



The North of England Zoological Society
Annual Report and Financial Statements for
the year ended 31 December 2022

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chesterzoo.org



Zac Goldsmith, International Environment Minister and former Zoos Minister – one of the most influential voices in UK environmental politics – visiting the zoo and meeting local school children.

The Trustees of the North of England Zoological Society ("Chester Zoo" / "the Charity" / "NEZS") 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 2022, 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 that owns and runs Chester Zoo.

The financial statements comply with the Charities Act 2011, the Companies Act 2006, the Charity'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).

Charitable objects

The Charity'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
- (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.

Registered Charity No. 306077

Registered Company No. 00287902

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In this year's report

In this year's annual report, you will find an introduction to our strategy that will take us through to Chester Zoo's 100th anniversary in 2031. The strategy brings together our Conservation Masterplan, our Strategic Development Plan for the zoo and a supporting business plan.

There are highlights from 2022 and details of our financial performance, together with information on our progress against our Conservation Masterplan targets. You can find out about the secret life of the zoo and all the activity that goes on behind the scenes to support our mission of preventing extinction. You'll find details of how we are focused on sustainability in all that we do and our progress against our ambitious targets to reduce our impact on the environment.

In the report, we also set out how we are redefining the role of zoos in society and how we work closely with partners to deliver change. There is information on how we are governed, the risks that we manage and details of how we ensure we promote the success of the zoo in order to achieve its charitable objectives.

An evolving strategy

Understand how our 10-year strategy is evolving as we head towards a milestone anniversary for the zoo.

Find out more on page 14.



Redefining the role of zoos in society

Find out how the role of zoos has changed to create an expanded sphere of influence.

Read more on page 48.



Working in partnership

A snapshot of the way we work in partnership across the different areas of the charity to work towards achieving our mission.

Read more on page 36.



Financial performance

Hear from Liz Carnie, our Corporate Director on the financial performance for 2022.

Find out more on page 38.



Case studies

To offer further insight into our work throughout 2022, there are case studies covering:

- Animals: Working to save the Javan green magpie (**page 19**)
- Commercial: Growing income – The Square (**page 42**)
- Plants: New zoo arboretum started in honour of her late Majesty Queen Elizabeth II (**page 50**)
- Education: Working with schools to empower the next generation of conservationists (**page 24**)
- Public affairs: A year of influence (**page 30**)



Introduction from our Chair of Trustees

It is my pleasure to introduce our annual report for 2022.

This year, the zoo remained open to visitors for the first full year since the start of the pandemic.

Although clearly impacted by the return to overseas travel during the year, our visitor numbers for 2022 were in line with our expectations and, combined with further growth in our membership numbers, enabled us to deliver a solid financial performance despite inflationary pressures and rising energy costs.

This continued financial performance has enabled us to recommence our ambitious programme of capital investment through the zoo's Strategic Development Plan. In 2022, we made great progress on the transformation of the old stable block in the heart of the zoo into a high-quality venue, The Square, where we are looking forward to hosting weddings and events from spring 2023. Work is underway to transform the zoo's main learning centre and plans are advanced to create a new habitat for snow leopards to open in 2024 – another highly endangered species for which Chester Zoo will soon be joining the conservation effort. Finally, in the autumn we started work on the much-anticipated Heart of Africa project, which is due to open to visitors in 2025.

I am also delighted to report that we were able to resume our full programme of conservation work in the field both here in the UK and overseas in support of our mission to prevent extinction. Our programme of education work is back to full strength, engaging with 264,730 participants in the year, both through learning at the zoo and through our outreach work in schools and with community groups. We built on our track record of conservation campaigning by engaging with a wide range of politicians and businesses locally, nationally and internationally. As a conservation charity, we recognise the impact of our own activities on the environment and have made further progress towards our sustainability targets to reduce our carbon footprint, reduce our waste and eliminate



commodities that lead to deforestation from our supply chains.

All of the achievements that you will read about in this report are a reflection of the outstanding team of staff and volunteers who are passionate about our mission and work tirelessly to deliver it. In 2022, we welcomed our first-ever cohort of 14 animal and plant apprentices, opening up opportunities to work within conservation to school leavers. I would like to thank my fellow Trustees for their advice and guidance; during the year, we strengthened the board, appointing new members with distinguished backgrounds in education, veterinary science and conservation science.

In September, we were all saddened by the news of the death of Queen Elizabeth II, who had last visited the zoo in 2012 for the opening of our Diamond Jubilee Quarter. In November, we planted the first trees in our new arboretum, which has been named in tribute.

We remain hugely grateful for the support of all our members, which is crucial to our continuing success. I hope you will enjoy reading the report and visiting the zoo during 2023.

Malcolm Ardron – Chair of Trustees

In the last 25 years the world has lost 80 percent of its Western chimpanzee population. Chimpanzee social dynamics are notoriously complex but the group at Chester Zoo is stable and continues to grow, contributing to the global breeding programme.



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Reasons to support us

1

Our conservation zoo is key to preventing the extinction of species under threat

With over one million species at risk of extinction worldwide, there has never been a more important time to act. Research shows that more than half of species under the most threat of extinction need active conservation management in the field, and 16% of threatened species globally require *ex-situ* conservation in zoos like ours if they are to have any chance of survival at all.

>> Read more on page 20



2

We are a renowned centre for conservation science

As part of a global network of scientists, we partner with NGOs and universities on critical scientific discoveries designed to find breakthroughs that help prevent extinction across a number of threatened species.

>> Read more on page 48



3

We connect two million people with nature each year

We engage two million people each year through our zoo and associated outreach work. We're the third most visited attraction in the UK and ensure that we inspire our visitors to care about, and for, nature.

>> Read more on page 24





4

We're part of a global network driving conservation in the field

We work with 62 partners in over 19 countries worldwide to provide 360° solutions to both save species and protect the landscape in which they live.

>> Read more on page 36

5

We are driving the conservation agenda in the UK and globally

We work as part of the IUCN, WAZA, EAZA and BIAZA to drive the global conservation agenda, as well as to influence policies and corporate practices in the UK to ensure the protection of species is at the top of the agenda.

>> Read more on page 30

6

We are empowering the public to protect biodiversity and the environment

We work to inspire and empower the public to live more sustainably and to take action to help protect the environment. We work with people during their zoo visit, in their everyday lives and through our education networks.

>> Read more on page 12



We work in partnership to achieve the highest impact.

Our partners include:



Darwin



British and Irish Association of Zoos and Aquariums



Cheshire Science Corridor



Green Recovery Challenge Fund



European Association of Zoos and Aquariums



Hutan



International Union for Conservation of Nature



University of Chester



World Association of Zoos and Aquariums



Wildlife Trust of India

At a glance

We spent
£24.7m

on conservation and education activities

56

field projects in 19 countries, working
with 62 partner organisations

1,848,634

visitors to the zoo

28

parliamentarian visits to the zoo and
9 mentions in Parliament

£6.4m

invested in capital projects

£3.6m

of donations to support our vital
conservation work

91%

of staff said Chester Zoo is a
friendly place to work

87kWp

of solar panels installed

124,465

on-site education visits

22,981

hours donated by volunteers

We worked with
140,732

animals of 567 different species in the zoo

The zoo is home to more than
2,500 plant species,

including 5 national collections

2022 highlights

EEHV vaccine pilot study

A pilot study of a new vaccine that aims to educate the immune system of the Asian elephant to fight a deadly virus (EEHV), which is threatening the survival of the endangered species globally, begins at the zoo.



ALVA visitor figures

New data, released by The Association of Leading Visitor Attractions (ALVA), ranked the zoo as the third most attended attraction in the UK during 2021.

Fossa triplets

A rare trio of fossa triplets emerged from their den. The trio were the first of their kind to ever be born at the zoo and are hailed by experts as incredibly important to the future of the species and the safety-net population found in conservation zoos.



Rhino calf

A rare greater one-horned rhino calf was born at the zoo after a 16-month pregnancy for mum, Asha. The species was once found roaming across the entire northern part of the Indian subcontinent, but is now only present in a small area in India and Nepal and is listed as vulnerable to extinction. Asha's pregnancy was tracked by the zoo's on-site endocrinology lab, which monitors the hormones in dung samples to check how a pregnancy is progressing.

Aardvark birth

An aardvark calf was born at the zoo for the first time in its 90-year history, joining a conservation breeding programme that only a handful of zoos are part of globally.

Parson's chameleons hatch

Reptile experts at the zoo became the first in the UK to successfully breed the world's largest chameleon, the rare Parson's chameleon. Conservationists described the breeding success as a "momentous event"; the skills and techniques developed to achieve the breakthrough could potentially help save other species from extinction.

New apprenticeships launched

A new animal and plant apprenticeships scheme to inspire more people to take up a career in conservation was launched, inviting anyone from school leavers to those seeking a career change to apply for one of 14 paid apprenticeships at the zoo. We also recruited two apprentices into our facilities and maintenance team.

Nature's SAFE partnership announced

The zoo began freezing tissue samples of the world's rarest animals in the battle to save hundreds of species from extinction. Its scientists teamed up with some of the UK's leading animal reproduction experts and, together, have founded Nature's SAFE – one of Europe's largest living biobanks dedicated to preserving and regenerating cells of the planet's most precious animals.

Malayan tapir calf

A rare Malayan tapir was born at the zoo in what was hailed as an "important moment" for the conservation of the endangered species. The zoo is one of just two British zoos currently caring for the Malayan tapir – listed as endangered on the Red List of Threatened Species by the International Union of Conservation of Nature (IUCN).



Our mission – Preventing extinction

“As one of the world’s leading conservation zoos, we are at the forefront of efforts to conserve biodiversity and are playing a special role in tackling the global extinction crisis.”

At Chester Zoo, everything we do is guided by our mission, preventing extinction. Our zoo is a complex centre of excellence, brimming with specialists in an array of disciplines. We are a huge team of conservationists, scientists, educators, veterinary experts, botanists, wildlife managers, animal welfare experts, animal behaviourists, endocrinologists, behavioural change experts and environmental policy influencers. We are among the world’s leading conservation-based charities, with decades of experience and highly respected levels of expertise. We empower communities to pursue pro-conservation behaviours and we influence policy and people. We are committed to the recovery of threatened species and tackling the challenges faced by wildlife, globally, with professionally planned, science-led conservation at our core.

We are a major wildlife charity, a genuine powerhouse for conservation and we are finding solutions to safeguard biodiversity at a time when it’s needed most.

Preventing extinction is highly challenging and requires a multi-faceted approach. This puts us in a leading position to provide immaculate levels of care for hundreds of threatened species, to protect and restore wild habitats, to foster deep and lasting connections with nature, and to inspire the next generation of conservationists.

Right now, our planet’s rich biodiversity is declining at an alarming rate, meaning zoos like ours are more relevant to the fight against extinction than ever before.

What first began as a family-run zoo back in the 1930s has now grown into a world-renowned centre for scientific research, a conservation academy training more than 400 conservationists a year and a place with the capacity to engage more than two million annual visitors with conservation and empower them to lead more nature-friendly lifestyles.

Driving our charity is our ground-breaking conservation model. When people visit the zoo, they not only connect with and learn about wildlife and nature, but they also help us to generate the vital funds needed to tackle some of the world’s most pressing conservation challenges. We are fighting extinction through our conservation, education and research work – here at the zoo, across the UK and in 19 countries around the world. This work is only possible because of the success of our pioneering model for conservation, which allows us to operate at the scale and urgency that’s needed to tackle the environmental emergency we face.

Our zoo is a shining example of what real conservation action in the 21st century looks like and is vital to preventing extinction – securing a brighter future for wildlife on this planet.



Our conservation work with the Scarce Yellow Sally stonefly in the river Dee with our partners at Buglife and the Welsh Dee Trust.

An evolving strategy for Chester Zoo

Chester Zoo will be 100 years old in 2031. Our strategy brings together the Strategic Development Plan, Conservation Masterplan and an associated Business Plan to ensure we succeed in meeting our objectives as we head towards our milestone anniversary.



Business plan

In order to achieve its mission and deliver the SDP and CMP, Chester Zoo needs to remain financially successful, growing and diversifying its income streams. This growth in income will allow delivery of the wider strategy and mission.



Commercial growth

Priorities for commercial growth include developing the visitor and member proposition, including events and experiences, to drive income from existing and new audiences. We will mobilise new income streams, for example The Square (see case study on page 42) and the development of a hotel.



Fundraising

With the vast majority of existing income coming from zoo visitors, we will seek to increase the level of income from fundraising for our work, providing opportunities for individuals, trusts and foundations and corporate partners to support our work.



Brand and marketing

There is a need to reposition the Chester Zoo brand to ensure it supports the strategy. It will bring together all areas of the organisation, allowing Chester Zoo to build its

reputation as an international conservation charity, as well as build income growth, increasing our reach to new audiences.



People and culture

During the strategic period, the zoo's culture must adapt to embrace new thinking and different ways of working.

We will seek to attract and retain the best people who can help us deliver our strategy. We will also develop the zoo's culture with a one team, one mission approach, invest in leadership skills for existing and future leaders, improve employee engagement and satisfaction and continue to focus on equality, diversity and inclusion.



Sustainability

Acknowledging that we cannot be part of the problem we are trying to solve, we are committed to environmental sustainability.

Details of our three ambitious sustainability targets in respect of carbon, waste and deforestation free commodities are set out on page 32.



An evolving strategy for Chester Zoo

The Strategic Development Plan (SDP)

The SDP sets out a plan to transform the zoo through the development of habitat-themed environmental zones, aligned with and supporting our Conservation Masterplan while ensuring Chester Zoo remains a leading visitor attraction.



New strategic developments

Following the success of the Islands zone, which opened in 2015, the Heart of Africa zone is planned to open in 2025. Featuring a variety of habitats from savannah to deserts, the development will be home to over 50 endangered species. The zone will also include The Reserve, a lodge-style development where visitors will be able to stay overnight.

Ahead of Heart of Africa opening, we will complete a number of other significant development projects, including The Square, which supports our 10-year business plan; construction of a Snow Leopard Habitat, in support of our CMP target to preserve options for future conservation for an additional 150 species

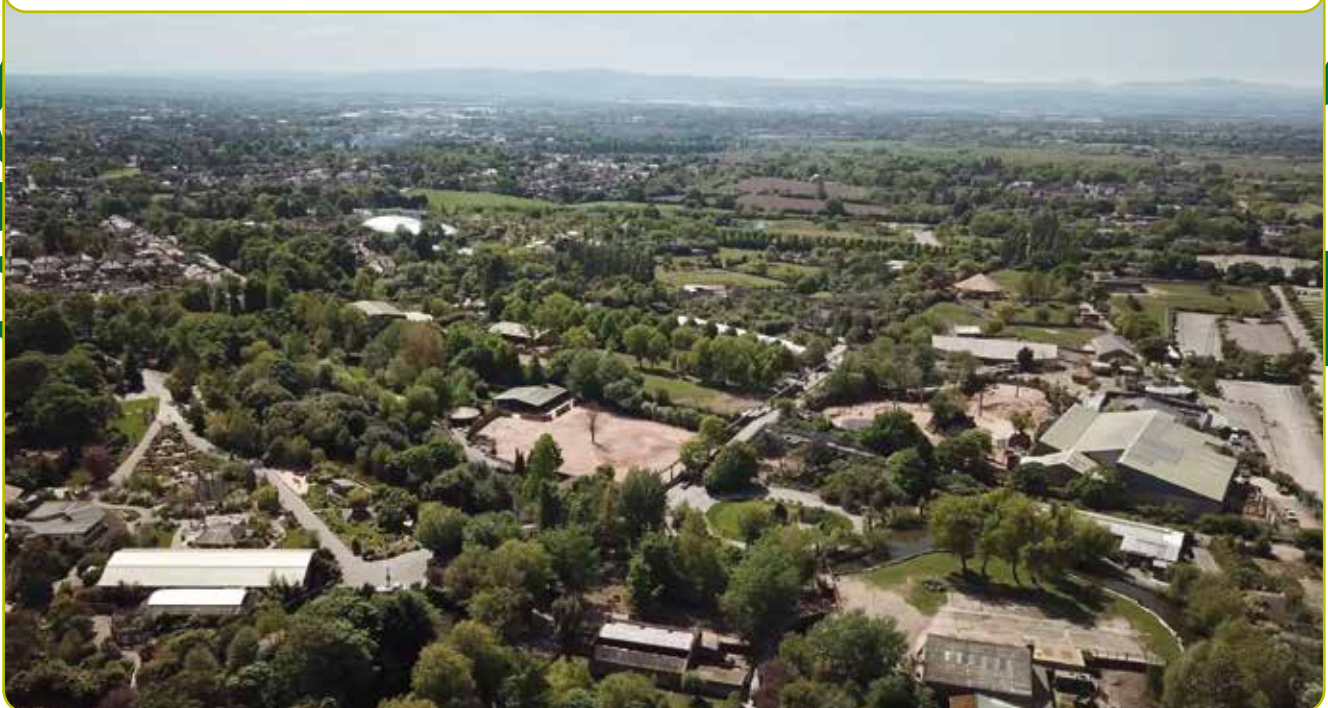
through conservation breeding; and construction of a new learning centre in support of our conservation education work.

Planning is already underway to define further development of the zoo after completion of Heart of Africa and ahead of our 100th anniversary.



Existing zoo estate

We need to ensure the existing zoo estate continues to support our excellent conservation work, animal welfare standards and visitor experience. During the strategic period, we will continue to invest in major repairs across the site, upgrading infrastructure with a focus on renewable energy and climate resilience and upgrading the working environment for our employees. We have set targets for managing our wider landholding for biodiversity in line with the COP-15 30x30 target, including habitats enhanced and created as part of the zoo's wider Nature Recovery Corridor work.





Scan to view the
Conservation Masterplan



The Conservation Masterplan (CMP)

The CMP was launched in 2021 to focus Chester Zoo's efforts on finding measured ways to demonstrate the impact of conservation work carried out on-site in Chester and also in the field. More detail can be found on page 20.



Our species

The zoo has a well documented and comprehensive species plan for its animals and plants aligned to the CMP and a targeted approach to species recovery in the field in a number of key regions across the globe. This plan will develop over the strategic period as biodiversity challenges evolve and these will inform future SDP projects.



Science

Chester Zoo's scientific plan underpins the CMP, and building on our reputation for groundbreaking and globally impactful conservation science, we will work to establish a centre of excellence in zoo conservation science. Working with our own staff and through collaborative partnerships, we will seek to scale up our impact and become a "conservation multiplier" through training others.



Conservation education & engagement

Our conservation education and engagement team will expand its programmes of work.

Priorities will be providing resources for schools to embed conservation in the curriculum, increasing engagements with zoo visitors, improving facilities for learning at the zoo, developing a comprehensive youth programme to increase opportunities for young people to actively participate in conservation and increasing access to conservation through reaching out to more diverse and underserved audiences.



Legislation & public affairs

We will continue to scale up our influence and reach via engagement with a wider set of stakeholders and a broader range

of policy agendas to support the delivery of the CMP. Working with other leading conservation zoos, bodies such as BIAZA and EAZA and with the wider conservation sector, we will respond to and seek to influence emerging political and regulatory challenges impacting Chester Zoo and the conservation and education sector.



The Javan green magpie project is an extension of an international partnership on songbird conservation dating back more than a decade. We've been proud to be a core part of this partnership, alongside Manchester Metropolitan University (MMU) in the UK, Mandai Nature and the Cikananga Conservation Breeding Centre (CCBC) in Java.

Case study – Working to save the Javan green magpie

For many years, a key area of focus for the zoo has been our work on Asian songbirds, especially given the crises so many species are facing as a result of widespread habitat loss and being highly sought after in both domestic and international trade. One species in particular that we have championed and worked tirelessly to prevent the extinction of is the Javan green magpie. Having undergone catastrophic declines in its native Java over the last 30 years, the species is now right on the edge of extinction – critically endangered with a wild population that is now believed to number less than 50 individuals hanging on in heavily fragmented areas.



For more than 10 years now, the zoo has worked to save the species. A small population was established with our help at Cikananga Wildlife Centre in Java, and in 2013, these successfully bred for the very first time. By 2015 we were ready to move a small number of birds out of Java as an essential part of the recovery of the species. By bringing birds to Chester Zoo, we were able to establish a critical ark population with the additional safety net of having birds being kept both in their country of origin and elsewhere, in Europe – an important mitigation to safeguard against an unforeseen disaster at any one place.

From these first birds at Cikananga and those brought to Europe by Chester Zoo, the global conservation breeding population has now passed the milestone in 2022 of 100 birds – quite possibly twice the entire population left in the wild. Now a total of nine partners are working with these birds, both in Europe and Indonesia, with the entire conservation breeding programme coordinated by our bird team here at the zoo. It has proved a challenging bird to care for and breed, and an immense amount of skill and research has gone into getting the conditions just right for the magpies. The knowledge and skills that our staff have accumulated over years of experience working with numerous species prove invaluable when it comes to creating the correct conditions for a 'new' species we have never worked with before.

By the end of 2022, we were looking after 16 Javan green magpies at the zoo, including three chicks successfully bred during the year. Particularly noteworthy this year was that for the first time ever, hand-reared birds (which had been cared for and artificially reared by our staff) went on to parent-rear their own chicks. This is a significant advance as it potentially allows us to increase numbers by hand-rearing but still be confident that those birds have all the skills required to breed themselves. In another first during the year, the team successfully cross-fostered an egg

from one pair to a different pair, which then went on to successfully incubate the egg and rear the chick.

It is the application of these innovative techniques, along with years of experience of caring for and breeding some of the most difficult and rarest birds in the world, that is so important to the successes we achieve at the zoo and fundamental to our mission of preventing extinction.



Our work with the Javan Green Magpie contributed to SDG 15 Life on land.



Andrew Owen (Head of Birds)

Andrew has overall responsibility for Chester Zoo's birds and plays an active role in the conservation of the Javan green magpie. He manages the EAZA conservation breeding programme and wrote the EAZA best practice husbandry guidelines. He is advisor to Cikananga Wildlife Center, our conservation partners in Java, helping with practical avicultural support, the recovery programme, bird surveys and fieldwork. Andrew works with his bird teams, who carry out the day-to-day care of the magpies, and the veterinary team, as well as with members of the science and field programmes team, who provide support in many different ways.



Javier López (Head of Veterinary Services)

Javier is responsible for veterinary support for Chester Zoo's conservation programmes, including the Javan green magpie. With the staff from Cikananga Wildlife Center, he helps produce the health care programme for the magpies to improve the diagnostic capacity of their veterinary department, their preventative healthcare and screening programmes. These contributed to the establishment of the captive population at Chester and the creation of training to support the care of the magpies. Together with our other teams and partners, Javier coordinates research into diseases that affect this species, to improve the Javan green magpie's breeding and prepare their health for potential future reintroductions.

Conservation Masterplan

Our Conservation Masterplan is our roadmap for how we are going to deliver real conservation impact over the next decade and make a significant contribution to tackling the global extinction crisis by 2031.

Centred around a set of clear, bold targets and endorsed by the global authority on conservation, the IUCN, this 10-year plan will take us up to our 100-year anniversary in 2031, when we'll be able to look back and clearly see the results of our mission to protect the natural world.

Tackling the magnitude of the biodiversity crisis requires deliberate, innovative conservation actions. Preventing extinction is complex and, with the majority of species with whom we share our planet facing unimaginable threats, it requires a multi-faceted approach.

Our conservation work is all about interconnection. Relentless collaboration is the only solution to ensuring the continued survival of threatened species. Our interdisciplinary zoo teams, together with our extensive network of field and academic partners, deploy a fully rounded approach to conservation.

Our focus is on 'four Ps':

- **Populations of animals and plants**
Effective management of populations of species both *in-situ* (in the wild) and *ex-situ* (in zoos and breeding centres) through research, conservation breeding, welfare and monitoring.
- **Places for wildlife**
Providing safe and healthy habitats for wildlife through effective protection, restoration and management.
- **People**
Working with people everywhere and in all areas of society to enable them to coexist and thrive with wildlife and develop nature-friendly, sustainable lifestyles and livelihoods.
- **Policy**
Influencing businesses, statutory agencies and governments to incorporate effective planning and legislation to protect and enhance biodiversity and, in doing so, contribute to vibrant economies.

By integrating activities in these four areas, we can maximise our impact. These four Ps shape our six key targets to benefit wildlife, as set out on the opposite page.

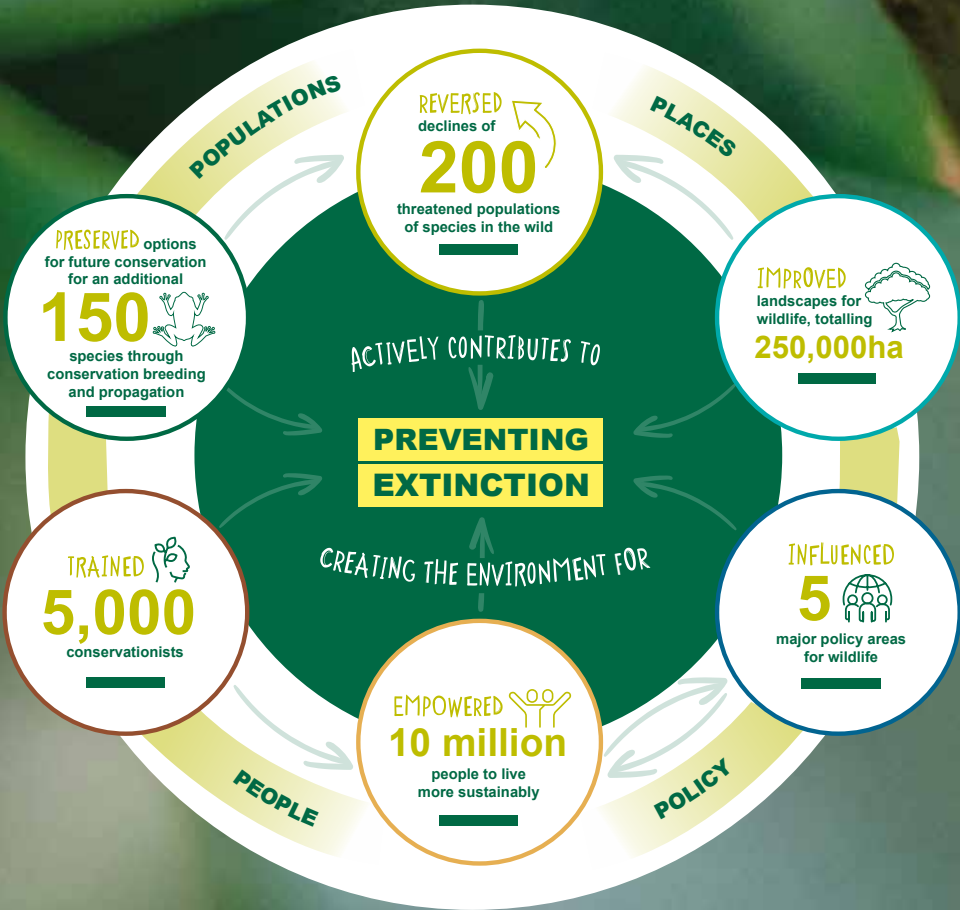
By 2031 we will:

- Preserve options for future conservation for an additional 150 species through conservation breeding and propagation
- Halt or reverse the decline of 200 highly threatened populations of plants and animal species in the wild
- Improve landscapes for wildlife, totalling 250,000 hectares
- Train 5,000 conservationists to deliver positive change for wildlife
- Empower 10 million people to live more sustainably
- Influence change in five major policy areas for wildlife.

Developed in line with the UN's sustainable development goals, our Conservation Masterplan also sets out a path for us to achieve carbon net zero and zero waste in our operations, as well as ensure the procurement of deforestation-free commodities in all of our supply chains.

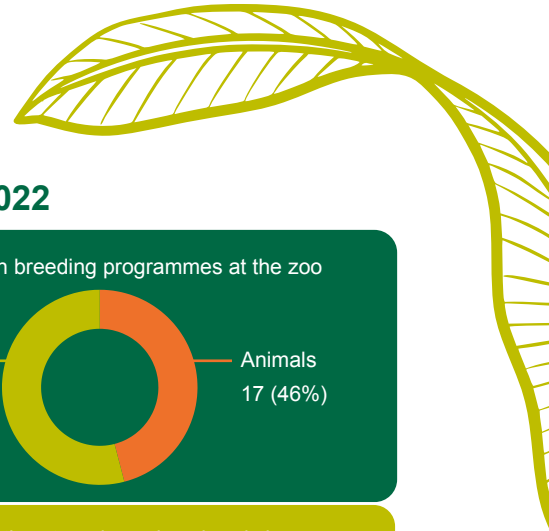
This plan focuses our precious resources on what really matters: a masterplan for wildlife that will deliver real conservation impact – and fast.





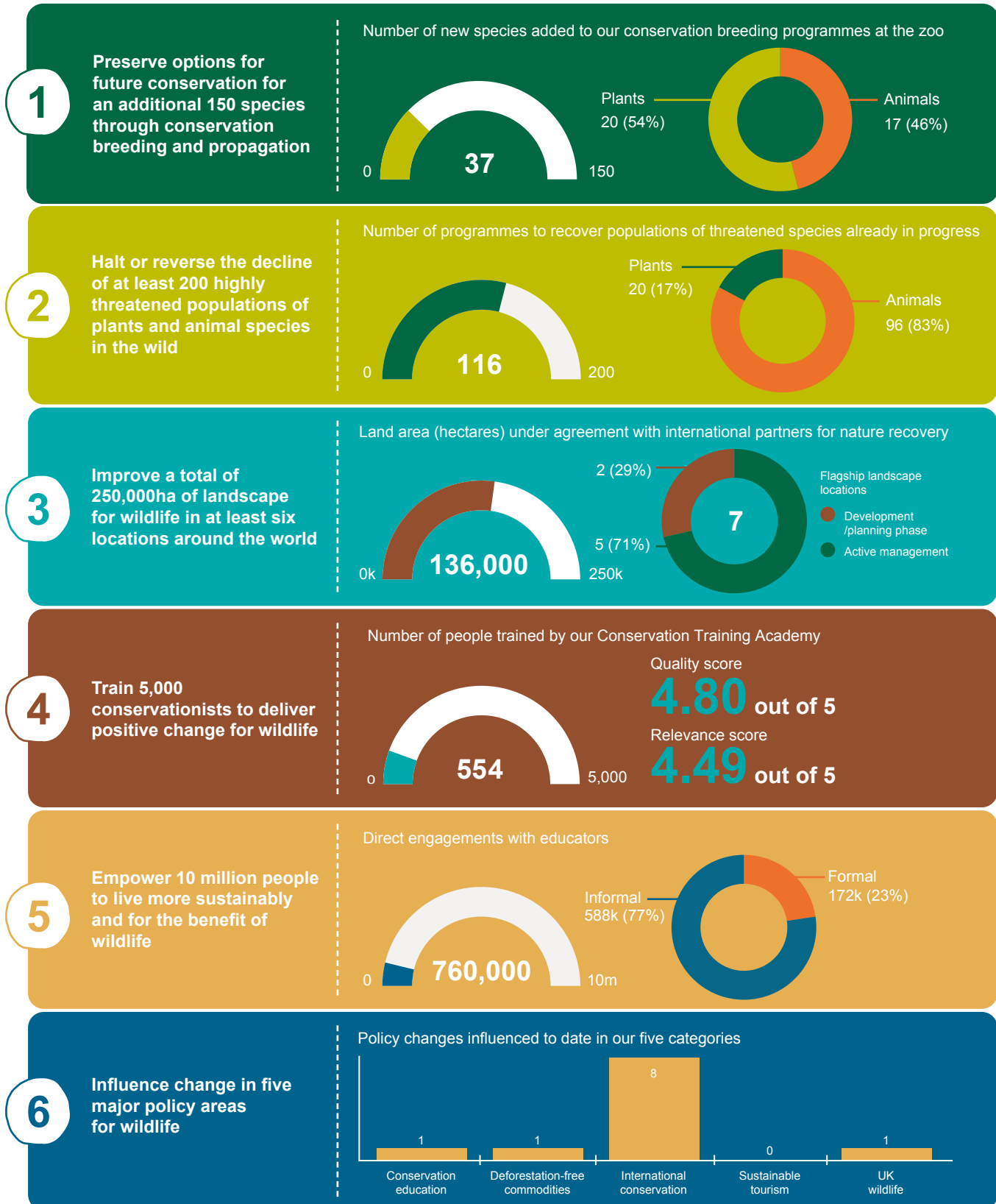
Parson's chameleon, *Calumma parsonii*. The loss of humid forest, mainly through conversion from slash-and-burn agriculture but also due to logging, is a threat to this species. Has a very long incubation of 18 months which recently Chester Zoo succeeded breeding.

Conservation Masterplan targets



By 2031 we will

Progress as at 31 December 2022





Conservationists from Chester Zoo reintroduced a number of the Bermudian skinks, one of the world's rarest lizards species, after they were hatched by the zoo's reptile experts.

Known locally in Bermuda as rock lizards, the skinks were carefully flown 3,000 miles from the zoo to Trunk Island where they are a much loved cultural icon and an important part of the ecosystem. The zoo's team fitted a number the skinks with special radio tracking 'backpacks,' which they hope will help with long-term monitoring of their activity on the island.



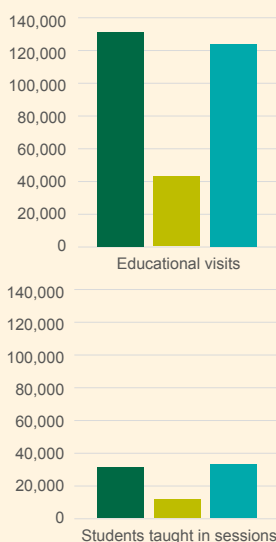
Case study – Working with schools to empower the next generation of conservationists



Through working with schools, the zoo's Conservation Education team connect young people to nature and inspire them to take conservation action today and into the future, while also responding to the needs of teachers and providing expert support to the education sector.

Engagement with schools at the zoo

■ 2019 ■ 2021 ■ 2022



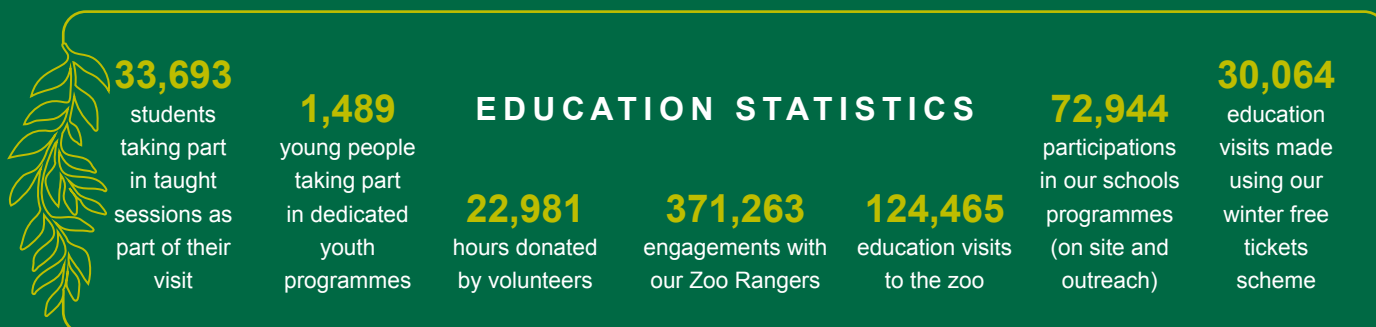
Following the lifting of the final COVID-19-related restrictions in the first quarter of the year, 2022 has delivered levels of engagement with schools comparable with pre-pandemic years.

However, the year has been about more than building back numbers. To help remove barriers to participation, the winter free ticket scheme supported 30,064 education visits in 2022 – a significant increase on previous years. The education team also worked to introduce new

services to meet changing priorities in the sector and to make use of new techniques to inspire learners.

Early in the year, the team added a Conservation Escape Room experience to the zoo's teaching offering of curriculum-linked workshops. This immersive new session enables students to explore issues around the illegal wildlife trade by solving puzzles relating to affected species and the conservation work the zoo is doing to save them. Another new workshop, Winnie's Winter Wish, uses puppetry and storytelling to take primary-aged pupils on an interactive tour of the zoo to find out about the challenges that UK wildlife can face during the winter months. Both new sessions use creative techniques to engender emotional connections, deliver deeper learning and inspire change, contributing to the Conservation Masterplan target to empower people to live more sustainably.





Other new developments have responded to growing demand from young people and from schools for more climate and sustainability content. During the UN Climate Change Conference of the Parties (COP26) in Glasgow, the Department for Education (DfE) announced a new strategy for sustainability and climate change. In the early months of 2022, the zoo team was able – particularly through its Youth Board being represented on the youth engagement panel – to engage in the development of this strategy, which was formally launched in April.

Many of the zoo's long-standing education programmes and resources will support schools to deliver on this new strategy. To meet increased demand and the focus on climate, the team developed a new Climate and Sustainability project for upper primary and secondary aged pupils. The project takes pupils through a series of interactive activities, both in school and at the zoo, enabling them to explore how they can take action to live more sustainably and reduce their personal climate impact.

Another aspect where the zoo's education work ties closely to the focus of the new DfE Sustainability and Climate Change Strategy is in enhancing biodiversity on the school estate. One example from this year is the work the education team have completed towards the zoo's Nature Recovery Corridor project. The zoo's community engagement and education specialists worked with six local schools to provide a range of UK wildlife-focused interventions, including teacher training, family wildlife clubs, curriculum-linked workshops, resources and zoo visits. These projects focused on habitats for UK wildlife and led to transformative change in the green spaces at the schools, benefiting both the children and the wildlife these spaces will now support. Like much of the zoo's education work, these projects also aimed to connect young people to nature, which is known to underpin both a sense of environmental responsibility and create benefits for human wellbeing.



Our work with schools contributed to SDG 4 Quality Education; SDG 11 Sustainable cities and communities; SDG 12 Responsible Consumption and production; SDG 13 Climate Action

To enable the continued development of our on-site workshop programme and to create better facilities for teaching and learning on site, work began to completely refurbish our Education Centre. The newly revamped centre, due to open in 2023, will make better use of technology and provide an improved experience for educational visitors, introducing a dedicated reception and information point, better storage, vibrant new classroom spaces, a new outdoor area and toilet facilities.



Sean Dick (Learning Operations Manager)

Sean manages the day-to-day running of our schools programmes and many of the education sector partnerships that support our work. His team develop and deliver educational workshops at the zoo, in schools and online, as well as contributing to resources and teacher training.



Charlotte Dale (Community Engagement Officer)

In 2022, Charlotte delivered one of the Nature Recovery Corridor's long-term engagement projects. During the project, she worked collaboratively with teachers and pupils to design green space improvements to benefit children's wellbeing and exposure to wildlife. She also delivered teaching sessions with children and their families to support learning about UK species.



Thanks to funding from the Green Recovery Challenge Fund and in collaboration with partners, we have been able to create and enhance 44 ha of wildlife habitats through our Nature Recovery Corridor project, including a new orchard, grasslands and restored ponds and wetlands on our own land near the zoo. These habitats will benefit species like the harvest mouse – surveys revealed over 60 nests after our successful reintroduction of the species onto the zoo estate 20 years ago.



Hollywood superstar Leonardo DiCaprio became a high-profile advocate of the work of the zoo and our partners in 2022 – praising our successful, collaborative efforts to save the rare golden skiffia fish from extinction in a series of social media posts.

The secret

250 camera traps were given to households in Chester as part of a citizen-science project working to map out the hedgehog population in the city for the first time. The data gathered could help conservationists form an action plan for the long-term protection of the much-loved species.



Thousands of free tickets to visit the zoo have been made available to charities, not-for-profits and community groups in the UK.

Our Charity Connections Scheme will see 5,000 people from a range of low-income groups and those who may have faced barriers to visiting the zoo previously visit the zoo, for free, to learn about our mission to prevent extinction.

The zoo is believed to have set a world record for the number of individual animals reintroduced to the wild from a conservation breeding programme with 42,000 Bermudan snails returned in a single translocation to Trunk Island in Bermuda. The total number of snails bred in Chester and returned to Bermuda now stands at 111,000 across both species.



In 2022, the zoo was awarded Kickstarter of the Year and Kickstart Employer of the Year at the Chamber of Commerce awards, recognising the work that the zoo is doing to ensure that careers in conservation are available to all.

life of the zoo

After several years of detailed scientific work, we published a groundbreaking publication on the impact of our Islands development on four of the iconic species that it supports (Sumatran Orangutan, Malayan Tapir, Malayan Sun Bear and Crested Macaque). This has revealed overall that the new habitats we have provided have been highly successful in allowing natural behaviours while providing excellent viewing opportunities for visitors.



A beer served in the zoo's Oakfield pub, The Oakfield IPA, uses ingredients specially grown at the zoo. Its distinctive flavour comes in part from banana leaves grown in our greenhouses.



Our new app, PalmOil Scan, enables shoppers to scan supermarket products and discover their sustainability credentials with regard to palm oil, allowing us all the chance to be responsible consumers when it comes to protecting the rainforest.



Q&A

Jamie Christon
Chief Executive Officer

Q. What do you think is the most challenging aspect of the zoo's strategy?

A. Apart from the obvious financial challenges of funding both the ambitious targets in the Conservation Masterplan and our physical development of the zoo, I'm acutely aware of the need to deliver a strategy that has a real impact in our mission of preventing extinction. A strategy also needs careful planning, but conservation needs change over time across regions of the world, and time is running out to make that change. Having a strategy that is fluid is vitally important.

Q. How is the strategy helping to shape legacy?

A. I've just mentioned impact. All of us want to see what Chester Zoo has done, or is doing, to allow nature to survive and thrive. We want to be proud of what this organisation can do in the world and how we can change lives and make the world a better place. It may seem like a fairy-tale story, but it's important to all of us that we can see a tangible effect of what we all do here.

Q. Have you fully recovered from being closed for such a long time during the COVID pandemic?

A. Yes. We saw visitor numbers recover really well in 2020, and 2021 was a stronger year for the zoo. What COVID has taught us is firstly how resilient we are, how much support we have from our visitors and members, and also how we need to future-proof our zoo to be able to look for funding from new sources in case something like COVID ever happens again.

Q. What's it like to be CEO of a zoo?

A. I can honestly say I've never woken up and not wanted to come to work in the 10 years I have been at the zoo. Each day is different. We're very non-corporate, which I love, and we genuinely all work together as a team to deliver our mission. It's an exciting job and I am very honoured to lead the team.

Q. Do you get to travel the world as part of your job?

A. It's really important to be able to see the work we do in the field and support our partners overseas. However, most of the conservation work we do is here at our home in Chester, so being part of the team here is equally important. As we grow our reputation in public affairs, being close to the heart of government in London is also vital and I spend a lot of time in the capital as well. When I do travel, I think really carefully about the carbon impact of what I'm doing. Remote conferencing has helped reduce my travel a lot over the last few years.

Q. Do you spend much time in and around the zoo?

A. Not enough. Juggling a busy diary is difficult, but I try and find time to see the zoo when I can. It's important to meet our visitors and also speak to staff in and around the zoo. I try and break a week up so that doing this is possible. It doesn't happen every week, but it's key to being a good leader.

Q. Have you always loved animals?

A. I spent a lot of my childhood on my aunty and uncle's dairy farm in North Yorkshire. Most weekends in the summer were spent milking cows, caring for pet lambs and herding sheep. From that came living with cats and dogs. Animals have always been in my life.

Q. You worked in airport management before the zoo, was that a big change?

A. Yes and no. There are a lot of similarities: large expanses of owned land, lots of visitors, retail, food and beverage, car parking, volumes of visitors, stakeholder management and security. However, there are a lot of differences as well – specifically our mission and our passion for nature and the environment.

Q. Who decides the names of newborn animals?

A. Normally our amazing keepers – they often have a theme for naming the newborns in their care. However, more recently, we've engaged with our visitors and members with a shortlist of names that they can vote on.



Q. What's your favourite part of the zoo?

A. It depends on the time of year, what I'm thinking about and sometimes the time of day:

- For excitement – our lemur walk-through is always engaging and full of life.
- For reflection – our sunken garden is a place of quiet time and thinking.
- For a break – the Oakfield provides a bit of our culture and good food and drink!

Case study – Public affairs – A year of influence

Having been the first UK zoo to develop a public affairs function, 2022 was a year of increased activity and growing influence among political stakeholders and in the major policy debates affecting wildlife. This area of work remains central in our efforts to achieve target six of our Conservation Masterplan and successfully influence change in five major policy areas for wildlife.

At the heart of this is our direct engagement with parliamentarians, civil servants and political advisors. During the year, we hosted over 30 visits at the zoo, ranging from regional MPs, politicians from across the UK with shared policy interests, and ministers and shadow ministers in key departments. These visits allow us to immerse stakeholders in our work and for them to experience first-hand the world-leading conservation efforts taking place across the zoo. Among the high-profile visitors in 2022 were the then Zoos Minister, Lord Zac Goldsmith (making his only official visit to a BIAZA zoo during his tenure as minister), and Speaker of the House of Commons, Sir Lindsay Hoyle. Alongside BIAZA, ZSL and RZSS, we also hosted a well-attended reception in parliament.

In a first for Chester Zoo, we had a high-profile presence at the main party conferences in 2022. The public affairs team and conservation education and engagement colleagues, as well as directors and trustees, staffed a stand at the Labour and Conservative conferences. Conservation Science and Policy Director Dr Simon Dowell spoke at two Chester Zoo sponsored fringe events, held in partnership with the Labour Environment Campaign and the Conservative Environment Network. Across the two conferences, we engaged with over 1,200 delegates, secured several media opportunities and successfully demonstrated what a conservation zoo can bring to society.

As well as building relationships with and lobbying political stakeholders, a central strand of our public affairs work is directly feeding into policy debates and processes, contributing to government consultations and calls for evidence. Throughout the year, we submitted evidence on a broad range of topics,





spanning issues such as new environmental targets, a UK nature recovery strategy and the Department for Education's sustainability and climate change strategy. A common theme, irrespective of the subject matter, is the highly collaborative nature of this work, which draws on the knowledge and expertise of colleagues from right across the zoo.

Similarly, we brief parliamentarians and their advisors in advance of debates to improve legislation. In 2022, this included coordinating a major response to significant regulatory changes for the UK zoo sector in the form of the Standards of Modern Zoo Practice and the Animal Welfare (Kept Animals) Bill.

Where there is a direct threat to wildlife, we are not afraid to speak out and challenge decision-makers. Notably, we are now members of Wildlife and Countryside Link and increasingly work in partnership with other NGOs to add our voice to campaigns designed to highlight potentially damaging policy decisions and protect nature.

2022 certainly proved to be a year of influence for Chester Zoo, marked significant progress towards achieving the policy goals within the Conservation Masterplan and provided the springboard for even more ambitious lobbying efforts in the year to come.

Our Public affairs work contributed to SDG 11 Sustainable cities and communities, SDG 12 Responsible consumption and production, SDG 13 Climate action, and SDG 17 Partnerships for the goals.



Our Public Affairs Advisors, Rob Comley and Cameron Stephenson, play a leading role in building awareness of our fight to prevent extinction among politicians, civil servants and policy makers. As well as regularly hosting MPs and Peers here at the zoo, they are frequent visitors to Westminster and Whitehall. Through their careful monitoring of the political landscape, they identify opportunities to harness the incredible expertise and experience of colleagues from across the zoo to help shape policy and legislation for the benefit of wildlife.

Our sustainable zoo

To achieve our mission of preventing extinction, it's essential that we address the global threat to biodiversity presented by climate change, waste and the overexploitation of natural resources. That's why we're taking action on sustainability at Chester Zoo.

In 2021, as part of our Conservation Masterplan, we set three sustainability targets focused on reducing our environmental impacts as an organisation over a 10-year period. They are:

- To be carbon net zero for our scope 1 and 2 emissions
- To work towards being a zero-waste operation
- To procure deforestation-free commodities in all major supply chains.



Solar PV installation at our Jubilee Toilets, installed in 2022.

In 2022, we built the foundations required to deliver sustainability at Chester Zoo, including:

- Appointing a Head of Sustainability to develop and lead our work on sustainability across the organisation
- Following a workshop with our Board of Trustees, we started work on the development of a Sustainability Policy and Strategy to structure our approach to sustainability moving forward
- Establishing internal governance structures, policies and procedures to embed sustainability into the organisation and oversee action on our three sustainability targets
- Providing training for our Directors and Senior Managers so they could better understand what sustainability means for Chester Zoo.



Our progress in 2022

Carbon net zero

In 2022, our scope 1 and 2 emissions were estimated to be 3,943 tCO₂e[†] (excluding methane emissions from our animals). This means we reduced our scope 1 and 2 emissions by 251 tCO₂e (6%) on a 2019 baseline year, where scope 1 and 2 emissions were estimated to be 4,194 tCO₂e (excluding methane emissions from our animals).

This year, we:

- Installed 87kWp of solar PV capacity, generating around 78,000kWh of energy to power our operations and saving 18 tCO₂e per year.
- Installed six air source heat pump systems (298kW total capacity) as part of a wider strategy to move away from using fossil fuels. As part of this, our new events venue, The Square, was transitioned completely off natural gas to all-electric, low-carbon heating, hot water and cooking solutions.
- Continued to transition to low-emission vehicles, with battery electric and hybrid vehicles now making up 18% and 13% of our road fleet respectively.

[†]3,926 tCO₂e of scope 1 and 2 energy-related emissions, as reported overleaf, plus 17 tCO₂e of emissions associated with refrigerants.

Zero waste operation

In 2022, we significantly improved the quality of data reporting on and management of our operational waste°. We disposed of 739 tonnes of operational waste, with 37% going to reuse or recycling and 63% being incinerated (waste to energy). From 2023 onwards, we'll be able to begin reporting trends in data to showcase our journey towards zero waste.

This year, we transformed our waste management facilities on site by installing a new Resource Recovery Centre. The new facilities have increased our ability to segregate waste, enabling us to increase the proportions of our waste successfully reused and recycled and reducing our use of incineration as a waste disposal mechanism.

°Currently, 'operational waste' excludes capital and maintenance waste, veterinary waste and herbivorous waste, which are managed outside of our operational waste management contract. We're working to include these in our reporting in future.



Compactors at our new Resource Recovery Centre.

Deforestation-free commodities

In 2022, we began working to understand the products we buy, the risks they might pose to forests and how we can work towards buying deforestation-free products in future. We also began a review of our procurement policy and procedures as part of our commitment to deliver sustainable procurement throughout the organisation.

This year, we:

- Hosted a Sustainable Supply Chain Day, opening up dialogue and collaborations with our key suppliers, with a focus on sustainable palm oil, deforestation-free commodities, waste and carbon.
- Initiated an audit of our major supply chains to identify where forest risk commodities are used in our operations and to investigate the quality of information available from our supply chain on forest risk commodities.

Sustainable Supply Chain Day at Chester Zoo (September 2022).



Energy consumption and associated greenhouse gas emissions

Here we report on our energy consumption and associated Greenhouse Gas emissions, as required under Streamlined Energy and Carbon Reporting (SECR) for the reporting period 1 January to 31 December 2022.

Energy consumption

Chester Zoo's energy use, within the United Kingdom, is set out below.

	2022	2021*
Energy usage	20,122,581kWh	18,943,895kWh

Greenhouse gas emissions associated with energy use

Chester Zoo's greenhouse gas emissions, associated with its energy use within the United Kingdom, are set out below.

Emissions source	Scope	2022 emissions	2021 emissions*
Gas consumption (gross CV)	1	1,638 tCO ₂ e	1,537 tCO ₂ e
LPG consumption (gross CV)	1	306 tCO ₂ e	302 tCO ₂ e
Consumption of oil products (kerosene, red diesel & white diesel)** (gross CV)	1	366 tCO ₂ e	366 tCO ₂ e
Fuel use in owned fleet (gross CV)	1	72 tCO ₂ e	49 tCO ₂ e
Purchased electricity	2	1,544 tCO ₂ e	1,759 tCO ₂ e
Fuel used in personal vehicles used for business travel (net CV)	3	5 tCO ₂ e	1 tCO ₂ e
Total energy emissions		3,931 tCO ₂ e	4,014 tCO ₂ e

*2021 emissions and kWh were calculated using the 2020 conversion factors, as 2021 factors were not available until January 2022.

**Oil products are used for heating and operational vehicles on site. Figures contain a small usage of fuel by equipment on site that cannot be disaggregated in the data.

The following table shows the greenhouse gas intensity ratios, based on the emissions data above, and the equivalent ratios for 2020 and 2021 for comparison.

	2022	2021***	2020***
kgCO ₂ e per zoo visitor in the year	2.14 kgCO ₂ e	2.51 kgCO ₂ e	2.64 kgCO ₂ e
kgCO ₂ e per acre of the total zoo estate	6,731 kgCO ₂ e	6,873 kgCO ₂ e	5,354 kgCO ₂ e

*** In both 2020 and 2021, the zoo was closed to the public for a number of months due to COVID-19 lockdowns.

Methodology

The greenhouse gas emissions reported above have been calculated using the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard and the UK Government GHG Conversion Factors for Company Reporting. The organisational boundary has been set around the operational

activities within the UK and at our operational zoo estate. We're continuously improving our reporting and data, so our intensity metrics presented above have been refined to provide a direct comparison between years, based on the emissions sources in the table above.

Energy efficiency actions

On earlier pages, we presented the activities undertaken to progress towards our target to be carbon net zero in our scope 1 and 2 emissions. In addition, this year, we continued to invest in improving energy efficiency on site, including on LED lighting, insulation and measures to reduce heat loss in animal buildings.

Next steps

Looking forward, we recognise energy use represents only part of the environmental impact we might have as an organisation. We are working to improve our reporting, including understanding our wider greenhouse gas emissions and our wider environmental impact as an organisation.

We are also developing our strategy for delivering sustainability, helping us to drive forward action to address our greenhouse gas emissions and wider environmental impact as an organisation. This will include further investment in renewable and low carbon technology, increasing reuse and recycling rates and collaborating with supply chain partners on carbon, waste and deforestation-free commodities.



Jennifer Kelly
(Head of Sustainability)

Jennifer is leading our strategy for sustainability and the delivery of our targets to be net zero carbon by 2030 towards a zero waste operation by 2030, as well as to

procure deforestation-free commodities from our major supply chains. She works to ensure the zoo is building towards a sustainable future, aligned to global standards and legislation.

She also helps advise teams across the zoo on delivering for sustainability through their work, from the advice we give to government and the engagement with our visitors to our developments and the products we purchase.



Cotton-top tamarins are now under severe threat in their dwindling forest home of northern Colombia. In 2022 an infant was born at the zoo – weighing just 40g at birth, a tiny individual but a mighty addition to zoos' assurance population of this threatened species

Working in partnership

We couldn't achieve our mission of preventing extinction without working in partnership to both drive influence and drive change on the ground. We work with partners across all our six Conservation Masterplan targets, as well as to help raise the charitable funds to make them happen.

Here is just a snapshot of the way we work in partnership across the different areas of the charity.



Working to influence the conservation agenda

The zoo works with a range of partners with common goals in order to influence policy and political agendas.

In 2022, we joined the Wildlife and Countryside Link, the UK's foremost coalition of wildlife and environment charities. We are also part of The All Party Parliamentary Environment Group, through which we aim to strengthen the influence of parliamentarians on environmental issues and provide a forum for debate, alongside other leading environment and conservation NGOs.

In addition, as key members of EAZA and BIAZA, we are active in terms of lobbying and influencing alongside other leading conservation zoos and look to support the Zoos and Aquariums All Party Parliamentary Group.

Working to drive change across the world

We work with 62 partners in 19 countries across the world to drive real and lasting change on the ground. Through this, we work with key funders such as the Darwin Initiative, as well as with internationally renowned NGOs such as the Wildlife Trust of India in the Assam region of India and HUTAN in Borneo.

We work closely in partnership with the IUCN (International Union for Conservation of Nature) across a number of areas. We fund the Chair's office for the Species Survival Commission as well as sitting on the board of the Conservation Planning Specialist Group. We are also heavily involved in a number of specialist groups, for example the Pangolin, Asian Wild Cattle and Butterfly Specialist Groups.



Working to drive scientific breakthroughs

We work across a great number of partnerships in order to drive innovation for conservation. For example, we work on the board of Nature's SAFE, a biobanking organisation looking to preserve options for species in the future.

We also work with a number of universities nationally, for example the University of Liverpool, with whom we have developed new science innovation in health monitoring, entering into the field of metabolomics.

Finally, we have joined the Cheshire Science Corridor and will be working with partners regionally in order to collaborate on key projects moving forward.



Working to educate the conservationists of the future

We work with partners across the education spectrum, with education being a key pillar of our charitable mission.

We work with partner schools across the region to deliver our outreach programmes – giving students and families who might not otherwise get such an opportunity a chance to connect with nature and conservation.

We have also recently partnered with Chester University to launch a PGCert in Conservation and Sustainability Education. Finally, our Youth Board were asked to partner with the Department for Education to consult on their climate and sustainability education strategy.

Working with partners to drive change locally

On a local level, we work closely with CWAC Council and the LEP to drive the conservation agenda on our doorstep. We work with councillors to help lobby on key issues and also to drive further partnerships, for example with the Cheshire Sustainable Food Places Network.

A key ongoing initiative for the zoo is our Nature Recovery Corridor, in which we work with Canal and River Trust, Land Trust, Sustrans, Cheshire West Communities Together, Cheshire West and Chester Council, as well as with the Green Recovery Challenge Fund, who provide funding for the project. The project has also engaged a number of other community and education partners.



Working with partners to drive systemic behaviour change

In addition to helping empower our two million visitors a year to live more sustainably, we work with partners globally to tackle key issues. A current focus for the zoo is the use of sustainable palm oil. In addition to working with local groups to develop sustainable palm oil communities, in 2022 we worked with WAZA, Cheyenne Mountain Zoo (Colorado, USA) and Auckland Zoo (New Zealand) to develop and launch the Palm Oil Scan app, helping consumers make sustainable choices in their everyday lives.

Working to fund our mission

The zoo is extremely grateful to the businesses, trusts, foundations and individuals that we work with to help fund our mission of preventing extinction. We work with a range of corporate partners, such as Urenco, Ferrero, Co-op, Saputo and Mowgli MBNA to fund key areas of our work, such as our new science labs and specific fieldwork in India and Borneo. We also receive support from a range of foundations and government grants to fund our scientific and educational work as well as our field programmes, for example: Chester Bluecoat Charity, The Whitley Fund for Nature, The Darwin Initiative (a UK government grants scheme) and the government's Green Recovery Challenge Fund, which is developed by Defra and its arm's-length bodies.





Financial review 2022



I am pleased to provide a review of the zoo's financial performance for 2022, a year in which the zoo's income grew to more than £50m for the first time in the zoo's history.* Our expenditure on charitable activities also continued to grow, and we were able to restart significant capital investment in the zoo through our Strategic Development Plan.

Looking forward to 2023, we will need to carefully manage the ongoing inflation in our cost base. While we will have to pass many of these cost increases on to our visitors and members, to enable us to continue to deliver our charitable activities, we are very much focused on ensuring the zoo remains a value-for-money day out. Through schemes such as free school visits and community connections, we are ensuring that a visit to the zoo is within the reach of all.

Liz Carnie, Corporate Director

*Excluding exceptional income – in 2019, exceptional income of £7.7m from the insurance claim relating to the Monsoon Forest fire pushed income over £50m.

In summary

2022 was the first year without significant disruption from COVID-19 since 2019; however, the performance of the zoo was impacted by the return to overseas travel and by the cost-of-living crisis.

Total income for 2022 was £50.7m, an increase of £5.5m from 2021's income of £45.2m, which had been impacted by the final COVID-19 lockdown. The growth in income was driven by zoo visitor numbers, secondary spend and an increase in the number of Chester Zoo members, as well as grant and legacy income.

Expenditure for 2022 was £49.2m (2021: £44.3m), an increase of £4.9m as activities returned to a more normal level and increasing inflation started to have an impact on operating costs.

At the end of the year, we reported a net increase in funds of £1.4m (2021: £0.9m) and after spending £6.4m on capital projects, we ended the year with net cash of £5.4m (2021: net cash of £2.7m). All funds are used for our charitable mission of preventing extinction.

Incoming resources

The majority of Chester Zoo's income comes from the zoo's visitors and members in the form of admissions and other charges.

Visitor numbers for 2022 were 1,848,634 – an increase of 15% on 2021 when the zoo had been closed for just over three months at the start of the year during the final COVID-19 lockdown. While an improvement on the previous year, visitor numbers were not quite at the levels expected. In common with many other visitor attractions, we saw a fall in visitors during springtime due to increased overseas travel, and then from summer onwards, our visitors were impacted by the cost-of-living crisis.

However, during 2022 we saw our membership numbers grow again, exceeding pre-COVID levels, and we ended the year with 137,978 members (2021: 130,178). In 2022, 33% of visits were made by members (2021: 29%).

School visits returned to pre-COVID-19 levels and engagement with on-site teaching sessions increased.

In the summer, we opened the zoo to visitors during the evening for the first of our Into The Night events and over 30,000 visitors came to see the zoo after hours. In November and December, our winter Lanterns event attracted 124,000 visitors to the zoo (2021: a record 131,000 visitors), which was an excellent





performance given the ongoing economic challenges.

In 2022, income from grants increased to £0.5m (2021: £0.4m), which included funds from the Green Recovery Challenge Fund for our Nature Recovery Corridor work.

Total income from these charitable activities, which includes admission fees, membership income and income from events and experiences, was £33.0m (2021: £30.5m).

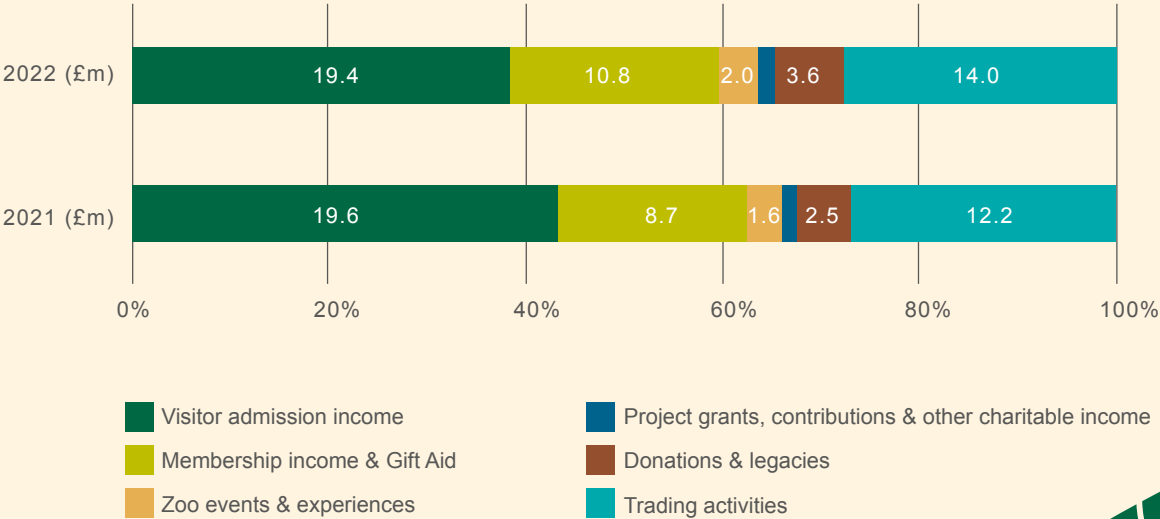
As a registered charity, Chester Zoo generates voluntary income from visitor donations (and Gift Aid thereon), animal adoptions, legacies, grants and other donations. Donations from zoo visitors and related Gift Aid increased to £1.7m (2021: £0.9m)

as we saw a change in visitor behaviour, with an increasing proportion of tickets being bought at the gate rather than online, with those buying a ticket in person more likely to donate.

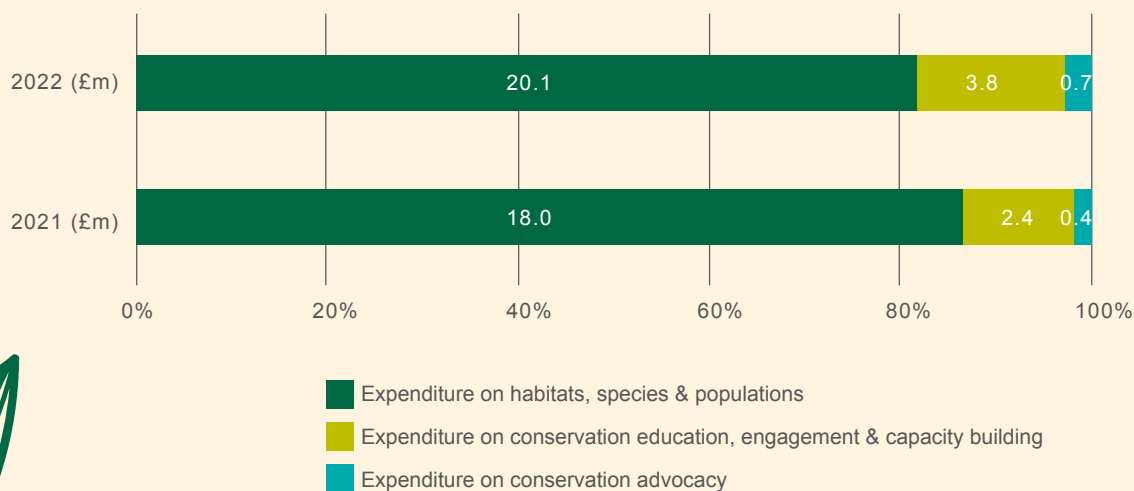
Income from animal adoptions, legacies and other donations increased to £1.9m (2021: £1.1m), with the receipt of a number of generous legacy gifts for which we are very grateful.

The zoo’s trading subsidiary, Chester Zoo Enterprises Limited, which provides retail and food & beverage offerings across the zoo site, had a turnover of £14.0m in 2022 (2021: £11.9m), recovering from 2021 when it was impacted by the three-month closure.

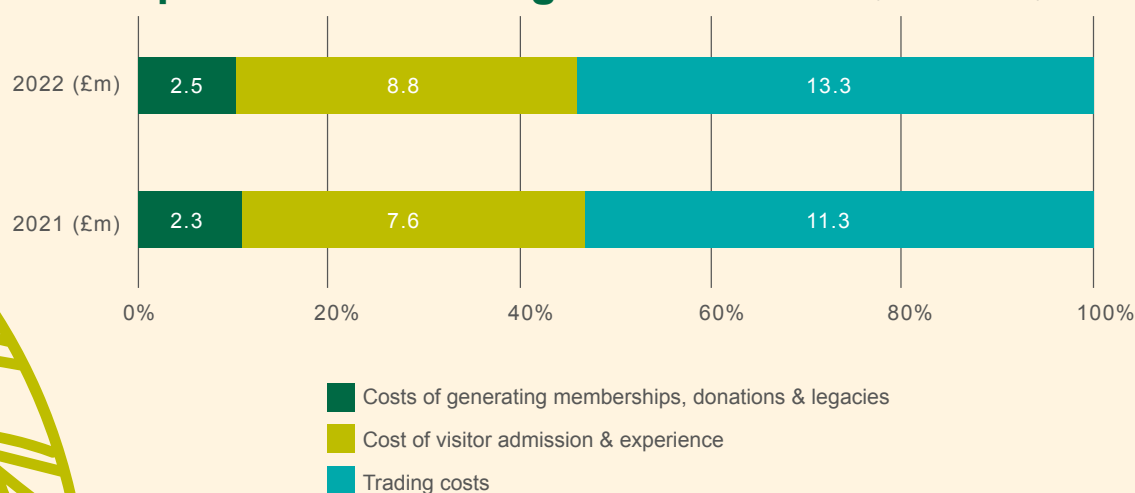
Total income £50.7m (2021: £45.2m)



Expenditure – charitable activities £24.7m (2021: £20.8m)



Expenditure – raising funds £24.6m (2021: £21.2m)



Resources expended

In 2022, Chester Zoo spent £49.2m (2021: £41.9m). These figures do not include capital expenditure or, in the case of 2021, the exceptional Defined Benefit pension scheme cost of £2.3m.

With activities having returned to normal pre-COVID-19 levels, combined with increasing inflation, resources expended on our charitable activities increased to £24.7m (2021: £20.8m).

In 2022 we spent £24.6m raising funds (2021: £21.2m), with £2.5m spent on generating membership income, donations and legacies (2021: £2.3m). The costs of visitor admission and experience at the zoo rose to £8.8m (2021: £7.6m).

With its significantly increased income, Chester Zoo Enterprises had trading costs of £13.3m (2021: £11.3m), excluding rent paid to its parent company The North of

England Zoological Society of £0.7m (2021: £0.5m). Chester Zoo Enterprises made an operating surplus of £0.02m in 2022 (2021: £0.4m).

By far the biggest element of operating expenditure (2022: £21.0m, 2021: £17.2m) is the payroll cost for our employees. Staffing levels are now higher than pre-COVID-19 with investment having been made in a number of teams in support of the longer-term Conservation Masterplan and Strategic Development Plan. Our average Full Time Equivalent (FTE) headcount for 2022 was 608 compared to 529 in 2021, 502 in 2020 and 618 in 2019.

Capital expenditure

In 2022 work restarted on the zoo's Strategic Development Plan and £6.4m was invested in the zoo estate (2021: £2.3m). Works undertaken included the development of The Square (see case study on page 42), investment in sustainability



through solar PV installations and work on staff facilities and a number of animal habitats, including Tamandua. We also invested in the early stages of work on a Snow Leopard habitat, which will open in 2024; refurbishment of our Learning Centre, which will be complete in spring 2023; and Heart of Africa & The Reserve, which are planned to open in 2025.

Borrowings, investments and reserves

It is the general policy to apply towards its charitable objectives as much funding as it reasonably can to avoid accumulating excessive cash reserves. Where considered appropriate, borrowings are undertaken to fund elements of significant capital projects.

In setting its cash reserves policy the Board of Trustees takes account of Chester Zoo's continuing financial commitments in terms of staffing and overheads including the costs of maintaining the animal and plant collection and funding its charitable activities together with any contractual commitments for capital projects. The Board also considers the risk that the zoo's income for any particular year may be impacted by a number of factors outside the management's control, such incidents that could close all or part of the zoo to visitors for prolonged periods, competition from other visitor attractions, social trends and recession. The experience of COVID-19 provided evidence of the impact of such an event.

Throughout 2022 Chester Zoo maintained minimum available cash reserves of £4.4m, which were supplemented by a minimum £2.2m of undrawn committed borrowing facilities. Such reserves are sufficient for the zoo to operate without significant curtailment of its activities for a period of up to three months.

At the end of 2022 Chester Zoo had borrowed £0.8m and had £6.1m of cash reserves, including £0.4m of cash reserves held in escrow for the defined benefit pension scheme (2021: £2.0m borrowings and £4.8m of cash reserves). At 31 December 2022 the borrowing facility comprised a £22m unsecured revolving credit facility, which is in place until April 2025. At 31 December 2022 Chester Zoo had access to £21.8m of undrawn borrowings and £5.7m of cash reserves (excluding the escrow account).

Going concern

The Trustees of the Charity and group have adopted the going concern basis of preparation for the financial statements. The Trustees have arrived at this opinion after reviewing budgets and predictions, cash requirements, financing facilities and capital resources for the period to 31 May 2024. They are satisfied that the Society and group is able to adequately fund its operations for the foreseeable future. Refer to the going concern accounting policy on page 73 for further details.

Pensions

Chester Zoo's defined benefit pension scheme was closed to future accrual in 2012 and in 2021 agreement was reached to enter into a buy-in policy with Aviva which fully matches the scheme liabilities, and a final contribution of £2.1m was made in 2021. In December 2022 the formal winding up of the scheme was announced and is expected to be completed in 2023. A balance of £0.4m remains in the escrow account which will be used to fund the wind-up of the scheme and any excess fund are then expected to be released back to the zoo.

Chester Zoo operates a defined contribution scheme which is open to all employees. For permanent employees who contribute 3% or more, the zoo 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 specific capital projects and conservation activities. Unrestricted income funds may be designated or freely available for Chester Zoo's general charitable purposes.

After setting aside restricted income funds, we keep a minimum cash deposit of £4.4m set aside as a free reserve to enable the zoo to operate for two months in the event of an unforeseen and enforced closure. The balance of available funds at the balance sheet date are designated as follows:

- To the defined benefit pension scheme, with funds held in escrow to cover the wind-up of the scheme in 2022.
- 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.

The Trustees do not consider it necessary to retain income in respect of the Chester Zoo'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 2022 Chester Zoo had total funds employed of £63.9m (2021: £62.4m) of which £0.9m (2021: £1.1m) were restricted, £4.4m were free (2021: £3.8m) and the balance of £58.6m (2021: £57.5m) were designated.



Case study – Growing income – The Square

In order to achieve its mission through the delivery of the Conservation Masterplan and Strategic Development Plan, Chester Zoo needs to be financially successful – growing its income to support its plans. As part of the Chester Zoo Strategy 2023–2031, a 10-year financial plan sets out the zoo's targeted growth in income from both existing and new activities.

As part of the plan, an increase in income will be achieved through:

- Growth in admissions, memberships and secondary spend
- Increasing fundraising income from donations, legacies, project grants and external contributions
- Growth in income from zoo events and experiences
- Launch of the zoo's first overnight stay offer, The Reserve.

To support the growth in events income, development is underway to transform an existing Grade II listed stable yard into a new wedding, conference and events venue called The Square.

The building was once home to some of the first animals to live at the zoo when it was opened by founder George Mottershead in 1931 and was hidden away and not accessible to the public. It has previously been used for storage, maintenance offices and workshops, and so the opportunity to sensitively and sustainably restore the area will give the historically important building a new lease of life while also creating an additional income generation opportunity.

The Square is due to open in spring 2023 and features an impressive gated entrance, its own large private courtyard, exposed brick walls, vaulted rafters and large windows overlooking the zoo's botanical gardens, as well as a host of preserved historical features. The venue will have a total capacity of 380 people, giving the zoo the ability to accommodate larger-scale events as we move through the decade.

The £4 million project has been three years in the making, involving multiple teams from within the zoo supported by Donald Insall Associates (architects on the existing building), Read Construction (build) and RLB (contract administration and cost management). The venue will soon be hosting special events, with corporate events and couples able to tie the knot in the unique meeting spaces surrounded by 29,000

animals. Hopefully, The Square will go on to stage important global summits and political conferences centred on wildlife conservation as part of the zoo's efforts to protect highly threatened species and the natural world.

It is expected that annually the venue will grow income from events from £0.5 million in 2022 to £1.7 million by 2025 and £2 million by 2028. Income generated by each and every occasion that takes place at The Square will contribute to our charitable mission and help us secure a brighter future for wildlife on our planet.



Our work with The Square contributed to SDG 8 Decent work and economic growth; SDG 11 Sustainable cities and communities



Simon Lockhart

Simon is Head of Food & Beverage. With a multi-faceted background in the hospitality industry, he has used his experience to work closely with the project team to deliver a unique, world-class events venue. The successful delivery of The Square is the next stage of the long term strategy to diversify our commercial opportunity as well as radically enhance Chester Zoo's reputation for quality hospitality service.



Kim Halliday

Kim is the senior project manager on the scheme and has responsibility for the delivery of the project. Her role includes managing client and stakeholder expectations, controlling costs, managing change control, monitoring the build quality and driving the programme. Kim coordinates all aspects of the project, including the main contractor works and direct trades such as kitchen installation and audio-visual install. She reports monthly to the project steering group.



Risks and uncertainties

The Trustees of Chester Zoo have a risk management strategy, which sets out responsibilities for risk management across the organisation, the 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.

Through maintaining a risk register, Trustees actively review the major risks that Chester Zoo faces on a regular basis against the relevant mitigating internal controls and actions being taken to manage risk. By ensuring cash reserves are kept at agreed levels and by putting in place appropriate insurances, Trustees are satisfied that there will be sufficient resources in the event of most adverse conditions.

The effectiveness of the risk assessment procedures is reviewed by the Audit & Risk Management Committee. 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 overall risk management process.

There are over 20 risks identified within the risk register. The risks identified by the Trustees as likely to have the most significant impact on Chester Zoo are set out in the following tables.



Risk

Increase in cost and shortage of availability of utilities and other commodities

Significant inflation, particularly in respect of wages, utilities and construction materials, is driving operating costs upwards.

Potential impact

Increasing costs will impact Chester Zoo's financial stability and ability to deliver its charitable activities and invest for the future through the Strategic Development Plan.

The inflationary increases will also impact visitor numbers and the associated spend at the zoo.

How do we manage the risk?

Annual operating budgets and project budgets include allowances for anticipated cost increases and include contingencies.

A longer-term business plan sets targets for growth and diversification of income streams to support activities.

The Strategic Development Plan and Conservation Masterplans span a 10-year period and allow for some change in pace of delivery if resources are constrained.

Commitments made to reduce our carbon footprint and waste generation are focused on reducing usage by improving existing operations and infrastructure, and having sustainability at the heart of future plans and developments.

Change in the perceived risk in the last 12 months

Increased risk





Risk	
Major incident	
That there is a major incident that threatens human or animal safety and/or risks Chester Zoo's assets and reputation. An example of this could be a dangerous animal escape, an act of terrorism, an outbreak of disease or a cyber-security attack.	
Potential impact	
Such an incident could cause significant financial loss and significantly risk our ability to operate in the future. Chester Zoo relies on visitors, members and donors for the majority of its income and therefore keeping the zoo open and welcoming visitors is key to financial sustainability.	
How do we manage the risk?	
Chester Zoo has in place documented risk assessments, emergency procedures and business recovery plans. Regular practice drills are undertaken, consulting with emergency services. A number of independent audits take place each year to review and check compliance with internal policies, procedures and controls. A schedule of insurances is renewed annually by the Audit & Risk Management Committee. A cash reserve is held to mitigate any period when the zoo is closed. The zoo's in house health and safety team report to the director team monthly, and submit a report to Trustees for each Board meeting where Health and Safety is a recurring agenda item. They also present annually to the Audit & Risk Committee and to the Board.	
Change in the perceived risk in the last 12 months	
Decreased risk	

Risk	
Reputation of zoos	
If the reputation of zoos in general is undermined, leading to a change in public sentiment, or if lobbying from anti-zoo organisations leads to significant restrictions on how zoos can operate.	
Potential impact	
A significant change in public perception of zoos could significantly impact Chester Zoo's income from visitors. Changes in legislation could mean that we have to significantly change the way the zoo operates or the collection that the zoo holds, potentially reducing the impact Chester Zoo can have in preventing extinction.	
How do we manage the risk?	
Chester Zoo regularly talks publicly about its role as a world-class zoo with the highest standards in animal welfare and about the impact of its conservation work, both within the zoo and in the field, to achieve its mission of preventing extinction. Chester Zoo staff work closely with and hold positions in a number of umbrella organisations representing zoos, animal welfare and conservation, striving to continually improve standards in husbandry. Our Public Affairs team work with a number of stakeholder groups to communicate the approach to conservation and the impact that the Charity's activities have. We also regularly research public sentiment in this area.	
Change in the perceived risk in the last 12 months	
Decreased risk	

Risk**Recruiting, developing and looking after the health & wellbeing of our employees**

Failing to be an attractive employer, to bring relevant skills into the organisation or to look after our employees through providing a safe working environment with opportunities to train and develop.

Potential impact

People are key to delivery of our mission and if we are unable to recruit and retain an appropriately skilled and engaged team, then delivery of our strategy and mission will be compromised.

How do we manage the risk?

All of our employees have a clearly defined job role and we have a clear and transparent job grading process, which is independently reviewed. All staff undertake a detailed induction and have access to both mandatory and optional training each year.

All employees take part in an annual performance and development review, which helps determine training needs. In 2022 we invested in accredited leadership training for 47 senior managers and 110 managers took part in Mental Health in the Workplace training.

Our Staff Association, comprising representatives from across the organisation, meet regularly with the executive directors to discuss matters impacting staff. An annual staff survey provides insight into engagement levels and what is important to our people.

We have an internal occupational health resource and a health and safety team to support staff, and systems are in place for staff to report issues and concerns.

In 2022, we continued to run activities to support staff under the four pillars of mental, physical, social and financial wellbeing. We also rolled out a programme of improvements to staff facilities, which will continue in 2023.

Change in the perceived risk in the last 12 months

Increased risk

**Risk****Strategic Development Plan delivery**

Delivery of the Strategic Development Plan is impacted by increases in cost and/or a lack of materials or available resources.

Potential impact

Delivery of the zoo's Strategic Development Plan is key to ensuring future income from visitors. Rising construction costs and shortage of materials may delay delivery of projects.

Ongoing development of the site causes disruption to the visit and may negatively impact visitor experience.

How do we manage the risk?

Budgets for all strategic development projects are developed with both in-house resources and external specialists.

All major projects are put out to tender with a minimum of three tender returns required for each project to ensure value for money is achieved.

Regular reviews of project status, cost estimates and contingencies are overseen by steering groups and the Strategic Development Committee.

Project steering groups monitor spend in all projects undertaken. The Charity's cash flow is regularly reviewed to ensure projects are delivered within the financial constraints of planned project budgets and resources available.

In years with significant construction work, ongoing investment is made in programming to enhance the visitor experience.

Change in the perceived risk in the last 12 months

Increased risk





Ploughshare tortoise, *Astrochelys yniphora*.
One of the most threatened tortoises on the planet. A sudden increase of relentless poaching for the illegal wildlife trade between 2015 and 2018 left the ploughshare tortoise possibly/nearly functionally extinct in the wild.

Redefining the role of zoos in society

Conservation zoos like ours make a substantial contribution to society, both in terms of our crucial role in global conservation and in the other social benefits that we provide to our communities and stakeholders.

Since the 1960s, the traditional view of zoos has been encompassed by the so-called 'four pillars' of conservation, education, research and recreation, but we believe this approach no longer adequately encompasses the complexity of a modern zoo. The 'four pillars' approach sees each pillar as separate from the others, whereas we now know that an integrated approach is needed to find solutions to the urgent biodiversity and climate crises that we face.

The inadequacy of this way of thinking has become apparent in our conversations with politicians and policy-makers through our public affairs work, so we have been seeking a new way of presenting the role and value of a modern zoo.

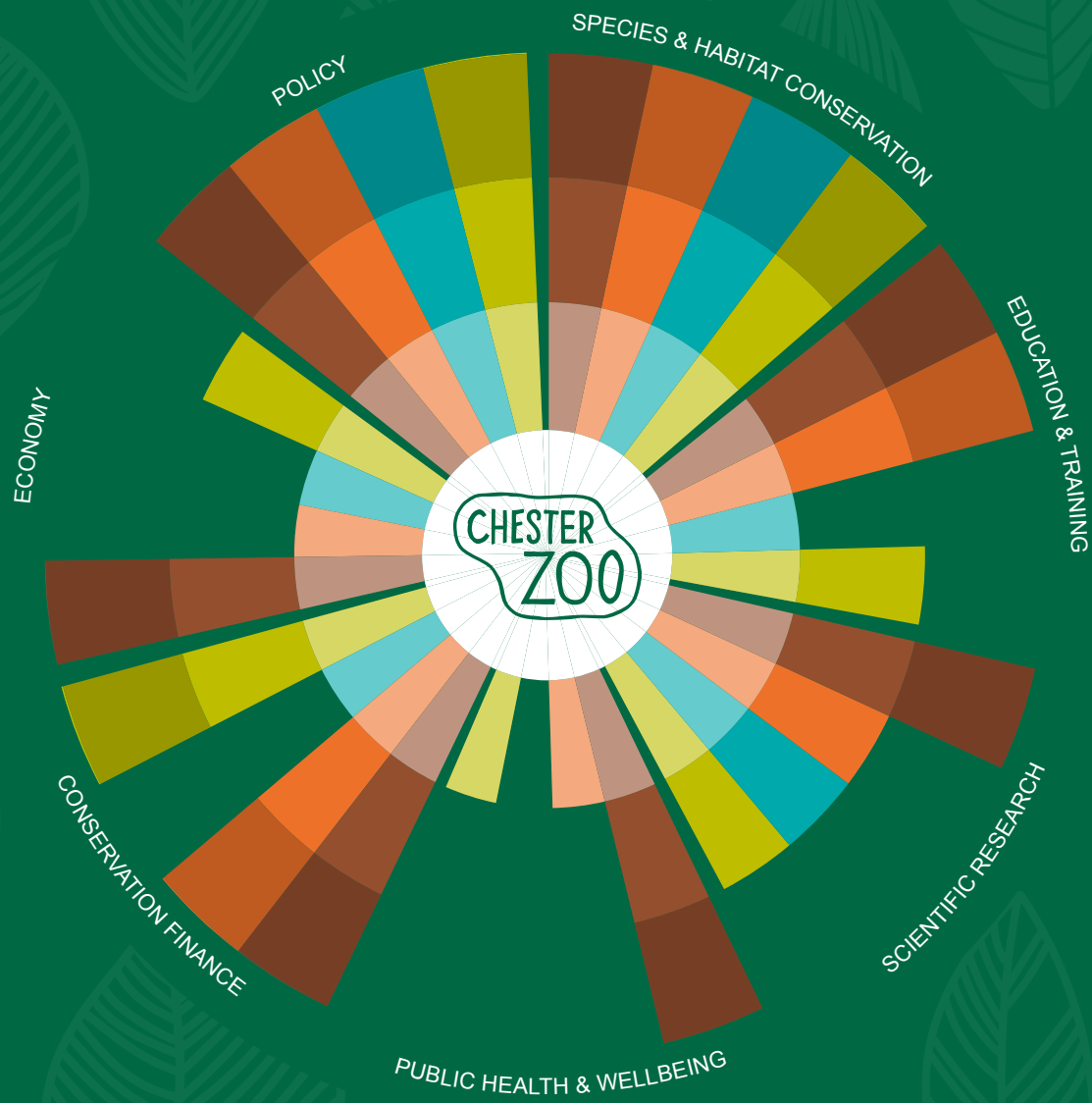
Our scientists have developed a new approach that encompasses the full range of 21st-century zoo functions, which we are calling our 'Sphere of influence' (see diagram). Crucially, these are influential to both species and society at large and cover areas such as human health and wellbeing as well as global species conservation. Along with this, we also wanted our new model to be practically useful for zoos and aquariums worldwide, so we have created a framework that will enable zoos to determine where they sit within the sphere of influence and how they might grow to expand this in the future. In this way, we hope that zoos will be able to use our model to evaluate their individual contributions to species and society.

This work has resulted in a paper, 'The value of zoos for species and society: The need for a new model', which was published in the scientific journal *Biological Conservation* and can be accessed freely on www.sciencedirect.com or via the QR code below. It has already generated very positive feedback from organisations such as the World Association of Zoos and Aquariums (WAZA) and the International Union for Conservation of Nature (IUCN). In 2023 we will be refining the model and encouraging zoos and aquariums globally to adopt it.



Scan here to read the full paper.

Zoo sphere of influence



Local	Low	Medium	High
National	Low	Medium	High
Regional	Low	Medium	High
Global	Low	Medium	High

Case study – New zoo arboretum started in honour of her late Majesty Queen Elizabeth II

November saw the very first planting of trees into an area of the zoo chosen to become our new arboretum to safeguard rare and threatened tree species. The need to manage populations of threatened tree species *ex-situ* was highlighted late in 2021 with the publication of the 'State of the World's Trees' report from BGCI (Botanic Gardens Conservation International), which highlighted that 30% of all tree species are threatened with extinction (a staggering 15,000+ species!).

The zoo has had a long history of working to conserve trees locally with species like the black poplar and Llangollen whitebeam and internationally as part of our programmes such as on the islands of Mauritius and Borneo. The establishment of a dedicated arboretum at Chester Zoo allows us to develop our temperate tree conservation work and in the future, as it develops, allows our visitors and community to enjoy another public space of the zoo in a similar fashion to the Nature Reserve.

This project was planned to coincide with the national campaign: The Queen's Green Canopy (QGC). This unique tree planting initiative, created to mark Queen Elizabeth II's Platinum Jubilee in 2022, invited people from across the United Kingdom to 'Plant a Tree for the Jubilee'. Sadly, by the time the first trees were planted in November 2022, her Majesty had passed away. The arboretum, though, will be there for generations to come – to visit and enjoy as a fitting tribute to her late Majesty Queen Elizabeth II's Platinum Jubilee.

The very first trees in the new arboretum were planted by His Majesty's Lord-Lieutenant of Cheshire, Lady Redmond MBE, in November 2022. A selection of native UK whitebeams was planted, some of which are amongst the rarest and most threatened trees in the UK, including the Ship Rock whitebeam (*Sorbus parviloba*), a critically endangered tree currently known from only a single specimen in the Forest of Dean, and Rich's whitebeam (*Sorbus richii*), another critically endangered tree only occurring close to Bristol on the Severn Estuary with just 41 individuals remaining. It will eventually be opened to the public once it has matured and more trees are planted.



Phil Esseen (Head of Plants)

Phil curates the plant collections and leads the teams that manage the plants, gardens and landscape features across Chester Zoo and its estate. For decades the zoo has propagated and reintroduced threatened UK trees, including Black poplar and Llangollen whitebeam. Hundreds of threatened trees have been grown in the zoo nursery and reintroduced to the wild or sent to other botanic gardens. Phil helped develop plans for the arboretum, where threatened tree species from the UK and around the world can be grown to provide a living conservation resource and showcase the work the teams are doing to save threatened trees.



Mark Hargreaves (Projects Team Manager)

Mark leads one of the three plant teams at the zoo, the 'Projects' team. His team is responsible for managing much of Chester Zoo's wider estate – the land that is not developed into the zoo but instead managed for browse for the animals, agriculture and biodiversity. They also carry out a lot of the tree management and landscaping within the zoo, especially the development of new habitats. The layout of the new arboretum will be carried out by our plant teams, with the Projects team carrying out the landscaping that will make the arboretum eventually accessible to our visitors.



Our work on the new arboretum contributed to SDG 13 Climate action and SDG 15 Life on land.



Lady Redmond MBE, His Majesty's Lord-Lieutenant of Cheshire, visited the Zoo in November 2022 to plant the first trees in our new arboretum. Located near the main car park, the arboretum will incorporate threatened tree species from UK and around the world, and will be open to the public in a few years' time when it is fully planted.



Chester Zoo leads the *ex-situ* programme of conservation of four terrestrial land snails from Deserta Islands. These critically endangered species are each restricted to a single location with fewer than 100 mature individuals and are currently on the brink of extinction because of the decline and fragmentation of their habitat as a result of feral goats.



Scan to find out more
about our structure
and governance.

Governance

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Governance

Chester Zoo – Who we are and what we do

The North of England Zoological Society (“Chester Zoo” / “the Charity” / “NEZS”) is a registered charity (Number 306077) and a company limited by guarantee (Number 00287902), regulated by its Memorandum and Articles of Association. Its principal and registered office is Cedar House, Chester Zoo, Caughall Road, Upton, Chester CH2 1LH.

The Charity owns and operates Chester Zoo and its charitable objects, as set out in its memorandum and articles of association, are:

- To promote the conservation of the physical and natural environment by promoting biodiversity.
- 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 corporate structure





Some of our Trustees, listed on page 56.

Trustees and executive directors

The Board of Trustees, as a body of charity trustees and as directors for the purposes of company law, have responsibility for the activities of Chester Zoo.

The Trustees manage the business of Chester Zoo and hold it “in trust” for current and future beneficiaries by:

- Ensuring that there is a clear mission and strategic direction, in line with the charitable objectives, and that Chester Zoo is focused on achieving these
- Being responsible for the performance of Chester Zoo, its employees and its culture
- Ensuring that Chester Zoo complies with legal and regulatory requirements
- Acting as guardians of Chester Zoo’s assets, both tangible and intangible, taking all due care over their security, deployment and proper application
- Ensuring that Chester Zoo’s governance is of the highest possible standard.

The Board of Trustees delegate the day-to-day management of Chester Zoo’s activities and the implementation of the

strategic plan to the executive director team, led by the Chief Executive Officer.

Trustees act on advice and information provided by the executive director team and, where appropriate, take independent external professional advice.

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 Chester Zoo, 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 15 months from being appointed.

The Trustees hold at least six formal meetings each year, together with an Annual General Meeting. The Chair and Vice Chair 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.

The Board of Trustees, all of whom had been elected or co-opted by the membership at the date of this report and serving during the year, were:

Name	Pictured	Date
Malcolm Ardron – Chair	6	Joined 24/11/06
William Beale	2	Joined 06/02/15
Jen Carter	3	Joined 25/06/19
David Chinn	-	Retired 06/01/23
Edwin Christmas	-	Joined 27/06/17
Penny Coates – Vice Chair	-	Joined 27/06/17
Sandra Donnelly	-	Retired 09/06/22
Professor Rhys Green	8	Joined 04/03/22
Professor Richard Griffiths	1	Joined 06/11/15
Brandon Leigh		Joined 4/3/22 Resigned 26/9/22
Professor David MacDonald	7	Joined 02/03/18
Dr Romain Pizzi	5	Joined 08/07/22
Lee Rawlinson	-	Joined 25/06/19
Bruce Ursell	-	Retired 09/06/22
Simon Venables	-	Joined 24/06/14
David Wooton	4	Joined 04/03/22

The role of Company Secretary is undertaken by Aarco Services Limited, represented by Nick Clarke.

The executive directors at the date of this report and serving during the year were:

Jamie Christon, Chief Executive Officer	Joined 22/07/13
Elizabeth Carnie, Corporate Director	Joined 27/01/14
Simon Dowell, Science Director	Joined 11/05/16
Mike Jordan, Animal & Plant Director	Joined 05/08/15
Dominic Strange, Commercial Director	Joined 18/01/10

Trustee meetings

The Board of Trustees meets formally at least six times a year and has a rolling business cycle that is used to set the agenda for each meeting. Meetings, which are also attended by the executive directors, are generally held as hybrid meetings, with Trustees encouraged to attend in person where practicable. The rolling business cycle includes approval of the annual budget, updates on the animal and plant collection, an annual

health and safety review, review of the risk management strategy and risk register, updates on field conservation work, fundraising updates and progress reports against the Strategic Development Plan, Conservation Masterplan and the business plans that underpin them.

Trustee committees

The Board of Trustees delegates aspects of their powers to five committees whose members are appointed by the Board and consist of both Board members and, where appropriate, specialist advisors. These committees report to the Trustees at each Board meeting.

Trustee involvement in each committee at 31 December 2022 is set out in the table below:

Committees	Ethical Review	Audit and Risk Management	Remuneration	Trustee Nominations	Strategic Development Plan	Conservation Masterplan
Malcolm Ardron			x	x	x	x
William Beale	x				x	Chair
Jen Carter*		x				
David Chinn					Chair	
Edwin Christmas					x	
Penny Coates		x	Chair	Chair	x	
Prof Rhys Green						
Prof Richard Griffiths	Chair					x
Prof David MacDonald						x
Dr Romain Pizzi	x					
Lee Rawlinson						x
Simon Venables		Chair				
David Wooton**						

*Jen Carter is the Trustee Liaison to the Youth Board.

**David Wooton acts as Chester Zoo's safeguarding lead.



Ethical Review Committee

Responsibilities

The Ethical Review Committee acts in an advisory capacity to the executive and the Board of Trustees to ensure that the charity pursues its mission while adhering to the highest possible ethical principles as they apply to animals, people and wider conservation.

Number of meetings in 2022

The Committee met three times in 2022.

Activities

Conducted independent reviews of a range of projects including those involving the reintroduction of species to their habitats. The Committee receives regular reports in relation to welfare and husbandry matters where there may be an ethical concern. Once a year, the Committee also reviews the Charity's ethical practices relating to business practice, sustainability and the environment, including matters relevant to the management of the zoo's employees.

Additional Information

The Ethical Review Committee has three external specialist advisors: Professor Richard Preziosi, Professor Thomas Webb and Dr Lottie Hosie.

Trustee Nominations Committee

Responsibilities

The Trustee Nominations Committee takes responsibility for ensuring that the Board has the relevant skills, experience, characteristics and backgrounds to provide high-quality, effective governance of the Charity's affairs. The Committee is responsible for identifying and proposing new Trustees to the membership for election at the Annual General Meeting. New Trustees roles are advertised through a number of channels, including the Charity's regular communications with its membership, the website, external job boards and, where specialist skills are sought, the use of executive search organisations. The nominations committee is also responsible for the induction, support and development of new Trustees.

Number of meetings in 2022

The Committee met three times in 2022.

Activities

Developed an approach for the recruitment of new Trustees. Appointed Warren & Partners, an external search organisation, ahead of the recruitment of further new Trustees in 2023.

Audit & Risk Management Committee

Responsibilities

The Audit & Risk Management Committee has the responsibility to review the effectiveness and integrity of the Charity's systems for internal control and its risk assessment procedures and appoint the Charity's external and internal auditors.

Number of meetings in 2022

The Committee met four times in 2022.

Activities

Received a report from the external auditor on the 2021 financial statements, with a focus on matters relating to the impact of COVID-19 on going concern. The internal auditors reported on five audits undertaken in the year, the Charity's risk register was reviewed and a number of presentations were made by management on topics such as health and safety, information governance, IT security and insurance.

Remuneration Committee

Responsibilities

The Remuneration Committee has responsibility for determining the remuneration of the Chief Executive Officer on behalf of the Trustees. Remuneration for other executive directors are set by the Chief Executive Officer in consultation with the Remuneration Committee and with advice from independent consultancy Korn Ferry.

Number of meetings in 2022

The Committee met once in 2022.

Activities

As well as considering executive remuneration, they discussed ways of supporting staff over the winter period, resulting in the approval of cost-of-living payments in October and November 2022. Succession planning for the executive and senior management team was also a focus to ensure the continued delivery of strategic plans.

Strategic Development Committee

Responsibilities

The Strategic Development Committee is responsible for ensuring that the long-term Strategic Development Plan (SDP) for the physical development of the zoo estate is implemented in accordance with the strategy set out by the Trustees. The Committee monitors progress and 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 and makes recommendations to the Board of Trustees for any issues of significance in respect of the SDP and its implementation.

Number of meetings in 2022

The Committee met six times in 2022.

Activities

The main focus was the restart of the SDP. Early in the year, the committee approved plans to develop a Snow Leopard habitat at the zoo, which will open in 2024, as well as a refurbishment of the Learning Centre in 2023. Towards the end of the year, it gave approval to the Heart of Africa development, which is due to open in 2025 and will include The Reserve, the zoo's first overnight stay offer.

Conservation Masterplan Committee

Responsibilities

The Conservation Masterplan Committee provides oversight of the 10-year Conservation Masterplan, as approved by the Trustee Board, and assurance that it is being properly implemented in accordance with the strategic objectives and against measurable targets set for its delivery.

Number of meetings in 2022

The Committee met three times in 2022.

Activities

A key focus has been to establish monitoring and evaluation approaches for the Conservation Masterplan to help assess progress and to evidence achievements. In 2022, the Conservation Masterplan Committee endorsed a number of overarching principles to support consistent monitoring of conservation work, including a conservation dashboard to present data. The dashboard has now been implemented and is reviewed at each meeting. The committee has also worked to ensure that the data being gathered is meaningful and will support evidence-based decision-making.

Trustee induction and training

All Trustees receive a Trustee Handbook and a formal induction, spending time with members of the zoo team. Trustees are required to complete annual training on topics such as Safeguarding, Cyber Security, Equality, Diversity and Inclusion. Trustees are also kept up to date with any changes to Charity Commission guidance for Trustees, through updates given by the Company Secretary at each Board meeting, or outside of the board meeting cycle if required.

Trustee third-party indemnity

The Charity purchases liability insurance cover for the Charity, its Trustees and other employees, which provides appropriate cover against claimants' damages, judgements, settlements or the costs incurred in the defence of actions.

Our professional advisors

Our professional advisors include:

External independent auditor

Grant Thornton UK LLP, Royal Liver Building, Liverpool L3 1PS

Internal independent auditor

RSM UK Risk Assurance Services LLP, 20 Chapel Street, Liverpool L3 9AG

Legal advisors

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

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

Knights plc, HQ Offices, 58 Nicholas Street, Chester CH1 2NP

Gunnercooke LLP, 53 King Street, Manchester M2 4LQ

Bankers

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

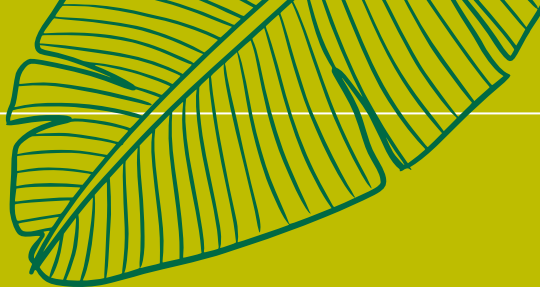
HSBC UK Bank plc, 47 Eastgate Street, Chester, Cheshire CH1 1XW

Handelsbanken plc, Albion Street, Chester CH1 1RQ

Actuaries

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



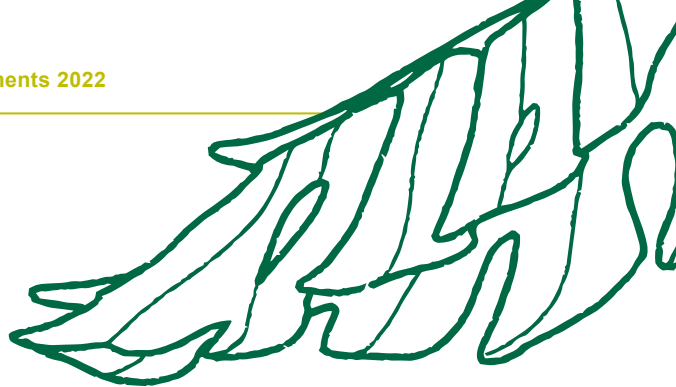


Youth Board

Established in 2020, with 13 volunteer members aged 18 to 25 years old, the Youth Board gives advice and makes recommendations to the Board of Trustees on a number of matters, particularly those that impact young people. In particular, the Youth Board works to ensure that Chester Zoo engages with teenagers and young adults and acts as a voice for Chester Zoo on matters that impact young people. Members of the Youth Board attend Trustee Board meetings and are also invited to attend Committee meetings. The Youth Board met six times in 2022 and in that period they:

- Gave input into the draft Sustainability and Climate Change strategy created by the Department for Education
- Created a Youth Governance Toolkit which aims to give organisations the tools needed to establish their own systems of youth governance and collectively drive forward the role of youth voices within the conservation sector
- Developed and delivered a presentation on youth engagement at the BIAZA Annual Conference
- Hosted the second consecutive Chester Zoo Youth Symposium – a co-led event that brought together young people aged 16–30 from across the country to share their experiences, knowledge and passion for conservation
- Provided advice and guidance to other zoos and aquariums on how they can set up their own youth governance structure
- Met with several Members of Parliament to discuss youth governance
- Provided a youth voice on the zoo's branding and educational programmes.





S172 statement

The Board of Trustees, as Directors of The North of England Zoological Society, are aware of their duty under section 172 of the Companies Act 2006 to act in the way which they consider, in good faith, would be most likely to promote the success of the charity in order for it to achieve its charitable objects. In particular, the Board acknowledges that its decisions have a long-term impact on Chester Zoo's stakeholders, including its employees, and on the environment, the community and the zoo's reputation for a high standard of conduct as a charity.

Trustees must also comply with section 4 of the Charities Act 2011, having due regard to public benefit guidance published by the Charities Commission, including its supplementary guidance on fee charging.



Governance and decision making



Impact on the environment



Reputation as a charity



Public benefit



Equality, diversity and inclusion



Grant-making



Fundraising



Engagement with stakeholders

Governance and decision making



On pages 54–59 of this report, we have set out the governance structure of the Board and its committees, the executive director team and professional advisers, along with detail of matters considered.

The balance of skills, experience, knowledge and diversity amongst the Board, the director team and the Youth Board brings a variety of different perspectives to its discussions and enhances the Board's decision-making process.

All decisions are made in support of the strategy and its objective to continue to build a strong, resilient and sustainable zoo that can maintain and develop its mission of preventing extinction throughout this decade and into the next.

Impact on the environment



On pages 32–34 of this report, there are details of how Chester Zoo is acting to reduce the impact of its activities on the environment, in line with three targets set within the Chester Zoo Conservation

Masterplan. Chester Zoo's estate includes the zoo and a significant land holding surrounding the zoo itself. This land is

used both for operational purposes, including growing browse for the animals, and for the protection of biodiversity and includes the zoo's nature reserve.

Estate conservation activities were bolstered in 2022 through the Green Recovery Challenge Fund. New habitats created on the estate in 2022 included an orchard containing 63 native fruit trees, a new pond (bringing the site total to 28 ponds) and wetland scrapes to encourage more diverse birdlife. Conservation management also improved the status of reed beds, grasslands and 13 ponds, and 570m of hedgerow were laid. Species highlights include nine bat species recorded on site, including the first confirmation of *Nathusius pipistrelle*, and evidence of the expansion of the breeding population of harvest mice reintroduced by the zoo 20 years ago. Breeding bird territories increased and 459 species were recorded on the nature reserve, 88 of which are newly recorded and 37 have a conservation status.

Ongoing assessments and research to aid estate management included a conservation grazing feasibility study, a full assessment of over half of our 27km of hedges and an initial assessment of soil health. Many of the surveys and habitat activities also included elements of community engagement and training.

Reputation as a charity



Chester Zoo has in place a range of policies and procedures that provide clear guidance on expectations and requirements for those working with and for the charity. Areas covered include ethical practices, employment procedures, working practices, communications procedures, health & safety procedures, environment, and safeguarding and information governance.

All policies are reviewed and updated regularly, and a number are reviewed by the Audit & Risk Management Committee or Ethical Review Committee as standing items.

As Chester Zoo's activities regularly involve its staff and volunteers working with children and vulnerable adults, there is a designated Trustee safeguarding lead and there is a designated safeguarding officer on site every day.

Public benefit



Chester Zoo relies on income from admission fees, food & beverage and retail sales, and other charges to cover its operating costs.

We have a number of different approaches to mitigating financial barriers to participation, which include the provision of concessionary rate tickets to certain groups alongside free and discounted tickets to targeted groups, including one-to-one carers. In 2022, 202,906 children under three visited the zoo for free. Our winter free tickets scheme for schools enabled free entry for 30,064 educational visits in 2022, and there were a further 9,000 visits as part of our outreach project work with schools with high percentages of pupils receiving free school meals. In addition, in September, we launched a new Charity Connection scheme, whereby charities could apply for tickets to distribute to participants who wouldn't otherwise have access to the zoo. Almost 5,000 tickets were distributed to 46 organisations through this scheme for use in 2023.

Through our educational project work, we provide a range of services to schools and community groups with the aim of increasing access to our programmes and services. In 2022, pupils from 52 different schools in low-income areas participated in outreach projects led by our education team. In addition to this, we worked intensively with six schools and six community groups as part of our GRCF-supported Nature Recovery Corridor project. Through a combination of staff and volunteer training, resources and delivered workshops, we supported the groups to transform their green spaces for

wildlife and to set up regular wildlife and wellbeing activities in their locality.

During 2022, 206 people were engaged through the zoo's volunteering programmes donating 22,981 hours between them. Volunteers support the zoo in a variety of ways including engaging with visitors out in the zoo, helping to sort out archival material, assisting our gardens teams and supporting educational programmes and special events.

The Nature Recovery Corridor project also generated new opportunities for volunteering, including more flexible short-term volunteering opportunities and opportunities to take part in community conservation action days, including hedge laying and orchard planting. We also delivered free Wildlife Champions training to 146 community leaders from 39 different organisations to enable them to deliver wildlife-focused activities in their own settings.

We also provide a variety of support for young people looking to gain experience, ranging from teenagers completing the volunteering element of their Duke of Edinburgh Award (13 across the year) through to early career conservationists being supported to study for their PhDs (32 supported in 2022), as well as voluntary work placements and a new apprentice scheme launched during the year. We also work actively with local partners to provide participation opportunities for people who might not otherwise be able to access them, for example providing supported volunteering opportunities for young people from Ancora House (a local youth mental health service) and, new in 2022, the Neuromuscular Centre.

Our online engagement programme provides alternatives for those who, for whatever reason, are unable to visit the zoo. We provide over 300 quality learning resources, which are free to download from our website.

Our Nature Reserve is open to all without charge, providing year-round access to nature. In September 2022, over 3,500 people attended our free Wildlife Connections Festival, engaging with fun and educational activities and experiences linked to the nature reserve.

Equality, diversity and inclusion



Chester Zoo is committed to fostering a culture of equality, diversity and inclusion in the workplace and will continue to take positive steps towards making longer-term improvements.

Recruitment continues to be a key focus area and in 2022 we looked at ways in which we could broaden our candidate pool

to ensure that careers at Chester Zoo are more accessible to a wider and more diverse group of people. This was achieved by engaging with the government's kickstart scheme, introducing an apprenticeship scheme within our animal and plant teams and introducing a number of bursaries for our voluntary work placements where applicants may have otherwise faced barriers to this opportunity.

Social wellbeing was another focus in 2022, and a number of groups and activities were launched to bring a sense of inclusion and belonging. This included a project group for the planning of Chester Zoo's attendance at Chester Pride 2022.

All of our people complete mandatory e-learning on Unconscious Bias and ED&I (Equality, Diversity and Inclusion). In addition, all line managers complete a more in-depth, bespoke facilitated training session on their responsibility as managers to support ED&I in the workplace.

Grant-making



Chester Zoo supports a wide range of conservation and research activities both in the zoo and externally, often in partnership with other organisations to whom we provide ongoing financial support. Grants towards scholarships are also awarded. Rather than providing one-off grants, the Charity works in partnership with other like-minded organisations with whom projects are co-developed in line with our mission and Conservation Masterplan.

Criteria for funding support for such projects include alignment with the Chester Zoo Conservation Masterplan, feasibility, expected conservation outcomes, 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 and opportunities for technical support from zoo employees.

Primarily, support is provided to those projects judged to have the potential to make a significant positive conservation impact and a contribution to one or more of the six targets of our Conservation Masterplan. 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.

Fundraising



Chester Zoo is committed to making fundraising a fair, responsible and enjoyable experience for our supporters and those who



fundraise on our behalf. We want people to feel connected to our work and understand the incredible impact their donations make.

We are wholly committed to best fundraising practice and, as such, we're signed up with the Fundraising Regulator. Both the organisation, and the fundraisers operating within it, abide by the Code of Fundraising Practice. We do not undertake fundraising that we consider to be intrusive or not akin to the inclusive culture of our safeguarding, and treating donors fairly is paramount to our work. We support people on their donation journey with us, in whatever capacity requested or needed, responding to the needs of the individual as per the Code of Fundraising Practice.

With relevant permissions, we communicate with our supporters, so any indicators of additional required care become apparent (such as bereavement or personal circumstances). We take measures to protect donors, including delaying the acceptance of gifts, returning gifts (cooling-off period), monitoring online giving for gifts made in error or malicious activity, and ensuring there is clear transparency as to where a gift will be used. If we believe an individual lacks sound capacity to make a donation, it will not be taken. Returned donations will be logged on our dedicated database, so we're prepared if another donation is made or attempted, making a reasoned judgment and acting appropriately. Supporters under the age of 16 must have explicit guardian approval and must be accompanied by their guardian during any telephone communications and during their fundraising. They will not receive any general fundraising communications from us.

We take all reasonable steps to ensure that supporters understand the context, implications and use of their donation and our campaigns are carefully managed to never place undue emotional pressure to donate.

The Charity did not receive any fundraising complaints in the year.





Engagement with stakeholders



Our stakeholders	Why we engaged with them	How we engaged with them
Our employees and volunteers	To allow us to recruit, develop, support and train the best, most passionate people in support of our mission.	Staff survey: In 2022, 77% of employees completed our staff survey. All-staff communications for all employees and volunteers: from weekly newsletters to quarterly all-staff briefings with an opportunity to ask questions. Staff Association: open to all staff, with directors and senior managers attending regular meetings. Volunteers: all get daily briefings and give shift feedback. They all receive an annual satisfaction survey and individual annual reviews and can attend coffee mornings.
Our members and supporters	To build lasting relationships with those who support us, providing them with opportunities to engage with our mission.	All of our members received a welcome pack, the <i>Our Zoo</i> quarterly e-magazine and e-mail communications. Additional information is available on the website. Members can visit the membership office in the zoo.
The public and communities	To build public awareness of our mission and to encourage engagement with the zoo.	Through advertising campaigns and press stories. Using our social media channels and the website. Through talks and information throughout the zoo site. Outreach through community partners. Face-to-face meetings and update communications with local residents.
Other zoos and related professional organisations	To increase the impact of our work by working with others.	Communication through member organisations, e.g. BIAZA and EAZA conferences. Direct communication and meetings with other zoos and related organisations.
Opinion leaders, policy setters and other influencers	To bring about policy changes that support conservation and the protection of biodiversity.	Providing briefing notes on topical issues, suggesting parliamentary questions and amendments to legislation. By responding to consultations and calls for evidence. Face-to-face meetings in Westminster, parliamentary visits to the zoo and attending party conferences. Taking part in NGO coalitions and joint campaigns. Being present at events, conferences and report launches. Influencing and supporting the lobbying efforts of BIAZA and other zoos.

Trustees' responsibilities

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 elected to prepare 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 Charities Statement of Recommended Practice (FRS102)
- Make judgements and accounting 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
- Prepare the financial statements on the going concern basis unless it is inappropriate to presume that the charitable group 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.

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 Charity'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 Charity'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.

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

Independent auditor

A resolution to formally reappoint Grant Thornton UK LLP as independent auditors will be proposed at the Annual General Meeting.

The Trustees Annual Report and Financial Statements were approved by the Trustees on 5 May 2023 and signed on their behalf by:



Malcolm Ardron
Chair of Trustees



Scan to see previous financial statements.

Financial Statements

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Independent auditor's report

Independent auditor's report to the members of The North of England Zoological Society

Opinion

We have audited the financial statements of The North of England Zoological Society (the 'parent charitable company' or 'Society') and its subsidiaries (the 'Group') for the year ended 31 December 2022, which comprise the Consolidated Statement of Financial Activities (including a consolidated income and expenditure account), the Consolidated and Society Balance Sheets, the Consolidated Cash Flow Statement and notes to the consolidated financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards, including Financial Reporting Standard 102; The Financial Reporting Standard applicable in the UK and Republic of Ireland (United Kingdom Generally Accepted Accounting Practice).

In our opinion, the financial statements:

- Give a true and fair view of the state of the Group's and parent charitable company's affairs as at 31 December 2022 and of the Group's incoming resources and application of resources, including its income and expenditure for the year then ended;
- Have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- Have been prepared in accordance with the requirements of the Companies Act 2006.

Basis for opinion

We have been appointed as auditor under the Companies Act 2006 and report in accordance with regulations made under that Act. We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the 'Auditor's responsibilities for the audit of the financial statements' section of our report. We are independent of the Group and parent charitable company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to going concern

We are responsible for concluding on the appropriateness of the Trustees' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the parent charitable company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify the auditor's opinion. Our conclusions are based on the audit evidence obtained up to the date of our report. However, future events or conditions may cause the Group or parent charitable company to cease to continue as a going concern.

In our evaluation of the Trustees' conclusions, we considered the inherent risks associated with the Group's and parent charitable company's business model including effects arising from macro-economic uncertainties such as the cost of living crisis, we assessed and challenged the reasonableness of estimates made by the Trustees and the related disclosures and we analysed how those risks might affect the Group's and parent charitable company's financial resources or ability to continue operations over the going concern period.

In auditing the financial statements, we have concluded that the Trustees' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the Group's and parent charity's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the directors with respect to going concern are described in the relevant sections of this report.

Other information

The other information comprises the information included in the Strategic Report and Governance sections, other than the financial statements and our auditor's report thereon. The Trustees are responsible for the other information contained within the Strategic Report and Governance sections. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon.

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 such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements themselves. 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 in this regard.

Opinion on other matters prescribed by the Companies Act 2006

In our opinion, based on the work undertaken in the course of the audit:

- The information given in the Strategic Report and the Directors' report, prepared for the purposes of company law, included in the Trustees' Report for the financial year for which the financial statements are prepared is consistent with the financial statements.
- The Strategic Report and the Directors' Report included in the Trustees' Report have been prepared in accordance with applicable legal requirements.

Matter on which we are required to report under the Companies Act 2006

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 have not identified material misstatements in the Strategic Report or the Directors' Report included in the Trustees' Report.

Matters on which we are required to report by exception

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

- 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
- The parent charitable company's financial statements are not in agreement with the accounting records and returns; or

- Certain disclosures of Trustees' remuneration specified by law are not made; or
- We have not received all the information and explanations we require for our audit.

Responsibilities of Trustees

As explained more fully in the Statement of Trustees' Responsibilities set out on page 64, the Trustees (who are also the directors of the charitable company for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the Trustees 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 and the parent charitable company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Trustees either intend to liquidate the Group or parent charitable company or to cease operations, or have no realistic alternative but to do so.

Auditor's 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 auditor's 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.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. The extent to which our procedures are capable of detecting irregularities, including fraud, is detailed below:

- We obtained an understanding of the legal and regulatory frameworks applicable to the Group and parent charitable company, and the industry in which it operates and determined which may influence the financial statements. Given the nature of its operating activities, the Group and parent charitable company is subject to several laws and

regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements.

- We determined that the following laws and regulations are the most significant that are directly relevant to specific assertions in the financial statements.
 - Those that relate to reporting frameworks being FRS 102 and the Statement of Recommended Practice (“Charities SORP (FRS 102)”), the Charities Act 2011, the Companies Act 2006 and the relevant tax compliance regulations.
 - Those that relate to the operational activities of the Group and parent charitable company as a zoo being the Zoo Licencing Act 1981, including subsequent amendments, Health and Safety requirements of the animals, visitors and employees, data protection and bribery and corruption practices.
- We assessed the susceptibility of the Group’s and parent charitable company’s financial statements to material misstatements, including how fraud might occur. We performed the following audit procedures to address the risks related to irregularities and fraud:
 - Evaluation of the processes and controls in place to address the risks related to irregularities and fraud;
 - Challenge of the assumptions and judgements made by management in its significant accounting estimates;
 - Review of performance targets and conditions to funding received and their propensity to influence efforts made by management to manage earnings;
 - Review and testing of journal entries, in particular manual journal entries including those with unusual account combinations, journals relating to management estimates and journal entries impacting the reported result for the year;
 - Consideration of the potential for fraud in revenue recognition through the manipulation of revenue from membership income, cut off in respect of visitor admissions and events income and revenue recognised through an unusual account combination;
 - Identifying related parties and through our data interrogation tools performed a review for any related party transactions in the year.
- We have enquired of management, the compliance officer, the Audit and Risk Management Committee and

the internal auditors whether there was any awareness of instances of non-compliance with laws and regulations or whether they had any knowledge of actual or suspected fraud. We corroborated the results of our enquiries with supporting documentation such as board minute reviews.

- In assessing the potential risks of material misstatements, we obtained an understanding of the Group’s and parent charitable company’s operations, the applicable statutory provisions and business risks that may result in risk of material misstatement, and the Group’s and parent charitable company’s control environment, including the adequacy for authorisation of transactions.
- These audit procedures were designed to provide reasonable assurance that the financial statements were free from fraud or error. The risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error and detecting irregularities that result from fraud is inherently more difficult than detecting those that result from error, as fraud may involve collusion, deliberate concealment, forgery or intentional misrepresentations. Also, the further removed non-compliance with laws and regulations is from events and transactions reflected in the financial statements, the less likely we would become aware of it.
- The engagement team’s experience with similar engagements, their understanding and knowledge of the Group’s and parent charitable company’s industry and their understanding of the industry and regulatory requirements were considered in assessing the appropriateness of the collective competence and capabilities of the engagement team.

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 auditor’s report.

Use of our report

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

A handwritten signature in black ink that reads "Grant Thornton UK LLP".

Deborah Watson BSc (Hons) FCA
Senior Statutory Auditor

for and on behalf of Grant Thornton UK LLP
Statutory Auditor, Chartered Accountants
Liverpool

Date: 5 May 2023

Consolidated financial statements

Consolidated statement of financial activities (including a consolidated income and expenditure account) for the year ended 31 December 2022

	Notes	Unrestricted funds £'000	Restricted funds £'000	Total 2022 £'000	Total 2021 £'000
Income from:					
Charitable activities					
Visitor admission income		19,442	-	19,442	19,567
Membership income & related Gift Aid		10,756	-	10,756	8,669
Zoo events & experiences		2,002	-	2,002	1,593
Project grants & contributions		6	463	469	382
Other charitable income		352	-	352	301
Total income from charitable activities		32,558	463	33,021	30,512
Donations, grants and legacies					
Donations from zoo visitors & related Gift Aid		1,657	-	1,657	875
Animal adoptions		236	-	236	386
Save Our Zoo campaign		-	-	-	46
Legacies & other voluntary income & related Gift Aid		1,204	476	1,680	628
Job retention scheme grant – Charity		-	-	-	558
Total income from donations, grants and legacies		3,097	476	3,573	2,493
Trading activities					
Trading income – Chester Zoo Enterprises Limited	2	14,019	-	14,019	11,871
Job retention scheme grant – Trading	2	-	-	-	327
Total income from trading activities		14,019	-	14,019	12,198
Investments					
Investment income	3	67	-	67	23
Total income		49,741	939	50,680	45,226
Expenditure on:					
Raising funds					
Cost of generating memberships donations and legacies	5a	(2,461)	-	(2,461)	(2,226)
Cost of visitor admission & experience	5a	(8,842)	-	(8,842)	(7,633)
Trading costs – Chester Zoo Enterprises Limited	2, 5a	(13,282)	-	(13,282)	(11,283)
Total expenditure on raising funds		(24,585)	-	(24,585)	(21,182)
Charitable activities					
Habitats, species & populations	4, 5a	(19,526)	(622)	(20,148)	(17,999)
Conservation education, engagement & capacity building	4, 5a	(3,358)	(466)	(3,824)	(2,415)
Conservation advocacy	4, 5a	(691)	-	(691)	(357)
Total expenditure on charitable activities		(23,575)	(1,088)	(24,663)	(20,771)
Other expenditure					
Settlement of DB pension scheme	23	-	-	-	(2,327)
Total expenditure		(48,160)	(1,088)	(49,248)	(44,280)
Transfer between funds		80	(80)	-	-
Net income / (expenditure)		1,660	(230)	1,432	946
Net movement in funds		1,660	(230)	1,432	946
Reconciliation of funds	19				
Total funds brought forward		61,321	1,124	62,445	61,499
Total funds carried forward		62,981	896	63,877	62,445

The North of England Zoological Society made an unconsolidated surplus of £1,411k of which £1,411k (2021: £2,843k) related to normal continuing operations and £Nil (2021: £2,327k) resulted from exceptional expenditure.

No statement of changes in equity has been presented as all such gains and losses have been included above. The notes on pages 78 to 89 form part of these financial statements.

Consolidated & Society balance sheets as at 31 December 2022

	Notes	Consolidated		Society	
		2022 £'000	2021 £'000	2022 £'000	2021 £'000
Fixed assets					
Intangible assets	10	479	857	479	857
Tangible assets	11	64,431	64,426	64,431	64,426
Investment in subsidiary companies	12	-	-	-	-
		64,910	65,283	64,910	65,283
Current assets					
Stocks	13	1,121	920	188	153
Debtors	14	2,085	1,991	2,834	2,452
Cash at bank and in hand	15	6,124	4,767	6,065	4,707
		9,330	7,678	9,087	7,312
Creditors: amounts falling due within one year	16	(9,613)	(9,516)	(9,411)	(9,178)
Net current liabilities		(283)	(1,838)	(324)	(1,866)
Total assets less current liabilities		64,627	63,445	64,586	63,417
Creditors: amounts falling due after more than one year	17	(750)	(1,000)	(750)	(1,000)
Net assets		63,877	62,445	63,836	62,417
Funds employed					
Income funds – restricted	19	896	1,124	896	1,124
Income funds – unrestricted	19	62,981	61,321	62,940	61,293
Total funds employed		63,877	62,445	63,836	62,417

The Charity made a surplus for the year of £1,411K (2021: £516K).

The financial statements were approved and authorised by the Trustees on 5 May 2023 and signed on their behalf by:



Malcolm Ardron, Chair of Trustees
Company number 00287902 – The North of England Zoological Society

The notes on pages 78 to 89 form part of these financial statements.

Consolidated cash flow statement for the year ended 31 December 2022

	Notes	2022 £'000	2021 £'000
Cash flows from operating activities:			
Net movement in funds as per the statement of financial activities		1,432	946
Adjustments for:			
Interest paid		150	206
Interest received		(67)	(23)
Amortisation charge	10	389	259
Depreciation charge	11	6,285	6,993
Loss on sale of fixed assets		84	-
Increase in stocks	13	(201)	(177)
Increase in debtors	14	(94)	(1,036)
(Decrease) / increase in creditors due within one year	16	(219)	1,745
Net cash generated from operating activities		7,759	8,913
Cash flows from investing activities:			
Interest received		67	23
Purchase of fixed assets		(5,023)	(2,666)
Net cash used in investing activities		(4,956)	(2,643)
Cash flow from financing activities:			
Cash (outflows) from borrowing	15	(250)	(7,700)
Interest paid		(150)	(206)
Net cash used in financing activities		(400)	(7,906)
Operating cash inflow / (outflow) in year		2,403	(1,636)
Increase/(decrease) in net cash at bank in the year		2,403	(1,636)
Cash and cash equivalents at 1 January	15	3,721	5,357
Cash and cash equivalents at 31 December	15	6,124	3,721

The notes on pages 78 to 89 form part of these financial statements.

Principal accounting policies

The following accounting policies have been applied in dealing with items that are considered material in relation to the financial statements of The North of England Zoological Society ("the Charity") and its subsidiary companies ("the Group"). 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 (Charities SORP (FRS102)) applicable to charities preparing their financial statements in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102). The functional currency of the charity is sterling (£).

The Group's activities, together with the factors likely to affect its future development, performance and position, are set out in the Trustees' report. The financial position of the Charity and its subsidiaries, its cash flows and liquidity position are shown in these financial statements.

Significant estimates and judgements made in preparing the financial statements are set out on page 77. The Trustees' report also notes the principal risks and uncertainties that impact on the Group.

The Charity has taken advantage of the exemption allowed from preparing a cash flow statement on the basis that it is a qualifying entity and the consolidated cash flow statement included in these financial statements includes the Charity's cash flows.

Going concern

The financial statements have been prepared on a going concern basis. In determining the appropriate basis of preparation of the financial statements, the Trustees are required to consider whether the Charity and the Group can continue in operational existence for the foreseeable future.

The zoo remained open for the full year, for the first time since the onset of COVID-19 in 2020 and 2021. Despite COVID-19 continuing to impact visitor numbers at the start of the year, coupled with a return to overseas travel and the impact of the cost of living on many households, the zoo saw subsequent trading and income return to the levels closer to the years preceding the pandemic.

At year end, the Group had continued to utilise its banking facility provided by Santander, albeit to a lesser extent than the prior year. The facility comprised of a £22m Revolving Credit Facility ("RCF"). As a result of the improved cash position of the Charity throughout the year, the £2m overdraft facility was not renewed. Temporary working capital requirements can be managed through managing the operational cash flow and improved flexibility within the RCF.

In March 2023, the Charity signed an agreement for two new facilities with Santander totalling £45m to fund the Heart of Africa development, where a contract of £22.7m has been committed to post year-end. This is detailed in note 18 to the accounts. The facilities are subject to two financial covenants which are tested quarterly: net debt to EBITDA (leverage) and EBITDA to net finance charges. The Group has generated sufficient income to meet the covenant tests in the old facility during the year. The forecasts, together with reasonable sensitivity analysis on key assumptions, provide evidence to support the Trustee's view that the Group will continue to meet the covenant tests in the new facilities to at least 31 May 2024.

The Trustees consider that the Charity and Group are well placed to manage the risks within its control and mitigate those outside its control. Despite there being net current liabilities at a consolidated level, this position will reverse as £3.4m of deferred income at 31 December 2022 (2021: £3.3m) is released in future periods. Forecasts, with sensitivity analysis on key assumptions such as reduced visitor numbers, zoo closure and the ability to reduce spend quickly if required, support the Trustee's view that the group will continue to operate beyond 12 months from the date of signing of the financial statements. The likelihood of further closures due to COVID-19 remains low and while there are some economic uncertainties outside the control of the Charity, there is sufficient headroom in the Charity's cash reserves and £45m banking facility to manage the current economic headwinds.

After the review of the budget and predictions for the period to 31st May 2024 and having considered the uncertainties described above, the Trustees are of the opinion that the Charity and Group has adequate resources to continue in operational existence for the foreseeable future, being a period of not less than 12 months from the date of approval of these financial statements. 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 Charity and its subsidiary undertakings, Chester Zoo Enterprises Limited and the North of England Zoological Society Pension Trustee Company Limited made up to 31 December 2022 and comply with recommended practice for accounting by charities. The results of the subsidiaries are consolidated on a line-by-line basis. No separate SOFA has been presented for the charity alone as permitted by Section 408 of the Companies Act 2006. Chester Zoo (Nigeria) Limited and Chester Zoo Foundation Nigeria have not been included because they are dormant and not considered material to the Group. Chester Zoo Hotels Limited was incorporated post year-end and therefore does not form part of the consolidated accounts.

Funds employed

All funds employed must be expended in furtherance of the objectives of the Charity. 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.

The unrestricted fund represents the funds to provide for the working capital of the Group and contingent expenditure.

Incoming resources

In accordance with the SORP, all incoming resources becoming receivable by the Group 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 from government and non-government sources 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 Charities SORP, support costs have been allocated to charitable activities and fundraising, apportioned by usage according to relative cost driving activities. Support costs also include governance costs as a separate component in line with the Charities SORP. Governance costs comprise of all costs involving public accountability of the Group and its compliance with regulations and good practice.

VAT

Visitor admission income is treated as VAT exempt. Accordingly, the Charity 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 Charity uses the standard method to calculate its residual input tax recovery. The cost of any 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 Charity 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.

Intangible fixed assets

Computer software is included in the balance sheet at historic purchase cost less accumulated amortisation. Assets in the course of construction are stated at cost, less any recognised impairment loss and are amortised when the assets are ready for their intended use. The amortisation rate reflects the useful economic life of the computer software.

Asset class	Rate of amortisation applied
Computer software	10% to 25% straight line

Tangible fixed assets

Tangible assets are included in the balance sheet at historic purchase cost less accumulated depreciation and any recognised impairment loss. 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.

Leases

All leases currently held by the Group are operating leases and the rental charges are taken as expenditures when incurred. The Group 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 Group operates two voluntary pension schemes.

The Group 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 Group is notified by the employee that they wish to opt out. The cost of these contributions is charged to the SOFA when payable.

The defined benefit scheme was closed to future accrual in March 2012. The Group has historically made payments in order to reduce the scheme's solvency deficit over time. These payments have been 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 provision basis, the Group does not recognise this in the financial statements, as the Group is unable to recover any surplus either through reduced contributions in the future or through refunds from the scheme.

The trustee of the defined benefit scheme, secured member benefits with Aviva on 23rd November 2021. While there remains no legal or constructive obligation to buy out the pension scheme, the payment and professional fees attributable to the transaction have been recognised in the SOFA as a settlement of the scheme within other expenditure. The policy with Aviva represents an asset within the scheme that is an insurance policy that exactly matches the amount and timing of all of the benefits payable under the plan. As a result, the fair value of the asset is deemed to be the present value of the obligations under the defined benefit plan.

Grant-making

The Group supports a wide range of conservation and research activities both in the zoo and externally, often in partnership with other organisations. Liabilities relating to grants are recognised once the Group 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.

Debtors

Trade and other debtors are recognised at transaction price less any impairment.

Cash at bank and in hand

Cash at bank and in hand includes cash, overdrafts and short-term highly liquid investments with a short maturity of three months or less from the date of acquisitions or opening of the deposit or similar account.

Creditors

Creditors are recognised where the Group has a present obligation resulting from a past event that will probably result in the transfer of funds to a third party and the amount due to settle the obligation can be measured or estimated reliably. Creditors are normally recognised at their settlement amount after allowing for any trade discounts due.

Financial instruments

The Group only enters into basic financial instrument transactions that result in the recognition of financial assets and liabilities, like accounts receivable and payable.

Financial assets that are measured at cost and amortised cost are assessed at the end of each reporting period for objective evidence of impairment. If objective evidence of impairment is found, an impairment loss is recognised in the SOFA.

For financial assets measured at amortised cost, the impairment loss is measured as the difference between an asset's carrying amount and the present value of estimated cash flows discounted at the asset's original effective interest rate. If a financial asset has a variable interest rate, the discount rate for measuring any impairment loss is the current effective interest rate determined under the contract.

For financial assets measured at cost less impairment, the impairment loss is measured as the difference between an asset's carrying amount and best estimate, which is an approximation of the amount that the charitable company would receive for the asset if it were to be sold at the balance sheet date.

Financial assets and liabilities are offset and the net amount reported in the balance sheet when there is an enforceable right to set off the recognised amounts and there is an intention to settle on a net basis or to realise the asset and settle the liability simultaneously.

Significant judgements

Preparation of the financial statements requires management to make significant judgements. The items in the financial statements where these judgements have been made include:

- **Properties owned by the Group that are rented out:** The Group owns a number of properties valued at £284k (2021: £278k) that are rented out. These properties are accounted for at cost less accumulated depreciation rather than as investment properties as the Group does not hold these properties for investment purposes. They are held in furtherance of the charitable purposes of the Group.
- **Impairment of tangible fixed assets:** Impairment tests will only be undertaken where there has been some indication that impairment has actually occurred. In a situation where the net book value of a tangible fixed asset will be greater than its recoverable amount, the value of the asset will be written down to this recoverable amount. At 31st December 2022 the Charity had spent £1.1m on the Heart of Africa and £0.2m on The Reserve, which are included in Tangible Assets under construction. Construction work on these projects was due to commence in autumn 2020, but due to the impact of COVID-19, the main construction was deferred. Construction work on the Heart of Africa has started at the time these accounts are signed. While works on The Reserve have yet to formally be approved by Trustees on the date of signing, the new bank finance facility with Santander has been structured to support the development on the expectation that construction will proceed in 2023. It is therefore not considered that there is any impairment of the costs incurred to date on the Heart of Africa project.
- **Defined benefit pension scheme and buy-in with Aviva:** as explained in note 23, the Trustees of the scheme secured a buy-in with Aviva. As at 31 December 2022, the Charity has not transferred its legal obligation in respect of the scheme to Aviva and has no legal or constructive obligation to do so. However, The Trustee of the Scheme and The North of England Zoological Society triggered the wind-up of the scheme with effect from 5 October 2022. The next stage of the process will be to convert the 'buy-in' policy to a 'buy-out' policy, which will see the Charity discharge its obligations in respect of the pension scheme and where each member of the scheme will have an insurance policy in their own name, covering the benefits due. The Trustees reflected the cost of this policy with Aviva amounting to £2.1m as a settlement of the DB Pension Scheme within the SOFA for the year ended 31 December 2021 as at the date of entering into the policy with Aviva, the Trustees' intention was to move towards a buy-out of the scheme.

Significant estimates

Preparation of the financial statements requires management to make significant estimates. The items in the financial statements where these estimates have been made include:

- **Depreciation and amortisation rates:** depreciation and amortisation rates used in respect of both tangible and intangible assets reflect the expected useful life of those assets based on historic experience. For major projects, component parts are allocated varying depreciation rates depending on their nature. The depreciation and amortisation charge for the year ending 31st December 2022 was £6.7m.
- **Defined benefit pension scheme:** the scheme still remains the responsibility of the Group and the present value of the pension scheme asset depends on a number of factors that are determined on an actuarial basis using a variety of assumptions. The assumptions used in determining the net cost (income) for pensions include the discount rate. Any changes in these assumptions, which are disclosed in note 23, will impact the carrying amount of the pension liability. The Group has not recognised this pension scheme asset on the balance sheet as, despite the fact that as a result of the surplus, the Group is not currently making any contributions into the scheme, the scheme is closed to future accrual, and the Group is not entitled to a refund from the scheme.

Notes to the consolidated financial statements

1. Status

The Charity is a company limited by guarantee and has no share capital. Members have guaranteed the liabilities of the Charity to the extent of £1 each in the event of the charity being wound up. The registered address is Cedar House, Caughall Road, Chester CH2 1LH. The principal activity of the Charity is as a conservation and education charity that owns and operates Chester Zoo.

2. Trading activities

The Charity 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 Charity. It distributes its annual taxable profit via Gift Aid to the Charity.

The Charity provided a rent concession in 2021, whereby the subsidiary would pay no rent during periods of closure due to COVID-19. Rents during periods of operation in 2021 were capped at the lower of 10% of turnover in an outlet or the rent payable in the lease agreement. Additionally, no rent was charged during the closure of Junes restaurant for repairs to the roof and flooring.

Audited financial statements for Chester Zoo Enterprises Limited for the year ended 31 December 2022 will be filed with the Registrar of Companies.

	Total 2022 £'000	Total 2021 £'000
Chester Zoo Enterprises Limited trading results		
Trading income	14,019	11,871
Job Retention Scheme Grant	-	327
Total income	14,019	12,198
Resources expended		
Labour and cost of goods sold	(10,426)	(8,297)
Gross trading profit for the year	3,593	3,901
Indirect costs		
Operating and support costs paid to the Charity	(2,856)	(2,986)
Property rents paid to the Charity	(716)	(475)
Operating profit	21	440
Taxation	-	1
Profit for the financial year	21	441
Donation (payable) to parent under Gift Aid scheme	-	(10)
Profit retained in subsidiary	21	431

3. Investment income

	Total 2022 £'000	Total 2021 £'000
Interest on cash deposits	67	23
Total investment income	67	23

4. Expenditure on charitable activities

	Total 2022 £'000	Total 2021 £'000
Habitats, species & populations		
• Priority species	12,345	11,156
• Visitor engagement species	4,990	4,325
• Conservation outreach programmes	1,669	1,573
• Science & research	1,144	945
Conservation education, engagement & capacity building	3,824	2,415
Conservation advocacy	691	357
Total expenditure on charitable activities	24,663	20,771

5a. Analysis of total expenditure

	Employee costs £'000	Other direct costs £'000	Support costs (note 5b) £'000	Depreciation and amortisation £'000	Total 2022 £'000	Total 2021 £'000
Raising funds						
Costs of generating memberships, donations and legacies	392	415	1,187	467	2,461	2,266
Costs of visitor admission & experience	2,423	1,431	3,377	1,611	8,842	7,633
Trading costs – Chester Zoo Enterprises Limited	4,688	5,738	2,856	-	13,282	11,283
Total expenditure on raising funds	7,503	7,584	7,420	2,078	24,585	21,182
Charitable activities						
Habitats, species & populations	6,302	3,483	6,445	3,918	20,148	17,999
Conservation education, engagement & capacity building	1,404	547	1,257	616	3,824	2,415
Conservation advocacy	139	55	435	62	691	357
Total expenditure on charitable activities	7,845	4,085	8,137	4,596	24,663	20,771
Total expenditure for Group	15,348	11,669	15,557	6,674	49,248	41,953

5b. Analysis of support costs

	Total 2022 £'000	Total 2021 £'000
Direct employee costs	6,142	4,978
Other costs	9,415	7,771
Total of support costs	15,557	12,749

Support costs have been allocated to the activities set out in note 5a on the basis of their usage of cost-driving activities attributable to each support service, as follows:

	Costs of generating donations & legacies	Cost of visitor admission & experience	Trading costs – Chester Zoo Enterprises Limited	Habitats species & population	Conservation education, engagement & capacity building	Conservation advocacy	Total 2022	Total 2021
Support cost breakdown by activity	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Governance	97	336	99	817	129	164	1,642	1,100
Marketing	472	692	466	349	175	175	2,329	1,540
Human resources	42	193	379	578	131	9	1,332	981
Information technology	50	231	453	691	157	10	1,592	1,597
Finance department	146	612	353	812	163	27	2,113	1,238
Site operations	32	111	446	271	42	4	906	803
Utilities	112	388	614	945	148	15	2,222	2,183
Facilities estates and development	236	814	46	1,982	312	31	3,421	3,307
Total	1,187	3,377	2,856	6,445	1,257	435	15,557	12,749

6. Grants payable in furtherance of the charity's objectives

The Charity 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 2022 £'000	Total 2021 £'000
Habitats, species & population	861	113	974	811
Conservation education & capacity building	26	-	26	47
Total grants payable	887	113	1,000	858

No allocation of support costs is required as all grants are issued directly to partners, with minimal employee or associated expenditure incurred in relation to the grant making activities.

7. Net income before other recognised gains and losses

	Total 2022 £'000	Total 2021 £'000
This is after charging:		
Services provided by the Charity's auditor		
Fees payable for the audit of the charity and consolidated accounts	45	40
Fees payable for the audit of the subsidiaries	15	11
Fees payable for taxation advice for the charity	-	8
Fees payable for taxation compliance for the subsidiary	7	6
Operating leases	151	127
Amortisation of intangible fixed assets	389	259
Depreciation of tangible fixed assets	6,285	6,993

8. Trustees' remuneration

The Trustees, being charity trustees, received no remuneration (2021: £nil) and received reimbursement totalling £1,361 (2021: £nil) for travel and accommodation expenses necessarily incurred. Indemnity insurance costing £32,480 (2021: £26,880) has been taken out by the Charity to protect the Charity, its Trustees and other employees.

9. Employee costs

The average monthly headcount employed by the Charity during the year was 873 (2021: 725) including seasonal employees. The average monthly number of full-time equivalent employees (FTE) analysed by category were as follows:

	Number of FTE employees	
	2022 number	2021 number
Habitat species & population	199	175
Conservation education	45	35
Conservation advocacy	3	1
Memberships donations and legacies	14	16
Visitor admission & experience	67	66
Trading subsidiary	131	110
Support and governance	149	126
Total FTE employees	608	529

The aggregate payroll costs of these persons were as follows:

	Total 2022 £'000	Total 2021 £'000
Wages and salaries cost	17,949	14,637
Social security cost	1,503	1,134
Pension cost:		
• Defined benefit pension scheme	-	2,327
• Defined contribution pension scheme	1,633	1,439
Total employee costs	21,085	19,537

During the year the Charity made no payments (2021: £110,300) on exit of employment contracts.

The number of employees, including those employed for only part of the year, whose emoluments for the year (excluding employee pension contributions under salary sacrifice) fell within each band of £10,000 from £60,000 upwards is shown below. All of these employees had benefits accruing to them under the defined contribution pension scheme. Only one had benefits accruing to them on the defined benefit scheme. Contributions to the defined contribution scheme for all of these employees totalled £128,318 (2021: £166,369).

	2022 number	2021 number
From £140,001 to £150,000	1	1
From £130,001 to £140,000	-	-
From £120,001 to £130,000	-	1
From £110,001 to £120,000	-	-
From £100,001 to £110,000	-	-
From £90,001 to £100,000	1	-
From £80,001 to £90,000	4	-
From £70,001 to £80,000	2	6
From £60,001 to £70,000	2	1

The key management personnel employed by the Charity comprise five members of the executive team who reported to the Board of Trustees during the year. Their total employee benefits for 2022 including salary, bonus, pension contributions, employer's national insurance contributions and payments on exit were £631,362 (2021: £697,693).

10. Intangible assets

	Assets under course of construction £'000	Computer software £'000	Total £'000
Cost			
At 1 January 2022	-	1,270	1,270
Additions	-	11	11
At 31 December 2022	-	1,281	1,281
Amortisation			
At 1 January 2022	-	413	413
Charge for the year	-	389	389
At 31 December 2022	-	802	802
Net book value			
At 31 December 2022	-	479	479
At 31 December 2021	-	857	857

11. Tangible assets

	Assets under construction £'000	Freehold property £'000	Buildings and enclosures £'000	Machinery and equipment £'000	Animals and plant collection £'000	Total £'000
Cost						
At 1 January 2022	2,603	5,150	100,258	15,154	1	123,166
Additions	4,496	-	1,337	541	-	6,374
Disposals	-	-	(136)	(91)	-	(227)
Transfers	(1,244)	-	1,244	-	-	-
At 31 December 2022	5,855	5,150	102,703	15,604	1	129,313
Depreciation						
At 1 January 2022	-	2,833	46,699	9,208	-	58,740
Charge for the year	-	17	4,804	1,464	-	6,285
Disposals	-	-	(81)	(62)	-	(143)
At 31 December 2022	-	2,850	51,422	10,610	-	64,882
Net book value						
At 31 December 2022	5,855	2,300	51,281	4,994	1	64,431
At 31 December 2021	2,603	2,318	53,558	5,946	1	64,426

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

The Trustees consider that it is not meaningful to consider the market value of most of the Charity'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 Charity.

The Charity considers that none of its assets meets the definition of heritage assets under FRS102. Although certain assets may have a heritage quality, these are all used for operational purposes in the running of the zoo and are therefore classified as operating assets.

12. Investments in subsidiary companies

	2022	2021
	£	£
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 Charity'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 Limited	02669535	UK	Catering and retail	100% ordinary	100% ordinary
Chester Zoo (Nigeria) Limited	08374657	UK	Dormant	100% ordinary	100% ordinary
Chester Zoo Foundation Nigeria	08904330	UK	Dormant	100% ordinary	-

All the above undertakings are registered at Cedar House, Caughall Road, Upton-by-Chester, Chester CH2 1LH. Activities in Nigeria have now ceased and Chester Zoo (Nigeria) Limited and Chester Zoo Foundation Nigeria are now dormant.

The Charity incorporated a newly formed 100% owned subsidiary undertaking Chester Zoo Hotels Limited (Company number 14611700) on 23 January 2023.

13. Stocks

	Group		Society	
	2022 £'000	2021 £'000	2022 £'000	2021 £'000
Goods for resale	834	755	-	-
Consumables	287	165	188	153
Total	1,121	920	188	153

14. Debtors: amounts falling due within one year

	Group		Society	
	2022 £'000	2021 £'000	2022 £'000	2021 £'000
Trade debtors	438	404	342	313
Amount owed by subsidiary undertaking	-	-	845	588
VAT and other debtors	151	46	151	46
Corporation tax repayable	-	35	-	-
Prepayments and accrued income	1,496	1,506	1,496	1,505
Total	2,085	1,991	2,834	2,452

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

15. Net funds

	At 1 Jan 2022 £'000	Cash flows £'000	At 31 Dec 2022 £'000
Cash deposits	4,263	1,437	5,700
Cash held in escrow	504	(80)	424
Cash at bank and in hand	4,767	1,357	6,124
Bank overdraft	(1,046)	1,046	-
Cash and cash equivalents	3,721	2,403	6,124
Revolving credit facility	(1,000)	250	(750)
Net funds	2,721	2,653	5,374

The cash held in escrow is set aside for the Trustee of the Charity's defined benefit pension scheme and to be used to conclude the wind-up of the scheme (see note 23 for further details on the buy in of the scheme). The money would also be paid to the pension scheme if the Charity were to become insolvent.

The Charity had placed £4.2m in a three-month money market account that matured on 6 January 2023. As this has a short maturity, it has not been treated as a short-term investment, but as part of the Charity's cash and cash equivalents.

16. Creditors: amounts falling due within one year

	Group		Society	
	2022 £'000	2021 £'000	2022 £'000	2021 £'000
Bank overdraft	-	1,046	-	1,046
Trade creditors	2,512	1,516	2,310	1,178
Other taxes and social security costs	393	653	393	653
Accruals	2,772	2,753	2,772	2,753
Other creditors	540	211	540	211
Deferred income (see below)	3,396	3,337	3,396	3,337
Total	9,613	9,516	9,411	9,178

During the financial year, the Charity undertook to not renew the £2m bank overdraft facility it had in place with Santander.

	Balance at 31 Dec 2021 £'000	Utilised advanced purchases £'000	Advanced purchases £'000	Balance at 31 Dec 2022 £'000
Deferred income				
Memberships	2,752	(2,752)	2,841	2,841
Gift vouchers	191	(191)	120	120
Event deposits	61	(61)	175	175
Experiences	333	(333)	260	260
Total deferred income	3,337	(3,337)	3,396	3,396

	Balance at 31 Dec 2020 £'000	Utilised advanced purchases £'000	Advanced purchases £'000	Balance at 31 Dec 2021 £'000
Deferred income	2,211	(2,211)	2,752	2,752
Memberships	290	(290)	191	191
Gift vouchers	69	(68)	60	61
Event deposits	-	-	333	333
Total deferred income	2,570	(2,569)	3,336	3,337

17. Creditors: amounts falling due after more than one year

	Group		Society	
	2022 £'000	2021 £'000	2022 £'000	2021 £'000
Revolving credit facility	750	1,000	750	1,000
Total	750	1,000	750	1,000

The Charity's borrowing facilities comprised an unsecured £22m revolving credit facility ("RCF") taken out with Santander in April 2020. The facility bears interest at a margin of between 1.5% and 1.75% above SONIA 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 Charity 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.

18. Post balance sheet events

The Charity incorporated a newly formed 100% owned subsidiary Chester Zoo Hotels Limited, (Company number 14611700) on 23 January 2023.

On 14 February 2023, the Charity entered into a contract for the Heart of Africa development, with a committed value of £22.7m. Works on this project started prior to the date of signing the accounts.

On the 30 March 2023, the RCF facility was replaced with two new facilities comprising a new £30m RCF and a £15m Business Development Loan. The new RCF facility expires in March 2028 and the Business Development Loan expires March 2027. Both facilities bear interest a margin of between 1.8% and 3.1% above SONIA depending on leverage. To remain compliant with the terms of these facilities, the Charity needs to meet the following covenants:

- (i) Interest cover – EBITDA must be at least four times the interest payable until 31 December 2024 and at least three times the interest payable until 30 June 2025 and to the maturity of the facilities; and
- (ii) Leverage – The facilities bear a variable net debt requirement that must not exceed between 2.5 and 4 times EBITDA.

In order to mitigate some interest rate risk, on 31 March 2023, the Charity entered into a contract to restrict the Charity's SONIA interest rate cost to the range of 3.88% to 4.75% on the first £15m of expected borrowings for 18 months from 31 January 2024, based on committed project spend.

19. Movement in consolidated funds

	Balance at 31 Dec 2021	New funds	Funds utilised	Transfers	Balance at 31 Dec 2022
	£'000	£'000	£'000	£'000	£'000
Restricted funds					
Animal and plant collections	43	12	(48)	-	7
Conservation science and education projects	472	926	(934)	-	464
Monsoon Forest fire donations	106	-	(106)	-	-
Escrow account – defined benefit pension scheme (note 15)	504	-	-	(80)	424
Job retention scheme grant	-	-	-	-	-
Total restricted funds	1,124	938	(1,088)	(80)	896
Unrestricted funds					
Designated funds					
Defined benefit pension scheme	-	-	-	-	-
Funds tied to fixed assets	57,519	1,146	(84)	-	58,581
Total designated funds	57,519	1,146	(84)	-	58,581
Free reserves					
Cash reserve	3,802	518	-	80	4,400
Total free reserves	3,802	518	-	80	4,400
Total group funds employed	62,445	2,602	(1,172)	-	63,877

	Balance at 31 Dec 2020	New funds	Funds utilised	Transfers	Balance at 31 Dec 2021
	£'000	£'000	£'000	£'000	£'000
Restricted funds					
Animal and plant collections	30	28	(15)	-	43
Conservation science and education projects	259	620	(407)	-	472
Monsoon Forest fire donations	106	-	-	-	106
Escrow account – defined benefit pension scheme (note 15)	1,771	-	(2,146)	879	504
Job retention scheme grant	-	885	(885)	-	-
Total restricted funds	2,166	1,532	(3,453)	879	1,124
Unrestricted funds					
Designated funds					
Defined benefit pension scheme	1,130	-	(251)	(879)	-
Funds tied to fixed assets	54,393	3,126	-	-	57,519
Total designated funds	55,523	3,126	(251)	(879)	57,519
Free reserves					
Cash reserve	3,810	40,568	(40,576)	-	3,802
Total free reserves	3,810	40,568	(40,576)	-	3,802
Total group funds employed	61,499	45,226	(44,280)	-	62,445

	Unrestricted			
	Free £'000	Designated £'000	Restricted £'000	2022 total funds £'000
Fixed assets	-	64,910	-	64,910
Current assets	4,400	4,034	896	9,330
Creditors: amounts falling due within one year	-	(9,613)	-	(9,613)
Creditors: amounts falling due after more than one year	-	(750)	-	(750)
Net assets	4,400	58,581	896	63,877

	Unrestricted			
	Free £'000	Designated £'000	Restricted £'000	2021 total funds £'000
Fixed assets	-	65,283	-	65,283
Current assets	3,802	2,752	1,124	7,678
Creditors: amounts falling due within one year	-	(9,516)	-	(9,516)
Creditors: amounts falling due after more than one year	-	(1,000)	-	(1,000)
Net assets	3,802	57,519	1,124	62,445

Restricted income funds include income from certain donations, grants and legacies received and money set aside in escrow for the defined benefit pension scheme (note 23).

Designated funds relate both to the movement in the Charity's defined benefit pension scheme as it secured benefits with an insurer and to its intangible and tangible fixed assets which are used to carry out the Group's activities. They have therefore been designated for that purpose.

The Charity sets aside a minimum £4.4m (2021: £3.8m) cash reserve, held separately from the Charity's other cash balances. Such a sum is sufficient to operate for a period of two months without significant curtailment of its activities.

20. Capital commitments

	Group		Society	
	2022 £'000	2021 £'000	2022 £'000	2021 £'000
Capital expenditure, contracted for but not provided in the financial statements	3,917	270	3,917	270

21. Leasing commitments

The Group and Charity had no non-cancellable operating lease commitments at 31 December 2022 and December 2021.

22. Related party transactions

The Charity did not receive a charitable donation by Gift Aid from Chester Zoo Enterprises Limited for the year ended 31 December 2022 (2021: £9,780). The Charity leases retail and food & beverage outlets to Chester Zoo Enterprises Limited and the 2022 lease costs were £715,660 (2021: £475,467) with a concession in 2021 to reflect the impact of COVID-19 on the operations on its subsidiary. The Charity also charged staff and support costs totalling £2,856,023 (2021: £2,986,092). As at the 31 December 2022, the Charity was owed £844,893 (2021: £588,099) from Chester Zoo Enterprises Limited.

23. Pensions

The Charity operates two pension schemes: a defined benefit scheme and a defined contribution scheme.

Defined benefit scheme

The defined benefit scheme holds assets in a separately administered fund and closed to future accrual in March 2012.

On closing the scheme to future accrual in 2012, the Charity committed to funding the scheme on a solvency basis over a 10-year period and to work towards securing member benefits with an insurer and in November 2021 the Trustees of the scheme secured a buy-in with Aviva. The Charity contributed £2.1m, from funds held in escrow for the scheme, as part of the buy-in transaction. Professional fees of £80,000 (2021: £181,000) were also incurred in relation to this transaction.

The remaining escrow balance of £0.4m forms part of the Charity's cash and cash equivalents balance (note 15) and is treated as restricted funds (note 19). This money will be used to fund the final wind-up of the scheme. The Trustee of the Scheme and the Charity, triggered the formal wind up of the scheme with effect from 5th October 2022. The next stage of the process will be to convert the 'buy-in' policy to a 'buy-out' policy where each member of the scheme will have an insurance policy in their own name, covering the benefits due under the scheme.

A full actuarial valuation was carried out as at 31 December 2020, and updated to 31st December 2022 for the purpose of these disclosures by Spence & Partners Limited, qualified independent actuaries.

	2022 £'000	2021 £'000
Present value of funded defined benefit obligations	11,744	17,455
Fair value of plan assets	11,835	17,455
Surplus	91	-
Effect of asset ceiling	(91)	-
Net defined benefit asset/(liability) recognised	-	-

In line with FRS102, a surplus can only be recognised in the balance sheet to the extent that the Charity 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. There is no recognition of any surplus at the year end.

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

Weighted average assumptions used to determine benefit obligations at:	2022	2021
Discount rate	4.77%	1.89%
Rate of price inflation (RPI)	3.33%	3.51%
Rate of pension increases (5% RPI)	3.16%	3.30%
Rate of pension increases (2.5% RPI)	2.13%	2.18%

Assumed life expectations on retirement at age 65:

Male member retiring today (member age 65)	22.5	22.5
Male member retiring in 20 years (member age 45 today)	24.2	24.1
Female member retiring today (member age 65)	25.0	24.9
Female member retiring in 20 years (member age 45 today)	26.6	26.5

The fair value of the plan assets were as follows:

	Fair value at 31 Dec 2022 £'000	2022 %	Fair value at 31 Dec 2021 (£'000)	2021 %
Cash and cash equivalents	91	0.77	273	1.6
Equities	-	-	-	-
Debt instruments	-	-	-	-
Insurance policy	11,744	99.23	17,231	98.7
Net current assets	-	-	(49)	(0.3)
Total	11,835	100.0	17,455	100.0

	2022 £'000	2021 £'000
Change in defined benefit obligation		
Benefit obligation at beginning of year	17,455	17,650
Interest cost	322	234
Past service cost	-	-
Remeasurement: actuarial (gain)/loss	(5,234)	(2,891)
Benefits and expenses paid	(799)	(405)
Losses on settlements/curtailments	-	2,867
Benefit obligation at end of year	11,744	17,455
	2022 £'000	2021 £'000
Change in scheme assets		
Fair value of scheme assets at beginning of year	17,455	21,405
Interest income	322	298
Employer contributions (incl. employer direct benefit payments)	-	2,146
Benefits and expenses paid	(799)	(405)
Remeasurements – return on scheme assets less interest income	(5,143)	(5,989)
Arrears allowance in respect of benefit rectification	-	-
Fair value of scheme assets at end of year	11,835	17,455
	2022 £'000	2021 £'000
Expense recognised in the statement of financial activities		
Current service cost	-	-
Net interest on net defined benefit obligation	-	(65)
Past service cost	-	-
Gains and losses on settlements and curtailments	-	2,867
Gains and losses due to surplus limitation	-	65
Total net interest cost	-	2,867
Remeasurements:		
Effect of changes in assumptions	(7,819)	(856)
Effect of experience adjustments	2,585	(2,035)
Return on plan assets (excluding interest income)	5,143	5,989
Remeasurement on effect of asset ceiling	91	(2,377)
Pension deficit reduction accrual	-	-
Total remeasurements included in other gains and losses in the SOFA	-	721
Total pension cost recognised in the pension scheme	-	2,146
Professional fees on pension scheme buy-out	80	181
Total pension costs recognised in the SOFA	80	2,327

Defined contribution scheme

Contributions to the defined contribution scheme totalled £1,633,089 (2021: £1,439,316). The expenditure is taken from unrestricted funds.

Thank you

We could not achieve our mission without the support we receive from many individuals and organisations. Our thanks go to:

Major Gifts

- Helen Wilson
- LDRA Ltd
- Sandra Birnie
- Sherrington Associates
- Waitrose Community Fund

Legacies

Thank you to those who have kindly remembered us in their wills. Their legacies are hugely valued and allow us to carry out our vital conservation work.

This year we'd like to give a special mention to the following:

A bequest was received from the late Jan Holman, a fierce supporter of the zoo since 1952; she also worked as a guide here. We thank both her and her husband Dennis for the gift.

A gift was received in memory of Lynda Merriman-Johnson. She brought many school children here over the years and was a great supporter. Thank you to her and her husband Sydney.

Trusts, Foundations and Grants in 2022:

- Asian Species Action Partnership (ASAP), IUCN
- Beauval Nature
- Charles Brotherton Trust
- Chester Bluecoat Charity
- Darwin Initiative, Defra
- District Level Licensing, Cheshire West and Chester Council
- EAZA Silent Forest Fund
- Green Recovery Challenge Fund
- Marjorie Coote Animal Charity Trust
- Marsh Charitable Trust
- Peter Foden Family Trust
- Sandra Charitable Trust
- Sir Donald and Lady Edna Wilson Trust
- Whitley Fund for Nature
- William Haddon Charitable Trust

Conservation, Science and/or Education Champions

- Co-op
- Ferrero UK
- MBNA/Lloyds Banking Group
- Mowgli
- Saputo Dairy UK
- Urenco

Corporate Champions

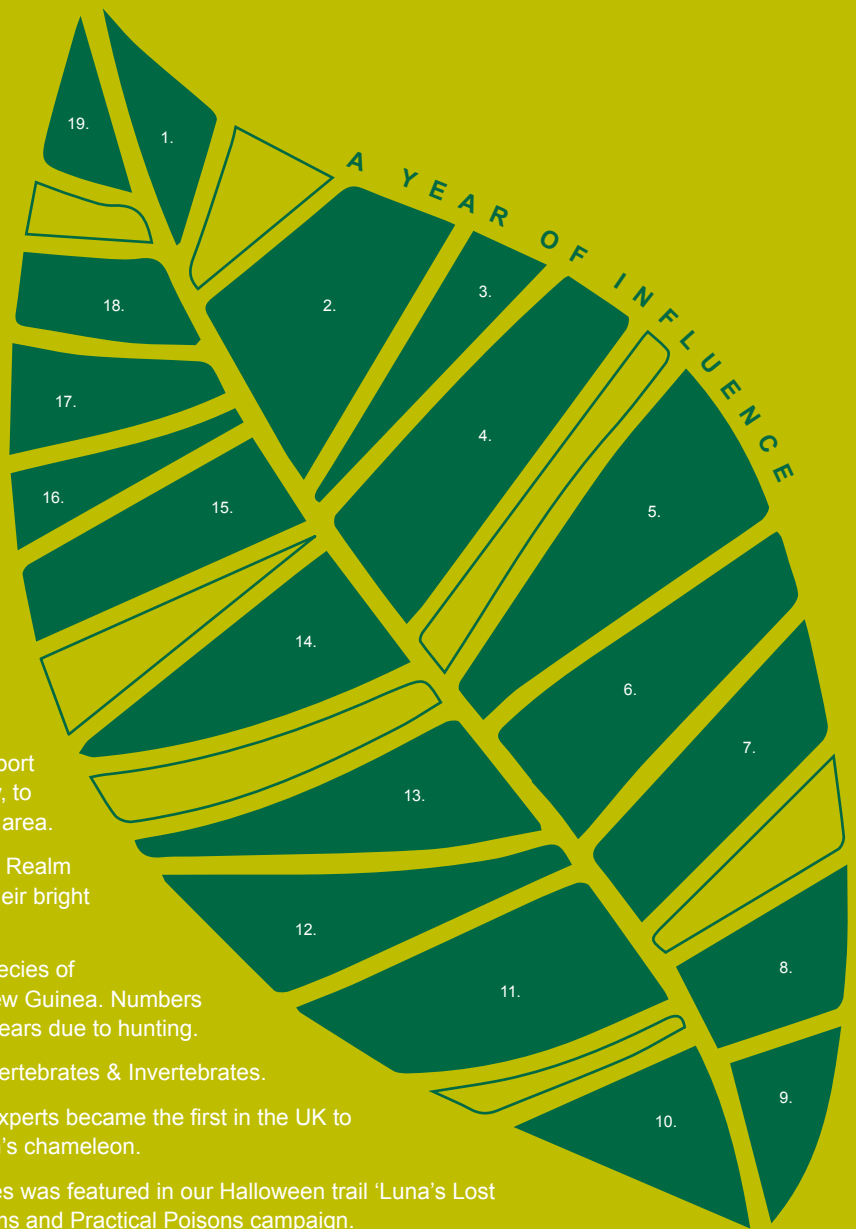
- Chester Racecourse
- Darwin Escapes
- M&S Bank
- Proximo Group
- Sykes Cottages
- Toyota UK

Academic Partners:

- Durham University
- Instituto de Conservação de Animais Silvestres (ICAS)
- Manchester Metropolitan University
- Michoacán University
- Nottingham Trent University
- University of Cambridge
- University of Chester
- University of East Anglia
- University of Kent (DICE)
- University of Liverpool
- University of Manchester
- University of Oxford (WildCru)
- University of Plymouth
- University of Salford
- University of Sheffield
- University of Surrey
- University of Toliara
- University of Turin

Cover images

1. Grévy's zebra: An endangered species with less than 2,000 individuals left in the wild. The zebras at the zoo are part of the European Endangered Species Breeding Programme, which is crucial to ensuring the survival of the species.
2. Red-bellied lemur: One of nine species of lemur at the zoo, red-bellied lemurs are endemic to Madagascar. We continue to support our Malagasy partner, Madagasikara Voakajy, to manage and monitor the Mangabe protected area.
3. Blue poison dart frog: Located in our Tropical Realm habitat, these frogs warn off predators with their bright blue colour.
4. Dusky pademelon: This rare mammal is a species of marsupial native to forests of the island of New Guinea. Numbers in the wild have dropped 30% in the last 20 years due to hunting.
5. A member of our team of keepers of Lower Vertebrates & Invertebrates.
6. Parson's chameleon: In October our reptile experts became the first in the UK to successfully breed the extremely rare Parson's chameleon.
7. Upside-down jellyfish: This fascinating species was featured in our Halloween trail 'Luna's Lost Spell', running alongside BIAZA's Vital Venoms and Practical Poisons campaign.
8. Humboldt penguin: Nine Humboldt penguin chicks were born at the zoo in July, with keepers naming them after their favourite fruits.
9. A member of our team of keepers of Lower Vertebrates & Invertebrates.
10. Asiatic lion: A new lion experience – giving visitors the chance to feed the Asiatic lions – was launched in 2022.
11. Cotton-top tamarin: One of the world's most endangered primates, with only 2,000 left in the wild due to habitat loss and the illegal wildlife trade.
12. Capybara: Three capybara pups were born in August to mum Coconut. Capybaras are highly social animals and can be found living in small herds on grassland, in tropical rainforests and in wetlands across South America. At the zoo, they share an outdoor habitat with the giant anteaters.
13. Clownfish: Found in the Aquarium, where visitors can discover what unique wildlife can be found in the depths of the oceans across the planet and the important role they play.
14. Members of our team of Voluntary Work Placement and our Lead Conservation Scientist: Population Biology
15. Philippine spotted deer: The most threatened deer species in the world, with as few as 700 remaining in the wild.
16. Dracula vinacea: One of over 700 different species in our National Collection of orchids.
17. A member of our Facilities team.
18. Rothschild's giraffe: We welcomed the arrival of a giraffe calf in August after mum Orla's 15-month pregnancy. The calf was named after Mount Stanley, the tallest mountain in Uganda, where the zoo's conservationists are fighting to boost giraffe numbers.
19. One of our Animal & Plant Logistical Services team, who provide support and resources to teams across the zoo.





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2022

		Stock 31/12/21			Births			Acquisitions			Deaths			Dispositions			Stock 31/12/22		
Preferred Scientific Name	Common Name	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	1	2	0	1	0	0	0	0	0	0	1	0	0	0	0	2	1	0
<i>Thylogale brunii</i>	Dusky pademelon	3	3	0	0	1	3	0	0	0	0	0	0	2	0	0	1	4	3
<i>Macroscelides proboscideus</i>	Short-eared elephant shrew	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0
<i>Orycteropus afer</i>	Aardvark	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0
<i>Procavia capensis capensis</i>	Rock hyrax	1	4	0	0	0	1	0	0	0	1	1	1	0	3	0	0	0	0
<i>Elephas maximus</i>	Asian elephant	2	4	0	0	0	0	0	0	0	0	0	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	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0
<i>Tamandua tetradactyla</i>	Southern tamandua	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Tupaia belangeri</i>	Northern tree shrew	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
<i>Eulemur coronatus</i>	Crowned lemur	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
<i>Eulemur macaco</i>	Black lemur	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0
<i>Eulemur rubriventer</i>	Red-bellied lemur	2	1	0	2	0	0	0	0	0	1	0	0	0	0	0	3	1	0
<i>Haplolemur alaotrensis</i>	Alaotran gentle lemur	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1
<i>Lemur catta</i>	Ring-tailed lemur	19	7	0	0	0	0	0	0	0	1	2	0	0	5	0	18	0	0
<i>Varecia rubra</i>	Red ruffed lemur	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
<i>Varecia variegata subcincta</i>	White-belted ruffed lemur	4	1	0	2	1	1	0	0	0	0	0	1	0	0	0	6	2	0
<i>Propithecus coquereli</i>	Coquerel's sifaka	1	1	0	0	1	1	0	0	0	0	1	0	0	0	0	1	1	1
<i>Daubentonia madagascariensis</i>	Aye-aye	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Cebuella pygmaea niveiventris</i>	Eastern pygmy marmoset	4	6	0	0	0	1	0	0	0	0	1	1	0	0	0	4	5	0
<i>Leontopithecus chrysomelas</i>	Golden-headed lion tamarin	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Saguinus bicolor</i>	Pied tamarin	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	0
<i>Saguinus imperator subgriseus</i>	Emperor tamarin	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Saguinus oedipus</i>	Cotton-top tamarin	1	1	0	0	2	1	0	0	0	0	1	1	0	0	0	1	2	0
<i>Sapajus xanthosternus</i>	Buffy-headed capuchin	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Ateles fusciceps rufiventris</i>	Black-headed spider monkey	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	0
<i>Macaca nigra</i>	Sulawesi crested macaque	7	10	0	0	0	0	0	0	0	0	0	0	0	0	0	7	10	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	2	11	0	0	2	0	0	0	0	0	0	0	0	0	0	2	13	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	1	0	0	0	0	0	1	0	0	0	2	2	0
<i>Pan troglodytes</i>	Chimpanzee	6	14	0	1	0	0	0	0	0	0	1	0	0	0	0	7	13	0
<i>Pongo pygmaeus</i>	Bornean orangutan	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	0
<i>Pongo abelii</i>	Sumatran orangutan	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0
<i>Callosciurus prevostii rafflesii</i>	Prevost's squirrel	5	7	0	3	4	2	0	0	0	3	1	2	1	3	0	4	7	0
<i>Tamias swinhoei</i>	Swinhoe's striped squirrel	10	6	0	1	1	47	0	0	0	7	4	34	5	0	0	8	7	0
<i>Hypogeomys antimena</i>	Votsovotsa/Giant jumping rat	1	3	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0
<i>Acomys cilicicus</i> *	Asia minor spiny mouse	39	67	22	1	3	167	0	0	0	44	60	54	0	0	0	53	81	7
<i>Lemniscomys barbarus</i> *	Barbary striped grass mouse	0	0	0	0	0	9	2	4	0	0	1	2	0	0	0	4	5	3
<i>Mus minutoides</i> *	Pygmy mouse	52	61	0	0	0	469	0	0	0	123	80	88	0	0	0	103	122	66
<i>Phloeomys pallidus</i>	Northern Luzon Giant Cloud Rat	1	2	0	0	0	1	0	0	0	0	0	1	0	0	0	1	2	0
<i>Thallomys paedulcus</i> *	Acacia rat	3	1	0	0	0	3	0	0	0	2	0	3	0	0	0	1	1	0
<i>Heterocephalus glaber</i> *	Naked mole-rat	22	47	12	0	0	91	0	0	0	3	14	84	0	0	0	16	49	6
<i>Hydrochoerus hydrochaeris</i>	Capybara	1	2	0	3	0	1	0	0	0	1	0	1	0	0	0	3	2	0
<i>Dasyprocta azarae</i>	Azara's agouti	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0
<i>Pteropus rodricensis</i>	Rodrigues Fruit Bat	76	113	0	12	4	0	0	0	0	13	6	0	0	0	0	75	111	0
<i>Carollia perspicillata</i> *	Seba's short-tailed bat	60	370	7	14	5	377	0	0	0	95	351	231	0	0	0	63	88	5
<i>Acinonyx jubatus soemmeringii</i>	Central African cheetah	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
<i>Felis silvestris grampia</i>	Scottish wild cat	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0
<i>Leopardus wiedii</i>	Margay	1	0	0	0	0	0	0	0	0	0	0	0	1	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	1	0	0	0	0	1	0	0
<i>Panthera tigris sumatrae</i>	Sumatran tiger	0	2	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1	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	1	1	0	1	2	0	0	0	0	0	0	0	0	0	0	2	3	0
<i>Galidictis grandieri</i>	Grandier's Vontsira	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0
<i>Mungotictis decemlineata</i>	Narrow-striped mongoose	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0
<i>Helogale parvula</i>	Dwarf mongoose	4	6	0	1	4	1	0	0	0	0	0	1	3	2	0	2	8	0
<i>Herpestes auropunctatus</i>	Small indian mongoose	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Suricata suricatta</i>	Slender-tailed meerkat	11	10	0	1	1	8	0	0	0	1	1	8	8	2	0	3	8	0

<i>Lycaon pictus</i>	African hunting dog	4	4	0	0	0	0	0	0	0	0	1	0	0	0	0	4	3	0
<i>Speothos venaticus</i>	Bush dog	3	7	0	0	1	0	0	0	0	0	1	0	0	1	0	3	6	0
<i>Helarctos malayanus</i>	Malayan sun bear	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Tremarctos ornatus</i>	Andean bear	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
<i>Aonyx cinereus</i>	Asian small-clawed otter	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	0
<i>Pteronura brasiliensis</i>	Giant otter	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Ailurus fulgens fulgens</i>	Red panda	2	2	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
<i>Equus grevyi</i>	Grevy's zebra	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0
<i>Equus hemionus onager</i>	Persian onager	0	7	0	0	0	0	1	0	0	0	0	0	0	2	0	1	5	0
<i>Tapirus indicus</i>	Malayan tapir	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Tapirus terrestris</i>	South American tapir	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Diceros bicornis michaeli</i>	Eastern Black rhinoceros	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	0
<i>Rhinoceros unicornis</i>	One-horned rhinoceros	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Babyrusa sp.</i>	Babirusa	6	9	0	0	1	0	0	0	0	0	0	0	0	0	0	6	10	0
<i>Phacochoerus africanus</i>	Warthog	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0
<i>Potamochoerus porcus</i>	Red River hog	1	4	0	0	0	1	0	0	0	0	0	1	0	1	0	1	3	0
<i>Sus cebifrons</i>	Visayan warty pig	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0
<i>Camelus bactrianus</i>	Bactrian camel	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<i>Tragululus nigricans</i>	Philippine mouse-deer	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Pudu puda</i>	Southern pudu	2	2	0	0	1	0	0	0	0	0	0	0	1	0	0	1	3	0
<i>Rucervus eldii thamin</i>	Burmese brow-antlered deer	0	8	0	1	1	0	0	2	0	0	0	0	0	0	0	1	11	0
<i>Rusa alfredi</i>	Philippine Spotted Deer	1	2	0	0	1	0	0	0	0	0	0	0	0	1	0	1	2	0
<i>Giraffa camelopardalis rothschildi</i>	Baringo giraffe	3	6	0	1	0	0	0	0	0	0	0	0	1	0	0	3	6	0
<i>Okapia johnstoni</i>	Okapi	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0
<i>Damaliscus pygargus phillipsi</i>	Blesbok	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	0
<i>Madoqua kirkii</i>	Kirk's dik-dik	2	2	0	0	1	0	0	0	0	0	0	0	1	0	0	1	3	0
<i>Bos javanicus</i>	Javan Banteng	1	11	0	1	1	1	0	0	0	2	1	1	0	0	0	0	11	0
<i>Bubalus depressicornis</i>	Lowland Anoa	3	2	0	0	1	0	0	0	0	0	0	0	1	0	0	2	3	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	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
<i>Tragelaphus spekii gratus</i>	West African Sitatunga	1	11	0	0	0	0	0	0	0	0	2	0	1	0	0	0	9	0
<i>Capra hircus</i>	Domestic goat	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0
<i>Cephalophus natalensis</i>	Red forest duiker	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Hippotragus equinus</i>	Roan antelope	0	6	0	0	0	0	1	0	0	0	0	0	0	0	0	1	6	0
		452	957	41	46	42	1189	7	8	0	299	534	517	27	25	0	502	746	92
			1450			1277			15			1350			52			1340	

* denotes managed in groups

		Stock 31/12/2021			Births			Acquisitions			Deaths			Dispositions			Stock 31/12/2022		
Preferred Scientific Name	Common Name	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	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
<i>Ambystoma dumerilii</i> *	Lake Patzcuaro salamander	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
<i>Calotriton arnoldi</i> *	Montseny brook newt	11	7	22	0	0	18	3	15	0	1	7	5	0	0	0	13	26	24
<i>Ingerophrynus divergens</i> *	Toad	0	0	0	0	0	0	4	0	6	4	0	6	0	0	0	0	0	0
<i>Phrynoidis asper</i>	Asian giant toad	5	1	0	0	0	46	0	0	0	0	0	10	0	0	0	5	1	36
<i>Dendrobates azureus</i> *	Dyeing Poison Dart Frog	0	0	27	0	0	1	0	0	0	0	0	0	0	0	0	0	0	28
<i>Phyllobates terribilis</i> *	Golden poison dart frog	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0
<i>Oophaga pumilio</i> *	Strawberry poison frog	6	2	18	0	0	22	0	0	0	0	0	1	0	0	6	11	5	25
<i>Ranitomeya imitator</i> *	Mimic poison frog	7	2	2	0	0	1	0	0	0	0	0	1	0	0	0	7	2	2
<i>Ranitomeya amazonica</i> *	Poison dart frog	2	6	5	0	0	10	0	0	0	0	0	0	0	0	0	2	6	15
<i>Excidobates mysteriosus</i> *	Marañón poison frog	0	0	37	0	0	8	0	0	0	0	0	1	0	0	9	15	14	6
<i>Boana pictura</i>	Imbabura tree frog	5	0	0	0	0	0	2	2	0	0	0	0	0	0	0	7	2	0
<i>Heterixalus alboguttatus</i> *	Whitebelly reed frog	4	8	8	0	0	152	0	0	0	0	0	11	0	0	31	0	0	130
<i>Leptodactylus fallax</i>	Mountain chicken frog	4	11	0	0	0	0	0	0	0	4	1	0	0	0	0	0	10	0
<i>Telmatobius culeus</i> *	Lake Titicaca frog	10	9	2	0	0	0	0	0	0	0	0	0	0	0	0	10	9	2
<i>Mantella aurantiaca</i> *	Golden mantella	34	25	80	0	0	789	0	0	0	3	7	105	0	0	135	11	21	646
<i>Mantella expectata</i> *	Blue-legged mantella	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Sylvirana maosonensis</i> *	Mao-Son frog	2	2	25	0	0	0	0	0	0	0	0	1	0	0	0	2	2	24
<i>Staurois parvus</i> *	Splash frog	0	0	86	0	0	30	0	0	0	0	0	10	0	0	11	0	0	95
<i>Nyctixalus pictus</i> *	Painted Indonesian tree frog	11	10	47	0	0	22	0	0	0	1	3	1	0	0	10	0	0	75
<i>Rhacophorus feae</i> *	Fea's tree frog	2	2	1	0	0	0	0	0	0	0	1	0	0	0	0	3	1	0
<i>Mannophryne trinitatis</i> *	Trinidad poison dart frog	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
<i>Agalychnis moreletii</i> *	Morelet's tree frog	11	3	0	0	0	63	0	0	0	0	1	12	10	3	51	0	0	0
<i>Agalychnis dacnicolor</i> *	Mexican giant tree frog	17	2	0	0	0	0	0	0	0	2	0	0	10	0	0	5	2	0
		139	99	395	0	0	1162	9	17	6	15	20	164	20	3	253	99	110	1143
			633				1162		32			199			276			1352	

* denotes managed in groups

		Stock 31/12/21			Births			Acquisitions			Deaths			Dispositions			Stock 31/12/22		
Preferred Scientific Name	Common Name	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	2	1	3	0	0	12	0	0	0	1	0	8	0	0	0	1	1	7
<i>Casuarius casuarius</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	4	2	0	1	2	0	0	0	0	0	0	0	0	0	0	5	4	0
<i>Guttera pucherani</i>	Eastern Crested Guineafowl	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Arborophila javanica</i>	Chestnut-bellied tree partridge	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Arborophila gingica</i>	Collared Partridge	2	3	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3	0
<i>Rollulus rouloul</i>	Crested wood partridge	3	0	0	0	0	9	0	3	0	0	0	2	0	0	0	3	3	7
<i>Tragopan caboti</i>	Cabot's tragopan	8	2	0	1	3	0	0	0	0	0	0	0	3	1	0	6	4	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>Gallus gallus</i>	Red junglefowl	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	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Lophura edwardsi</i>	Vietnam pheasant	3	2	0	1	3	2	0	0	0	1	1	2	0	0	0	3	4	0
<i>Lophura erythrophthalma</i>	Malay Crestless fireback	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0
<i>Polyplectron chalcurum</i>	Bronze-tailed peacock pheasant	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3	2	0
<i>Polyplectron inopinatum</i>	Rothschild's peacock pheasant	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Polyplectron napoleonis</i>	Palawan peacock pheasant	3	3	0	0	0	0	0	0	0	0	1	0	0	0	0	3	2	0
<i>Argusianus argus</i>	Great argus	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0
<i>Pavo cristatus</i>	Common peafowl	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	6	0	0
<i>Dendrocygna autumnalis autumnalis</i>	Southern black-bellied whistling duck	4	3	3	8	2	5	0	0	0	0	0	5	0	0	0	12	5	3
<i>Dendrocygna viduata</i> *	White-faced whistling duck	0	0	38	0	0	4	0	0	0	0	0	7	0	0	0	12	8	15
<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>Amazonetta brasiliensis</i>	Brazilian teal	5	3	0	4	0	0	0	0	0	0	0	0	0	0	0	9	3	0
<i>Anas capensis</i>	Cape teal	3	2	5	0	0	0	0	0	0	0	0	1	0	0	0	3	2	4
<i>Anas erythrorhyncha</i>	Red-billed pintail	2	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0
<i>Aythya baeri</i> *	Baer's pochard	0	0	14	0	0	0	0	0	0	0	0	1	0	0	0	1	2	10
<i>Aythya fuligula</i> *	Tufted duck	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Aythya nyroca</i>	Ferruginous Duck	7	10	0	0	0	0	0	0	0	0	0	0	0	0	0	7	10	0
<i>Cairina moschata</i>	Muscovy duck	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
<i>Callonetta leucophrys</i>	Ringed teal	11	6	0	0	0	0	0	0	0	0	4	0	5	2	0	6	0	0
<i>Marmaronetta angustirostris</i> *	Marbled teal	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	1	4	2
<i>Neochen jubata</i>	Orinoco goose	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
<i>Oxyura leucocephala</i> *	White-headed duck	4	8	2	0	1	0	0	0	0	0	0	0	0	0	0	4	9	2
<i>Oxyura maccoa</i>	Maccoa duck	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Oxyura vittata</i>	Argentine ruddy duck	1	1	0	2	1	0	0	0	0	0	0	0	0	0	0	3	2	0
<i>Sarkidiornis melanotos</i>	African comb duck	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
<i>Tadorna ferruginea</i>	Ruddy shelduck	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0
<i>Spatula hottentota</i>	Hottentot teal	6	2	0	1	5	12	0	0	0	2	0	12	0	0	0	5	7	0
<i>Spatula platalea</i>	Red shoveler	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0
<i>Spatula puna</i>	Puna teal	1	4	0	1	1	1	0	0	0	0	0	1	0	0	0	2	5	0
<i>Asarcornis scutulata</i>	White-winged duck	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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 ruber</i>	Caribbean Flamingo	63	56	10	0	0	20	0	0	0	1	0	6	0	0	0	62	56	24
<i>Caloenas nicobarica nicobarica</i>	Nicobar pigeon	6	9	4	0	0	0	2	2	0	0	1	0	2	1	0	6	9	4
<i>Chalcophaps indica</i>	Emerald Dove	9	6	1	1	0	5	0	0	0	2	2	3	2	0	0	6	4	3
<i>Ducula bicolor</i> *	Pied imperial pigeon	4	3	1	0	2	2	0	0	0	0	0	1	0	0	0	5	5	1
<i>Gallicolumba criniger</i>	Mindanao bleeding heart dove	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3	2	0
<i>Gallicolumba luzonica</i>	Luzon bleeding heart dove	4	4	0	0	0	0	0	0	0	3	0	0	1	1	0	0	3	0
<i>Gallicolumba rufigula</i>	Cinnamon ground dove	5	5	0	2	5	5	0	0	0	0	0	3	1	2	0	6	8	2
<i>Goura victoria</i>	Victoria crowned pigeon	5	5	0	0	0	0	0	0	0	0	0	0	2	2	0	3	3	0
<i>Otidiphaps aruensis</i>	White-naped pheasant-pigeon	3	1	0	0	1	4	0	0	0	0	0	3	0	0	0	3	2	1
<i>Ptilinopus melanospilus</i>	Black-naped fruit-dove	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0
<i>Ptilinopus porphyrea</i>	Pink-headed fruit dove	1	2	0	0	0	2	1	0	0	0	0	2	0	0	0	2	2	0
<i>Ptilinopus superbus</i>	Superb fruit dove	9	7	0	0	1	5	0	0	0	1	0	5	2	1	0	6	7	0
<i>Treron vernans</i>	Pink-necked pigeon	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Treron waalia</i>	Bruce's green pigeon	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0

<i>Zenaida graysoni</i>	Socorro dove	2	1	0	0	0	0	1	0	0	0	0	0	2	0	0	1	1	0
<i>Nesoenas mayeri</i>	Pink pigeon	2	3	0	0	0	0	0	0	0	0	0	0	0	1	0	2	2	0
<i>Tauraco schalowi</i>	Schalow's turaco	6	4	0	0	3	0	0	0	0	0	0	0	2	0	0	4	7	0
<i>Tauraco leucolophus</i>	White-crested turaco	4	2	0	0	0	0	0	0	0	0	1	0	2	1	0	2	0	0
<i>Eurypyga helias</i>	Sunbittern	1	2	0	2	0	2	0	0	0	0	0	2	1	1	0	2	1	0
<i>Porphyrio porphyrio</i>	Purple swamphen	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<i>Balearica pavonina pavonina</i>	West African Crowned Crane	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Balearica regulorum gibbericeps</i>	East African grey crowned-crane	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Bugeranus carunculatus</i>	Wattled crane	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Spheniscus humboldti</i>	Humboldt penguin	24	19	0	3	6	3	0	0	0	2	2	3	5	1	0	20	22	0
<i>Ciconia nigra</i>	Black stork	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Eudocimus ruber</i>	Scarlet ibis	14	9	1	0	0	15	0	0	0	0	1	1	0	0	0	14	8	15
<i>Plegadis ridgwayi</i>	Puna ibis	0	0	0	0	0	0	4	5	0	0	0	0	0	0	0	4	5	0
<i>Geronticus eremita</i>	Waldrapp ibis	13	7	0	0	0	0	0	0	0	0	0	0	0	0	0	13	7	0
<i>Platalea ajaja</i>	Roseate spoonbill	1	2	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0
<i>Scopus umbretta</i>	Hamerkop	2	3	0	0	0	0	0	0	0	0	0	0	1	2	0	1	1	0
<i>Himantopus himantopus mexicanus</i>	Black-necked stilt	3	3	0	1	0	2	0	0	0	0	0	2	0	0	0	4	3	0
<i>Vanellus armatus</i>	Blacksmith lapwing	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Bubo lacteus</i>	Verreaux's eagle owl	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
<i>Otus megalotis</i>	Luzon Lowland Scops Owl	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Ptilopsis leucotis</i>	Northern white-faced owl	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
<i>Pulsatrix perspicillata</i>	Spectacled owl	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0
<i>Strix leptogrammica</i>	Brown wood owl	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	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>Gyps africanus</i>	African white-backed vulture	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
<i>Trigonoceps occipitalis</i>	White-headed vulture	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Sagittarius serpentarius</i>	Secretary bird	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Urocolius macrourus*</i>	Blue-naped mousebird	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
<i>Trogon collaris</i>	Collared trogon	2	3	0	2	7	4	0	0	0	1	0	4	0	0	0	3	10	0
<i>Buceros rhinoceros silvestris</i>	Rhinoceros hornbill	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	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	3	0	0	0	0	0	0	0	0	0	0	0	2	0	3	1	0
<i>Rhabdotorrhinus corrugatus</i>	Wrinkled hornbill	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0
<i>Coracias caudatus</i>	Lilac-breasted roller	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<i>Pteroglossus viridis</i>	Green aracari	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Psilopogon pyrolophus</i>	Fire-tufted barbet	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Megalaima oorti</i>	Black-browed barbet	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Trichoglossus forsteni forsteni</i>	Scarlet-breasted lorikeet	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Trichoglossus forsteni mitchellii</i>	Mitchell's lorikeet	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	0
<i>Trichoglossus johnstoniae</i>	Mount Apo Lorikeet	5	1	0	0	0	0	0	0	0	1	0	0	0	0	0	4	1	0
<i>Lorius domicella</i>	Purple-naped lory	2	2	0	2	0	0	0	0	0	1	0	0	0	0	0	3	2	0
<i>Psittacula derbiana</i>	Derbyan parakeet	9	14	0	0	0	0	0	0	0	0	0	0	0	0	0	9	14	0
<i>Loriculus galgulus</i>	Blue-crowned parrot	12	17	0	3	3	9	0	0	0	1	3	2	0	0	0	14	17	7
<i>Anodorhynchus hyacinthinus</i>	Hyacinth macaw	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Ara ambiguus</i>	Buffon's macaw	5	1	0	1	0	0	0	0	0	1	0	0	0	0	0	5	1	0
<i>Ara glaucogularis</i>	Blue-throated macaw	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0
<i>Pyrrhura griseipectus</i>	Gray-breasted parakeet	3	2	0	0	0	0	0	0	0	1	0	0	0	0	0	2	2	0
<i>Amazona lilacina</i>	Lilacine amazon	6	4	0	0	0	0	0	0	0	0	0	0	1	0	0	5	4	0
<i>Cacatua haematuropygia</i>	Red-vented cockatoo	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
<i>Oriolus chinensis</i>	Black-naped oriole	2	2	0	0	0	1	0	0	0	0	1	0	0	0	0	2	1	1
<i>Cissa thalassina</i>	Javan Green Magpie	7	7	0	0	3	2	1	0	0	1	1	2	0	0	0	7	9	0
<i>Cyanopica cyanus</i>	Azure-winged magpie	8	8	1	2	2	2	0	0	0	0	1	0	0	0	0	10	9	3
<i>Urocissa erythrorhyncha</i>	Red-billed Blue Pie	2	3	0	0	1	0	0	0	0	1	1	0	1	1	0	0	2	0
<i>Spizixos semitorques</i>	Collared finch-billed bulbul	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0
<i>Pycnonotus jocosus *</i>	Red-whiskered bulbul	4	4	3	2	1	0	0	0	0	1	0	0	0	0	0	5	7	1
<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	0
<i>Irena puella</i>	Fairy bluebird	6	3	0	2	2	2	0	1	0	1	1	2	2	0	0	5	5	0

Bitis parviocula	Ethiopian mountain adder	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	3	1	0
Bitis rhinoceros	Western gaboon viper	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Vipera berus	Common adder	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Erpeton tentaculatum	Tentacled snake	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	0
Tomistoma schlegelii	False gharial	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Caiman crocodilus	Spectacled caiman	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
		87	117	111	1	0	92	16	24	15	14	13	29	14	17	23	91	126	136
* denotes managed in groups			315			93			55			56		54			353		

		Stock 31/12/2021			Births			Acquisitions			Deaths			Dispositions			Stock 31/12/22		
Preferred Scientific Name	Common Name	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Erpetoichthys calabaricus</i> *	Reedfish	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Pantodon buchholzi</i> *	African freshwater butterflyfish	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<i>Gnathonemus petersii</i> *	Long-nosed Elephant Trunk Fish	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
<i>Barilius</i> *	Barb	0	0	7	0	0	0	0	0	0	0	0	4	0	0	0	0	0	3
<i>Crossocheilus oblongus</i> *	Siamese flying fox	0	0	0	0	0	0	0	0	700	0	0	300	0	0	0	0	0	400
<i>Garra barreimiae</i> *	Omani Blind Cave Fish	0	0	41	0	0	0	0	0	0	0	0	6	0	0	0	0	0	35
<i>Garra flavatra</i> *	Panda garra	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
<i>Notropis chrosomus</i> *	Rainbow shiner	0	0	371	0	0	0	0	0	0	0	0	5	0	0	366	0	0	0
<i>Puntius titteya</i> *	Cherry barb	0	0	100	0	0	0	0	0	0	0	1	40	0	0	0	0	0	59
<i>Rasbora trilineata</i> *	Threelined scissortail rasbora	0	0	380	0	0	0	0	0	3000	0	0	352	0	0	0	0	0	3028
<i>Tanichthys albonubes</i> *	White cloud mountain minnow	0	0	15	0	0	0	0	0	0	0	0	5	0	0	0	0	0	10
<i>Trigonostigma hengeli</i> *	Rasbora	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
<i>Dawkinsia assimilis</i> *	Mascara barb	0	0	107	0	0	0	0	0	0	0	0	2	0	0	0	0	0	105
<i>Dawkinsia filamentosa</i> *	Filament barb	0	0	70	0	0	0	0	0	0	0	0	1	0	0	0	0	0	69
<i>Dawkinsia tambraparniei</i> *	Tambraparni barb	0	0	61	0	0	0	0	0	0	0	0	11	0	0	0	0	0	50
<i>Dawkinsia rohani</i> *	Rohan's barb	0	0	58	0	0	0	0	0	0	0	0	20	0	0	0	0	0	38
<i>Pethia padamya</i> *	Odessa barb	0	0	9	0	0	0	0	0	0	0	0	2	0	0	0	0	0	7
<i>Pethia bandula</i> *	Barb	0	0	12	0	0	66	0	0	0	0	0	16	0	0	0	0	0	62
<i>Sahyadria denisonii</i> *	Denison's barb	0	0	43	0	0	1	0	0	0	0	0	8	0	0	0	0	0	36
<i>Desmopuntius pentazona</i> *	Fiveband barb	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
<i>Desmopuntius rhomboocellatus</i> *	Barb	0	0	41	0	0	0	0	0	0	0	0	2	0	0	0	0	0	39
<i>Puntigrus tetrazona</i> *	Sumatra barb	0	0	1531	0	0	136	0	0	8	0	0	121	0	0	0	0	0	1554
<i>Enteromius hulstaerti</i> *	Butterfly barb	0	0	89	0	0	5	0	0	0	0	0	9	0	0	0	0	0	85
<i>Opsarius pulchellus</i> *	Barb	0	0	5	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2
<i>Botia kubotai</i> *	Angelicus loach	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
<i>Chromobotia macracanthus</i> *	Clown loach	0	0	4	0	0	0	0	0	13	0	0	0	0	0	0	0	0	17
<i>Acantopsis choirorhynchos</i> *	Horseface loach	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
<i>Ambastaia sidthimunki</i> *	Dwarf loach	0	0	5	0	0	2	0	0	0	0	0	1	0	0	0	0	0	6
<i>Gastromyzon borneensis</i> *	Loach	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Distichodus noboli</i> *	Nobol distichodus	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Distichodus teugelsi</i> *	Distichodus teugelsi	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Bathyaethiops greeni</i> *	Tetra	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Hemiodus gracilis</i>	Red tail hemiodus	0	0	20	0	0	5	0	0	0	0	0	4	0	0	0	0	0	21
<i>Semaprochilodus insignis</i>	Insignis	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Hemigrammus coeruleus</i> *	Cerulean tetra	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
<i>Hyphessobrycon</i> *	Tetra	0	0	53	0	0	59	0	0	0	0	0	9	0	0	0	0	0	103
<i>Hyphessobrycon erythrostigma</i> *	Bleeding heart tetra	0	0	88	0	0	0	0	0	0	0	0	77	0	0	0	0	0	11
<i>Hyphessobrycon wadai</i> *	Tetra	0	0	18	0	0	14	0	0	0	0	0	3	0	0	0	0	0	29
<i>Hyphessobrycon hexastichos</i> *	Tetra	0	0	58	0	0	2	0	0	0	0	0	40	0	0	0	0	0	20
<i>Moenkhausia</i> *	Tetra	0	0	16	0	0	0	0	0	0	0	0	7	0	0	0	0	0	9
<i>Moenkhausia pittieri</i> *	Diamond tetra	0	0	199	0	0	0	0	0	0	0	0	169	0	0	0	0	0	30
<i>Nematobrycon palmeri</i> *	Emperor tetra	0	0	99	0	0	0	0	0	0	0	0	94	0	0	0	0	0	5
<i>Paracheirodon axelrodi</i> *	Cardinal tetra	0	0	3012	0	0	0	0	0	0	0	0	1502	0	0	0	0	0	1510
<i>Kryptopterus macrocephalus</i> *	Glass catfish	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
<i>Pareutropius debauwi</i> *	African glass catfish	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
<i>Synodontis flavitaeniatus</i> *	Striped catfish	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
<i>Synodontis njassae</i> *	Lake Malawi Upside-down Catfish	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Synodontis petricola</i> *	Evenspotted catfish	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
<i>Synodontis polli</i> *	Poll's upsidedown catfish	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Bunocephalus coracoideus</i> *	Twocolored banjo catfish	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Brochis splendens</i> *	Brochis Catfish	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Corydoras sterbai</i> *	Sterba's catfish	0	0	45	0	0	0	0	0	0	0	0	12	0	0	0	0	0	33
<i>Corydoras duplicareus</i> *	Corydoras catfish	0	0	8	0	0	69	0	0	0	0	0	16	0	0	0	0	0	61
<i>Baryancistrus demantoides</i> *	Catfish	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
<i>Farlowella vittata</i> *	Catfish	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
<i>Hemiancistrus dolichopterus</i> *	Bristlenoe Plecostomus	0	0	39	0	0	0	0	0	0	0	0	1	0	0	0	0	0	38
<i>Sturisoma aureum</i> *	Royal catfish	0	0	5	0	0	1	0	0	0	0	0	1	0	0	0	0	0	5
<i>Antennarius maculatus</i> *	Warty frogfish	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
<i>Lepadogaster lepadogaster</i> *	Shore clingfish	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Melanotaenia</i> sp.	Rainbowfish	0	0	96	0	0	590	0	0	20	0	0	23	0	0	0	0	0	683
<i>Epiplatys bifasciatus</i> *	Panchax	0	0	10	0	0	0	0	0	0	0	0	4	0	0	0	0	0	6
<i>Pachypanchax sakaramyi</i> *	Killiefish	0	0	9	0	0	9	0	0	0	0	0	10	0	0	0	0	0	8
<i>Fundulus bermudae</i> *	Bermuda killifish	0	0	37	0	0	45	0	0	0	0	0	33	0	0	0	0	0	49

<i>Allotoca zacapuensis</i> *	Zacapu allotoca	0	0	59	0	0	28	0	0	0	0	0	22	0	0	15	0	0	50	**
<i>Allotoca diazi</i> *	Pátzcuaro allotoca	0	0	19	0	0	12	0	0	0	0	0	16	0	0	0	0	0	15	**
<i>Ameca splendens</i> *	Butterfly Goodeid	0	0	350	0	0	124	0	0	0	0	0	64	0	0	0	0	0	410	**
<i>Characodon audax</i> *	Bold characodon	0	0	63	0	0	0	0	0	0	0	0	35	0	0	0	0	0	28	
<i>Skiffia francesae</i> *	Golden Saw-finned Goodeid	0	0	29	0	0	102	0	0	0	0	0	96	0	0	0	0	0	35	**
<i>Xenotoca doadrioi</i> *	Redtail splitfin	0	0	574	0	0	38	0	0	0	0	0	234	0	0	227	0	0	151	**
<i>Zoogoneticus tequila</i> *	Crescent Zoe	0	0	30	0	0	54	78	69	5	0	0	32	0	0	0	0	0	204	**
<i>Poecilia reticulata</i>	Guppy	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	
<i>Syngnathus acus</i> *	Greater pipefish	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	
<i>Hippocampus abdominalis</i> *	Big-bellied Seahorse	0	0	11	0	0	57	0	0	0	0	0	60	0	0	0	0	0	8	**
<i>Dendrochirus brachypterus</i>	Fuzzy Dwarf Lionfish	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	
<i>Serranus tortugarum</i> *	Chalk seabass	0	0	10	0	0	0	0	0	0	0	0	3	0	0	0	0	0	7	
<i>Pseudanthias squamipinnis</i> *	Sea goldie	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
<i>Pterapogon kauderni</i> *	Emporor/Banggai Cardinal Fish	0	0	48	0	0	0	0	0	0	0	0	7	0	0	0	0	0	41	
<i>Chelmon rostratus</i> *	Copperband butterflyfish	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Centropyge tibicen</i> *	Keyhole angelfish	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Nandus nandus</i> *	Ganges leaffish	0	0	10	0	0	0	0	0	0	0	0	2	0	0	8	0	0	0	
<i>Dario hysignon</i> *	Dario	0	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	
<i>Geophagus sveni</i> *	Eartheater	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Lethrinops</i> *	Lake Malawi cichlid	0	0	15	0	0	66	0	0	0	0	0	28	0	0	0	0	0	53	**
<i>Nanochromis splendens</i> *	Congo dwarf cichlid	0	0	80	0	0	0	0	0	0	0	0	73	0	0	0	0	0	7	
<i>Paretroplus damii</i> *	Cichlid	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
<i>Paretroplus kieneri</i> *	Kieneri cichlid	0	0	14	0	0	0	0	0	0	0	0	4	0	0	7	0	0	3	
<i>Paretroplus maculatus</i> *	Spotted Damba	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	
<i>Paretroplus menarambo</i> *	Pin Striped Damba	0	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	
<i>Pelvicachromis sacrimontis</i> *	Cichlid	0	0	16	0	0	0	0	0	0	0	0	10	0	0	0	0	0	6	
<i>Rhamphochromis</i> *	Torpedo cichlid	0	0	11	0	0	19	0	0	0	0	0	0	0	0	0	0	0	30	**
<i>Amphiprion frenatus</i> *	Tomato Clownfish	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Amphiprion ocellaris</i> *	Common Clownfish	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
<i>Chrysiptera hemicyanea</i> *	Yellow-tailedBlue Damsel Fish	0	0	5	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	
<i>Chrysiptera parasema</i> *	Goldtail damselfish	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
<i>Ctenolabrus rupestris</i> *	Goldsinny wrasse	0	0	6	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	
<i>Macropharyngodon meleagris</i> *	Leopard wrasse	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
<i>Pseudocheilinus hexataenia</i> *	Sixline wrasse	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Lipophrys pholis</i> *	Shanny blenny	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
<i>Hypseleotris compressa</i> *	Empire gudgeon	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
<i>Gobiodon okinawae</i> *	Okinawa goby	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Pomatoschistus minutus</i> *	Sand goby	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
<i>Siganus vulpinus</i> *	Foxface rabbitfish	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Acanthurus triostegus</i> *	Convict surgeon	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Ctenochaetus tominiensis</i> *	Bristle-tooth Tang	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<i>Zebrasoma flavescens</i> *	Yellow tang	0	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	
<i>Parosphromenus linkei</i> *	Liquorice Gourami	0	0	19	0	0	0	0	0	0	0	0	16	0	0	0	0	0	3	
<i>Parosphromenus paludicola</i> *	Pallid licorice gourami	0	0	65	0	0	0	0	0	5	0	0	52	0	0	0	0	0	18	
<i>Parosphromenus opallios</i> *	Licorice gourami	0	0	13	0	0	0	0	0	0	0	0	8	0	0	0	0	0	5	
<i>Trichogaster leerii</i> *	Pearl Gourami	0	0	308	0	0	0	0	0	0	0	0	208	0	0	0	0	0	100	
<i>Betta patoti</i> *	Betta	0	0	8	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7	

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87131506390739086249594

* denotes managed in groups

** denotes bred in the collection in 2022

* denotes managed in groups

** denotes bred in the collection in 2022

Preferred Scientific Name	Common Name	Stock 31/12/21			Births			Acquisitions			Deaths			Dispositions			Stock 31/12/22		
		M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
<i>Cassiopea</i> *	Frilled upside-down jellyfish	0	0	145	0	0	92	0	0	0	0	0	59	0	0	0	0	0	178
<i>Euplexaura</i> *	Gorgonian	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Erythropodium caribaeorum</i> +	Encrusting gorgonian	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Briareum sp.</i> *	Green star polyp	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Lobophytum</i> +	Leather coral	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
<i>Sinularia</i> *	Soft Coral	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Sinularia flexibilis</i> *	Slimy leather coral	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
<i>Xenia umbellata</i> *	Pulsing xenia	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
<i>Actinia equina</i> *	Beadlet anemone	0	0	20	0	0	0	0	0	425	0	0	25	0	0	0	0	0	420
<i>Anemonia viridis</i> *	Snakelocks anemone	0	0	80	0	0	0	0	0	47	0	0	0	0	0	0	0	0	127
<i>Entacmaea quadricolor</i> *	Bladdertipped anemone	0	0	7	0	0	2	0	0	12	0	0	3	0	0	0	0	0	18
<i>Urticina felina</i> *	Northern red anemone	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
<i>Metridium senile</i> *	Clonal plumose anemone	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Discosoma</i> *	Umbrella false coral	0	0	420	0	0	80	0	0	0	0	0	0	0	0	0	0	0	500
<i>Acropora</i> *	Staghorn coral	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Montipora</i> *	Montipora coral	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
<i>Montipora confusa</i> *	Encrusting coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Montipora danae</i> *	Coral	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
<i>Montipora digitata</i> *	Finger coral	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
<i>Pocillopora damicornis</i> *	Brush coral	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
<i>Stylophora</i> *	Cauliflower coral	0	0	16	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0
<i>Plerogyra sinuosa</i> *	Bubble coral	0	0	7	0	0	0	0	0	0	0	0	3	0	0	0	0	0	4
<i>Duncanopsammia axifuga</i> +	Coral	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
<i>Tubastraea</i> +	Coral	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
<i>Turbinaria mesenterina</i>	Bowl Coral	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Turbinaria peltata</i> *	Bowl Coral	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<i>Turbinaria reniformis</i>	Coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Favia</i> *	Star coral	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Hydnophora</i> *	Horn coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Acanthophyllia deshayesiana</i> *	Doughnut coral	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
<i>Blastomussa wellsii</i> *	Pineapple coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Micromussa lordhowensis</i> *	Coral	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Galaxea fascicularis</i> *	Ivory coral	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
<i>Pavona</i> +	Cactus coral	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
<i>Fungia fungites</i> *	Mushroom coral	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
<i>Porites</i> +	Coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
<i>Fimbriaphyllia</i> +	Crescent coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
<i>Euphyllia ancora</i> *	Crescent coral	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Trochus</i> *	Snail	0	0	14	0	0	10	0	0	0	0	0	5	0	0	0	0	0	19
<i>Lithopoma tectum</i> *	Lightfoot snail	0	0	15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	12
<i>Neritina</i> *	Olive nerite	0	0	15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	13
<i>Marisa cornuarietis</i> *	Giant ramshorn snail	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
<i>Tylomelania</i> *	Freshwater snail	0	0	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65
<i>Strombus</i> *	Fighting conch	0	0	7	0	0	0	0	0	0	0	0	5	0	0	0	0	0	2
<i>Nassarius</i> *	Sharp-knobbed mud snail	0	0	13	0	0	0	0	0	0	0	0	2	0	0	0	0	0	11
<i>Nassarius vibex</i> *	Common eastern mud snail	0	0	12	0	0	0	0	0	0	0	0	4	0	0	0	0	0	8
<i>Bertia cambojiensis</i> *	Vietnamese giant magnolia snail	0	0	37	0	0	32	0	0	0	0	0	10	0	0	0	0	0	59
<i>Poecilozonites circumfirmatus</i> *	Lesser Bermuda land snail	0	0	7245	0	0	5759	0	0	0	0	0	1000	0	0	7798	0	0	4206
<i>Poecilozonites bermudensis</i> *	Greater Bermuda land snail	0	0	48691	0	0	34232	0	0	0	0	0	6775	0	0	74348	0	0	1800
<i>Discula lyelliana</i> *	Snails	0	0	2362	0	0	751	0	0	0	0	0	2238	0	0	0	0	0	875
<i>Discula polymorpha</i> *	Snails	0	0	70	0	0	92	0	0	0	0	0	10	0	0	0	0	0	152
<i>Caseolus innominatus</i> *	Snails	0	0	19	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0

<i>Geomitra grabhami</i> *	Snails	0	0	935	0	0	1694	0	0	0	0	0	1804	0	0	0	0	0	825	**
<i>Atlantica calathoides</i>	Snails	0	0	37	0	0	214	0	0	0	0	0	19	0	0	0	0	0	232	**
<i>Platymma tweediei</i> *	Fire snail	0	0	0	0	0	1336	0	0	20	0	0	1053	0	0	0	0	0	303	**
<i>Hirudinaria manillensis</i> *	Buffalo leech	0	0	46	0	0	3	0	0	0	0	0	40	0	0	0	0	0	9	
<i>Pandinus imperator</i> *	Common emperor scorpion	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	
<i>Avicularia avicularia</i> *	Pink-toed tarantula	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
<i>Cyrtopholis femoralis</i>	Montserrat tarantula	0	5	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	
<i>Lasiodora parahybana</i>	Brazilian salmon tarantula	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
<i>Monocentropus balfouri</i> *	Tarantula	0	1	4	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3	
<i>Nhandu tripepii</i> *	Brazilian giant blonde tarantula	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	
<i>Caribena versicolor</i> *	Tarantula	0	0	15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	13	
<i>Omothymus violaceopes</i> *	Singapore blue tarantula	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
<i>Trichonephila inaurata</i>	Red-legged golden orb weaver	0	6	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	
<i>Stenopus hispidus</i> *	Banded coral shrimp	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
<i>Atya gabonensis</i> *	Shrimp	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
<i>Neocaridina</i> *	Red Cherry Shrimp	0	0	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135	
<i>Lysmata amboinensis</i> *	Cleaner Shrimp	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
<i>Lysmata debelius</i> *	White-booted cleaner shrimp	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
<i>Lysmata boggeysi</i> *	Peppermint shrimp	0	0	10	0	0	0	0	0	0	0	0	7	0	0	0	0	0	3	
<i>Dardanus megistos</i>	Blue-spotted hermit crab	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	
<i>Paguristes cadenati</i> *	Red reef hermit	0	0	7	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5	
<i>Geosesarma hageni</i> *	'Red Devil' Vampire Crab	95	61	236	0	0	116	0	0	0	56	6	165	6	20	50	31	53	121	**
<i>Mithraculus sculptus</i> *	Green reef crab	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
<i>Periplaneta americana</i> *	American cockroach	0	0	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1600	
<i>Therea olegrandjeani</i> *	Cockroach	55	55	250	62	62	246	0	0	0	15	15	250	0	0	0	75	75	300	
<i>Gromphadorhina oblongonota</i> *	Madagascar hissing cockroach	0	0	50	0	0	207	0	0	0	0	0	1	0	0	0	33	23	200	
<i>Deroplatys desiccata</i> *	Malaysian dead-leaf mantis	3	6	0	0	0	0	2	0	0	4	6	0	0	0	0	0	1	0	
<i>Stilpnochlora coulöniana</i> *	Florida Leaf Katydid	33	19	100	0	0	0	0	0	0	33	19	100	0	0	0	0	0	0	
<i>Ancylecha fenestrata</i> *	Malaysian Leaf Katydid	0	0	8	23	14	97	0	0	0	21	12	15	0	0	0	28	16	50	**
<i>Metrioptera brachyptera</i>	Bog meadow bush-cricket	0	0	0	0	0	0	1	5	2	1	5	2	0	0	0	0	0	0	
<i>Phaeophilacris bredoides</i> *	Cricket	0	0	100	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
<i>Homoeogrillus xanthographus</i> *	Cricket	0	0	100	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
<i>Tropidacris collaris</i>	Violet-winged grasshopper	2	4	8	0	0	0	0	0	0	2	4	8	0	0	0	0	0	0	
<i>Heteropteryx dilatata</i> *	Malaysian Jungle Nymph	10	36	24	0	12	238	0	0	0	12	28	83	0	0	73	27	53	44	**
<i>Phyllium giganteum</i> *	Giant leaf insect	0	22	50	0	4	249	0	0	0	1	31	81	0	0	10	0	2	200	**
<i>Marmessoidea</i> *	Walkingstick	4	0	20	2	1	750	0	0	0	25	16	645	0	0	0	5	0	86	**
<i>Achrioptera manga</i> *	Walkingstick	0	0	350	2	4	516	0	0	0	70	78	587	0	0	15	0	0	122	**
<i>Isogenus nubecula</i>	Rare medium stonefly	0	0	0	0	0	0	0	0	30	0	0	30	0	0	0	0	0	0	
<i>Manticora imperator</i> *	Ground beetle	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	
<i>Dynastes hercules</i> *	Western hercules beetle	6	7	123	4	1	111	0	0	0	9	8	136	0	0	0	1	0	98	**
<i>Mecynorrhina ugandensis</i> *	Beetle	9	0	665	20	24	69	0	0	0	20	14	421	0	0	50	11	12	259	**
<i>Graphium agamemnon</i> *	Tailed Jay	0	0	16	0	0	37	0	0	0	0	0	53	0	0	0	0	0	0	
<i>Papilio demoleus</i> *	Lime Swallowtail	0	0	13	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	
<i>Papilio rumanzovia</i> *	Scarlet swallowtail	0	0	20	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	
<i>Danaus plexippus</i> *	Monarch butterfly	0	0	13	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	
<i>Coenonympha tullia</i> *	Large heath butterfly	0	0	28	0	0	37	3	6	0	5	10	35	0	0	19	0	0	5	
<i>Caligo atreus</i> *	Owl butterfly	0	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	
<i>Caligo memnon</i> *	Giant Owl	0	0	36	0	0	20	0	0	0	0	0	36	0	0	0	0	0	20	**
<i>Eryphanis polyxena</i> *	Purple Mort Bleu	0	0	13	0	0	8	0	0	0	0	0	13	0	0	0	0	0	8	
<i>Morpho peleides</i> *	Blue Morpho	0	0	66	0	0	70	0	0	0	0	0	66	0	0	0	0	0	70	
<i>Morpho polyphemus</i> *	White Morpho	0	0	5	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	
<i>Heliconius erato</i> *	Red Postman	0	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	
<i>Heliconius melpomene</i> *	Postman	0	0	100	0	0	100	0	0	0	0	0	100	0	0	0	0	0	100	
<i>Hypolimnas bolina</i> *	Great Eggfly	0	0	19	0	0	50	0	0	0	0	0	19	0	0	0	0	0	50	

<i>Salamis parhassus</i> *	Mother-of-Pearl Beaty	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Siproeta stelenes</i> *	Malachite	0	0	42	0	0	40	0	0	0	0	0	42	0	0	0	0	40
<i>Attacus atlas</i> *	Atlas moth	0	0	3	0	0	5	0	0	0	0	0	3	0	0	0	0	5
<i>Acromyrmex octospinosus</i> +	Leafcutter ant	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
<i>Atta cephalotes</i> *	Leafcutter ant	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Polyrhachis dives</i> +	Ant	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Ampulex compressa</i> *	Emerald cockroach wasp	125	74	115	522	255	333	0	0	0	371	235	270	15	15	80	205	86
<i>Apis mellifera mellifera</i> +	Honeybee	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Epibolus pulchripes</i> *	Mombassan train millipede	28	19	540	7	1	3909	0	0	0	33	11	4034	0	0	221	18	22
<i>Archaster typicus</i>	Sea star	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Asterias rubens</i> *	Common Starfish	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2
<i>Ophiarachna incrassata</i> *	Green Brittle Starfish	0	0	27	0	0	0	0	0	0	0	0	5	0	0	0	0	22
<i>Ophiocomina fragilis</i> *	Brittlestar	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
<i>Mespilia globulus</i> *	Colored tuxedo urchin	0	0	8	0	0	0	0	0	0	0	0	4	0	0	0	0	4
<i>Psammechinus miliars</i> *	Shore urchin	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
		372	323	65402	642	378	51505	6	11	540	679	506	20583	21	40	82664	435	350
			66097			52525			557			21768		82725			14695	13910

denotes managed in colonies
* denotes managed in groups
** denotes bred in the collection in 2022

colony
colony
colony
**
colonies
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