further £0.4m has been accrued to cover uninsured professional fees.

The chart above shows a breakdown of the Society's expenditure (excluding exceptional costs relating to the Monsoon Forest fire).

Pensions

The Society's defined benefit pension scheme was closed to future accrual in 2012 and at 31 December 2018 reported a surplus of £4.6m under FRS102 (2017: £5.4m). During 2018, in accordance with an agreement with the Pension Trustees, the Society deposited £1m into an escrow account held by the Society, which is to be used, if required, to fund a buy out of the scheme, when the scheme liabilities would be fully secured with an insurer. The reported surplus, which excludes the amount held in the escrow account, is not recognised in the financial statements as the Society cannot gain economic benefit from it.

Capital expenditure

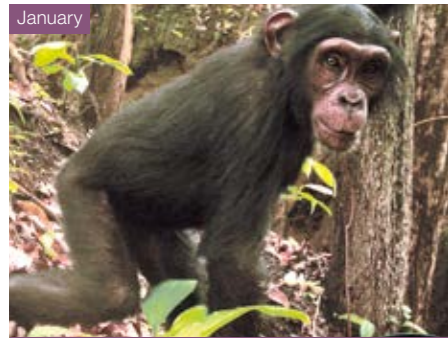
During 2018 the Society spent £10.4m on capital expenditure (2017: £9.6m). This expenditure included the completion of the renovations to Oakfield House and its conversion to a restaurant and pub, building of a new habitat for tree kangaroo and pademelon within Islands, upgrades to the penguin habitat and construction of a new canteen for our employees and volunteers. We also commenced work on a number of projects that will be delivered in 2019. These include a Madagascar forest exhibit with an immersive lemur walkthrough exhibit that will open in spring 2019, construction of an off-show area which will allow holding and movement of animals during planned development works and a new habitat for our Asiatic lions.

Cash generated from operations of £11.1m (2017: £8.9m), together with a £1.2m increase in borrowings, was used to fund these capital developments. At 31 December 2018 the Society had a net borrowing position of £3.5m (2017: £4.1m), with £1m being held within an escrow account for the benefit of the defined benefit pension scheme.

Full details of our financial performance can be found in the 2018 Trustee's Report and Financial Statements.



HIGHLIGHTS OF THE YEAR



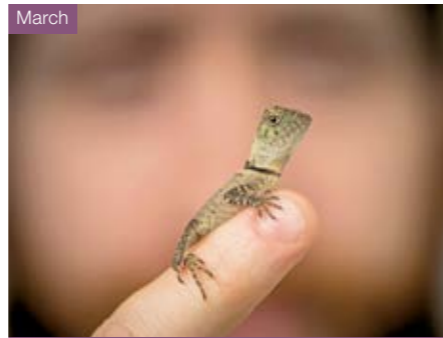
January

Camera trap footage reveals incredible diversity of Nigeria's Gashaka Gumti National Park



February

Precious African painted dog pups named



March

Rare baby forest dragons hatch



April

Chester Zoo Nature Reserve Phase 2 opens



May

Celebrations as we reach 100,000 members



June

Our work with Lake Patzcuaro Salamanders makes the news



July

Western chimpanzee baby draws summer visitors



August

One-week-old rhino calf has first outdoor adventure



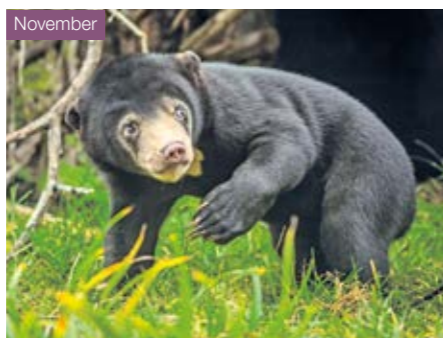
September

Camera trap tiger - Living with Tigers



October

Series six of The Secret Life of the Zoo airs on Channel 4



November

Sun bear cub explores outside habitat for the first time



December

Staff care for animals saved from the Monsoon Forest fire

Front cover: African painted dog

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



The North of England Zoological Society

TRUSTEES' REPORT AND FINANCIAL STATEMENTS

Year ended 31st December 2018

Registered Charity Number 306077



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

Honorary Positions

Vice Presidents

The Right Honourable Lord Wade of Chorlton, kt, JP
(Deceased 7th June 2018)

The Honourable Lady Jane Heber-Percy

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

Elected by the members

Bruce Ursell – Chairman

Malcolm Ardron – Vice Chairman

William Beale – Vice Chairman

Edwin Christmas

Penny Coates

Sandra Donnelly

Professor Richard Griffiths

Professor Russell Newton

Angela Pinnington

Paula Spence (Resigned 10th March 2018)

Simon Venables

Co-opted by the Trustees

Catherine Buckley (Retired 5th October 2018)

Professor David MacDonald (Co-opted 2nd March 2018)

Principal Executives

Dr Mark Pilgrim – Chief Executive Officer

Jamie Christon – Chief Operating Officer

Company Secretary

Aarco Services Limited represented by Nick Clarke

External Advisors to the Ethical Review Committee

Dr Ian Dunbar

Dr Richard Preziosi

Dr Thomas Webb

Independent Auditor

PricewaterhouseCoopers LLP, No 1 Spingingfields,
1 Hardman Square, Manchester, M3 3EB

Internal Auditor

RSM, 20 Chapel Street, Liverpool, L3 9AG

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

Jolliffe & Co, 6 St John Street, Chester, CH1 1DA

Bankers

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

Actuaries

Spence & Partners Limited, The Culzean Building,
36 Renfield Street, Glasgow, G2 1LU.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2018

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 2018 which are also prepared to meet the requirements for a directors' report and financial statements for Companies Act 2006 purposes. NEZS is a conservation and education charity which owns and runs Chester Zoo. Further information about NEZS's activities during 2018 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 Society's Memorandum and Articles of Association, and Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their financial statements in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102).

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 Mission

Preventing Extinction

Our Strategy

The Society's five-year strategic plan was launched in 2018 and supports the mission statement "Preventing Extinction". The strategic plan contains six strategic objectives which are:

- Preventing extinction by achieving the greatest conservation impact
- Preventing extinction by being a world class visitor attraction
- Preventing extinction by providing exceptional animal and plant care
- Preventing extinction by ensuring financial stability
- Preventing extinction by developing our people
- Preventing extinction by being a voice for change

Achievements and Performance in 2018

2018 was a record year for the North of England Zoological Society as Chester Zoo welcomed 1,969,768 visitors, 6% above 2017 and 4% ahead of the record set in 2016. Membership of the Society continued to increase and at the end of the financial year the Society had just over 114,000 members. The devastating fire within the Monsoon Forest building unfortunately marked the end of the year and thanks are due to all supporters who made generous donations following the fire.

Significant capital investment in the zoo continued as part of the Strategic Development Plan. In July 2018 we opened The Oakfield, the newly refurbished pub restaurant. We completed the construction of the tree kangaroo and pademelon exhibit within Islands, built a new staff canteen, upgraded the penguin enclosure and replaced play areas that had reached end of life. Work continued on the new Madagascar zone which subsequently opened to visitors in March 2019.

The zoo continued to have significant media coverage through Channel 4's the "Secret Life of the Zoo" series and the much loved winter Lanterns event attracted over 90,000 visitors. The initiative to make the zoo more accessible to children at schools previously unable to visit due to monetary constraints continued and in 2018 we offered over 36,000 free places over the winter months as well as subsidising coach travel.

None of this would have been possible without the skills, dedication and passion of our staff and volunteers and the Trustees are grateful for their continuing support in delivering the Society's strategy.

A full review of the Society's achievements and performance in 2018 can be found in the "Chester Zoo Annual Review" which is published separately and can be downloaded from www.chesterzoo.org.

Equal Opportunities

The Society is an equal opportunities employer and is committed to promoting equal opportunity for all staff and job applicants. The Society has an equal opportunities policy and does not discriminate against staff on the basis of their gender, sexual orientation, marital or civil partner status, gender reassignment, race, colour, nationality, ethnic or national origin, religion or belief, disability or age. This policy applies to all aspects of our relationship with staff and to relations between staff members at all levels. This includes job advertisements, recruitment and selection, training and development, opportunities for promotion, conditions of service, pay and benefits, conduct at work, disciplinary and grievance procedures, and termination of employment.

In April 2019, the Society published its Gender Pay Gap report relating to April 2018, the results of which highlight the equal opportunities available regardless of gender. Details of the report can be found at www.chesterzoo.org.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2018 (CONTINUED)

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. Coupled with a flexible pricing structure, many visitors enjoy concessionary prices which are set to encourage visits by children, students, families, senior citizens and those with disabilities, with over 63,000 receiving free admission. There were 128,000 concessionary priced education visits, of which over 36,000 received free admission and more than 30,000 were taught by our education team.

Financial Review 2018

The year ended 31st December 2018 was a record year for The North of England Zoological Society (the Society) in terms of zoo visitor numbers, income and expenditure on our charitable activities. Our underlying income rose to £44.3m (2017: £41.3m) whilst underlying expenditure rose to £40.9m (2017: £38.5m). These figures exclude exceptional income and expenditure relating to the Monsoon Forest fire. Having taken account of the £0.4m net impact of these exceptional items the Society reported a £3.0m net increase in our funds (2017: £2.9m increase after a £1.6m pension funding charge in 2017, nil in 2018).

Incoming resources

The bulk of the Society's income comes from the zoo's visitors and members, in the form of admissions and other charges. Visitor numbers reached a record 1,969,768 in 2018, up nearly 6% from 1,866,628 in 2017, with nearly a third of those visits made by our members. Membership numbers increased by 20% to 114,007 during the year and have grown by 130% in the last 5 years.

Our winter Lanterns event attracted over 90,000 visitors and we welcomed 128,000 education visitors, more than 36,000 of whom visited the zoo for free during the winter months under an initiative launched in 2017.

Total visitor related income for 2018, which includes admission fees and membership income, rose by 7% to £28.1m (2017: £26.3m).

As a registered charity the Society generates voluntary income from visitor donations, Gift Aid, animal adoptions, grants, legacies and other donations. With increases in visitor numbers, the related donations and Gift Aid on admission increased to £2.9m (2017: £2.8m). Fundraising income, which includes animal adoptions, grants, legacies and other donations was £1.3m (2017: £1.3m).

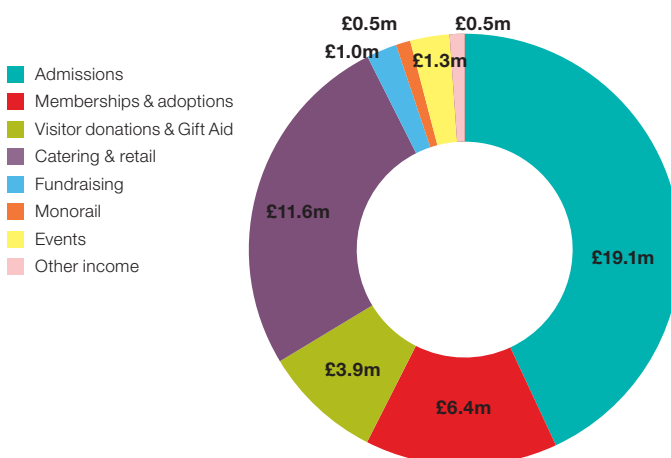
This fundraising figure includes £0.2m of generous donations by the public following the Monsoon Forest fire. Since the year end this fund has grown to £0.3m and will be used in the coming years to fund a number of conservation projects both in the zoo and in the field.

The Society's trading subsidiary, Chester Zoo Enterprises Limited, which provides retail and food & beverage offerings across the zoo site had a turnover of £12.0m in 2018 (2017: £11.0m). This performance was impacted by the closure of Oakfield House for redevelopment

during the first half of the year. The Oakfield opened to visitors as a gastro pub in July 2018.

Exceptional income of £5.2m reflects the estimated income to be recovered from insurers for the rebuild of the Monsoon Forest building and offsets the impairment charge recognised in respect of the damage.

An analysis of the sources of 2018 underlying income is shown in the following chart:



Resources expended

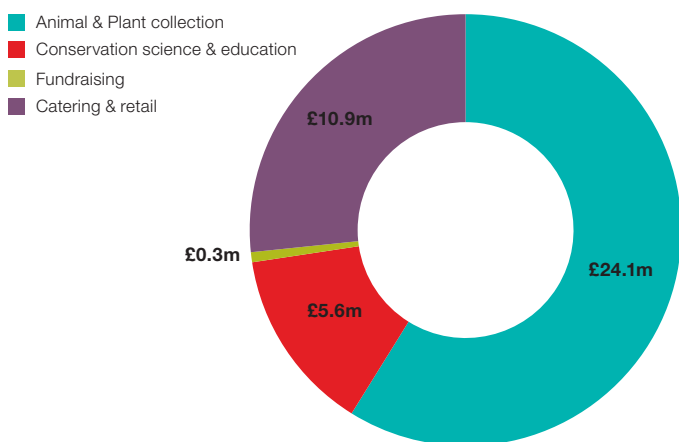
In 2018 we spent £40.9m (2017: £38.5m), excluding capital expenditure and exceptional costs relating to the Monsoon Forest fire. Resources expended on our charitable activities, including the costs of maintaining the animal & plant collection, the visitor facilities, science and education and our field conservation programmes, together with related support costs totalled £29.7m (2017: £26.8m). In addition we spent £0.3m (2017: £0.2m) generating our voluntary income.

Information on the conservation and research field programmes funded can be found at www.chesterzoo.org and the Society's 2018 Annual Review.

Chester Zoo Enterprises Limited had costs of £10.9m, excluding £0.7m of rents paid to the Society, and it made an operating profit of £0.4m in 2018 (2017: £0.4m) which is donated to the Society.

By far the biggest element of expenditure relates to our employees and the cost continues to be impacted by both increases in the number of employees and the ongoing increases to the national living wage and to auto-enrolment pension contributions. Our average Full Time Equivalent (FTE) headcount for 2018 rose to 579 from 555 in 2017. A third of these employees worked 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 a team of over 220 passionate volunteers.

The chart below shows an analysis of 2018 expenditure (excluding exceptional costs):



Exceptional costs in relation to the fire in the Monsoon Forest total £5.6m, £5.2m is an impairment charge in relation to certain elements of the building structure, its fixtures and fittings, which were damaged in the fire and are offset by income to be received from insurers. A further £0.4m has been accrued to cover uninsured professional fees.

Capital expenditure

During 2018 the Society spent £10.4m on capital expenditure (2017: £9.6m). This expenditure included the completion of the renovations to Oakfield House and its conversion to a gastro pub, building of a new habitat for tree kangaroo and pademelon within Islands, upgrades to the penguin habitat and construction of a new canteen for our employees and volunteers. We also commenced work on a number of projects that will be delivered in 2019. These include a Madagascar forest exhibit with an immersive lemur walkthrough exhibit that opened in March 2019 and construction of an off-show area which will allow holding and movement of animals during planned development works and a new enclosure for our Asiatic lions.

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 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.

Having considered these factors, the Society maintained minimum available cash reserves of £1.5m at all times during 2018 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. Since the

end of 2018 the Trustees have increased the level of cash reserves held to £1.9m to reflect the increased cost base of the zoo.

At the end of 2018 the Society had borrowed £7.1m and had £3.5m of cash reserves, including £1m of cash reserves held in escrow for the defined benefit pension scheme. The Society's borrowing facility comprises a £18m unsecured revolving credit facility, which is in place until April 2023 and a £2.0m overdraft facility which is renewable annually. At 31 December 2018 the Society had access to £13m of undrawn borrowings and £2.5m of cash reserves.

Pensions

The Society's defined benefit pension scheme was closed to future accrual in 2012 and at 31 December 2018 reported a surplus of £4.6m under FRS102 (2017: £5.4m). During 2018, in accordance with an agreement with the Pension Trustees, the Society deposited £1m into an escrow account held by the Society, which is to be used, if required, to fund a buy out of the scheme, when the scheme liabilities would be fully secured with an insurer. The reported surplus, which excludes the amount held in the escrow account, is not recognised in the financial statements as the Society cannot gain economic benefit from it.

The Society now operates a defined contribution scheme which is open to all employees. For permanent employees who contribute 3% or more, the Society makes a contribution that is 2% more than the employee contribution up to a maximum of 9%. Qualifying seasonal employees are enrolled into the NEST pension scheme with contributions in line with government rates.

Restricted and Designated Funds

Restricted income funds derive from donations, grants and legacies received and are put towards a variety of capital projects and conservation activities. Unrestricted income funds may be designated or freely available for the Society's general charitable purposes.

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
- to funds that could only be realised by disposing of fixed 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 2018 the Society had total funds employed of £50.6m (2017: £47.6m) of which £1.1m (2017: £1.0m) were restricted and the balance of £49.6m (2017: £46.6m) were designated, including £45.4m (2017: £42.6m) tied to fixed assets. The increase in the amount tied to fixed assets reflects the impact of capital expenditure in the year. There were no unrestricted free reserves (2017: nil).

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2018 (CONTINUED)

Plans for Future Periods

2018 saw the completion of a number of projects as part of the zoo's strategic development plan. 2019 will be no different and work is ongoing on a number of projects including a new habitat for the Asiatic lions, as well as holding facilities which are required to facilitate the Grasslands development planned to start in late 2019 and to be complete for 2022, subject to planning permission being obtained.

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 and 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 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 governance of the Society's defined benefit pension scheme.

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 Chief Executive Officer and Chief Operating Officer 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 sixteen of whom not more than thirteen shall be Elected Trustees and not more than three 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 Chairmen 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

To 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 2018, Trustees delegated aspects of their powers to committees consisting of some of their members and specialist advisors. These committees report to the Trustees.

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

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 and internal 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 principal executives.

Trustee Nominations Committee – takes responsibility for identifying and proposing new Trustees, and (if elected) for their subsequent induction, support and development.

Strategic Development Committee – responsible for ensuring that the Strategic Development Plan (SDP) is implemented in accordance with the strategy set out by Trustees. Monitors progress, scrutinises and makes decisions in respect of individual strategic capital projects in respect of the overall SDP with regard to quality, cost and overall programme. Makes recommendations to the Board of Trustees for any issues of significance in respect of the SDP and its implementation.

Trustee involvement in each committee at 31 December 2018 is set out in the table below:

Committees	Ethical Review	Audit and Risk Management	Remuneration	Trustee Nominations	Strategic Development
Bruce Ursell			Chair	Chair	x
Malcolm Ardron			x	x	Chair
William Beale	x		x	x	x
Edwin Christmas					
Penny Coates		x			x
Sandra Donnelly					
Prof Richard Griffiths	x				
David McDonald					
Prof Russell Newton	Chair	x			
Angela Pinnington	x	x			
Simon Venables		Chair			

Trustees – Recruitment

If there are vacancies in any year, the Nomination Committee prepares 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 provides appropriate cover against claimants' damages, judgements, settlements or the costs incurred in the defence of actions.

Statement of Trustees Responsibilities

The trustees (who are also directors of the North of England Zoological Society for the purposes of company law) are responsible for preparing the Trustees' Annual Report (including the Strategic Report) and the financial statements in accordance with applicable law and regulation.

Company law requires the trustees to prepare financial statements for each financial year. Under that law the trustees have prepared the financial statements in accordance with United Kingdom Accounting Standards, comprising FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland", and applicable law (United Kingdom Generally Accepted Accounting Practice). Under company law the trustees must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of the affairs of the charitable company and the group and of the incoming resources and application of resources, including the income and expenditure, of the charitable group for that period. In preparing these financial statements, the trustees are required to:

- select suitable accounting policies and then apply them consistently;
- observe the methods and principles in the Statement of Recommended Practice: Accounting and Reporting by Charities (2015);
- make judgments and estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards, comprising FRS 102, 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 charitable company will continue in business.

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 the group and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the charitable company and the group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2018 (CONTINUED)

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.

Independent Auditor

In 2018, the Trustees reviewed the Society's auditors and following a resolution at the Annual General Meeting, re-appointed PricewaterhouseCoopers LLP.

The Strategic Report on pages 5 to 16 was approved by the Trustees on the 20 May 2019 and signed on their behalf by:

Bruce Ursell
Chairman of Trustees

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

Report on the audit of the financial statements

Opinion

In our opinion, The North of England Zoological Society's group financial statements and parent charitable company financial statements (the "financial statements"):

- give a true and fair view of the state of the group's and of the parent charitable company's affairs as at 31 December 2018 and of the group's incoming resources and application of resources, including its income and expenditure, and of the group's cash flows, for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland", and applicable law); and
- have been prepared in accordance with the requirements of the Companies Act 2006.

We have audited the financial statements, included within the Trustees' Report and Financial Statements (the "Annual Report"), which comprise: the consolidated and society balance sheets as at 31 December 2018; the consolidated statement of financial activities and the consolidated cash flow statement for the year then ended; the accounting policies; and the notes to the financial statements.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)") and applicable law. Our responsibilities under ISAs (UK) are further described in the Auditors' responsibilities for the audit of the financial statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We remained independent of the charitable company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, which includes the FRC's Ethical Standard and we have fulfilled our other ethical responsibilities in accordance with these requirements.

Conclusions relating to going concern

We have nothing to report in respect of the following matters in relation to which ISAs (UK) require us to report to you when:

- the trustees' use of the going concern basis of accounting in the preparation of the financial statements is not appropriate; or
- the trustees have not disclosed in the financial statements any identified material uncertainties that may cast significant doubt about the group's and parent charitable company's ability to continue to adopt the going concern basis of accounting for a period of at least twelve months from the date when the financial statements are authorised for issue.

However, because not all future events or conditions can be predicted, this statement is not a guarantee as to the group's and parent charitable company's ability to continue as a going concern. For example, the

terms on which the United Kingdom may withdraw from the European Union, are not clear, and it is difficult to evaluate all of the potential implications on the charity's activities, beneficiaries, suppliers and the wider economy.

Reporting on other information

The other information comprises all of the information in the Annual Report other than the financial statements and our auditors' report thereon. The trustees are responsible for the other information. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except to the extent otherwise explicitly stated in this report, any form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report based on these responsibilities.

Based on the responsibilities described above and our work undertaken in the course of the audit, ISAs (UK) require us also to report certain opinions and matters as described below.

Strategic Report and Trustees' Report

In our opinion, based on the work undertaken in the course of the audit, the information given in the Trustees' Report, including the Strategic Report, for the financial year for which the financial statements are prepared is consistent with the financial statements; and the Strategic Report and the Trustees' Report have been prepared in accordance with applicable legal requirements.

In addition, in light of the knowledge and understanding of the group and parent charitable company and their environment obtained in the course of the audit, we are required to report if we have identified any material misstatements in the Strategic Report and the Trustees' Report. We have nothing to report in this respect.

Responsibilities for the financial statements and the audit

Responsibilities of the trustees for the financial statements

As explained more fully in the *Statement of Trustees' Responsibilities*, the trustees are responsible for the preparation of the financial statements in accordance with the applicable framework and for being satisfied that they give a true and fair view. The trustees are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the trustees are responsible for assessing the group's and parent charitable company's ability to continue as a going concern, disclosing as applicable, matters related

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

to going concern and using the going concern basis of accounting unless the trustees either intend to liquidate the group and parent charitable company or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditors' report.

Use of this report

This report, including the opinions, has been prepared for and only for the charity's members as a body in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

Other required reporting

Companies Act 2006 exception reporting

Under the Companies Act 2006 we are required to report to you if, in our opinion:

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

We have no exceptions to report arising from this responsibility.

Nicholas Boden (Senior Statutory Auditor)
for and on behalf of PricewaterhouseCoopers LLP
Chartered Accountants and Statutory Auditors
Manchester
20 May 2019

CONSOLIDATED STATEMENT OF FINANCIAL ACTIVITIES

(Including a consolidated income and expenditure account) for the year ended 31 December 2018

	Notes	Unrestricted Funds £'000	Restricted Funds £'000	Total 2018 £'000	Total 2017 £'000
Income from:					
Charitable activities					
Animal and plant collection	2	28,104	-	28,104	26,302
Donations and legacies					
Voluntary income	3	3,486	709	4,195	4,034
Other trading activities					
Subsidiary's trading turnover	4	11,974	-	11,974	11,013
Investments					
Investment income	5	8	-	8	5
Exceptional income	9	-	5,160	5,160	-
Total income		43,572	5,869	49,441	41,354
Expenditure on:					
Charitable activities					
Animal and plant collection	6a	(23,921)	(151)	(24,072)	(21,769)
Conservation science and education	6a	(5,120)	(508)	(5,628)	(4,997)
Raising funds					
Costs of generating voluntary income	6a	(307)	-	(307)	(207)
Subsidiary's cost of goods sold and other costs	4	(10,895)	-	(10,895)	(9,943)
Exceptional costs	9	(384)	(5,160)	(5,544)	-
Total expenditure		(40,627)	(5,819)	(46,446)	(36,916)
Net income		2,945	50	2,995	4,438
Other gains and losses					
Contribution made to defined benefit scheme	22	-	-	-	(1,556)
Transfer to restricted funds	19	(1,000)	1,000	-	-
Net movement in funds		1,945	1,050	2,995	2,882
Reconciliation of funds	19				
Total funds brought forward		46,613	1,028	47,641	44,759
Total funds carried forward		48,558	2,078	50,636	47,641

The North of England Zoological Society made an unconsolidated surplus of £2,995,000 (2017: £2,882,000). 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 2018

	Notes	Consolidated		Society	
		2018 £'000	2017 £'000	2018 £'000	2017 £'000
Fixed assets					
Tangible assets	12	54,820	56,216	55,279	56,216
Investment in subsidiary companies	13	-	-	-	-
		54,820	56,216	55,279	56,216
Current assets					
Stocks	14	732	704	91	65
Debtors	15	6,071	812	5,830	1,201
Cash at bank and in hand	16	3,531	1,963	3,531	1,963
		10,334	3,479	9,452	3,229
Creditors: amounts falling due within one year	17	(7,468)	(6,204)	(7,045)	(5,955)
Net current liabilities		(2,866)	(2,725)	2,407	(2,726)
Total assets less current liabilities		57,686	53,491	57,686	53,490
Creditors: amounts falling due after more than one year	18	(7,050)	(5,850)	(7,050)	(5,850)
Net assets		50,636	47,641	50,636	47,640
Funds employed					
Income funds – restricted	19	2,078	1,028	21,078	1,028
Income funds - unrestricted					
Designated funds	19	48,558	46,613	48,558	46,612
Total funds employed		50,636	47,641	50,636	47,640

The notes on pages 16 to 28 form part of these financial statements.

The financial statements were approved and authorised by the Trustees on the 20 May 2019 and signed on their behalf by:

Bruce Ursell
Chairman of Trustees

Company number – 287902 – North of England Zoological Society

CONSOLIDATED CASH FLOW STATEMENT FOR THE YEAR ENDED 31 DECEMBER 2018

	Notes	2018 £'000	2017 £'000
Cash flows from operating activities:			
Net movement in funds as per the Statement of Financial Activities		2,995	4,438
Adjustments for:			
Interest paid		196	165
Interest received	5	(8)	(5)
Depreciation charge	12	6,637	6,121
Impairment charge	12	5,160	-
Increase in stocks	14	(28)	(18)
(Increase)/decrease in debtors	15	(5,259)	262
Increase/(decrease) in creditors due within one year	17	1,491	(539)
Contributions to pension scheme		(56)	(1,550)
Net cash provided by operating activities		11,128	8,924
Cash flows from investing activities:			
Interest received	5	8	5
Purchase of fixed assets	12	(10,400)	(9,620)
Net cash used in investing activities		(10,392)	(9,615)
Cash flow from financing activities:			
Cash inflows from new borrowing	18	1,200	600
Interest paid		(196)	(165)
Net cash provided by financing activities		1,004	435
Operating cash inflow/(outflow) in year		1,740	(256)
Increase/(decrease) in net cash at bank in the year		1,740	(256)
Cash and cash equivalents at 1 January	16	1,791	2,047
Cash and cash equivalents at 31 December	16	3,531	1,791

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 2015 ("SORP") applicable to charities preparing their financial statements in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102).

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 financial statements other than in relation to the exceptional income and costs relating to the Monsoon Forest fire (note 9). 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 2017 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.

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. The estimated recoverable amount is reviewed at subsequent balance sheet dates where further information is available. Note 9 further explains the impairment charge recognised in the year ended 31st December 2018.

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 to the 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 minimum deficit reduction payment will be made to the scheme annually in order to reduce the scheme's solvency 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 financial statements.

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

	Unrestricted Funds			Total 2018 £'000	Total 2017 £'000
	Visitor Related £'000	Other unrestricted £'000	Other designated £'000		
Animal and plant collection					
Visitor admission to zoo and gardens	19,066	-	-	19,066	18,361
Monorail and boats	481	-	-	481	524
Membership of zoo and Gift Aid thereon	7,128	-	-	7,128	5,983
Events	995	-	-	995	989
Other	434	-	-	434	445
Total incoming resources from charitable activities	28,104	-	-	28,104	26,302

3. Income from Donations and Legacies

	Unrestricted 2018 £'000	Restricted 2018 £'000	Total 2018 £'000	Total 2017 £'000
Donations and Gift Aid on admission to zoo	2,902	-	2,902	2,755
Animal adoptions	286	-	286	264
Grants and other donations	298	709	1,007	1,015
Total voluntary income	3,486	709	4,195	4,034

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.

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 below.

Audited financial statements for Chester Zoo Enterprises Limited for the year ended 31 December 2018 will be filed with the Registrar of Companies.

Chester Zoo Enterprises Limited trading results	Total 2018 £'000	Total 2017 £'000
Turnover	11,974	11,013
Resources expended		
Labour and cost of goods sold	(8,609)	(7,423)
Gross trading surplus for year	3,365	3,590
Indirect costs		
Operating and support costs paid to Society	(2,286)	(2,520)
Property rents paid to Society	(694)	(695)
Operating profit	385	375
Taxation	-	-
Profit for the financial year	385	375
Gift Aid donation to parent company	(385)	(375)
Surplus/(deficit) retained in subsidiary	-	-

5. Interest income

	Total 2018 £'000	Total 2017 £'000
Interest on cash deposits	8	5
Total interest income	8	5

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

6a. Analysis of Total Expenditure

	Employee Costs £'000	Other Direct Costs £'000	Support Costs (Note 6b) £'000	Total 2017 £'000	Total 2016 £'000
Charitable activities					
Animal and plant collection	6,424	12,259	5,389	24,072	21,769
Conservation science and education	2,088	2,191	1,349	5,628	2,701
Total for Society	8,512	14,450	6,738	29,700	25,766
Raising Funds					
Costs of generating voluntary income	103	72	132	307	207
Exceptional costs (note 9)	-	5,544	-	5,544	-
Subsidiary's cost of goods sold and other costs	3,806	4,803	2,286	10,895	9,943
Total for Society	8,615	20,066	6,870	35,551	26,973
Total expenditure for Group	12,421	24,869	9,156	46,446	36,916

6b. Analysis of Support Costs

	Total 2018 £'000	Total 2017 £'000
Direct employee	4,155	3,730
Other costs	5,000	4,744
Total of support costs	9,155	8,474

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	Animal and plant collection £'000	Conservation science and education £'000	Generating voluntary income £'000	Subsidiary £'000	Total 2018 £'000	Total 2017 £'000
Governance and Directorate	455	148	6	297	906	963
Human Resources	553	138	8	392	1,091	1,017
Information Technology	432	108	6	306	852	956
Finance Department	1,178	246	83	427	1,934	1,936
Security and Site operations	322	114	5	175	616	585
Maintenance Department	1,675	595	24	687	2,981	2,401
Estates and Project Planning	775	-	-	-	775	615
Total	5,390	1,349	132	2,284	9,155	8,474

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 within the Statement of Financial Activities.

	Grants to institutions £'000	Grants to individuals £'000	Total 2018 £'000	Total 2017 £'000
Conservation science and education	792	78	870	893
Total grants payable	792	78	870	893

8. Net Income before other Recognised Gains and Losses

This is after charging:	Total 2018 £'000	Total 2017 £'000
Services provided by the Society's auditor		
Fees payable for the audit of the charity and consolidated accounts	18	17
Fees payable for the audit of the subsidiaries	6	6
Fees payable for taxation advice for the charity	-	-
Fees payable for taxation advice for the subsidiary	5	5
Operating Leases	68	68
Depreciation of tangible fixed assets	6,637	6,121
Impairment charge (note 9)	5,160	-

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

9. Exceptional income and costs related to the Monsoon Forest fire

On 15th December 2018 a fire broke out in the Monsoon Forest building within the zoo's Islands zone. The fire caused significant damage to the buildings and its contents. The zoo is fully insured in respect of the damage and work is underway to assess the damage and repair of the building. Within the financial statements an impairment charge of £5,160,000 has been recognised, being the estimated net book value of the fixed assets destroyed in the fire based on information available at the time of approving the financial statements.

Insurers have accepted liability to cover the costs of repairing the building and work is ongoing to establish the full cost of repair. At 31st December 2018 an amount equal to the £5,160,000 impairment charge has been recognised to reflect the estimated income that will be received from insurers to repair the building. Should the actual amount received exceed this amount of estimated income then it will be recognised in the accounting period in which it becomes virtually certain.

Provision has also been made for £384,000 of uninsured costs, primarily the excesses on insurance policies together with professional fees.

Following the fire, we received generous donations from the public, of which £162,698 were received in the year ended 31st December 2018. These donations have been treated as restricted income and will be spent in future years on conservation projects supporting the zoo's mission, with a particular focus on those species who live in the Monsoon Forest building.

10. Trustees' Remuneration

The Trustees, being charity Trustees, received no remuneration (2017: nil) but received reimbursement totalling £2,425 (2017: £1,376) during the year for travel and accommodation expenses necessarily incurred. Indemnity insurance costing £12,177 (2017: £13,638) has been taken out by the Society to protect the Society, its Trustees and other employees.

11. Employee costs

The average monthly headcount employed by the Society during the year was 739 (2017: 716) including seasonal employees. The average monthly number of full-time equivalent employees (FTE) analysed by category were as follows:

	Number of FTE employees	
	2018 Number	2017 Number
Animal and plant collection	136	128
Conservation science and education	58	45
Fundraising	3	3
Trading subsidiary	173	156
Guest experience	91	92
Site operations	53	55
Support and governance	65	66
Total FTE employees	579	555

The aggregate payroll costs of these persons were as follows:

	Total 2018 £'000	Total 2017 £'000
Wages and salaries cost	13,957	12,618
Social security cost	1,091	981
Pension cost:		
Defined benefit pension scheme	-	-
Defined contribution pension scheme	1,262	946
Total employee costs	16,310	14,545

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 two had benefits accruing to them on the defined benefit scheme. Contributions to the defined contribution scheme for all of these employees totalled £92,644 (2017:£71,907).

	2018 Number	2017 Number
From £120,001 to £130,000	2	1
From £110,001 to £120,000	-	1
From £100,000 to £110,000	-	-
From £90,001 to £100,000	-	-
From £80,001 to £90,000	1	-
From £70,001 to £80,000	1	1
From £60,001 to £70,000	3	3

The key management personnel employed by the Society comprise five members of the executive team during the year. Their total employee benefits for 2018, including pension contributions, were £519,529 (2017: £503,550).

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

12. 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 and plant collection £'000	Total £'000
Cost						
At 1 January 2018	1,255	5,026	77,001	13,125	1	96,408
Additions	2,240	14	7,418	729	-	10,401
Disposals and Transfers	(1,144)	-	1,144	-	-	-
At 31 December 2018	2,351	5,040	85,563	13,854	1	106,809
Depreciation						
At 1 January 2018	-	2,798	33,094	4,300	-	40,192
Charge for the year	-	29	5,153	1,455	-	6,637
Impairment charge (note 9)	-	-	4,666	494	-	5,160
At 31 December 2018	-	2,827	42,913	6,249	-	51,989
Net book value						
At 31 December 2018	2,351	2,213	42,650	7,605	1	54,820
At 31 December 2017	1,255	2,228	43,907	8,825	1	56,216

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.

13. Investments in subsidiary companies

	2018 £	2017 £
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 Ltd	2669535	UK	Catering and Retail	100% ordinary	100% ordinary
Chester Zoo (Nigeria) Ltd	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	-

All the above undertakings are registered at Cedar House or Oakfield House, Caughall Road, Upton-by-Chester, Chester, CH2 1LH

14. Stocks

	Group		Society	
	2018 £'000	2017 £'000	2018 £'000	2017 £'000
Goods for resale	641	640	-	-
Consumables	91	64	91	65
Total	732	704	91	65

15. Debtors: Amounts Falling Due Within One Year

	Group		Society	
	2018 £'000	2017 £'000	2018 £'000	2017 £'000
Trade debtors	238	187	177	161
Amount owed by subsidiary undertaking	-	-	279	415
Other debtors	50	17	50	17
Insurance debtor (note 9)	5,160	-	5,160	-
Prepayments and accrued income	623	608	623	608
Total	6,071	812	6,289	1,201

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

16. Cash at bank and in hand

Cash at bank and in hand includes £1m (2017: nil) of cash held in escrow, set aside for the Trustees of the Society's defined benefit pension scheme which is to be used, if required, to fund a buy out of the scheme, when the scheme liabilities would be fully secured with an insurer. The money would also be paid to the pension scheme if the Society were to become insolvent.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

17. Creditors: Amounts Falling Due Within One Year

	Group		Society	
	2018 £'000	2017 £'000	2018 £'000	2017 £'000
Bank overdraft	-	171	-	171
Trade creditors	2,173	1,255	1,750	1,006
Other taxes and social security costs	380	350	380	350
Accruals	2,223	2,208	2,223	2,208
VAT payable	17	42	17	42
Other creditors	417	198	417	198
Deferred income	2,258	1,980	2,258	1,980
Total	7,468	6,204	7,045	5,955

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

	Group		Society	
	2018 £'000	2017 £'000	2018 £'000	2017 £'000
Revolving credit facility	7,050	5,850	7,050	5,850
Total	7,050	5,850	7,050	5,850

An unsecured £18m revolving credit facility was taken out with Santander in April 2018 and will expire in April 2023 where upon it must be repaid in full. The facility bears interest at a margin of between 1.5% and 1.75% above LIBOR on utilised amounts and a fee of 35% of the margin is paid on unutilised amounts. As part of compliance with 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 2018 the Society was fully compliant with these covenants and anticipates complying with the covenants for the duration of the facility.

19. Movement in Consolidated Funds

	Balance at 31 Dec 2017 £'000	New funds £'000	Funds utilised £'000	Transfers £'000	Balance at 31 Dec 2018 £'000
Restricted income funds					
Animal and plant collections	184	121	(151)	-	154
Conservation science and education projects	844	425	(508)	-	761
Monsoon Forest fire donations	-	163	-	-	163
Defined benefit pension scheme (note 23)	-	-	-	1,000	1,000
Exceptional items (note 9)	-	5,160	(5,160)	-	-
	1,028	5,869	(5,819)	1,000	2,078
Designated funds					
Reserves tied to tangible fixed assets	42,580	-	(8,201)	10,984	45,363
Animal and plant collections	693	-	(693)	754	754
Conservation, science and education projects	1,833	-	(1,833)	1,695	1,695
Future capital projects	1,507	-	(1,507)	746	746
	46,613	-	(12,234)	14,179	48,558
Other charitable funds	-	-	-	-	-
Total group funds employed	47,641	5,869	(18,053)	15,179	50,636

	Unrestricted			2018	2017
	General £'000	Designated £'000	Restricted £'000	Total Funds £'000	Total Funds £'000
Tangible Fixed Assets	9,457	45,363	-	54,820	56,216
Current Assets and Liabilities	(2,407)	3,195	2,078	2,866	(2,726)
Long Term Liabilities	(7,050)	-	-	(7,050)	(5,850)
	-	48,558	2,078	50,636	47,640

Restricted income funds generally derive from certain donations, grants and legacies received, including animal adoptions. Animal adoption income is all utilised to purchase animal foods, and the remaining restricted funds are put towards a variety of projects in support of the Society's mission.

Designated funds relate principally to the Society's capital expenditure programme for the coming year and to conservation projects which the Society wishes to support and that are in line with the charitable objectives

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

20. Capital Commitments

	Group		Society	
	2018 £'000	2017 £'000	2018 £'000	2017 £'000
Capital expenditure, contracted for but not provided in the financial statements	2,208	7,260	2,208	7,260

21. Leasing Commitments

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

	Group		Society	
	2018 £'000	2017 £'000	2018 £'000	2017 £'000
Within one year	48	68	39	56
Between one and five years	2	50	2	41
	50	118	41	97

22. Related Party Transactions

The Society received a charitable donation by Gift Aid from Chester Zoo Enterprises Limited of £385,362 (2017: £375,929). The Society also leases retail and catering outlets to Chester Zoo Enterprises Limited for an annual lease of £693,875 (2017: £694,708) and also charged staff and support costs totalling £2,285,741 (2017: £2,519,469).

23. 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 2017 and updated to 31 December 2018 for the purpose of these disclosures by Mercer, a qualified independent actuary.

	2018 £'000	2017 £'000
Present value of funded defined benefit obligations	18,025	19,088
Fair value of plan assets	22,655	24,442
Surplus	4,630	5,354
Effect of asset ceiling	(4,630)	(5,354)
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:	2018	2017
Discount rate	2.97%	2.60%
Rate of price Inflation (RPI)	3.44%	3.20%
Rate of pension increases (5% RPI)	3.25%	3.00%
Rate of pension increases (2.5% RPI)	2.16%	2.05%
Assumed life expectations on retirement at age 65:		
Male member retiring today (member age 65)	23.0	22.7
Male member retiring in 20 years (member age 45 today)	25.2	24.8
Female member retiring today (member age 65)	25.5	25.2
Female member retiring in 20 years (member age 45 today)	27.9	27.5

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

	Fair value at 31 Dec 2018 (£'000)	2018 %	Fair value at 31 Dec 2017 (£'000)	2017 %
Cash and cash equivalents	113	0.5	78	0.3
Equities	6,417	28.3	12,052	49.3
Debt Instruments	13,672	60.4	9,862	40.3
Property	2,453	10.8	2,450	10.1
Total	22,655	100.0	24,442	100.0

	2018 £'000	2017 £'000
Change in defined benefit obligation		
Benefit obligation at beginning of year	19,088	19,899
Interest cost	485	523
Remeasurement: Actuarial (gain)/loss	(700)	(253)
Benefits and expenses paid	(848)	(1,081)
Benefit obligation at end of year	18,025	19,088

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

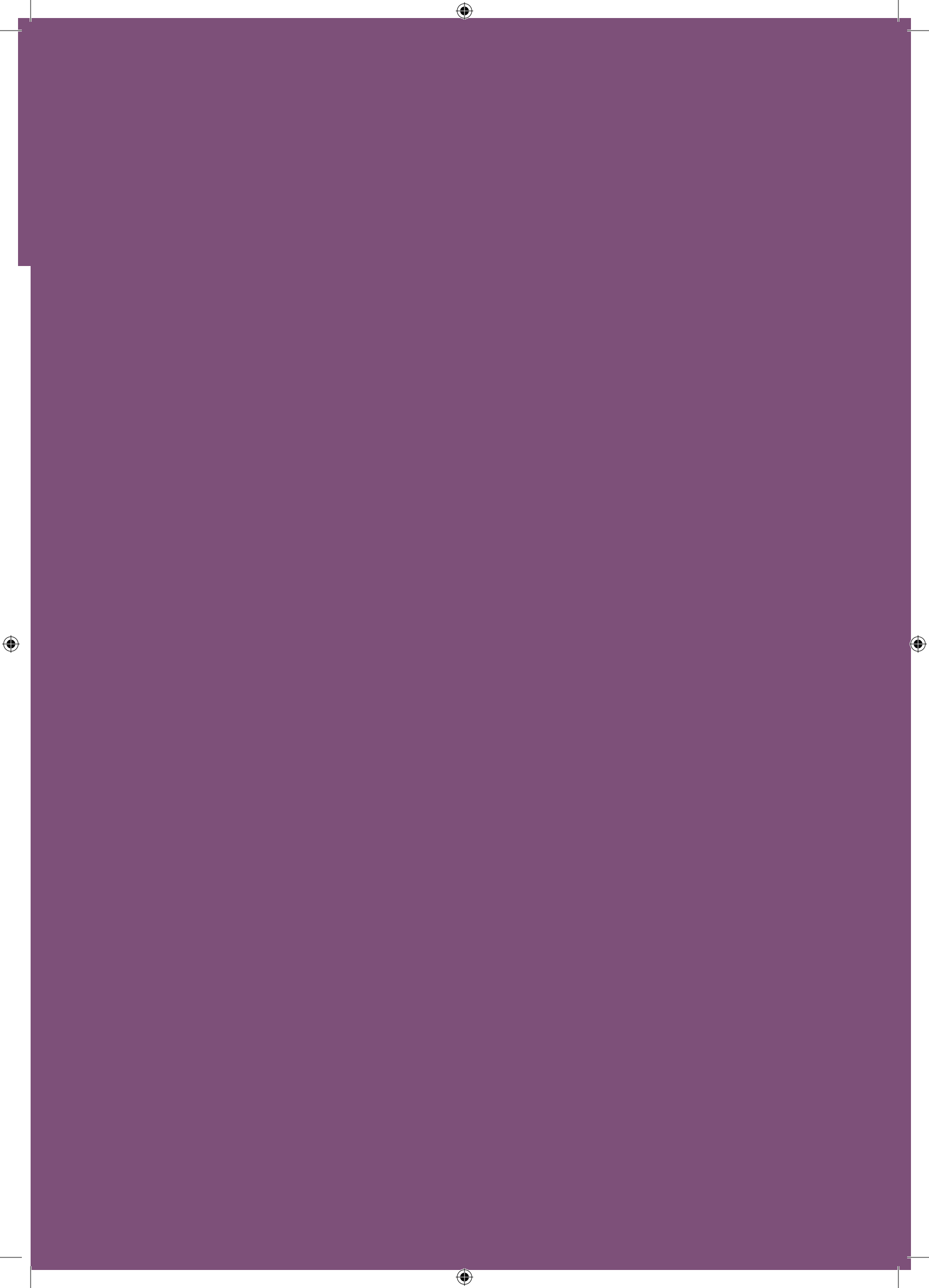
	2018 £'000	2017 £'000
Change in scheme assets		
Fair value of scheme assets at beginning of year	24,442	21,990
Interest income	625	593
Employer contributions (incl. employer direct benefit payments)	56	1,500
Benefits and expenses paid	(848)	(1,081)
Remeasurements – return on scheme assets less interest income	(1,620)	1,440
Fair value of scheme assets at end of year	22,655	24,442
Expense recognised in the profit and loss account		
Current service cost	-	-
Interest expense	485	523
Interest (income) on plan assets	(625)	(593)
Interest expense on effect of (asset ceiling)	140	70
Total net interest cost recognised in the profit and loss account	-	-
Remeasurements:		
Effect of changes in assumptions	(533)	(253)
Effect of experience adjustments	(167)	-
Return on plan assets (excluding interest income)	1,620	(1,440)
Remeasurement on effect of asset ceiling	(864)	3,193
Pension deficit reduction accrual	(56)	56
Total remeasurements included in other comprehensive income gains and losses	-	1,556
Total pension cost recognised in the SOFA	-	1,556

The Society has committed to making annual contributions with a view to funding the scheme on a solvency basis in the medium term. However, given the level of funding in the scheme it was agreed that the £1m due to be paid by the Society in 2018 would instead be held in escrow by the Society and hence the amount has not been included in the assets above. This £1m forms part of the Society's cash and cash equivalents balance (note 16) and is treated as restricted funds (note 19).

The Trustees of the Scheme have a first legal charge over certain assets of the Society with a market value of circa £10m.

Contributions, Defined Contribution Scheme

Contributions to the defined contribution scheme totalled £1,262,000 (2017: £946,000). The expenditure is taken from unrestricted funds.



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Registered Charity Number 306077
Registered Company Number 287902

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MAMMALS STOCKLIST (page 1 of 3)

Preferred Scientific Name	Common Name	Stock 31/12/17			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/18		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Dendrolagus goodfellowi</i>	Goodfellow's tree kangaroo	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Thylogale brunii</i>	Dusky pademelon	2	0	0	0	2	0	0	0	0	0	0	0	1	1	0	1	1	0
<i>Echinops telfairi</i>	Lesser Madagascar hedgehog tenrec	1	2	1	0	0	0	0	0	1	0	2	2	0	0	0	1	0	0
<i>Hemicentetes semispinosus</i>	Streaked tenrec	1	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
<i>Setifer setosus</i>	Greater Madagascar hedgehog tenrec	0	0	0	1	1	0	0	0	3	0	0	3	0	0	0	1	1	0
<i>Macroscelides proboscideus</i>	Short-eared elephant shrew	4	3	0	0	0	0	1	4	1	2	2	1	0	0	0	3	5	0
<i>Orycteropus afer</i>	Aardvark	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
<i>Procavia capensis</i>	Rock hyrax	4	4	0	0	0	0	2	1	0	3	0	0	0	1	0	3	4	0
<i>Elephas maximus</i>	Asian elephant	2	6	0	0	0	0	1	0	0	1	2	0	0	0	0	2	4	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	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tupaia belangeri</i>	Northern tree shrew	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	3	1	0
<i>Eulemur macaco</i>	Black lemur	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Hapalemur alaotrensis</i>	Alaotran gentle lemur	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Lemur catta</i>	Ring-tailed lemur	13	10	0	0	0	0	2	1	0	0	0	0	0	0	0	15	11	0
<i>Varecia variegata subcincta</i>	White-belted ruffed lemur	1	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	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>Cebuella pygmaea niveiventris</i>	Eastern pygmy marmoset	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	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	7	5	0	0	0	0	1	1	2	2	0	0	0	2	0	6	4	2
<i>Saguinus imperator subgriseus</i>	Emperor tamarin	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
<i>Saguinus oedipus</i>	Cotton-top tamarin	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
<i>Sapajus xanthosternos</i>	Buffy-headed capuchin	5	1	1	0	0	0	0	0	0	2	0	0	0	0	0	3	1	1
<i>Pithecia pithecia</i>	White-faced saki	2	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	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	4	6	0	0	0	0	0	1	1	0	1	1	1	0	0	3	6	0
<i>Macaca nigra</i>	Sulawesi crested macaque	5	13	0	0	0	0	0	1	0	0	1	0	0	0	0	5	13	0
<i>Macaca silenus</i>	Lion-tailed macaque	3	9	0	0	0	0	0	0	0	0	0	0	0	0	0	3	9	0
<i>Mandrillus sphinx</i>	Mandrill	1	10	0	1	0	0	0	0	0	1	0	0	0	0	0	1	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>	Javan gibbon	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	1
<i>Pan troglodytes</i>	Chimpanzee	7	12	0	0	0	0	0	1	2	0	0	2	0	0	0	7	13	0
<i>Pongo 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	0	0	1	0	0	0	0	0	1	5	0
<i>Callosciurus prevostii rafflesii</i>	Prevost's squirrel	6	8	0	0	0	0	0	0	3	0	1	1	3	0	0	3	7	2
<i>Tamias swinhoi</i> *	Swinhoe's striped squirrel	0	0	0	4	4	0	0	1	2	0	0	0	0	0	0	3	6	2
<i>Brachytarsomys albicauda</i>	White-tailed antsangy	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Hypogeomys antimena</i>	Votsovo/ta/Giant jumping rat	4	2	0	0	0	0	0	0	4	1	0	2	1	0	0	2	2	2
<i>Acomys cilicicus</i> *	Turkish spiny mouse	31	69	29	0	0	0	0	0	554	115	104	286	10	11	6	53	94	10
<i>Mus minutoides</i> *	Pygmy mouse	0	0	0	12	9	0	0	0	10	1	2	1	0	0	0	9	6	9

MAMMALS STOCKLIST (page 2 of 3)

<i>Phloeomys pallidus</i>	Slender-tailed cloud rat	0	0	0	1	1	0	0	1	2	0	0	0	0	0	0	1	2	2
<i>Heterocephalus glaber</i> *	Naked mole-rat	14	22	9	0	0	7	0	0	74	0	1	36	4	6	9	10	15	45
<i>Hystrix africaeaustralis</i>	Cape porcupine	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
<i>Hydrochoerus hydrochaeris</i>	Capybara	2	8	0	0	0	0	0	0	0	1	0	0	1	1	0	0	7	0
<i>Dasyprocta azarae</i>	Azara's agouti	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	2	1	2
<i>Pteropus rodricensis</i>	Rodrigues Fruit Bat	76	144	0	0	0	0	28	28	3	12	14	3	9	0	0	83	158	0
<i>Carollia perspicillata</i> *	Seba's short-tailed bat	197	228	25	0	0	0	71	34	87	362	69	89	0	32	0	0	0	238
<i>Acinonyx jubatus soemmeringii</i>	Central African cheetah	3	2	0	0	0	0	0	0	0	0	1	0	0	0	0	3	1	0
<i>Felis silvestris grampia</i>	Scottish wild cat	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0
<i>Otocolobus manul</i>	Pallas's cat	0	0	0	4	0	0	0	0	0	4	0	0	0	0	0	0	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
<i>Panthera onca</i>	Jaguar	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Panthera tigris sumatrae</i>	Sumatran tiger	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Arctictis binturong whitei</i>	Palawan binturong	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Cryptoprocta ferox</i>	Fossa	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Galidictis grandidieri</i>	Grandidier's Vontsira	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	3	1	0
<i>Mungotictis decemlineata</i>	Narrow-striped mongoose	1	1	0	1	1	0	0	0	0	1	0	0	0	0	0	1	2	0
<i>Helogale parvula</i>	Dwarf mongoose	3	0	0	0	2	0	0	0	0	0	1	0	1	0	0	2	1	0
<i>Suricata suricatta</i>	Slender-tailed meerkat	3	1	0	0	0	0	4	1	2	2	0	2	1	0	0	4	2	0
<i>Lycaon pictus</i>	African hunting dog	4	5	0	0	0	0	0	0	0	0	1	0	0	0	0	4	4	0
<i>Speothos venaticus</i>	Bush dog	5	7	0	0	0	0	2	4	1	0	0	1	0	2	0	7	9	0
<i>Helarctos malayanus</i>	Malayan sun bear	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0
<i>Tremarctos ornatus</i>	Andean bear	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Aonyx cinerea</i>	Oriental small-clawed otter	2	3	0	0	0	0	1	4	0	0	0	0	1	0	0	2	7	0
<i>Pteronura brasiliensis</i>	Giant otter	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0
<i>Ailurus fulgens fulgens</i>	Red panda	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Equus grevyi</i>	Grevy's zebra	1	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0
<i>Equus hemionus onager</i>	Persian onager	1	4	0	0	1	0	1	2	0	2	0	0	0	0	0	0	7	0
<i>Tapirus indicus</i>	Malayan tapir	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
<i>Tapirus terrestris</i>	South American tapir	2	1	0	0	0	0	1	0	0	1	0	0	0	0	0	2	1	0
<i>Diceros bicornis michaeli</i>	Eastern Black rhinoceros	5	5	0	0	0	0	1	0	0	1	0	0	0	0	0	5	5	0
<i>Rhinoceros unicornis</i>	One-horned rhinoceros	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	1	0
<i>Babyrousa</i>	Babirusa	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	1	2	0
<i>Babyrousa babyrussa</i>	Babirusa	2	6	0	0	0	0	1	0	1	1	0	1	0	0	0	2	6	0
<i>Babyrousa celebensis</i>	North Sulawesi babirusa	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Phacochoerus africanus</i>	Warthog	3	6	0	0	0	0	0	0	0	0	0	0	1	2	0	2	4	0
<i>Potamochoerus porcus</i>	Red River hog	2	2	0	0	0	0	0	3	0	0	0	0	0	0	0	2	5	0
<i>Sus cebifrons</i>	Visayan warty pig	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0
<i>Camelus bactrianus</i>	Bactrian camel	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Tragulus nigricans</i>	Philippine mouse-deer	3	2	0	0	0	0	0	1	2	2	0	2	1	0	0	0	3	0
<i>Pudu puda</i>	Southern pudu	4	1	0	0	0	0	1	0	0	0	0	0	2	0	0	3	1	0
<i>Muntiacus muntjak</i>	Indian muntjac	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0

MAMMALS STOCKLIST (page 3 of 3)

<i>Rucervus eldii thamin</i>	Burmese brow-antlered deer	2	8	0	0	0	0	1	3	0	2	2	0	0	0	0	1	9	0
<i>Rusa alfredi</i>	Philippine Spotted Deer	1	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0
<i>Giraffa camelopardalis rothschildi</i>	Baringo giraffe	4	6	0	0	0	0	0	0	0	0	0	0	1	1	0	3	5	0
<i>Okapia johnstoni</i>	Okapi	3	1	0	0	0	0	1	0	0	0	0	0	1	0	0	3	1	0
<i>Madoqua kirkii</i>	Kirk's dik-dik	4	4	0	0	0	0	1	1	2	2	0	2	2	1	0	1	4	0
<i>Bos javanicus</i>	Javan banteng	4	9	0	0	0	0	2	4	0	1	1	0	1	0	0	4	12	0
<i>Bubalus depressicornis</i>	Lowland Anoa	2	3	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0
<i>Syncerus caffer nanus</i>	Congo buffalo	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0
<i>Tragelaphus eurycerus isaaci</i>	Eastern bongo	0	3	0	1	0	0	0	0	0	0	1	0	0	0	0	1	2	0
<i>Tragelaphus spekii gratus</i>	West African Sitatunga	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	14	0
<i>Cephalophus natalensis</i>	Red forest duiker	1	1	0	1	1	0	0	0	0	1	0	0	0	0	0	1	2	0
<i>Hippotragus equinus</i>	Roan antelope	0	9	0	0	0	0	0	0	0	0	2	0	0	0	0	0	7	0
		497	732	67	36	26	7	129	101	760	528	210	437	47	66	15	325	562	316
		1296			69			990			1175			128			1203		

* denotes managed in groups

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Preferred Scientific Name	Common Name	Stock 31/12/17			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/18		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Eudromia elegans</i>	Elegant crested tinamou	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	4	2	0
<i>Casuarus casuarus</i>	Southern cassowary	1	1	0	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	4	2	0	0	0	0	0	0	0	0	1	0	0	0	0	4	1	0
<i>Arborophila javanica</i>	Chestnut-bellied tree partridge	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
<i>Arborophila gingica</i>	Collared Partridge	2	8	1	0	0	0	0	0	0	0	1	0	0	3	0	2	4	1
<i>Rollulus rouloul</i> *	Crested wood partridge	7	6	0	0	0	0	0	0	0	1	1	0	0	0	0	6	5	0
<i>Tragopan temminckii</i>	Temminck's tragopan	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
<i>Tragopan caboti</i>	Cabot's tragopan	2	3	0	0	0	0	2	0	1	0	0	1	1	1	0	3	2	0
<i>Lophophorus impejanus</i>	Himalayan impeyan pheasant	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Chrysolophus amherstiae</i>	Lady Amherst's pheasant	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Polyplectron chalcurum</i>	Bronze-tailed peacock pheasant	2	2	0	0	0	0	0	0	3	0	0	0	0	0	0	2	2	3
<i>Polyplectron inopinatum</i> *	Rothschild's peacock pheasant	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Polyplectron napoleonis</i>	Palawan peacock pheasant	7	6	0	2	0	0	0	0	0	1	0	0	5	1	0	3	5	0
<i>Argusianus argus</i>	Great argus	2	2	0	0	0	0	1	0	1	0	0	1	2	1	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>Dendrocygna viduata</i>	White-faced whistling duck	2	5	54	0	0	0	0	0	44	0	0	34	0	0	0	0	0	56
<i>Thalassornis leuconotus leuconotus</i>	African white-backed duck	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Branta ruficollis</i>	Red-breasted goose	2	1	6	0	0	0	0	0	0	1	1	3	0	0	0	1	0	3
<i>Anas capensis</i>	Cape teal	0	1	9	0	0	0	0	0	0	0	1	0	0	0	0	0	0	9
<i>Anas erythrorhyncha</i>	Red-billed pintail	1	2	2	0	0	0	0	0	2	0	0	2	0	0	0	1	2	2
<i>Aythya baeri</i>	Baer's pochard	4	12	4	0	0	0	9	6	13	0	1	6	3	8	2	6	3	18
<i>Aythya fuligula</i> *	Tufted duck	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Aythya nyroca</i> *	Ferruginous Duck	8	8	0	0	0	0	0	0	12	0	0	12	0	0	0	8	8	0
<i>Marmaronetta angustirostris</i> *	Marbled teal	1	1	5	0	0	0	0	0	0	1	0	1	0	0	0	1	1	3
<i>Netta rufina</i>	Red-crested pochard	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Oxyura leucocephala</i>	White-headed duck	2	4	13	0	0	0	3	1	9	0	2	10	3	0	0	2	3	12
<i>Sarkidiornis melanotos</i>	African comb duck	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4
<i>Tadorna ferruginea</i>	Ruddy shelduck	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1
<i>Spatula hottentota</i>	Hottentot teal	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
<i>Spatula querquedula</i>	Garganey	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Asarcornis scutulata</i>	White-winged duck	2	5	0	0	0	0	0	0	0	0	0	0	0	4	0	2	1	0
<i>Mergellus albellus</i>	Smew	4	5	0	0	0	0	0	0	0	0	0	0	4	5	0	0	0	0
<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	12	0	0	0	0	0	5	0	0	0	0	0	10	46	50	7
<i>Phoenicopterus ruber</i>	Caribbean Flamingo	51	41	27	0	0	0	7	11	8	1	0	8	0	0	16	57	51	11
<i>Caloenas nicobarica</i>	Nicobar pigeon	4	4	2	0	0	0	0	1	5	0	0	1	0	0	0	4	5	6
<i>Chalcophaps indica</i>	Emerald Dove	12	11	2	0	0	0	1	1	19	2	3	9	3	0	1	8	9	11

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<i>Columba livia</i> *	Rock dove	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Ducula bicolor</i> *	Pied imperial pigeon	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5
<i>Gallicolumba criniger</i>	Mindanao bleeding heart dove	2	4	0	0	0	0	0	1	1	0	0	0	0	0	0	2	5	1
<i>Gallicolumba luzonica</i>	Luzon bleeding heart dove	1	5	0	1	0	0	3	0	3	0	0	1	0	2	0	5	3	2
<i>Gallicolumba rufigula</i>	Golden heart dove	4	4	1	0	0	0	2	2	1	1	0	1	1	1	0	4	5	1
<i>Goura victoria</i>	Victoria crowned pigeon	3	2	0	0	0	0	0	1	1	0	0	1	0	0	0	3	3	0
<i>Otidiphaps aruensis</i>	White-naped pheasant-pigeon	5	4	3	0	0	0	4	0	2	0	1	2	5	2	0	5	3	0
<i>Ptilinopus melanospilus</i>	Black-naped fruit-dove	3	5	0	0	0	0	0	0	1	2	4	1	0	0	0	1	1	0
<i>Ptilinopus porphyrea</i>	Pink-headed fruit dove	1	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0
<i>Ptilinopus superbus</i>	Superb fruit dove	11	5	0	0	0	0	1	1	2	1	1	2	3	2	0	8	3	0
<i>Streptopelia risoria</i>	Java (Barbary) Dove	8	4	1	0	0	0	5	4	1	0	0	1	0	0	0	13	6	3
<i>Zenaida graysoni</i>	Socorro dove	2	1	0	1	1	0	1	1	0	1	0	0	1	1	0	2	2	0
<i>Nesoenas mayeri</i>	Pink pigeon	2	1	0	0	1	0	0	1	0	0	0	0	0	0	0	2	3	0
<i>Tauraco schalowi</i>	Schalow's turaco	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1
<i>Tauraco corythaix fischeri</i>	Fischer's turaco	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
<i>Tauraco leucolophus</i>	White-crested turaco	3	1	0	0	0	0	0	1	2	0	0	1	2	0	0	1	2	1
<i>Musophaga violacea</i>	Violet turaco	1	3	0	0	0	0	0	1	0	0	0	0	0	1	0	1	3	0
<i>Eurypyga helias</i>	Sunbittern	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Porphyrio porphyrio</i>	Purple swamphen	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Balearica pavonina</i>	Black Crowned Crane	3	2	0	0	0	0	0	1	1	0	1	0	0	0	0	3	2	1
<i>Balearica regulorum</i>	Grey crowned-crane	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Bugeranus carunculatus</i>	Wattled crane	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0
<i>Spheniscus humboldti</i>	Humboldt penguin	7	10	8	13	12	0	0	0	5	1	0	9	0	0	0	19	22	4
<i>Ciconia nigra</i>	Black stork	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Geronticus eremita</i>	Waldrapp ibis	17	10	1	0	0	0	0	0	0	2	0	0	0	0	0	16	10	0
<i>Scopus umbretta</i>	Hamerkop	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
<i>Anitibyx armatus</i>	Blacksmith plover	1	1	0	0	0	0	0	2	3	1	0	3	0	0	0	0	3	0
<i>Otus megalotis</i>	Luzon Lowland Scops Owl	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Ptilopsis leucotis</i>	Northern white-faced owl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Pulsatrix perspicillata</i>	Spectacled owl	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Strix leptogrammica</i>	Brown wood owl	2	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	2	0
<i>Strix nebulosa lapponica</i>	Great grey owl	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Strix uralensis</i>	Ural owl	1	1	0	0	0	0	2	1	0	0	0	0	2	2	0	1	0	0
<i>Surnia ulula</i>	Northern Hawk owl	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Aegypius monachus</i>	European Black Vulture	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Urocolius macrourus</i>	Blue-naped mousebird	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6	0	0
<i>Trogon collaris</i>	Collared trogon	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tockus erythrorhynchus</i>	Red-billed hornbill	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	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 tarctic hornbill	3	2	0	0	0	0	1	1	0	1	0	0	1	0	0	2	3	0
<i>Rhabdotorrhinus corrugatus</i>	Wrinkled hornbill	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0

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<i>Rhabdotorrhinus leucocephalus</i>	Wreathed hornbill	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Coracias caudatus</i>	Lilac-breasted roller	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0
<i>Psilopogon pyrolophus</i>	Fire-tufted barbet	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
<i>Megalaima oorti</i>	Black-browed barbet	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
<i>Pteroglossus viridis</i>	Green aracari	1	1	0	0	0	0	2	1	1	0	1	1	0	1	0	3	0
<i>Pogonornis melanopterus</i>	Brown-breasted barbet	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Eos histrio</i>	Red-and-blue lory	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
<i>Trichoglossus forsteni</i>	Scaley-breasted lorikeet	0	0	0	2	2	0	0	0	1	0	0	1	0	0	0	2	2
<i>Trichoglossus johnstoniae</i>	Mount Apo Lorikeet	2	3	1	0	0	0	1	0	0	1	0	0	0	0	0	3	3
<i>Lorius garrulus flavopalliatu</i>	Yellow-backed chattering lory	2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
<i>Lorius domicella</i>	Purple-naped lory	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
<i>Psittacula derbiana</i>	Derbyan parakeet	5	6	1	1	0	0	2	2	2	0	0	2	0	0	0	8	9
<i>Loriculus galgulus</i>	Blue-crowned parrot	4	3	3	0	0	0	1	0	2	0	1	1	0	0	0	5	2
<i>Anodorhynchus hyacinthinus</i>	Hyacinth macaw	2	2	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
<i>Ara glaucogularis</i>	Blue-throated macaw	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
<i>Pyrrhura griseipectus</i>	Gray-breasted parakeet	3	4	1	0	0	0	2	1	0	1	0	0	1	1	0	4	4
<i>Amazona lilacina</i>	Lilacine amazon	2	1	0	0	1	0	1	1	0	0	0	0	0	0	0	3	3
<i>Guaruba guarouba</i>	Golden conure	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Cacatua haematuropygia</i>	Red-vented cockatoo	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	2
<i>Cacatua sulphurea</i>	Lesser sulphur-crested cockatoo	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
<i>Oriolus chinensis</i>	Black-naped oriole	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
<i>Cissa thalassina thalassina</i>	Short-tailed green magpie	7	7	0	0	0	0	1	3	2	1	0	2	2	2	0	5	8
<i>Cyanocorax yncas</i>	Green jay	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Cyanopica cyanus</i>	Azure-winged magpie	2	3	0	0	0	0	1	1	4	0	0	4	0	0	0	3	4
<i>Pyrrhocorax pyrrhocorax</i>	Red-billed Chough	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Urocissa erythrorhyncha</i>	Red-billed Blue Pie	3	4	0	0	0	0	2	1	2	0	0	2	2	3	0	3	2
<i>Pycnonotus squamatus</i>	Scaly-breasted bulbul	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
<i>Pycnonotus jocosus</i>	Red-whiskered bulbul	4	6	11	0	0	0	0	0	7	0	1	15	0	0	0	4	5
<i>Zosterops eurycricotus</i>	African montane white-eye	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Irena puella</i>	Fairy bluebird	6	5	0	0	0	0	1	0	4	2	1	4	0	0	0	5	4
<i>Garrulax bicolor</i>	Black & White Laughingthrush	10	5	0	0	0	0	3	4	24	2	1	21	4	1	0	7	7
<i>Garrulax palliatus</i>	Grey-and-brown laughing thrush	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
<i>Aplonis panayensis</i> *	Asian Glossy Starling	13	10	221	0	0	0	2	1	24	3	1	15	10	10	0	12	11
<i>Lamprotornis iris</i> *	Emerald starling	0	0	80	0	0	0	0	0	1	0	0	1	0	0	0	0	0
<i>Lamprotornis purpureus</i>	Purple glossy starling	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
<i>Lamprotornis superbus</i>	Superb starling	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Lamprotornis regius</i>	Golden-breasted starling	1	2	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1
<i>Leucopsar rothschildi</i>	Bali mynah	2	11	0	0	0	0	2	4	1	0	0	1	2	0	0	2	15
<i>Mino dumontii</i>	Yellow-faced mynah	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Onychognathus morio</i>	Red-winged starling	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
<i>Scissirostrum dubium</i>	Scissor-billed Starling	13	16	1	0	0	0	3	4	9	5	3	9	4	6	0	7	11
<i>Copsychus malabaricus</i>	White-rumped Shama	4	6	0	0	0	0	0	6	3	0	3	3	2	4	0	2	5

BIRD STOCKLIST (page 4 of 4)

<i>Copsychus saularis</i>	Magpie robin	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Cossypha niveicapilla</i>	Snowy-headed robin chat	3	1	0	0	0	0	0	0	2	0	0	2	1	0	0	2	1	0
<i>Turdus boulboul</i>	Grey-winged blackbird	2	2	0	0	0	0	0	0	2	0	1	2	0	0	0	2	1	0
<i>Dryonastes courtoisi</i>	Blue-crowned laughing thrush	5	3	0	0	0	0	3	2	0	0	0	0	2	2	0	6	3	0
<i>Ianthocincla ocellata</i>	White-spotted laughing thrush	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Leiothrix argentea</i>	Silver-eared mesia	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	1	1	1
<i>Leiothrix lutea</i> *	Pekin robin	6	4	46	0	0	0	0	0	20	0	1	12	7	4	1	0	1	50
<i>Liocichla omeiensis</i>	Grey-cheeked Liocichla	5	5	0	0	0	0	0	1	3	0	0	3	1	2	0	4	4	0
<i>Trochalopteron milnei</i>	Red-tailed laughing thrush	3	2	0	0	0	0	0	1	0	1	0	0	0	0	0	2	3	0
<i>Euplectes afer</i>	Yellow-crowned bishop	0	0	0	9	5	1	0	0	0	0	0	1	0	0	0	9	5	0
<i>Foudia madagascariensis</i> *	Red fody	1	1	39	0	0	0	0	0	34	2	0	10	5	6	0	1	1	50
<i>Ploceus cucullatus</i> *	Black-headed weaver	0	0	34	0	0	0	0	0	2	0	0	3	0	0	0	0	0	33
<i>Ploceus nigricollis</i>	Black-necked weaver	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Mandingoa nitidula</i>	Green-backed twin-spot	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
<i>Estrilda caerulescens</i>	Lavender waxbill	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0
<i>Estrilda melpoda</i>	Orange-cheeked waxbill	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	10
<i>Estrilda astrild</i>	Common waxbill	0	0	0	12	8	0	0	0	15	5	3	5	0	0	0	7	5	10
<i>Spermophaga haematina</i>	Western bluebill	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
<i>Lagonosticta rubricata</i>	African fire-finch	0	0	0	1	6	0	0	0	1	0	0	1	0	0	0	1	6	0
<i>Sporaeginthus subflavus</i>	Orange-breasted avadavat	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Amandava amandava</i>	Red avadavat	0	0	0	6	2	12	0	0	0	2	0	0	0	0	0	4	2	12
<i>Taeniopygia guttata</i> *	Timor Zebra Finch	10	12	11	0	0	0	0	0	40	1	0	3	5	8	10	0	0	40
<i>Lonchura oryzivora</i> *	Javan sparrow	0	0	411	0	0	0	0	0	8	0	0	39	12	2	168	0	0	231
<i>Lonchura fuscata</i> *	Timor sparrow	1	1	7	0	0	0	0	0	0	0	0	0	0	0	0	1	1	7
<i>Coccothraustes affinis</i>	Collared grosbeak	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	2	2	0
<i>Icterus oberi</i>	Montserrat oriole	3	1	0	0	0	0	0	0	1	0	0	0	1	0	0	2	1	1
<i>Gubernatrix cristata</i>	Yellow cardinal	0	0	0	1	1	0	0	0	2	0	0	2	0	0	0	1	1	0
<i>Paroaria dominicana</i>	Pope cardinal	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Ramphocelus bresilius</i>	Brazilian tanager	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Ramphocelus passerinii</i>	Scarlet-rumped tanager	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0
<i>Geokichla citrina</i>	Orange-headed thrush	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Geokichla dohertyi</i>	Chestnut-backed thrush	1	5	0	1	0	0	1	3	2	1	3	0	0	0	0	2	5	2
		421	425	1034	69	52	27	69	72	367	50	45	280	103	90	208	432	421	1059
		1880			148			508			375			401			1912		

* denotes managed in groups

REPTILES STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/17			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/18		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Astrochelys radiata</i>	Radiated tortoise	5	6	1	0	0	0	0	0	0	1	0	0	0	0	0	4	6	1
<i>Astrochelys yniphora</i>	Ploughshare tortoise	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
<i>Chelonoidis nigra</i>	Galapagos tortoise	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
<i>Malacochersus tornieri</i>	African pancake tortoise	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Manouria emys emys</i>	Asian brown tortoise	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
<i>Batagur borneoensis</i>	Malaysian painted river terrapin	3	0	2	0	0	0	0	0	0	1	0	0	0	0	0	2	0	2
<i>Cuora galbinifrons</i>	Flower-backed Box turtle	1	2	5	0	0	0	0	0	0	0	0	0	0	0	3	1	2	2
<i>Cuora trifasciata</i>	Chinese three-striped box turtle	1	2	6	0	0	0	0	0	0	0	0	0	0	0	5	1	2	1
<i>Cuora zhoui</i>	Zhou's box turtle	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Geoclemys hamiltonii</i>	Spotted pond turtle	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<i>Geoemyda spengleri</i>	Black-breasted leaf turtle	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
<i>Heosemys grandis</i>	Giant Asian pond turtle	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
<i>Heosemys spinosa</i>	Spiny hill turtle	2	4	0	0	0	0	0	0	0	0	0	0	1	2	0	1	2	0
<i>Mauremys annamensis</i>	Annam leaf turtle	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Orlitia borneensis</i>	Malaysian giant pond turtle	1	4	0	0	0	0	0	0	0	0	2	0	0	0	0	1	2	0
<i>Chelodina mccordi</i>	McCord's snake-necked turtle	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
<i>Sphenodon punctatus</i>	Tuatara	1	5	8	0	0	0	0	0	0	0	0	0	0	0	0	1	5	8
<i>Acanthosaura capra</i> *	Mountain Horned Lizard	3	1	12	0	0	0	0	0	0	0	0	5	2	0	3	1	1	4
<i>Bronchocela cristatella</i> *	Green Crested Lizard	0	1	12	0	0	0	0	0	5	0	0	10	0	0	0	0	1	7
<i>Gonocephalus bellii</i>	Bell's angle-headed dragon	1	1	1	0	0	0	0	0	5	0	0	2	0	0	0	1	1	4
<i>Gonocephalus chamaeleontinus</i> *	Chameleon forest dragon	0	1	1	2	2	0	0	0	0	0	2	1	0	0	0	2	1	0
<i>Hypsilurus magnus</i> *	Arboreal agamid lizard	3	2	3	0	0	0	0	0	3	1	0	0	1	0	2	1	2	4
<i>Uromastyx geyri</i> *	Sahara spiny-tailed lizard	0	0	0	2	4	0	0	0	0	1	4	0	0	0	0	1	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>Trioceros montium</i> *	Cameroon two-horned mountain chameleon	4	2	0	0	0	0	1	0	1	0	0	1	0	0	0	5	2	0
<i>Furcifer pardalis</i>	Panther Chameleon	4	1	0	2	0	0	0	0	0	1	1	0	0	0	0	5	0	0
<i>Anolis grahami</i> *	Jamaican anole	2	4	9	0	0	0	0	0	8	0	0	2	0	0	5	8	8	0
<i>Anolis leachii</i> *	Antigua anole	4	2	4	0	0	0	0	0	2	0	1	0	0	0	0	4	1	6
<i>Laemactus serratus</i> *	Casque-headed iguana	2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	3	2	3
<i>Oplurus cuvieri</i>	Cuvier's Madagascar swift	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1
<i>Phelsuma pronki</i>	Pronk s day gecko	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Uroplatus henkeli</i>	Henkel's leaf-tailed gecko	0	1	2	30	30	0	0	0	1	0	0	1	26	26	0	5	6	0
<i>Smaug mossambicus</i>	Gorongosa girdled lizard	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5
<i>Zonosaurus maxima</i>	Southeastern girdled lizard	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	2	3	0
<i>Lacerta agilis</i> *	Sand lizard	9	3	8	0	0	0	0	0	2	0	0	2	0	0	0	9	3	8
<i>Takydromus sexlineatus</i> *	Six-lined grass lizard	15	13	5	1	1	6	0	0	6	8	5	5	4	8	0	5	2	10
<i>Lamprolepis smaragdina</i> *	Philippine tree skink	2	2	18	0	0	0	0	0	12	0	0	4	0	0	13	2	2	13
<i>Plestiodon longirostris</i>	Bermuda skink	5	6	7	0	0	0	0	0	0	0	1	0	0	0	0	5	5	7
<i>Eutropis macularia</i> *	Orange-throated skink	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Eutropis multifasciata</i> *	Oriental brown-sided skink	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4

REPTILES STOCKLIST (page 2 of 2)

<i>Lepidothyris fernandi</i> *	Lepidothyris fernandi *	0	0	0	1	0	6	0	0	0	0	0	0	1	2	0	1	0	3
<i>Dracaena guianensis</i>	Caiman lizard	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
<i>Diploglossus warreni</i> *	Haitian giant galliwasp	0	0	0	3	6	0	0	0	0	0	0	0	0	0	0	3	6	0
<i>Varanus komodoensis</i>	Komodo Dragon	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0
<i>Varanus melinus</i>	Quince monitor	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Varanus prasinus</i>	Emerald monitor	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Varanus salvadorii</i>	Crocodile monitor	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Shinisaurus crocodilurus</i>	Chinese crocodile lizard	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0
<i>Malayopython reticulatus</i>	Reticulated python	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Simalia boeleni</i>	Boelen's python	4	3	0	0	0	0	0	0	0	1	0	0	0	0	0	3	3	0
<i>Corallus batesi</i>	Emerald tree boa	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Boiga dendrophila</i>	Mangrove snake	4	4	1	0	0	0	0	0	6	0	0	1	0	0	0	4	2	4
<i>Elaphe moellendorffi</i>	Flower snake	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Gonyosoma oxycephala</i>	Red-tailed ratsnake	3	2	3	0	0	0	0	0	0	0	0	0	0	1	0	3	1	3
<i>Bothriechis schlegelii</i> *	Eyelash Viper	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
<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>Trimeresurus venustus</i> *	Beautiful pitviper	1	4	6	0	0	0	0	0	0	0	0	0	1	2	4	0	2	2
<i>Bitis rhinoceros</i>	West African gaboon viper	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
<i>Vipera berus</i>	Common adder	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Erpeton tentaculatum</i> *	Tentacled snake	7	10	3	0	0	0	0	0	0	5	4	0	0	0	0	4	7	0
<i>Tomistoma schlegelii</i>	False gharial	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	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
		100	122	128	47	49	17	1	0	51	18	26	35	37	42	35	105	111	102
		350			113			52			79			114			318		

* denotes managed in groups

AMPHIBIAN STOCKLIST

Preferred Scientific Name	Common Name	Stock 31/12/17			Acquisitions			Births			Deaths			Dispositions			Stock 31/12/18		
		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	4	2	12	0	0	0	0	0	10	0	1	9	0	0	0	6	2	10
<i>Ambystoma dumerilii</i> *	Lake Patzcuaro salamander	0	4	10	0	0	0	0	0	0	0	2	2	0	0	0	5	5	0
<i>Calotriton arnoldi</i> *	Montseny brook newt	11	11	7	0	0	0	0	0	9	0	1	5	0	0	0	11	10	11
<i>Ingerophrynus divergens</i> *	Toad	0	0	14	0	0	0	0	0	0	2	5	7	0	0	0	0	0	0
<i>Dendrobates auratus</i> *	Green & black poison dart frog	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	5	3	2
<i>Dendrobates azureus</i> *	Dyeing Poison Dart Frog	12	6	7	0	0	0	0	0	2	0	1	4	0	0	0	7	7	8
<i>Mannophryne olmonae</i> *	Poison dart frog	0	0	0	0	0	10	0	0	0	0	1	0	0	0	0	0	6	3
<i>Mannophryne trinitatus</i> *	Trinidad poison dart frog	0	0	22	0	0	0	0	0	1	0	0	5	0	0	0	2	11	5
<i>Phyllobates terribilis</i> *	Golden poison dart frog	1	1	25	3	2	6	0	0	0	1	1	12	0	0	7	5	2	10
<i>Oophaga pumilio</i> *	Strawberry poison frog	0	0	10	0	0	0	0	0	4	0	0	0	0	0	0	0	0	14
<i>Ranitomeya imitator</i> *	Mimic poison frog	1	1	0	0	0	2	0	0	3	0	0	0	0	0	0	1	1	5
<i>Excidobates mysteriosus</i> *	Marañón poison frog	2	5	37	0	0	0	0	0	6	0	0	6	0	0	6	0	0	38
<i>Anotheca spinosa</i> *	Spine-headed tree frog	1	1	6	0	0	0	0	0	10	1	0	3	0	0	0	2	3	9
<i>Trachycephalus resinifictrix</i>	Mission golden-eyed tree frog	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Agalychnis dacnicolor</i> *	Mexican giant tree frog	9	5	9	0	0	0	0	0	0	2	2	0	0	0	0	14	5	0
<i>Agalychnis moreletii</i> *	Morelet's tree frog	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	4	1	0
<i>Cruziohyla calcarifer</i> *	Splendid leaf frog	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
<i>Phyllomedusa trinitatus</i> *	Waxy tree frog	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	10
<i>Leptodactylus fallax</i>	Mountain chicken frog	5	13	0	0	0	0	0	0	0	4	5	0	0	0	0	1	8	0
<i>Mantella aurantiaca</i> *	Golden mantella	21	11	135	0	0	0	0	0	0	0	0	9	0	0	20	21	11	68
<i>Mantella expectata</i> *	Blue-legged mantella	0	0	43	0	0	0	0	0	0	0	0	0	0	0	20	0	0	23
<i>Mantella madagascariensis</i> *	Malagasy mantella	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Dyscophus guineti</i>	Sambava tomato frog	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
<i>Scaphiophryne gottlebei</i> *	Red rain frog	0	0	23	0	0	0	0	0	0	0	0	19	0	0	0	0	0	6
<i>Scaphiophryne madagascariensis</i> *	Madagascar rain frog	0	0	6	0	0	0	0	0	0	0	0	4	0	0	0	0	0	2
<i>Sylvirana maasonensis</i> *	Mao-Son frog	2	2	66	0	0	0	0	0	0	0	0	2	0	0	0	2	2	64
<i>Staurois guttatus</i> *	Black-spotted rock frog	0	0	16	0	0	0	0	0	0	3	1	5	0	0	0	7	0	0
<i>Staurois parvus</i> *	Splash frog	0	0	31	0	0	0	0	0	0	0	0	17	0	0	0	0	0	14
<i>Nyctixalus pictus</i> *	Painted Indonesian tree frog	2	7	25	0	0	0	0	0	8	1	1	4	0	0	10	6	6	20
<i>Polypedates dennysi</i> *	Denny's tree frog	0	0	15	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0
<i>Polypedates otlophus</i> *	Bornean eared frog	3	2	19	0	0	0	0	0	0	0	0	7	0	0	5	3	2	8
<i>Rhacophorus feae</i>	Fea's tree frog	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
		83	73	561	7	3	28	0	0	53	14	21	136	0	0	68	105	85	350
		717			38			53			171			68			540		

* denotes managed in groups

FISHES STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/18		
		M	F	U
<i>Gnathonemus petersii</i> *	Long-nosed Elephant Trunk Fish	0	0	6
<i>Barilius</i> *	Barb	0	0	36
<i>Garra barreimiae</i> *	Omani Blind Cave Fish	0	0	317
<i>Notropis chrosomus</i> *	Rainbow shiner	0	0	142
<i>Puntius titteya</i> *	Cherry barb	0	0	13
<i>Rasbora caudimaculata</i> *	Greater scissortail	0	0	28
<i>Rasbora dorsiocellata</i> *	Eyespot rasbora	0	0	497
<i>Rasbora trilineata</i> *	Threelined scissortail rasbora	0	0	793
<i>Dawkinsia assimilis</i> *	Mascara barb	0	0	118
<i>Dawkinsia filamentosa</i> *	Filament barb	0	0	160
<i>Dawkinsia tambraparniei</i> *	Tambraparni barb	0	0	78
<i>Dawkinsia rohani</i> *	Rohan's barb	0	0	3
<i>Sundadanio axelrodi</i> *	Neon green rasbora	0	0	3
<i>Pethia bandula</i> *	Barb	0	0	24
<i>Sahyadria denisonii</i> *	Denison's barb	0	0	110
<i>Desmopuntius rhomboocellatus</i> *	Barb	0	0	17
<i>Puntigrus tetrazona</i> *	Sumatra barb	0	0	412
<i>Enteromius hulstaerti</i> *	Butterfly barb	0	0	30
<i>Chromobotia macracanthus</i> *	Clown loach	0	0	5
<i>Acantopsis choirorhynchus</i> *	Horseface loach	0	0	4
<i>Ambastaia sidthimunki</i> *	Dwarf loach	0	0	22
<i>Gastromyzon borneensis</i> *	Loach	0	0	20
<i>Distichodus noboli</i> *	Nobol distichodus	0	0	4
<i>Distichodus teugelsi</i> *	Distichodus teugelsi	0	0	6
<i>Bathyaethiops greeni</i> *	Tetra	0	0	12
<i>Phenacogrammus aurantiacus</i> *	Golden congo tetra	0	0	2
<i>Hemiodus gracilis</i> *	Red tail hemiodus	0	0	62
<i>Semaprochilodus insignis</i> *	Insignis	0	0	1
<i>Nannostomus mortenthaleri</i> *	Coral red pencilfish	0	0	47
<i>Gasteropelecus sternicla</i> *	Black Lined Silver Hatchetfish	0	0	120
<i>Hemigrammus coeruleus</i> *	Cerulean tetra	0	0	3
<i>Hyphessobrycon</i> *	Tetra	0	0	64
<i>Hyphessobrycon erythrostigma</i> *	Bleeding heart tetra	0	0	111
<i>Hyphessobrycon pyrrhonotus</i> *	Flame-back Bleeding Heart Tetra	0	0	2
<i>Hyphessobrycon wadai</i> *	Tetra	0	0	73
<i>Hyphessobrycon hexastichos</i> *	Tetra	0	0	58
<i>Hyphessobrycon piranga</i> *	Tetra	0	0	6
<i>Iguanodectes geisleri</i> *	Lizard tetra	0	0	2
<i>Inpaichthys kerri</i> *	Purple Emperor Tetra	0	0	1
<i>Moenkhausia</i> *	Tetra	4	4	53

<i>Moenkhausia pittieri</i> *	Diamond tetra	0	6	202
<i>Nematobrycon lacortei</i> *	Rainbow tetra	2	2	43
<i>Nematobrycon palmeri</i> *	Emperor tetra	1	0	47
<i>Paracheirodon axelrodi</i> *	Cardinal tetra	0	0	1512
<i>Thayeria boehlkei</i> *	Penguin Tetra	0	0	1
<i>Synodontis flavitaeniatus</i> *	Striped catfish	0	0	6
<i>Synodontis njassae</i> *	Lake Malawi Upside-down Catfish	0	0	4
<i>Synodontis polli</i> *	Poll's upsidedown catfish	0	0	5
<i>Synodontis</i> *	???	0	0	1
<i>Bunocephalus coracoideus</i> *	Twocolored banjo catfish	0	0	4
<i>Brochis splendens</i> *	Brochis Catfish	0	0	4
<i>Corydoras reticulatus</i> *	Reticulated Corydoras	0	0	1
<i>Corydoras sterbai</i> *	Sterba's catfish	0	0	39
<i>Corydoras duplicareus</i> *	Corydoras catfish	0	0	11
<i>Baryancistrus demantoides</i> *	Catfish	0	0	6
<i>Farlowella vittata</i> *	Catfish	0	0	15
<i>Hemiancistrus dolichopterus</i> *	Bristlenoe Plecostomus	0	0	43
<i>Sturisoma aureum</i> *	Royal catfish	0	2	5
<i>Melanotaenia lacustris</i> *	Lake Kutubu Rainbow Fish	0	0	45
<i>Melanotaenia parkinsoni</i> *	Parkinson's rainbowfish	0	0	12
<i>Pachypanchax sakaramyi</i> *	Killiefish	0	0	61
<i>Fundulus bermudae</i> *	Bermuda killifish	0	0	140
<i>Allotoca zacapuensis</i> *	Zacapu allotoca	0	0	9
<i>Allotoca diazi</i> *	Pátzcuaro allotoca	0	0	4
<i>Ameca splendens</i> *	Butterfly Goodeid	0	0	437
<i>Characodon audax</i> *	Bold characodon	0	0	38
<i>Skiffia lermae</i> *	Olive skiffia	0	0	13
<i>Xenotoca doadrioi</i> *	Redtail splitfin	0	0	20
<i>Zoogoneticus tequila</i> *	Crescent Zoe	0	0	129
<i>Hippocampus abdominalis</i> *	Big-bellied Seahorse	0	0	20
<i>Serranus tortugarum</i> *	Chalk seabass	0	0	15
<i>Pterapogon kaudemi</i> *	Emporor/Banggai Cardinal Fish	0	0	46
<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>Geophagus sveni</i> *	Eartheater	0	0	6
<i>Mikrogeophagus ramirezi</i> *	Blue butterfly cichlid	0	0	100
<i>Nanochromis splendens</i> *	Congo dwarf cichlid	0	0	109
<i>Paretroplus damii</i> *	Cichlid	0	0	25
<i>Paretroplus kieneri</i> *	Kieneri cichlid	0	0	14
<i>Paretroplus menarambo</i> *	Pin Striped Damba	0	0	10
<i>Pterophyllum scalare</i> *	Freshwater angelfish	0	0	2

FISHES STOCKLIST (page 2 of 2)

<i>Amphiprion frenatus</i> *	Tomato Clown Fish	0	0	1	
<i>Amphiprion ocellaris</i> *	Common Clownfish	0	0	10	
<i>Chrysiptera parasema</i> *	Goldtail damselfish	0	0	1	
<i>Macropharyngodon bipartitus</i> *	Vermiculate Wrasse	0	0	1	
<i>Pseudocheilinus hexataenia</i> *	Sixline wrasse	0	0	1	
<i>Lipophrys pholis</i> *	Shanny blenny	0	0	5	
<i>Hypseleotris compressa</i> *	Empire gudgeon	0	0	2	
<i>Gobiodon okinawae</i> *	Golden goby	0	0	1	
<i>Periophthalmus novemradiatus</i> *	Pearse's mudskipper	0	0	11	
<i>Pomatoschistus minutus</i> *	Sand goby	0	0	2	
<i>Siganus vulpinus</i> *	Foxface rabbitfish	0	0	1	
<i>Ctenochaetus tominiensis</i> *	Bristle-tooth Tang	0	0	1	
<i>Zebrasoma flavescens</i> *	Yellow tang	0	0	6	
<i>Parosphromenus linkei</i> *	Liquorice Gourami	0	0	8	**
<i>Parosphromenus opallios</i> *	Licorice gourami	1	1	2	
<i>Parosphromenus phoenicurus</i> *	Licorice gourami	0	0	2	
<i>Trichogaster leerii</i> *	Pearl Gourami	0	0	1139	**
<i>Betta pallifina</i> *	Pallifina betta	0	0	1	
<i>Canthigaster valentini</i>	Saddled puffer	0	0	1	
		8	15	7868	
		7891			

* denotes managed in groups

** denotes bred in the collection in 2018

INVERTEBRATES STOCKLIST (page 1 of 2)

Preferred Scientific Name	Common Name	Stock 31/12/18		
		M	F	U
<i>Cassiopea</i> *	Frilled upside-down jellyfish	0	0	26
<i>Euplexaura</i> *	Gorgonian	0	0	3
<i>Lobophytum</i> *	Leather coral	0	0	3
<i>Sinularia</i> *	Soft Coral	0	0	4
<i>Sinularia flexibilis</i> *	Slimy leather coral	0	0	24
<i>Anemonia viridis</i> *	Snakelocks anemone	0	0	45
<i>Entacmaea quadricolor</i> *	Bladdertipped anemone	0	0	7
<i>Discosoma</i> *	Umbrella false coral	0	0	451
<i>Acropora</i> *	Staghorn coral	0	0	1
<i>Acropora cervicornis</i> *	Staghorn coral	0	0	13
<i>Acropora millepora</i> *	Staghorn coral	0	0	3
<i>Acropora yongei</i> *	Staghorn coral	0	0	1
<i>Montipora</i> *	Montipora coral	0	0	19
<i>Montipora confusa</i> *	Encrusting coral	0	0	4
<i>Montipora danae</i> *	Coral	0	0	8
<i>Montipora digitata</i> *	Finger coral	0	0	4
<i>Montipora foliosa</i> *	Hard coral	0	0	16
<i>Montipora friabilis</i> *	Orange plating coral	0	0	1
<i>Pocillopora damicornis</i> *	Brush coral	0	0	24
<i>Seriatopora caliendrum</i> *	Hard coral	0	0	1
<i>Seriatopora guttatus</i> *	Bird nest coral	0	0	1
<i>Stylophora</i> *	Cauliflower coral	0	0	2
<i>Stylophora pistillata</i> *	Pink cauliflower coral	0	0	6
<i>Euphyllia ancora</i> *	Crescent coral	0	0	1
<i>Plerogyra sinuosa</i> *	Bubble coral	0	0	5
<i>Duncanopsammia axifuga</i> *	Coral	0	0	1
<i>Turbinaria peltata</i> *	Bowl Coral	0	0	3
<i>Hydnophora</i> *	Horn coral	0	0	12
<i>Galaxea fascicularis</i> *	Ivory coral	0	0	3
<i>Fungia fungites</i> *	Mushroom coral	0	0	4
<i>Alveopora</i> *	Coral	0	0	1
<i>Zoanthid</i> *	Anemone	0	0	3
<i>Clithon corona</i> *	Horned nerite	0	0	1
<i>Marisa cornuarietis</i> *	Giant ramshorn snail	0	0	50
<i>Pomacea canaliculata</i> *	Apple snail	0	0	74
<i>Tylomelania</i> *	Freshwater snail	0	0	59
<i>Strombus</i> *	Fighting conch	0	0	20
<i>Nassarius vibex</i> *	Common eastern mud snail	0	0	40
<i>Partula rosea</i> *	Partula snail	0	0	442
<i>Partula varia</i> *	Partula snail	0	0	1738
<i>Bertia cambojiensis</i> *	Vietnamese giant magnolia snail	0	0	13
<i>Poecilozonites circumfirmatus</i> *	Lesser Bermuda land snail	0	0	200
<i>Poecilozonites bermudensis</i> *	Bermuda land snail	0	0	7280

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<i>Hirudinaria manillensis</i> *	Buffalo leech	0	0	16
<i>Heterometrus longimanus</i> *	Asian forest scorpion	2	2	5
<i>Pandinus imperator</i> *	Common emperor scorpion	3	3	0
<i>Cyrtopholis femoralis</i> *	Montserrat tarantula	1	16	172
<i>Lampropelma violaceopes</i> *	Singapore blue tarantula	0	1	0
<i>Lasiadora parahybana</i> *	Brazilian salmon tarantula	0	1	0
<i>Stegodyphus sarasinorum</i> *	Indian social spider	0	0	1
<i>Nephila edulis</i> *	Golden orb-weaver	19	11	350
<i>Atyopsis moluccensis</i> *	Bamboo shrimp	0	0	3
<i>Caridina multidentata</i> *	Yamato shrimp	0	0	10
<i>Lysmata amboinensis</i> *	Cleaner Shrimp	0	0	1
<i>Cambarellus patzcuarensis</i> *	Orange dwarf crayfish	0	0	23
<i>Geosesarma hageni</i> *	'Red Devil' Vampire Crab	4	40	72
<i>Periplaneta americana</i> *	American cockroach	0	0	1600
<i>Therea olegrandjeani</i> *	Cockroach	0	0	250
<i>Deroplatys desiccata</i> *	Malaysian dead-leaf mantis	3	9	2
<i>Stilpnochlora coulouiana</i> *	Florida Leaf Katydid	17	20	100
<i>Lesina intermedia</i> *	Dragon-headed katydid	4	1	0
<i>Phaeophilacris bredoides</i> *	Cricket	0	0	100
<i>Homoeogryllus xanthographus</i> *	Cricket	0	0	200
<i>Heteropteryx dilatata</i> *	Malaysian Jungle Nymph	26	14	250
<i>Epidares nolimetangere</i> *	Touch me not stick insect	13	13	22
<i>Phyllium giganteum</i> *	Giant leaf insect	0	4	72
<i>Marmessoidea</i> *	Walkingstick	1	25	8
<i>Achrioptera fallax</i> *	Walkingstick	0	0	63
<i>Phasma gigas</i> *	Giant stick insect	10	10	20
<i>Chalcosoma caucasus</i> *	Atlas beetle	3	4	0
<i>Chalcosoma caucasus</i> *	Atlas beetle	0	0	17
<i>Dynastes hercules</i> *	Western hercules beetle	2	2	62
<i>Mecynorrhina ugandensis</i> *	Beetle	3	1	377
<i>Xylotrupes gideon</i> *	Elephant beetle	1	4	13
<i>Graphium agamemnon</i> *	Tailed Jay			
<i>Papilio demoleus</i> *	Lime Swallowtail	0	0	18
<i>Papilio memnon</i> *	Great Mormon			
<i>Papilio palinurus</i> *	Emerald Swallowtail			
<i>Papilio polytes</i> *	Common Mormon			
<i>Papilio rumanzovia</i> *	Scarlet swallowtail	0	0	33
<i>Hebomoia glaucippe</i> *	Giant Asian Orange Tip			
<i>Greta oto</i> *	Glasswing	0	0	27
<i>Danaus chrysippus</i> *	Lesser wanderer butterfly	0	0	13
<i>Danaus plexippus</i> *	Monarch butterfly	0	0	1
<i>Idea leuconoe</i> *	Giant Wood Nymph	0	0	16
<i>Caligo memnon</i> *	Giant Owl	0	0	26
<i>Morpho peleides</i> *	Blue Morpho	0	0	67
<i>Heliconius ismenius</i> *	Tiger Longwing			

colonies

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INVERTEBRATES STOCKLIST (page 2 of 2)

<i>Heliconius melpomene</i> *	Postman	0	0	21	
<i>Cethosia biblis</i> *	Red Lacewing				
<i>Anartia amathea</i> *	Scarlet Peacock	0	0	25	
<i>Hypolimnas bolina</i> *	Great Eggfly				
<i>Kallima inachus</i> *	Dead-leaf butterfly	0	0	14	
<i>Kallima paralekta</i> *	Indian Leaf				
<i>Parthenos sylvia</i> *	Clipper				**
<i>Siproeta stelenes</i> *	Malachite	0	0	10	**
<i>Attacus atlas</i> *	Atlas moth				
<i>Atta cephalotes</i> *	Leafcutter ant	0	0	2	colonies
<i>Ampulex compressa</i> *	Emerald cockroach wasp	38	45	189	**
<i>Apis mellifera</i> *	Honeybee	0	0	3	colonies
<i>Colossobolus litoralis</i>	Madagascar Russet millipede	0	2	0	
<i>Asterina gibbosa</i> *	Cushion Starfish	0	0	1	
<i>Ophiarachna incrassata</i> *	Green Brittle Starfish	0	0	40	
<i>Mespilia globulus</i> *	Colored tuxedo urchin	0	0	4	
		150	228	14936	
		15314			

* denotes managed in groups

** denotes bred in the collection in 2018

PLANT STOCKLIST

As there are over 2,500 plant species, varieties and cultivars within the Zoo, this inventory gives an overview of the most notable ones i.e. the 5 Plant Heritage National Collections; those on the IUCN Red List, and those species which are part of UK reintroduction projects.

Scientific Name	Common Name	No. of Species	No. of Specimens
National Plant Collections			
<i>Copiapoa</i> spp	Cacti	25	259
<i>Matucana</i> spp	Cacti	15	132
<i>Nepenthes</i> spp	Pitcher Plants	129	1132
<i>Turbinicarpus</i> spp	Cacti	19	201
Other Notable Plant Species			
<i>Pleurothallidinae</i>	Orchids		
<i>Acianthera</i> spp	Orchids	18	26
<i>Acronia</i> spp	Orchids	28	62
<i>Anathallis</i> spp	Orchids	10	16
<i>Ancipitia</i> spp	Orchids	2	10
<i>Andinia</i>	Orchids	1	3
<i>Barbosella</i> spp	Orchids	7	16
<i>Brenesia</i>	Orchids	1	5
<i>Diodonopsis</i>	Orchids	1	2
<i>Dracula</i> spp	Orchids	60	98
<i>Dresslerella</i>	Orchids	2	4
<i>Dryadella</i> spp	Orchids	16	34
<i>Echinosepala</i>	Orchids	1	1
<i>Lepanthes</i>	Orchids	29	59
<i>Lepanthopsis</i> spp	Orchids	7	12
<i>Masdevallia</i> spp	Orchids	180	430
<i>Myoxanthus</i> spp	Orchids	14	38
<i>Octomeria</i> Spp	Orchids	12	22
<i>Ophidion</i> spp	Orchids	1	1
<i>Orbis</i> spp	Orchids	1	2
<i>Pabstiella</i> spp	Orchids	4	5
<i>Phloeophila</i> spp	Orchids	3	4
<i>Platystele</i> spp	Orchids	13	22
<i>Pleurothallis</i> spp	Orchids	170	425
<i>Pleurothallopsis</i> spp	Orchids	2	2
<i>Porroglossum</i> spp	Orchids	12	18
<i>Restrepia</i> spp	Orchids	35	135
<i>Restrepiella</i> spp	Orchids	1	5
<i>Scaphosepalum</i> spp	Orchids	24	50
<i>Specklinia</i> spp	Orchids	11	27
<i>Stelis</i> spp	Orchids	52	193
<i>Trichosalpinx</i> spp	Orchids	14	39
<i>Trisetella</i> spp	Orchids	7	23
<i>Zootrophion</i> spp	Orchids	12	35

Scientific Name	Common Name	No. of Species	No. of Specimens
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		10
<i>Ansellia africana</i>	Orchid		2
<i>Butia eriospatha</i>	Palm		1
<i>Coccothrinax borhidiana</i>	Palm		1
<i>Coincya monensis</i> ssp. <i>Monensis</i>	Isle of Man Cabbage		10
<i>Cotoneaster cambricus</i>	Wild Cotoneaster		6
<i>Dionaea muscipula</i>	Venus Flytrap		20
<i>Diospyros egrettarum</i>	Ebony		2
<i>Doricera trilocularis</i>			1
<i>Encephalartus ferox</i>	Cycad		1
<i>Encephalartus nataliensis</i>	Cycad		1
<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>Hibiscus fragilis</i>	Mandrinette		5
<i>Hibiscus insularis</i>	Philip Island Hibiscus		3
<i>Hyophorbe lagenicaulis</i>	Bottle Palm		10
<i>Hyophorbe verschaffeltii</i>	Spindle palm		1
<i>Jubeae chilensis</i>	Chilean wine palm		6
<i>Juniperus communis</i>	Common Juniper		10
<i>Latania loddigesii</i>	Palm		6
<i>Latania verschaffeltii</i>	Palm		1
<i>Luronium natans</i>	Floating Water Plantain		170
<i>Mammillaria</i> spp	Cacti	128	163
<i>Neobenthamia gracilis</i>	Orchid		1
<i>Olearia hectorii</i>	Hector's Tree Daisy		1
<i>Palcourea crocea</i>			2
<i>Paphiopedilum</i> spp	Slipper orchids	46	48
<i>Passiflora jatunsachensis</i>	Passion flower sp		1
<i>Phoenix threophrasti</i>	Cretan date palm		1
<i>Pholidota chinensis</i>	Orchid		1
<i>Pleione formosana</i>	Orchid		1
<i>Populus nigra</i> ssp. <i>betulifolia</i>	Black Poplar		102
<i>Potamogeton compressus</i>	Grasswrack Pondweed		630
<i>Pteris adscensionis</i>	Fern		1
<i>Pritchardia thurstonii</i>	Palm		1
<i>Sabal bermudaana</i>	Palm		1
<i>Sarcanthemum coronopus</i>			2
<i>Sarcochilus falcatus</i>	Orchid		1
<i>Sorbus bristoliensis</i>	Bristol whitebeam		3

PLANT STOCKLIST

<i>Sorbus cunefolia</i>	Llangollen whitebeam		60
<i>Sorbus margaretae</i>	Margaret's whitebeam		1
<i>Sorbus parviloba</i>	Ship Rock whitebeam		3
<i>Sorbus richii</i>	Rich's whitebeam		3
<i>Stachys alpina</i>	Limestone woundwort		3
<i>Tillandsia dyeriana</i>	Bromeliad		1
<i>Vanda tessellata</i>	orchid		1
<i>Veronica bahamensis</i>			1
<i>Zanthoxylum heterophyllum</i>			1