

LETTER FROM THE PRESIDENT

Dear Member,

The Board of the Zoological Society of Ireland (ZSI) presents the twenty-ninth annual report, together with the consolidated audited financial results of Dublin Zoo and Fota Wildlife Park, for the year ended 31 December 2022.

It is a great pleasure and privilege to highlight some of the remarkable achievements set out in this report for 2022. The teams in both Dublin and Fota ambitiously progressed the development of our 10 year strategic plans while also recording outstanding operational performance in terms of visitation results, maintaining the strong focus on activities in pursuit of our critical work on species conservation, animal welfare, nurturing our future conservationists and providing an inspiring and fun-filled day for our visitors!

In Dublin, I am delighted to report our highest total visitor number since our foundation in 1831. We welcomed a total of 1,276,930 visitors, of which 1,007,109 were day visitors, and a record 269,821 visitors came along to view our Wild Lights. As one of Dublin's most enduring institutions, in May we were also very proud to celebrate our 60-millionth recorded visitor since our opening.

With all Covid restrictions lifted, all departments across the Zoo were able to deliver the full range of activities once more. Our teams quickly got to work on many activities and events that had been delayed. We were delighted to host the annual BIAZA conference, postponed from 2020, a first for Dublin Zoo. The long awaited opening of our Himalayan Hills habitat for

snow leopards and red pandas was performed by the Tánaiste, Leo Varadkar. We produced our first official guidebook for Dublin Zoo in very many years; it was in such demand that it was reprinted twice. The 11,000 copies sold by our Retail and Visitor Services team and other such innovations, along with their relentless focus for sustainable product sourcing, have all contributed to the excellent sales results they produced.

At the heart of everything we do in ZSI is animal welfare. As well as completing structured welfare assessments for all species in Dublin with analysis of the outcomes presented to the ZSI Ethics Committee, the animal and veterinary teams availed of world-class expertise to upgrade our training and husbandry procedures.

In progressing some of the key pillars of our 10-year 'Dublin Zoo 200' strategic plan, both the Conservation Education Master Plan and the Conservation Master Plan were completed and published. As well as the delivery of the Conservation Education Master Plan, which not only will support our goals for cultivating next generation conservationists, but will align us with global best practice strategies, the Discovery & Learning team reached a remarkable 67,661 learners of all ages through the year. The Conservation Master Plan builds on our conservation activities to date, and the establishment of the National Centre for Species Survival (NCSS), a key element of the Conservation Master Plan, has commenced, with the refurbishment of Society House underway. This historic building will be home to the NCSS and will be completed to open in 2023. We are grateful for government part-funding for this. A third pillar of our 10-year strategic plan, the Sustainability Masterplan, also progressed, with



the establishment of the Dublin Zoo Sustainability Team. Here, our ambition is to operate a sustainable visitor attraction from an environmental, social and economic perspective.

Running from November 2022 to January 2023, this year's "Magic of Life" Wild Lights event once again shone spectacular inspirational joy and magic across Dublin Zoo for 269,821 visitors. The record attendance pays great tribute to the work of the Marketing and Events team, working closely with other teams to produce this very special part of our year's calendar.

In Fota Wildlife Park, we welcomed 415,200 visitors, with the highest first-quarter visitation numbers experienced to date. Inclement weather and other issues with accommodation in the Cork area caused some decline on 2021's all-time record attendance performance.

Substantial progress has also been made with Fota's 10-year strategic plan, with the commencement of the construction of the new Conservation, Education and Research Centre (CERC). This cutting-edge and sustainably built facility will expand on Fota's award-winning education programmes and support delivery of our commitment to be a leading contributor to the conservation of national and global conservation projects. This largest project undertaken by Fota is on budget and scheduled to be completed in 2023, and will be an impressive addition to our 40th anniversary celebrations next year. The generosity and support of the Irish Government through the Office of Public Works on this important project is much appreciated. Alongside this development activity, the education department

delivered formal education to 16,000 students, as well as supporting many other park events and field activities. The significant conservation and research work continued, with extensive coverage of the success of those projects relating to native species and return to the wild. Of particular note is work on the projects related to the curlew, corncrake and natterjack toads, all critically endangered native species where Fota has been successful in their return to the wild, in collaboration with the National Parks and Wildlife Service.

The focus on animal welfare and assessment is ever present in Fota under the management and oversight of the Animal Care team. The performance of the Retail team continued to be an important contributor to Fota, with strong results achieved, again ahead of the prior year.

As President of the Society, I would like to acknowledge with sincere thanks the enormous contributions of Dr Christoph Schwitzer, Director of Dublin Zoo, and Sean McKeown, Director of Fota Wildlife Park, and their skilled, hardworking and committed teams. It is through their expertise, resilience and loyalty and the incredible support of the entire teams of employees, volunteers and other supporters like our veterinary teams, catering teams, and others, that we can deliver the results and achievements set out in this report.

We are extremely grateful to the Irish Government for their support in 2022. The ambitious strategic development plans in both Dublin and Fota depend on this important support continuing, and we would like to acknowledge our particular gratitude to the Office of

Public Works for their strong and active support.

I would also like to pay tribute to our very loyal members and our visitors for their support throughout the year. Your support will continue to be critical as we in ZSI work together in conserving biodiversity for future generations.

Finally, I would like to acknowledge the support, dedication, expertise and generosity of my colleagues on the Board of the Zoological Society of Ireland and the

Chair and Governors of Fota Wildlife Park.

With our strategic plans well underway, we have clarity on the important purpose ahead of us, and I look forward with great confidence to the continued success of both Dublin Zoo and Fota Wildlife Park.

Ann Keenan
President
Zoological Society of Ireland



NOTICE OF ANNUAL GENERAL MEETING

NOTICE is given that the annual general meeting of the Zoological Society of Ireland will be held at Haughton House, Dublin Zoo, Dublin 8 on 21 September 2023, at 18:00 for the following purposes:

Ordinary Business:

1. To receive and consider the statutory financial statements for the financial year ended 31 December 2022 (the "Financial Statements"), the report of directors on the Financial Statements (the "Directors' Report") and the report of the statutory auditors on the Financial Statements and the Directors' Report.
2. To review the affairs of the Company.
3. To elect Yvonne Buckley as director of the company with effect from 21 September 2023.
4. To elect Sharon McCabe as director of the company with effect from 21 September 2023.
5. To note that Nigel Bell retires as director of the company as of 21 September 2023.
6. To note that Michael Daly retires as director of the company as of 21 September 2023.
7. To re-appoint Deloitte Ireland LLP as statutory auditors of the Company.
8. To authorise the directors to approve the remuneration of the statutory auditors.

BY ORDER OF THE BOARD

Tom Cassin
Secretary

Registered Office

The Zoological Society of Ireland
Dublin Zoo
Phoenix Park
Dublin 8

28 July 2023

Note: A member entitled to attend and vote is entitled to appoint a proxy using the form set out in section 184 of the Companies Act 2014 (enclosed) to attend, speak and vote on his or her behalf. A proxy need not be a member of the Company. Proxies must be received at the registered office of the Company not less than 48 hours before the time of the meeting.



DUBLIN ZOO: DIRECTOR'S REPORT

We were delighted to welcome 1,007,109 day visitors, and a record 269,821 visited Wild Lights this year, giving us a total of 1,276,930 visitors in 2022. After two unsettled years with lower visitor numbers due to the Covid pandemic, this is a phenomenal achievement and a credit to the team. In terms of day visitors, we were 7% below an average year prior to the pandemic; however, the overall number of visitors is the highest ever number to Dublin Zoo in a single year. In May, Dublin Zoo celebrated the 60-millionth recorded visitor since the Zoo opened in September 1831.



In April, the Tánaiste, Leo Varadkar TD, opened our much-delayed Himalayan Hills habitat for the snow leopards (*Panthera uncia*) and red pandas (*Ailurus fulgens*) on the west side of the Zoo. Himalayan Hills was inspired by the natural habitat of these species in the Himalayan mountain ranges and recreates the rocky and woodland environment in which the animals blend in to make themselves invisible to their prey. The viewing area reminds visitors of a Nepalese village with its colourful rooftops and prayer flags. Visitors can see the red pandas in elevated woodland and watch the snow leopards moving along sloping rocky terrain. The snow leopard is classified as Vulnerable and the red panda is classified as Endangered on the IUCN Red List. Both species at Dublin Zoo are part of a European Endangered Species Programme (EEP).

The new habitat was originally conceived in 2019 with architect Mario Campos of Jones and Jones. Donal Higgins was appointed project manager and the contractors were T. Connolly and Sons. A builders'





compound was constructed at the Zoo boundary fence with the cooperation of the Phoenix Park authorities. Work on the superstructure was completed by the end of January 2020, but the following month all capital works and nonessential maintenance were halted due to the Covid-19 pandemic. Work resumed in May 2021 and proceeded slowly to allow the contractors to navigate the very challenging post-pandemic construction environment. Costs had increased since the tender of 2019 due to increased supplier costs, storage needs due to the delays, and costs associated with Covid compliance and site remobilisation. However, the special government grant in 2021 of two million euro for capital works allowed us to complete the project, and we are grateful to Minister Patrick O'Donovan TD and the Office of Public Works (OPW) for making this possible.

In January, our two snow leopards, 15-year-old male Qiemo and 10-year-old female Tashi, were transferred to their new home. Following weeks of crate training, the animals entered the transport crates voluntarily. Sadly, Qiemo died in March of heart failure. The female, Tashi, was closely monitored and she settled down well. The EEP coordinator sourced a new breeding male, nine-year-old Otto III, in Tallinn Zoo, Estonia. After undergoing all health checks, he arrived in December 2022 and showed signs of getting on very well with Tashi. Our two very popular red pandas were transferred to their new habitat in March, once more following crate training. 15-year-old female Jasmina had come to Dublin Zoo from Bristol in 2015, and three-year-old male Jinpa had arrived from Hungary in 2020. Following transfer recommendations under the EEP, we received three additional young females.

They all arrived during the summer, two from the Czech Republic and one from Italy. After quarantine, they were transferred into the new habitat and settled in very well. One of the new arrivals was named Chaha by eight-year-old Oliver Treacy during his Make-A-Wish visit to Dublin Zoo. Another was named Oishi following an RTÉ naming competition.

The Discovery & Learning Department prepared the interpretation for the Himalayan Hills habitats. An online limited-edition activity book about red pandas and snow leopards was created for children. As part of our ongoing relationships with in-situ conservation projects, we continued to provide financial aid to the Red Panda Network's Forest Guardian programme in Nepal and the Snow Leopard Trust, both of which support measures to protect these species in the wild and promote awareness among local communities. In addition, camera traps were placed in the snow leopard habitat, as well as the Amur tiger habitat, in order to participate in a project by the Snow Leopard Trust on estimating the camera traps' accuracy in identifying individual snow leopards when using remotely triggered cameras in the wild. The launch of our latest habitats was a great success, with widespread television, radio, print and online media coverage.

COVID PANDEMIC

On 21 January, the Taoiseach, Micheál Martin TD, announced the lifting of most Covid-19 restrictions from Saturday 22 January. All of our animal houses were re-opened on the 22 January, the Covid signage and the one way trail were removed, and limits on the number of tickets and restrictions on annual pass holders to pre-book were lifted. Indoor dining returned to the Meerkat Restaurant after works were completed to return it to a fully functional restaurant. Hand hygiene units remained, and mask wearing was requested in animal houses until well into the spring. As the summer season started, keeper talks were reinstated and were offered on a daily basis until October, when the schedule was reduced to weekends only.

The animal care teams worked in pods until 11 February to minimize staff absences due to a rise in Covid cases. However, due to isolation requirements for close contacts of a positive case, the teams remained under pressure; staff from other departments helped out when required. While this continued, Haughton House, the Discovery Centre and Family Farm remained closed. Staff who were not required on site continued to work from home where this could be facilitated. When the Discovery Centre reopened, it was at weekends only due to a shortage of volunteers.

In June 2022, Dublin Zoo won the marketing Gold award at the annual BIAZA awards for the hugely successful 'Save Dublin Zoo' campaign, which had been launched in 2020 in response to the pandemic.



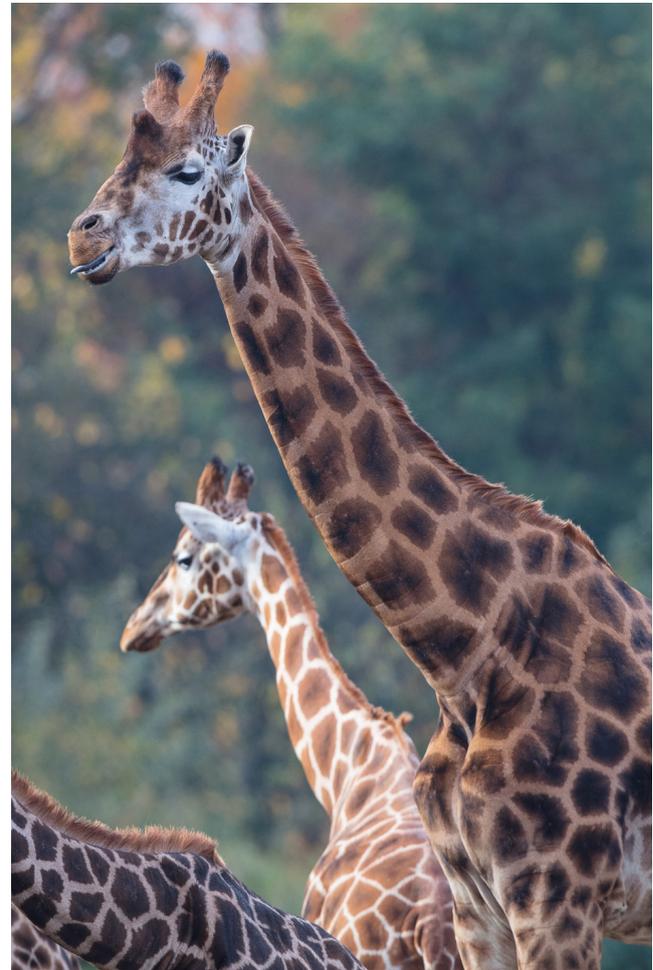
ANIMAL COLLECTION

During the year, welfare assessments were completed for all species and an analysis of the outcomes was presented to the Zoological Society of Ireland Ethics Committee. From next year, it is a goal of the World Association of Zoos and Aquariums (WAZA) to have all WAZA member institutions implement a welfare assessment process. Meanwhile, a review of heat and lighting provision in each habitat in Dublin Zoo took place.

Dublin Zoo continued to undertake animal training, with marked success. Animal training involves interacting with animals to teach them specific responses under certain conditions. The type of training an animal receives depends on the purpose of the training. Crate training, for example, is especially important for encouraging an animal to enter a crate voluntarily prior to internal and external transfers; it reduces the stress of the move on the animal and makes risky anaesthetic procedures unnecessary. Training that promotes cooperation from the animals in husbandry or medical procedures reduces the potential stress of a procedure and opens a range of opportunities for us to increase our knowledge of the animals. This year we worked with Barbara Heidenreich, a highly experienced animal training specialist. Her recommendations helped us to improve some of our husbandry procedures, particularly with our giraffes (*Giraffa camelopardalis*), wolves (*Canis lupus lupus*) and dholes (*Cuon alpinus lepturus*). She also reviewed other ongoing training procedures with okapis (*Okapia johnstoni*), bongos (*Tragelaphus eurycerus isaaci*), Grant's zebras (*Equus quagga boehmi*) and southern white rhinos (*Ceratotherium simum simum*). The long list of animals we now engage in training includes the elephants, some primates and cats, the great apes, sea

lions and red pandas. Our aim is to be able to work with as many species as possible when a need for, or a benefit from, training has been identified.

A very important arrival in Dublin Zoo were three aye-ayes (*Daubentonia madagascariensis*) from Bristol Zoo. The seven-year-old female and two-year-old male were



(Right) Rothschild's giraffes
(Far right) Asian elephants



born in Bristol Zoo, while the six-year-old male was born in London Zoo. This largest of the nocturnal primates is native to Madagascar and is classified as Endangered on the IUCN Red List. Prior to their arrival in September, Miguel Bueno, general curator, and Frank O'Sullivan, head veterinarian, visited Bristol Zoo to inspect their aye-aye habitat and to learn about husbandry requirements in preparation for their arrival in Dublin. Keeper Sarah Byrne spent a week in Bristol working alongside their team. A new nocturnal house is being built for them on the west side of Dublin Zoo, close to the new Asian lion habitat, and will be completed in 2023. In constructing the house, we were particularly mindful to ensure that the animals have a quiet, peaceful and dark environment. We are grateful to our colleagues at Bristol Zoo and to the aye-aye EEP coordinator, Rachel Cowen at Jersey Zoo, for letting us have these wonderful animals.

The major activity with our Asian elephant (*Elephas maximus*) herd continued to be the preparation for

the move of four of our elephants (two adult females and their bull calves) to Cincinnati Zoo in 2023. As it is critical to the complex transportation schedule that each elephant goes willingly and with confidence into the crate at the appointed time, the crate-training process, which is demanding on the team, has been vital. Space was made in the habitat to accommodate the four transport crates along with an area to crate train the animals. This is a very important move in terms of the management of the Dublin Zoo herd, and for transferring potential breeding bulls from Europe to America. As part of the preparations, a team from Cincinnati Zoo came over to look at the Kaziranga Forest Trail habitat. Elephant consultant Alan Roocroft continues to work with our team and is confident that the work is progressing well. A new calf weighing scale and a hot water system were installed in the elephant house. The hot water system is to assist in taking blood samples from the elephants' ears.



Training with the chimpanzees (*Pan troglodytes*) continued in preparation for the internal transfer of one sub-group to the off-show habitat in February. The latter was refurbished with outdoor climbing and resting structures to prepare for their arrival. This move was necessary to facilitate better socialisation of our potential breeding male Marlon with females Malou and Pia, all of which are of the Critically Endangered western subspecies (*Pan troglodytes verus*). After the transfer, the three chimpanzees, including 52-year-old Betty, were put on a modified diet to encourage weight loss. All of the chimps were relaxed in their respective habitats. Discussions are underway with the EEP coordinator to arrange a swap of Marlon with another adult breeding male. A study on the behaviour of our chimpanzees was undertaken for Niamh McGill's MSc project with the University of Edinburgh, with the use of the Zoomonitor® App along with our volunteers and keepers. Volunteers were trained in research and began collecting data alone at the end of the year.

In July, okapi Lumara gave birth to a healthy calf, only the second okapi to be born in Ireland. The male calf, named Leki, flourished; by the end of the year he had grown from his birth weight of 20 kilogrammes to over 100 kilogrammes. Meanwhile, opportunistic training continued with Lumara to allow her feet to be held up for foot care. In May, our young female okapi, Dalia, was transferred to Lisbon Zoo following crate training; she is to be part of a breeding pair under the EEP. With a global zoo population of only 183 animals in 57 institutions, Dublin Zoo is one of the few zoos that has bred okapis, and since 2012 we have been providing financial support to the team working in the Okapi

Wildlife Reserve in the Democratic Republic of Congo.

Other significant arrivals included two male Venezuelan red howler monkeys (*Alouatta seniculus*) from Tierpark Berlin. After quarantine and a settling-in period, they were successfully mixed with the squirrel monkeys. We also received five male dholes, or Asian wild dogs, from Tierpark Berlin in February. The two pairs of brothers and one half-brother are a harmonious pack. Dholes are listed as Endangered on the IUCN Red List and are not often seen in zoos. They are native to Central, South, East and Southeast Asia and are residing in the former snow leopard habitat in the Asian section of Dublin Zoo. We also received two Fiji or Lau banded iguanas (*Brachylophus fasciatus*) from ZSL London Zoo. We would like to thank the colleagues at Tierpark Berlin, particularly Dr Andreas Pauly, and London Zoo for loaning these animals to us.

Significant departures included Alba, our two-year-old Goeldi's monkey (*Callimico goeldii*) to Lisbon Zoo on the recommendation of the EEP. Alba is genetically very important, so any future offspring will be beneficial to the EEP. In a straight swap, Lisbon sent their female Zambie to Dublin to pair with Alba's father, Nose; she arrived in January 2023.

In Zoorassic World, a ZooMonitor® project commenced to establish an activity budget for the Chinese stripe-necked turtle (*Mauremys sinensis*), along with an approximation of how much time the animal spent interacting with the glass boundary of his habitat. The data will be used to instigate changes to the habitat if required. New heaters were installed to increase the

ambient temperature of the African spurred tortoise (*Centrochelys sulcata*) house to a minimum of 18°C at night, and temperatures were constantly monitored. By the end of the year, all reptile habitats had a functional data logger to measure ambient temperature that was set to take a data point every two hours.

The severity and transmissibility of the winter avian influenza strain prompted us to review our mitigation actions. Consequently, in January, all of our birds were moved indoors to minimise the risk of infection from wild birds. In March, we received the avian influenza vaccine, and all birds were vaccinated over two days. A second dose was given after 30 days, and a week later all birds were released back into their outdoor habitats. In early summer, courtship behaviours among the Chilean flamingos (*Phoenicopterus chilensis*) were observed, as well as interest in the nesting area, but by autumn the birds started to moult, indicating that the breeding season was over for them. The very long lockdown due to avian influenza and unfavourable weather conditions likely affected their breeding activity this year. In November, we once more instituted biosecurity measures to contain avian influenza. Signage, boot cleaners for organic matter and disinfection foot bath points were placed in each of the bird habitats. Inspectors from the Department of Agriculture reviewed all bird habitats and our measures to contain the spread of the virus.

In other activities, the southern white rhino habitat was refurbished with the addition of boulders to create three new islands of vegetation. In the Amur tiger habitat, a major refurbishment took place and,



arising from this, we decided to swap the Amur tiger and the Asian lion habitats for welfare reasons. Our two Amur tigers (*Panthera tigris altaica*) responded very well to the flatter habitat near the front of the Zoo, while the four lions will benefit from the additional space, which is scheduled to be ready in 2023. In Sea Lion Cove, following work on the plant room, the water clarity in the California sea lion (*Zalophus californianus*) pool improved significantly. New enrichment was introduced for the sea lions, and training with some new behaviours was undertaken during the summer. Meanwhile, receiving institutions for our three young male California sea lions were identified together with the EEP coordinator, and moves are scheduled in 2023.

Since Brexit, BIAZA has been working with the government of the United Kingdom and the European Commission to sort out problems that had arisen with animal transfers between Britain and the EU. To help with these negotiations, we provided a list of examples of Dublin Zoo animal transports that have taken longer due to having to avoid the UK 'land bridge'. The examples were sent to the UK Department of Environment, Food and Rural Affairs. In June, the Irish Public Affairs Working Group of BIAZA sent a letter to the Taoiseach and the British Prime Minister, signed by all 11 Irish BIAZA member zoos and aquariums, lobbying for a Sanitary and Phytosanitary (SPS) Agreement between the UK and the European Union to facilitate the transport of animals to, from and through the UK. Any changes will require changes to legislation.

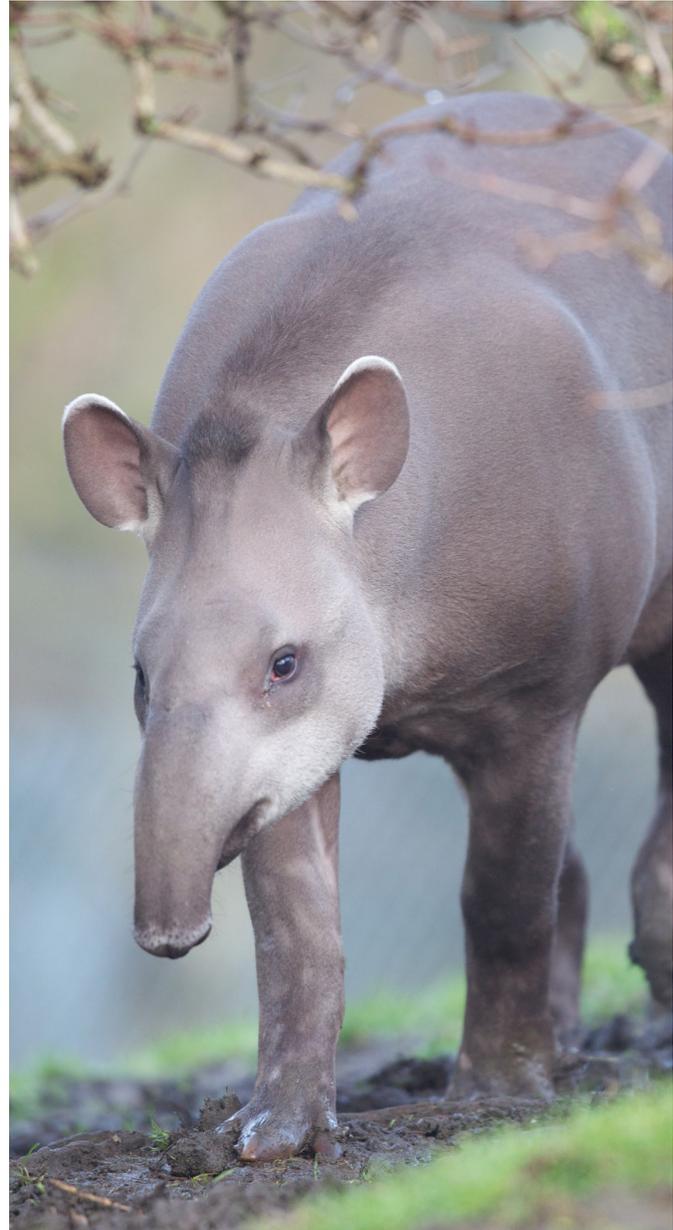
This year, Dublin Zoo lost three of our elderly residents. In March, 19-year-old Amur tiger, Niamh,

was deteriorating and, following a detailed welfare assessment, the decision was made to euthanise her. She had been born in Edinburgh Zoo in 2003 and came to Dublin a year later. She was one of the older of the tiger specimens on record in captivity. In June, we lost Maeve, our 24-year-old female giraffe (*Giraffa camelopardalis rothschildi*), who had been born in Fota Wildlife Park and came to Dublin Zoo in 2009. She had given birth to six calves in Dublin. For some months, she had been showing signs of mobility impairment, although her appetite and general demeanour remained good. When she was found in a recumbent position one morning and could not get up on her own, we consulted our Euthanasia Decision Guide, and the decision was made collectively with the participation of the animal care team leaders and staff to euthanise her. She was one of the older of her species in a zoo. In August, Marmaduke, the oldest South American tapir (*Tapirus terrestris*) on record in human care, was three days short of his thirty-seventh birthday when the decision was made to euthanise him. He had been presenting with cardiac and respiratory issues; the possibility of improvement with medication was very low and his quality of life was deteriorating significantly. Once more we had used our Euthanasia Decision Guide to make the decision. Marmaduke had come to Dublin Zoo in 1986 and had sired 19 calves over his lifetime. He had been a great favourite of the keepers who cared for him and, in his old age, he had enjoyed a very good quality of life.

In February, keepers observing the male orangutan infant (*Pongo pygmaeus pygmaeus*), born to Mujur and sired by Sibü, noticed that he had become weaker and was looking dehydrated. After consulting with the EEP

coordinator and advisers, the decision was taken to intervene. Mujur was anaesthetised, and the infant was retrieved for warming-up and supplemental feeding. Further consultation with orangutan experts took place, and the baby was handed back to Mujur after about 24 hours of intensive care. She took him back immediately, and for a while he appeared to be doing well. Unfortunately, 11 days after his birth, the baby orangutan died of maternal neglect.

On 1 May, eastern bongo Nanyuki gave birth to a male calf. This was her fourth pregnancy. Although the maternal instincts of Nanyuki were excellent, the calf could not be observed suckling. Despite initial successful intervention on the part of the keepers, the calf died overnight. Other notable deaths included male eastern bongo Nsoah as a result of gastric stasis, female Goeldi's monkey Buffy as a result of complications with her sixth pregnancy; a scimitar-horned oryx (*Oryx dammah*) due to chronic pneumonia, and a female African wild dog (*Lycaon pictus*).



ZOO LICENCE

The annual zoo licence inspection by the National Parks and Wildlife Service (NPWS) took place on 16 May. The inspectors commended Dublin Zoo, writing in their report:

"The standards at Dublin Zoo are very high, and it is clear from talking to various keepers and other staff that there is an eagerness and significant support for the management and the improvements being made. The keepers were found to be experienced and knowledgeable and wholly dedicated to the animals they look after."

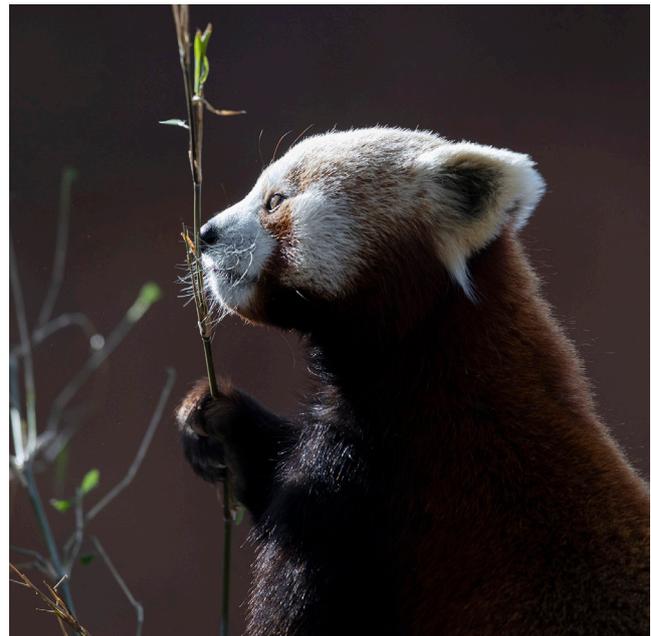
In July, the NPWS conducted a special inspection after a series of animal welfare allegations made anonymously against Dublin Zoo via a protected disclosure. The Zoo cooperated fully with the investigation. The NPWS report, published in January 2023, was lengthy and comprehensive, and put Dublin Zoo's animal welfare and veterinary programmes in a very positive light.

SIGNIFICANT VETERINARY PROCEDURES

In pursuit of our strategic aim to provide a more integrated veterinary service in Dublin Zoo, our Veterinary Team, led by Frank O'Sullivan, installed several pieces of new equipment in our vet hospital, including a dental suite and x-ray, and an ultrasound machine with three probes.

Young eastern bongo male, Tashi, had a standing sedation to be moved to a vacant house in the okapi habitat while the new bongo house was being built. Shortly afterwards, Tashi was transferred to Beauval Zoo in France under a

transfer recommendation from the EEP coordinator. In spring, the 14-year-old red panda, Jasmina, underwent a dental operation under general anaesthesia with specialist vet dentist Dr Nora Schwitzer. Jasmina recovered well and was eating bamboo a day after the operation. Female siamang gibbon (*Symphalangus syndactylus*) Cahaya was sedated for a successful contraceptive implant. In spring, a green tree python (*Morelia viridis*) was brought to specialist vet Bairbre O'Malley for a caesarean section to remove her bound eggs. Some of the eggs were of abnormal dimension and consistency, with pathological changes in the oviduct. All eggs were removed and the oviduct ligated. The animal recovered well from anaesthesia, but her heart rate started to drop about an hour after going back into her vivarium, and unfortunately she died a short while later.



(Right) Red panda
(Far right) Grant's zebras

In early summer, all red ruffed lemurs (*Varecia rubra*) were anaesthetised for a full periodic health check. The examinations included checks of their dentition, their body condition scores, their coat and lymph nodes as well as auscultation of their chests and palpation of their abdomens. Some hair samples and skin scrapes were taken from one individual, as two patches of hair loss were noted, which were negative for parasites and for fungal growth. All were given a topical anti-parasitic treatment. Suprelorin contraceptive implants were placed in all lemurs, with the exception of Fifi and Pierre (the breeding pair). Two of the younger lemurs were also microchipped. Blood was taken from each individual for full biochemical analysis, and some samples were also sent to the Biomedical Primate Research Centre in the Netherlands for species-specific virology including Varicella virus. All lemurs recovered well.

During the summer, female Amur tiger Tundra got a bamboo stick lodged in her throat, for which she needed to be sedated. However, she had broken two canines, which had possible pulp exposed, and a dental procedure was carried out a few days later. In autumn, Grant's zebra Izzy had some mane and skin lesions consistent with sweet itch, an allergy to midge bites. She received topical ectoparasite treatment to help control this. Her mane regrew in October as we exited the fly and sweet itch season.

We thank all external specialists, and in particular UCD's School of Veterinary Medicine, who provided help and support to the Dublin Zoo Veterinary Team throughout the year.



HORTICULTURE

During the year, the Horticulture Team established a process to create mulch out of animal waste in the new bay in the African Plains service yard. The process has proven to be very successful. With the new waste management system, we can produce enough mulch for all our plant needs. A large portion of the mulch generated was used around the Zoo's perimeter fence for the first time in years. This will be done on an annual basis in the future. Excess mulch is being offered to other institutions, which allows us to avoid some of the cost of having the manure collected.

Throughout the year, seasonal jobs continued, including plant division and propagation in the nursery, plant protection, tree assessment for surgery, and weeding and hedge-cutting in winter. In preparation for the renovation of Society House, plants were lifted from the garden and potted, replanted in the nursery or other locations around the Zoo, or disposed of. Giant knotweed, *Fallopia sachalinensis*, an invasive plant, was detected and will be eradicated with long-term treatment. Outside the farm house in Family Farm, the team prepared and planted up the vegetable garden with plants and seeds. Vegetation was cleared from Camp Kaziranga to allow erection of the tent for summer camps. Some plants on the gabion wall of the African Savanna were cut back to facilitate the installation of a temporary platform for 'The Zoo Live' TV show. In August, the dry weather required the Horticulture Team to spend considerable time on irrigation of planted areas. Bamboo was dying off in some areas of the Kaziranga Forest Trail, and has since been replaced. Planting took place alongside the new stand-off barrier on the eastern side of the African

Plains lake and along the North Road animal habitats as improvements on the pathways were completed. At the end of the year, discussions took place for ideas for enrichment and extra browse provision for the Western lowland gorilla troop (*Gorilla gorilla gorilla*). An in-house workshop was organised to discuss husbandry practices, nutrition, training and health and safety working with apes. A consultant from Britain who specialises in working with the four ape species attended.

In May, Dublin Zoo started taking part in the Flower-Insect Timed Count (FIT Count) as part of our involvement with the All-Ireland Pollinator Plan. The Horticulture Team helped to make Dublin Zoo more pollinator-friendly and their work included creating a new soil bank and soil/sand pits for solitary mining bees; they also planted new flower beds at the Discovery & Learning Centre, using a mix of pollinator-friendly plants. FIT Counts were run all over the country and recorded the abundance of flower-visiting insects over time. In Dublin Zoo, they were conducted once a month between May and September in the garden beside the Farmhouse, and the results were submitted to the National Biodiversity Data Centre to help track changes in the abundance of Ireland's pollinators. This is a great collaboration across the Zoo involving our Conservation, Horticulture, Discovery & Learning and the Volunteer teams.

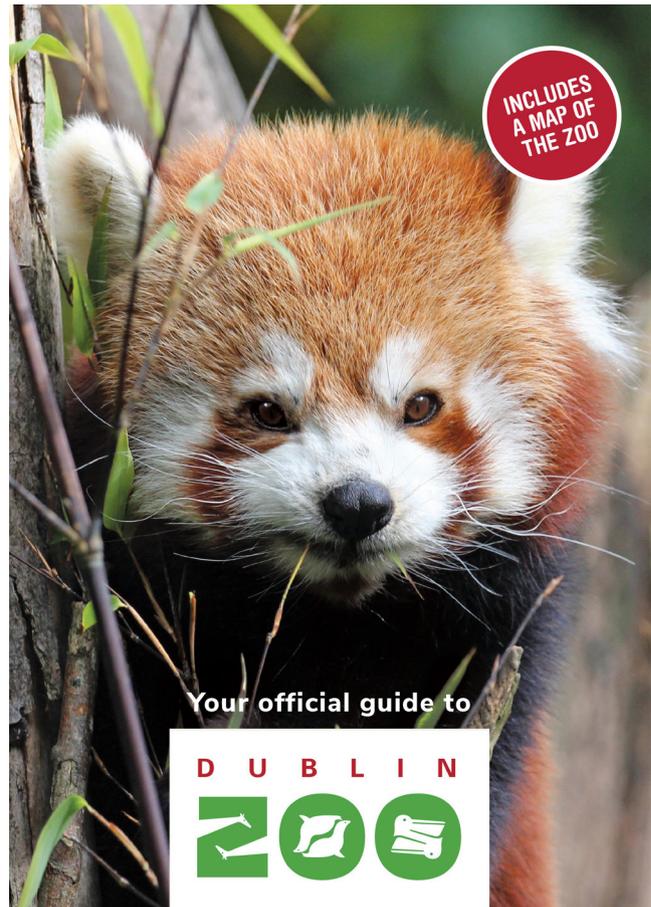


RETAIL AND VISITOR SERVICES

Our retail sales in 2022 were very strong, with the main gift shop, the African Plains shop and our online shop, Zootique, showing increases during most of the year against the last comparable periods. These were excellent results for Senior Retail and Visitor Services Manager Mark Bowes and his team. Helen Clancy, who worked in the Retail and Visitor Services Team for 21 years, retired in May.

The Retail Team worked in close partnership with our suppliers, including Nature Planet, to develop new bespoke products for the summer season. In May, we introduced a new brand called 'Big Jigs Toys' into our main gift shop; these are wooden toy sets made from sustainable sources. The new Zoo guidebook was a great success and sold particularly well, requiring several reprints. Towards the end of the year, the Retail Team introduced new signage for the clothing range; each product now has a sign detailing its price and design, which enables the customer to have an easier shopping experience. The adoption packs continued to sell well, especially through Zootique; the red panda, Asian elephant and Humboldt penguin were the top three selling packs.

During Wild Lights, the Retail Team ran a pop-up shop in the main gift shop and two Wild Lights cabins, located on the lawn. Glow wands were the single bestselling product across all ranges. The Wild Lights Christmas pop-up cabin, which stocked a limited edition of festive Christmas products, also proved to be very popular. Retail sales in November and December were higher than in 2021, the last comparable period.



CATERING

Arising from the expiration of the previous catering contract, a tender process had been launched in 2021 for a new long-term contract. Authenticate, a procurement and management consultancy experienced in catering, drew up a comprehensive list of KPIs and a framework for managing the contract. The requirement for consistency and excellence in service delivery was stressed, as was managing queuing times. As part of the briefings for prospective tenderers, Dublin Zoo's ten-year strategic plan was outlined and discussed. Following a thorough selection process, Baxter Storey was once again appointed as the Dublin Zoo caterers.

Under their contract, Baxter Storey provide catering services to visitors throughout the Zoo. These include the Meerkat Restaurant near the entrance; the Chicken Hut and Crepe Cabin at Sea Lion Cove; Picnic Bench, Wuuf Truck, and Sophia's Ice Cream Parlour on the main lawn; and Starbucks in Nakuru Café, Okapi Hut and Wild Burger in the African Plains. As restrictions were lifted following the pandemic, all menu offerings were once more available, including the extended breakfast time with hot food options in the Meerkat Restaurant. During the year, Baxter Storey also introduced pizza and fish and chips to the menu in the Meerkat Restaurant.



FACILITIES

As the Zoo fully reopened after the Covid pandemic, the Facilities Department engaged in restoring all visitor facilities which had been closed for extended periods. These included indoor habitats, playgrounds and catering outlets. Sound systems were recommissioned in preparation for the resumption of keeper talks. The new accessible toilet was built to 'Changing Places' specification and made available early in the year. A review of all heating, cooling and air handling was carried out across the site and boilers replaced as required.

During the year, extensive work on the visitor paths and fences was undertaken along the eastern side of the lake in the African Plains. Scheduled tarmac repairs

were delayed due to supply chain issues with the buff-coloured dye. New houses for the eastern bongos and African wild dogs were integrated into these works. Safety improvements were carried out in the Wolves in the Woods, the Amur tiger habitat and in the gorilla and chimpanzee houses. Additional heating was installed for the wolves.

A major undertaking was the commencement of the restoration of Society House, which is part-funded by the Irish government through the OPW. The 1868 building is to become the Zoological Society of Ireland's National Centre for Species Survival, with lecture space for third-level education, a public library and reading room, as





well as office space for our Conservation and Science Team, student and external collaborators and some living accommodation in the extension. Alan Sherwood was appointed as project manager and Axo Architects as architects. The design phase was completed in good time, and construction commenced in November. The pebble dash, added to the building in about 1911, was removed and replaced with a lime render. Work is scheduled to be completed by summer 2023.

Car parking continued to be a challenge at busy times, and we were grateful to the OPW for creating an overflow car park next to the Lord's Walk car park to ease the pressure during the high zoo visitation period in June, July and August.

SUSTAINABILITY

Late in the year we held a sustainability workshop with our consultant John Barcroft of the sustainability consultancy firm 'The Environmental Edge', who is assisting us in developing a sustainability strategy for the Zoo. The Dublin Zoo Sustainability Team was established,

a cross-departmental group consisting of managers and staff, with the aim of producing a sustainability master plan in keeping with Objective 5 of our ten-year strategic plan 'Dublin Zoo 200: Vision 2021 – 2031'. John Barcroft is chairing the working group.

WAZA released a new guidance document on reducing, measuring and offsetting carbon in zoos and aquariums. Together with the WAZA Sustainability Strategy, this will be a useful resource for setting our own sustainability goals.

HEALTH AND SAFETY

The transport, storage and handling of large square bales and round bales of hay and straw was reviewed, and a risk assessment completed by John Munro. John also carried out a risk assessment on the use of machinery. A sample frame was manufactured to operate the counterbalance gates across the site. This will set the standard for our counterbalance gates for the future. Additional hot wire was installed to protect the keepers while operating in the elephant training stall. The former tiger and future lion habitat underwent a major refurbishment to improve work safety.

Significant safety improvements were made to the visitor pathways and stand-off fencing on the eastern side of the lake in the African Plains.

HUMAN RESOURCES

In January, Dublin Zoo set up a Staff Development Fund to help support employees' personal development and to cover activities that would not normally be funded through the central training budget, such as visiting or volunteering on a conservation project. Staff can request to attend courses or training through this fund. A panel assesses applications twice a year. Using this fund, in 2022, successful applicants included a keeper who was funded to travel to Latvia to attend the EAZA European Zoo Nutrition Conference; and a keeper who received funding to travel to a number of UK zoos to discover best practice, new techniques and initiatives for visitor experiences such as private tours, behind-the-scenes tours and overnight stays.

In February, the Human Resources Department held the first meeting of the Employee Engagement Group, which included representatives from each department elected by their colleagues. The director attended the bimonthly meetings. During the year, a new Employee Welfare and Social Group (EWSG) was set up as a sub-committee of the Employee Engagement Group. The purpose of the EWSG is to organise social, wellness and recreational events for the enjoyment of staff members and to help create a strong, positive and inclusive organisational culture. The EWSG meets a number of times a year to review all suggestions from the team and, having consideration for the budget, puts forward costed proposals to the Employee Engagement Group for approval.

The promotion and grading system in the Animal Department was reviewed to update position titles, make promotion and progression routes fair and transparent, and offer development and progression opportunities at all levels from the entry grade upwards. The General Assistant grade was replaced with an Assistant Keeper position, and a new Keeper (Entry Level) grade was introduced. During the year, the personal development plan programme was successfully rolled out for all staff.

A significant new appointment in 2022 was that of Dublin Zoo's new Head of Marketing, Aoife Davey. Aoife has an exceptional 20-year track record, having played an instrumental role in developing the One4all business from a start-up to a multi-million-euro business that is now a household brand in Ireland and a market leader in the UK. In 2019, when One4all were acquired by Global Fintech company BlackHawk Network, she took on responsibility for a range of UK gift card products, marketplace ecommerce sites across Europe and the UK, and the launch of the One4all Gift Card in new European markets. She has also developed corporate society responsibility (CSR) initiatives including the One4all Shop4Crumlin (now Shop4Giggles), a nationwide, annual fundraiser in aid of sick children and their families. Aoife will be playing a key role in implementing Dublin Zoo's ten-year strategic vision. We are delighted to welcome her to the Dublin Zoo team.



DISCOVERY & LEARNING

The Discovery & Learning Team's broader range of face-to-face programmes could be offered once again from January 2022, although, due to high levels of Covid in the community, the team continued to deliver some digital programmes. After nearly two years with restrictions, we were delighted to welcome to the Zoo 27,013 participants to formal (curriculum-linked) programmes and 2,565 for informal (non-school) sessions, making 29,578 the total number of participants in teacher-led programmes in either an in-person or virtual delivery capacity. 38,083 participants arrived for self-directed programmes. In total, we had 67,661 bookings through the Discovery &

Learning department in 2022. Despite a drop in numbers early in the year due to Covid in the community, this was an 11% increase on 2019, which was the last full year of programmes.

After two years of being used to facilitate social distancing for other members of the Zoo Team, the Discovery Centre reopened in February. The four species of stick insect – Indian green stick insect (*Carausius morosus*), Black beauty stick insect (*Peruphasma schultei*), Zompro's Thai stick insect (*Parapachymorpha zomproi*) and Macleay's stick insect (*Extatosoma tiaratum*) – were





transferred from Zoorassic World, where they had been cared for over the past two years, to new, larger, state-of-the-art habitats in the Discovery Centre.

During the year, the Discovery & Learning Department drafted Dublin Zoo's Conservation Education Master Plan 2023-2031. This first ever Conservation Education Master Plan ties in directly with 'Dublin Zoo 200', the Zoo's strategic plan. The Conservation Education Master Plan is an ambitious plan that aligns with the WAZA and the International Zoo Educators' Conservation Education Strategy, and with the Department of Education STEM (science, technology, engineering, mathematics) Implementation Plan. It was approved by the Zoological Society of Ireland Board in December. The Discovery & Learning team updated their learning programmes to ensure that all learners understand Dublin Zoo's conservation mission and what they can do themselves to help protect wildlife locally and globally. This work was completed in line with Dublin Zoo's commitments to best practice in conservation education.

Face-to-face formal programmes at primary school level included African Adventurer, Rainforest Ranger and Dinosaur Detectives. Each programmed group received a digital package tailored to their learning programme; the package included teacher support documents and follow-up worksheets for students to complete back in the classroom. Early in the year, as Covid prevented some schools from visiting the Zoo, we promoted the two SSE Airtricity-sponsored primary school programmes Amazing Adaptations and Champions for Conservation, which we had developed in 2021 during the pandemic. Although the demand had lessened from the previous

year and we only released them during the off-peak periods, the response was very positive from teachers.

Our relationship with the library network continues to be very positive, and we are delighted with the network's enthusiasm for continued collaboration with Dublin Zoo. In March, 587 primary-level students from Dublin, Leitrim, Offaly, Kildare and Donegal participated in Virtual Engineers Week. During Science Week in November, 2,494 primary learners took part in virtual learning programmes. These were booked via the local library network.

The ever-popular primary school tours in May and June were back at full strength with a bumper season this year. In June, we had 17,711 primary school bookings, which was 29% higher than in June 2019. The excellent performance is attributed to having five zoo educators available this year, compared to four zoo educators and an Agri Aware teacher in June 2019. The team's flexibility with breaks also ensured that on most days we could book three 75-minute programmes per teacher. There was a 28% increase in self-guided primary school tours compared with June 2019. Many of these groups had missed out on a programme booking due to the limited availability of morning time slots in particular. The volunteers worked closely with the Discovery & Learning Team to manage the large numbers. The coordination and communication between the Retail and Visitor Services Team, the Discovery & Learning Team, the Animal Care teams and the volunteers were especially strong this season, resulting in a well-run school season. The Discovery & Learning Department is working on creating a dedicated public engagement team to complement the work of

the teaching staff, zookeepers and volunteers to provide richer and more consistent learning moments across the site throughout the year, but especially during our peak primary school season and school holidays.

For the formal secondary-level programmes, there was a pent-up demand, especially for our ecology, conservation and sustainability programmes. There was also good demand for our evolution programme, which was delivered for the first time since before the pandemic. This programme was updated to include a discovery trail in Zoorassic World, and the new format worked very well. We continued to offer the after-school programme to youth groups and disadvantaged groups. At tertiary level, 144 students participated in the Level 5 QQI course, Animal Behaviour and Care, which we continued to provide both online and in person to accommodate the students. This year, we worked with the School of Tourism and Hospitality Management at Technological University Dublin (Grangegorman) to host a sustainability workshop with their students. An interesting new initiative emerged with a series of bespoke sessions for paediatrics students from the Royal College of Surgeons. These sessions were focused on parental care in wildlife and juvenile development, and were established as part of a wellbeing initiative run by the college.

Our first in-person informal workshops in two years were the sold-out spring workshops held over the February mid-term week. Forty-eight children joined us across two days. From then on, we were able to offer our full range of informal workshops, including the Junior Easter workshops, which were in great demand. Our popular Parent and Toddler sessions resumed in May and continued in autumn.

During the summer, our Dinosaur Discovery-Kids Only sessions, and Dinosaur Discovery-Family sessions booked out so quickly that we doubled the number of sessions; the Dinosaur Discovery-Family sessions see families working together to carry out their own dinosaur dig, using specialist tools. The much anticipated summer camps resumed in July, with 52 children taking part each week. A team of eight Dublin Zoo staff and twelve summer camp volunteers hosted this year's camps, with facilitators from the NPWS joining the team each Wednesday. Our 'Forest Families' programme, held monthly in autumn, saw families spend the morning together exploring the 'Wild Space' in the African Plains. This programme is valuable in offering conservation education to families and supporting them in connecting with nature. In the autumn, 100 young people came to our creative Junior Halloween workshops, and during the same week, 30 teens attended the 'Young Zoologist' programme. One of the summer camp volunteers returned to support the running of the Halloween workshops so that we could accommodate higher learner numbers. Many of the families attending the workshops and informal sessions were repeat visitors; this is a positive trend and indicative of the high quality of our programmes.

Groups and self-guided visits continued throughout the year. The groups included primary and secondary schools, tertiary institutions, hospitals and charities, language schools, tourist groups, scout groups and those with additional needs.

In February, the Discovery & Learning Team, along with colleagues from Tayto Park and Galway Atlantaquaria, presented a virtual workshop 'The Value of Nature'

RED PANDA

Panda rufus
Ailuropus fulgens

Red pandas are acrobatic tree climbers and live high up in trees. Their habitat is temperate forest, where bamboo is plentiful. These solitary animals are territorial and sleep for most of the day, much like a domestic cat! They are most active at dawn and dusk.



HABITAT
high-altitude forests with bamboo



Current red panda range
Nepal - Bhutan - China
North India - Tibet

DIET OMNIVORES

Widely eat



Bamboo and leaves

Sometimes eat



Flowers Berries Eggs Small lizards Insects

Red pandas were once thought to be related to giant pandas or raccoons.

Recent research now shows red pandas are in their own unique family.



BRAND
200





to junior cycle secondary teachers. This is an annual partnership initiative with Junior Cycle for Teachers (JCT) as part of the STEAM (science, technology, engineering, arts and maths education) programme. Weeks of planning went into the hour-long virtual session, which focused on why nature is important to protect, and looked at the impact of phones, laptops and other technology products on habitats and species. The outcome of the session was to highlight the actions that each person can take daily to support the conservation of species on a local and global level. Planning for our 2023 event commenced in November. This collaboration in conservation education teacher training received recognition at the Annual BIAZA Gala Dinner held in Dublin this year. The Discovery & Learning team, and their Irish BIAZA colleagues, received the BIAZA Gold Award in Education for the 'Virtual National STEM Collaboration Ireland; working creatively to promote BIAZA Conservation Education to Junior Cycle Teachers throughout the pandemic'. They were also awarded the BIAZA Outstanding Achievement Award in recognition of how our joining forces with other conservation-based organisations can lead to more significant social action for conservation. The team also won the BIAZA Bronze Award in Education for their development of the virtual Eco Explorers learning programme in collaboration with SSE Airtricity during the pandemic.

Our Primary Teachers Summer Course, approved by Drumcondra Education Centre, returned to face-to-face delivery this year. Seventy-five teachers enrolled in the course, which took place daily from 4 to 8 July. There was great demand for tickets, resulting in us selling out in early May. All Discovery & Learning team members

played a part in delivering or supporting the teaching sessions. Animal Care Team Leader, African Plains, Helen Clarke delivered a presentation on the history and conservation of chimpanzees at Dublin Zoo. External facilitators Niall Hatch from Birdwatch Ireland, and school garden expert Dr Paddy Madden also gave well received modules. The course continues to get excellent reviews, with many participants saying it is the best of any summer professional development courses they have done during their teaching careers.

Head of Discovery & Learning Aileen Tennant contributed to the consultation process for the STEM Education Implementation Plan 2021–2027, hosted by the Department of Education and Skills. In the submission, it was highlighted that informal science education centres such as Dublin Zoo should have more support from the Department of Education and other bodies to promote the wide range of high-standard education programmes that these centres offer to children and families throughout Ireland. She also suggested that STEM Education should promote biological and environmental sciences with emphasis on conservation and sustainability education, to ensure students are offered chances to understand climate change, biodiversity loss, and be provided with education that equips them for future problems facing our planet.

A fourth-year BSc Education student from the Marino Institute of Education completed a seven-week internship with the Discovery & Learning Department. She worked on all aspects of teaching and learning, public engagement and administration, and on the volunteer recruitment process.

Interpretation planning became a larger remit for the Discovery & Learning Team, with extensive planning with designers Wilsons Creative to come up with a fresher, more child-centric approach to educational species interpretation while fulfilling interpretation criteria outlined by IZE/WAZA conservation education guidelines. The first roll-out was for the Himalayan Hills project, which saw a new illustration style incorporated to the new storybook look and feel. The Amur tiger and Asian lion interpretation also saw a revamp. Interpretation in Zoorassic World was also updated to include the IUCN status on all species, and interpretation was completed for the Chinese dhole and red howler monkey.

Dream Night was held on 22 June, with 104 Dream Night volunteers from various Zoo departments and contractors giving up their time freely and generously to make it a great success. The event was run fully outdoors to ensure

we could provide the safest environment for vulnerable children. This new format was a great success, with families receiving their own Dream Night volunteer who provided support to the family for the night. Fifty families, 219 parents and children, attended from Our Lady's Hospital, Crumlin, and Temple Street Children's Hospital. Ten Children's Hospital Ireland volunteers and hospital support staff were also helping on the night. Coordinated by the Discovery & Learning Team and Keeper Brendan Walsh, tours of the Zoo were provided for all of the families, and the team from Baxter Storey provided food. The children's entertainer 'Silly Billy' provided magic shows and Dream Night regular, Derek 'Mono' Monaghan, provided his usual fun DJ set with zoo suppliers providing treats for children's goody bags. The feedback from the families, the hospitals and the Zoo volunteers showed once again what a special night this is for the children involved.



VOLUNTEERS

In 2022, we were pleased to be able to return to our usual volunteer activities once more. Volunteer recruitment took place with an in-person open day, held over two sessions, and interviews at the beginning of the year. From the large number of applicants, we secured 35 strong candidates to rebuild our volunteer programme numbers. Our 2020 recruitment programme training had been completed before the pandemic lockdown, but the new volunteers did not have a chance to participate fully in the programme. We did not train any new volunteers in 2021. In April, at the end of the comprehensive training programme, a joint graduation ceremony took place in the Discovery & Learning Theatre for the class of 2020 and the class of 2022. During the year, volunteer recruitment policies and procedures were updated for the coming years. As part of our updated terms and conditions, volunteers who are off the programme for more than two years must re-apply at the next volunteer recruitment to be considered. This is to ensure they are fully trained with the most up-to-date protocols and education activities, and are re-vetted.

In 2021, post Covid, the number of active volunteers available for the summer season had been reduced to approximately 45 people. In 2022, at the beginning of the busy season, volunteer numbers had been rebuilt to over 80. However, during July and August, filling the volunteer shifts was a challenge due to ongoing disruptions from Covid absences, extended holidays and family visits abroad, the first opportunity for many volunteers to travel since 2019. In the years before the pandemic, we would have worked with up to 110 volunteers on the summer roster. In 2022, at the end of

the summer, seasonal volunteers were invited to apply to join the long-term programme, and 25 volunteers stayed on.

In May, the volunteers reopened the biocart on the Savanna. In preparation for the SSE Airtricity Sustainability Weekend in July, two new biocarts, now known as discovery carts, were created and funded by SSE Airtricity. One cart, focussing on the Bornean orangutans, was stationed at Orangutan Forest, and the other, focussing on the western lowland gorillas, was stationed at Gorilla Rainforest. The discovery carts feature biofacts with Dublin Zoo's conservation and sustainability messaging. The volunteers work in pairs at the discovery carts to provide informal learning opportunities for visitors.

In May and June, the volunteers helped with the great rush of school visits for the first time since 2019. We had five engagement 'hotspots' located around the Zoo for primary school children and general visitors. Volunteers hosted a meet-and-greet with school groups and the public at the gate, and directed them to a learning hotspot in other areas of the zoo.

For World Bee Day on 20 May, Dublin Zoo was supporting the All-Ireland Pollinator Plan, and the volunteers ran a pollinator pop-up event outside the farmhouse. This coincided with five volunteers getting involved in on-site pollinator recording, working with Conservation and Research Officer Dr Andrew Mooney and contributing records for the All-Ireland Pollinator Plan. July included a very popular volunteer-led visitor event based at the Himalayan Hills, celebrating

the habitat and its species. In September, volunteers delivered arts, crafts and public engagement tables during a very busy Red Panda Weekend. They also coordinated a Safari Day in Camp Congo for visitors. In October, volunteers delivered the 'Teeny Weeny Halloweeny trail' during the October bank holiday and mid-term break. The latter proved to be one of the most interactive volunteer events ever with visitors.

In May, the ever popular and highly photographed Wishing Chair at Family Farm received a makeover by artist Noeleen Frain, who completed the work on a voluntary basis. Noeleen painted the various wild and domesticated animals that feature at Family Farm. She also included paw prints in memory of the three labradors Ruby, Kim and Honey, who were residents at Pets Corner some years ago and were known to spend a lot of time in the company of volunteers.

Volunteers continued to support zoo visitors in the Discovery & Learning Centre. They also supported many out-of-shift events during this year including the National Biodiversity Conference, the BIAZA Conference and Dream Night, all in June. They continued supporting the teaching team with the Ecology course bookings, Parent and Toddler classes and Halloween workshops. Twelve volunteers, specially recruited, assisted the Discovery & Learning Team with the summer camps. Towards the end of the year, three volunteers supported the veterinary team, African Plains team leader Helen Clarke and keeper Susan O'Brien with a behavioural study of the chimpanzees. Extensive training and risk assessments were required to ensure maximum safety for all concerned. The survey was scheduled to continue until March 2023.



MARKETING AND PUBLIC RELATIONS

2022 was an exciting year for the Dublin Zoo marketing team, with the opening of the Himalayan Hills Habitat, some special new arrivals, our events reopening and the most successful Wild Lights to date. A big highlight was the opening of the Himalayan Hills habitat in April by Tánaiste and local Dublin West TD Leo Varadkar during a ceremony at Dublin Zoo. The opening generated extensive broadcast, print and digital media interest, with the total coverage for the month reaching over 15 million, with Dublin Zoo's social media reach accounting for over 2.1 million.

Another one of our highlights was the first-of-its-kind live broadcast from the Zoo which aired on RTÉ One over three consecutive days from 7.00 pm to 8.00 pm in June. Named 'Zoo Live', it was broadcast from a specially-made set overlooking the African Savanna. Thanks to the meticulous preparation and excellent collaboration between the Zoo Team, the production company, Moondance Productions, and the RTÉ team, the ambitious programme was an enormous success. It was presented by Sinead Kennedy and



Ella McSweeney with help from celebrity 'zookeepers' Doireann Garrihy, Jedward and Kevin McGahern. 'Zoo Live' had an audience of over 235,000 viewers per episode and showed the beauty of the Zoo, the passion of the entire team and the very important work we do in conservation and education. The show received coverage across all national press titles, magazines and national radio. The 'Zoo Live' series was a big undertaking for the Zoo and there was generosity of time given in particular by the Animal Care teams and Discovery & Learning Team.

Shortly afterwards, 'The Zoo' TV series returned for an eleventh season on RTÉ One. The new series, which ran for eight weeks and was broadcast on Sunday nights, once again took viewers behind the scenes at Dublin Zoo to see the animals and meet the dedicated Animal Care team who look after them. This series included the red pandas moving into their new home, the Himalayan Hills, and the arrival of six dholes, the first time this species has been seen in Dublin Zoo.

Other print and broadcast media highlights this year included an interview in the Irish Independent with the director about Wild Lights, new animal habitats and our 10-year strategic plan; and Dublin Zoo featuring on RTÉ



One's Dancing with the Stars in January with clips of our elephants, red pandas, gorillas, sea lions and animals in the African Plains. In May, we received considerable radio and online coverage for our 60-millionth visitor since the Zoo opened in 1831. In August, we launched a major PR campaign to announce the birth of the okapi calf. There was extensive PR coverage in national print newspapers; a prominent picture of the calf appeared on the front page of the Irish Times.

Several very successful promotions were offered during the year. In March, we ran a St Patrick's Day promotion, offering a 30% discount on gate prices to anyone who bought tickets online using a promo code. The offer was promoted across our channels including social media and email marketing, and received strong pick up in the media. It was a highly successful four days, attracting over 30,000 visitors.

On the weekend of International Red Panda Day, 17-18 September, we took the opportunity to acknowledge the generosity and support of the public for the 'Save Dublin Zoo' campaign. We offered half-price tickets to visitors and hosted a range of educational activities and keeper talks over the weekend. A new red panda sculpture, created by award-winning sculptor Stephanie Hess, was unveiled beside the red panda habitat in the Himalayan Hills; showcasing Dublin Zoo's gratitude to all supporters of the 'Save Dublin Zoo' campaign. The response to PR and marketing activity for the weekend was excellent, with the Sunday being the busiest day of the year at 12,853 visitors.

In June, a new five-year agreement with our sustainability partner, SSE Airtricity, was announced. There were positive new elements to the sponsorship, including the

unveiling of a new sustainability character at Dublin Zoo called Pookie, the new Eco Explorers Trail signage and new discovery carts. As part of the announcement, SSE Airtricity ran an exclusive Roar and Snore competition that offered a family the chance to win an overnight stay in Haughton House in August, which included a zookeeper tour and a movie night during their 'glamping' experience. The response was huge, with 14,000 entries. Earlier in the year, the SSE Airtricity Eco Explorers Club at Dublin Zoo won the silver award in the 'Best in Europe' category at the European Sponsorship Awards in London.

WILD LIGHTS

'The Magic of Life', Dublin Zoo's 2022-23 Wild Lights event, shone a light on biodiversity and was designed to inspire visitors to take action to help save our planet. This theme was closely aligned with our vision to become a zoo-based conservation organisation of national and global significance. As biodiversity is a complex and serious matter, our challenge was to find a way to deliver on messaging that inspired action and also create a show that entertained our visitors. Alongside this, we needed to ensure our event was not impacting on, or was impacted



by, the energy crisis. We adopted a novel approach to bring biodiversity to life by showing smaller animals and insects, but featuring them as out-sized to reflect their important roles in maintaining our fragile world. Visitors were brought on a journey through illuminated and magical woodland scenes, where they encountered wondrous pollinators including giant bees and beehives. They saw the co-operation between ants in a colony and the metamorphosis of a caterpillar into a butterfly. Visitors witnessed the abundance and diversity of life in the tree tops of the rainforest and finished the route with illuminated sea creatures and coral.

The hand-crafted traditional lanterns were once again produced by Vya Creative, the lantern group based in Zigong, in the Sichuan province of China. We created the name 'The Magic of Life' to reflect a magical sensory experience and to portray the extraordinary beauty of biodiversity. We used the concept of helping hands as a golden thread that featured in our advertising and marketing creative, as lanterns within the event, and as call-outs on the educational interpretation boards throughout the route. In the face of the energy crisis, we took Wild Lights completely off the national grid and



powered everything with hydrotreated vegetable oil (HVO) derived from 100% renewable raw materials.

Wilson Creative and Moondance Productions undertook the creative and video for the campaign. We worked with Zenith Media and Teneo on the delivery of a fully integrated marketing, advertising and PR campaign that worked with our own channels and delivered year-on-year growth in reach, engagement and return on investment. Thanks to a very successful media night and a topical theme, our PR campaign delivered a reach of over 14 million, which was an increase of 154% on reach and an increase of 89% on value in comparison to our 2021 campaign. Once again, 98fm was our radio partner. This partnership included extensive advertising, interviews for the launch, and promotions across its sister stations Today FM and Newstalk, as well as social media and digital activity. For print media, we partnered with Mediahaus, and this relationship included digital advertising, press advertising, magazine advertising and competitions across the Irish Independent, The Herald, Sunday Independent and Sunday World. Two poster inserts on biodiversity during the campaign were included in the Sunday Independent and the Irish Independent in November and promoted through TV and online advertising. The Sunday Independent is the highest-read newspaper at weekends in Ireland and the Irish Independent is the most popular daily newspaper, so this was an unprecedented opportunity to promote Dublin Zoo to its readers.

For the first time, we ran post-visit research that gave us useful ongoing feedback and allowed us to make tweaks and measure results throughout the entire event run. The feedback will also help with 2023 planning. From

our research, we are delighted to report that 56% of respondents said they felt more knowledgeable about biodiversity after visiting Wild Lights.

The Magic of Life event was managed by Safe Events and was the most successful Wild Lights to date in visitor numbers. It included a visit from President Michael D. Higgins with his wife, children, and granddaughter. Visitor numbers grew by 16% against our record year in 2019 with the same marketing spend.

EVENTS

In 2022, events returned to pre-pandemic levels with an impressive line-up of corporate family fun days, weddings, wake-up events, award ceremonies and an increasing number of corporate bookings for meetings in Haughton House. In February, 'Woo in the Zoo', our Valentine's weekend special 'Wake-up with the elephants' event, went on sale at the end of January and we sold 90% of the tickets in two days. During the summer we worked with SSE to hold their Eco Explorer weekends and the Roar and Snore event, a first for the Zoo. Santa at the Zoo returned at Christmas for the first time since 2019; this year we trialled a Santa's breakfast format instead of the grotto, and it was a great success. The Santa Experience was held every weekend from the 12 November, with additional dates from 19-23 December. All December dates sold out.

The Events Team organised four major events, including the opening celebration for Himalayan Hills in April. In March we hosted a three-day EAZA zoo-licensing training course for zoo licence authorities from European Union countries. In June, the three-day BIAZA annual

conference was held in Dublin Zoo for the first time. This conference had been postponed from June 2020 due to the Covid pandemic. The event, attended by more than 120 delegates, included presentations and panel discussions in the Discovery & Learning Centre, Zoo tours, a social event in Zoorassic World, a 'Celtic Night' evening event in the Meerkat Restaurant and a gala dinner with award ceremony in the Morrison Hotel in the city centre. Dublin Zoo won the BIAZA marketing award for our Save Dublin Zoo campaign. In June also, we hosted a social event for the National Biodiversity Conference, which was organised by the National Parks and Wildlife Service and held in Dublin Castle. The delegates were invited to the evening event and given the opportunity to walk around the Zoo after hours in the company of keepers and volunteers; food and drinks were provided by Baxter Storey.

In July, the SSE Airtricity-sponsored Eco Explorers Weekend took place. The updated Eco Explorer Trail was launched with a new character, Pookie, featuring on the signs.



CONSERVATION AND RESEARCH

Implementation of Dublin Zoo's strategic approach to conservation and research continued with several important developments in 2022. During the year, the director became a member of the National Biodiversity Forum. The forum, funded by the Department of Housing, Local Government and Heritage, is tasked with monitoring progress on the implementation of the National Biodiversity Action Plan (NBAP) and providing reports to the Minister; it also helps to shape and improve biodiversity policy and action in Ireland. It comprises representatives of academia, environmental NGOs, community groups and selected sectoral organisations. Our National Centre for Species Survival (NCSS), which is to be opened in Society House in 2023, will contribute to the outcomes of the NBAP by increasing the national capacity for species conservation assessments, conservation planning and action.

Throughout the year, Dublin Zoo worked as a stakeholder with the NPWS and KPMG to contribute to the development of Ireland's fourth National Biodiversity Action Plan, which is planned to be released in 2023. As part of this process, Dublin Zoo was also invited to contribute to the 2022 Citizens' Assembly on Biodiversity Loss. In June, Dublin Zoo organised a session on zoo-based conservation and science with an international panel at the National Biodiversity Conference, held in Dublin Castle. There was a particular focus on how zoos, aquaria and botanic gardens can collaborate with one another, and with government departments, to deliver conservation assessments, planning and action. We also had the honour of hosting an evening social event at Dublin Zoo for all conference participants. Both the Citizens' Assembly on Biodiversity Loss and the

National Biodiversity Conference formed part of the public consultation process for Ireland's next National Biodiversity Action Plan.

During the year, we finalised a memorandum of understanding with the IUCN Species Survival Commission (SSC) for establishing a National Centre for Species Survival (NCSS) at Dublin Zoo. This was a lengthy process and involved extensive collaboration with the IUCN SSC Chair's office. Dublin Zoo's commitment to conservation and to the provision of dedicated staff to work on priority conservation assessments, planning and action initiatives were crucial to the success of this initiative. There are currently only 12 other Centres for Species Survival around the world, all operating in collaboration with the IUCN SSC. When our NCSS opens in 2023, we will work closely with the IUCN SSC network and other centres to implement the IUCN's Assess-Plan-Act cycle for native Irish species.

In December, Dublin Zoo published its Conservation Master Plan, which is a key element in our strategic plan, 'Dublin Zoo 200: Vision 2021 – 2031'. The Conservation Master Plan is a practical document that builds on Dublin Zoo's significant conservation work to date. It outlines seven strategic areas where we have the potential to achieve defined and measurable conservation outcomes. Clear actions are identified, as are the local and international collaborations necessary to achieve our ambition of becoming a zoo-based conservation organisation. Actions include the establishment of the NCSS, and the creation of a national wildlife biobanking hub at Dublin Zoo to safeguard the genetic future of key species. The Master Plan also aims to raise awareness



and promote positive social action amongst our visitors of all ages. The urgency of our conservation role is captured in a statement in the introduction to the Master Plan by Conservation and Research Officer Dr Andrew Mooney:

"The targets and actions set out in this plan are both bold and ambitious; however, now is the time to take action and assume a leadership role in the conservation of wildlife. If achieved, these actions will make a significant contribution to the conservation of global biodiversity and will position Dublin Zoo as a leader in wildlife conservation."

Our new Research Policy was completed early in the year, highlighting Dublin Zoo's commitment to supporting quality research in various disciplines, both ex situ and in situ. The research may involve the utilisation of Dublin Zoo's living collection, its physical grounds and staff time. This Policy covers all research which may involve ethical considerations, the application process, project implementation, safety and insurance, and intellectual property. The policy also covers research projects undertaken by Dublin Zoo's employees in collaboration with external researchers, which are conducted at a different site. In 2022, research supported by Dublin Zoo included survey collection for a project with Dr Courtney Collins (UCC), coordination of on-site interviews for Oliver Moore as part of his PhD on primate nutrition, camera-trapping for the Snow Leopard Trust, bat ringing as part of the All-Ireland Nathusius's Pipistrelle Bat Project, and the initiation of a longitudinal study looking at the movement of our elephants to the USA next year. This longitudinal study is a collaboration

between Dublin Zoo, Chester Zoo and Cincinnati Zoo & Botanical Garden to use faecal hormone monitoring and behavioural observations to see how our four elephants, which are to be moved to the Cincinnati Zoo in October 2023, adapt to the move. In conjunction with the Research Policy, a standardised reporting system and database were created for all research projects, which ensures that project files and information are stored in a consistent way; the database also tracks outputs, including publications and theses. The annual research project summary for Dublin Zoo is submitted to the BIAZA Research Database, an arrangement that has been taking place for a number of years.

In terms of our conservation partners, this year we supported 20 projects abroad, four Irish projects and two global projects. We also gave one-off donations to three projects abroad. We established new partnerships with four projects, including the Wildlife Trust of India (Asian elephants), Proyecto Eremita (weldrapp ibis *Geronticus eremita*), Re:wild (Miss Waldron's red colobus *Ptilocolobus waldronae*) and Burung Indonesia (citron-crested cockatoo *Cacatua citrinocristata*). The Wildlife Trust of India (WTI) works in partnership with the Government of India, state governments and local communities. Dublin Zoo supports WTI's National Elephant Corridors project, called Right of Passage, which works to identify and protect elephant corridors across India. These corridors allow elephants to move between secure habitats without encroaching upon human populations and neighbouring communities, and are crucial for the future of elephants in India. In Ireland, our support for the Irish Peatland Conservation Council (IPCC) changed to focus on the marsh fritillary



butterfly (*Euphydryas aurinia*). This species has suffered serious population declines due to habitat loss and degradation, but can still be found at Lullymore West Bog Nature Reserve in Co. Kildare. Of the 35 butterfly species found in Ireland, 26 have been recorded on this reserve. The marsh fritillary butterfly requires structured vegetation of different heights, and Lullymore West is managed by the IPCC; if left unmanaged, these grasslands would gradually be replaced with woodland. As a result of their hard work, the IPCC recorded a record 57 marsh fritillary butterfly nests on the reserve in autumn 2022, an increase from the 18 recorded in 2021. This work is also funded by the Heritage Council, through the Heritage Council Capacity Support Fund 2022, and we look forward to continuing our support of these efforts into the future.



In February, Dublin Zoo joined the All-Ireland Pollinator Plan (AIPP). Currently, nearly one third of our 98 different species of bees in Ireland are threatened with extinction. The AIPP is a shared plan of action that encourages individuals, communities, schools, local government agencies, businesses and many other types of groups to support and record sightings of pollinators in order to gain a national perspective. As part of our commitment to conservation, Dublin Zoo has become a registered business supporter of the AIPP. In doing so, we will commit to supporting the ethos of the plan, take specific actions as outlined in the plan and update the pollinator team as we do this. We already carry out many of the recommended actions to support pollinators, such as having planted areas throughout the zoo to provide pollinators with food, shelter and nesting areas. Over the course of the plan, we will implement additional measures, including signage to raise awareness of the plan with our visitors. We also provided training to a team of six volunteers and four Discovery & Learning staff on Flower Insect Timed (FIT) Counts in the garden by Family Farm. Data collection takes place on the first Wednesday of every month from May to September, and the data is inputted into the National Biodiversity Data Centre portal.

During the year, Dr Mooney was appointed as the EEP Coordinator for the citron-crested cockatoo. Previously, this position had been held by Sandra Molloy, formerly Dublin Zoo's registrar/research and conservation coordinator. We are very pleased that the role remained with Dublin Zoo.

DUBLIN ZOO CONSERVATION PARTNERS

Africa

- Giraffe Conservation Foundation (Nubian Giraffe Conservation Working Group), Kenya (Nubian giraffe).
- Lemur Conservation Association AEECL, Madagascar (several lemur species, including blue-eyed black lemur).
- Bongo Surveillance Project, Kenya (eastern bongo).
- Okapi Conservation Project, Democratic Republic of the Congo (okapi).
- Painted Dog Conservation, Zimbabwe (African wild dog).
- Re:wild/Swiss Center for Scientific Research, Côte d'Ivoire (Miss Waldron's red colobus).
- Save the Rhino (Lowveld Rhino Trust), Zimbabwe (black rhino, southern white rhino).
- Scimitar-Horned Oryx Reintroduction Programme, Tunisia (scimitar-horned oryx).
- Tacugama Chimpanzee Sanctuary, Sierra Leone (western chimpanzee).
- West African Primate Conservation Action, Ghana (several primate species, including white-naped mangabey).

Asia

- BirdLife/Burung Indonesia (citron-crested cockatoo).
- Orangutan Foundation (Lamandau Wildlife Reserve), Indonesia (Bornean orangutan).
- Red Panda Network, Nepal (red panda).
- Selamatkan Yaki, Indonesia (Sulawesi-crested macaque).
- Snow Leopard Trust, Central Asia Range States (snow leopard).
- WildCats Conservation Alliance, China (Amur tiger and Amur leopard).
- Wildlife Trust of India (Right Of Passage: National Elephant Corridors Project), India (Asian elephant).

South America

- Golden Lion Tamarin Association, Brazil (golden lion tamarin).
- Sphenisco, Chile (Humboldt penguin).

Europe

- Proyecto Eremita, Spain (waddling ibis).

Ireland

- BirdWatch Ireland (raptors, barn owl).
- Irish Grey Partridge Conservation Trust (breeding waders, curlew).
- Irish Peatland Conservation Council, Kildare (Marsh Fritillary butterfly).
- Louth Nature Trust, Louth (little tern).

Global

- Frozen Ark
- IUCN SSC Conservation Planning Specialist Group

One-off donations

- Cheetah Conservation Fund, Namibia (cheetah).
- IUCN SSC Abyssinian Ground-Hornbill Working Group, Ghana (Abyssinian ground hornbill).
- Sahara Conservation Fund, Chad (scimitar-horned oryx).

RESEARCH PROJECTS

Staff-led research at Dublin Zoo

- The behavioural and hormonal adaptation of a related herd of Asian elephants to a transatlantic inter-zoo transfer. In collaboration with Chester Zoo and Cincinnati Zoo.
- Chimpanzee Behaviour and Habitat Use Assessment at Dublin Zoo.
- Examine the levels of faecal glucocorticoid metabolites (FGM) in the chimp group at Dublin Zoo. MRes, Royal (Dick) School of Veterinary Studies, University of Edinburgh.
- Flamingo feet in Dublin Zoo: collection and examination of images from the feet of Chilean flamingos.
- Flower-Insect Timed Count (as part of the All Ireland Pollinator Plan).

University-led research at Dublin Zoo

- Analysis of the activity budget of a captive *Hippopotamus amphibius* pre and post intervention with the aim of reducing the expression of stereotypic behaviours. BA, Trinity College Dublin.
- An audit of Dublin Zoo's kitchens. BSc, Technological University Dublin.
- Behavioural analyses of the impact of the observer's effect on the grey wolf (*Canis lupus*) in captivity in Ireland. BSc, Munster Technological University.
- Chemical and microbial analysis of the flamingo lagoon water quality and phytoremediation trials. BSc, Technological University Dublin.
- Comparative microscopy study of the morphological features of human and animal hairs. BSc, Technological University Dublin (Tallaght).
- Development and application of current and future sustainable practices within Dublin Zoo to reduce

- carbon footprint. BSc, Technological University Dublin.
- Dietary conservatism and feeding behaviour of Dublin Zoo's wild robins (*Erithacus rubecula*). MSc, Trinity College Dublin.
- Dublin Zoo: increasing accessibility to drive strategy. MBA, University College Dublin.
- The effect of choice in enrichment on animal participation and welfare. MSc, University of St Andrews.
- The efficacy of pest management strategies for zoo-housed southern white rhinos. Trinity College Dublin.
- Energy analysis of Dublin Zoo's reptile house and improvement of facility environment with consideration of reptile species' indigenous habitats. BSc, Technological University Dublin.
- Hay/haylage quality analysis. BSc, Technological University Dublin.
- Investigation into the role of parasites as a cause of diarrhoea in non-human primates in Dublin Zoo. BSc, University College Dublin.
- Optimizing non-invasive DNA sampling for white rhino. BSc, University College Dublin.
- An investigation on the change in behaviours of captive red pandas in response to the introduction of new enclosure mates. BA, Trinity College Dublin.
- An investigation into the impacts of the introduction of enrichment on the behaviour of two captive, castrated male red-capped mangabeys (*Cercocebus torquatus*) in Dublin Zoo. BA, Trinity College Dublin.
- Red-Capped Mangabey Welfare and Enrichment Study. BA, Trinity College Dublin.
- Sea lion pool water quality assessment. BSc, Technological University Dublin.
- The Microbial and Chemical analysis of Sea Lion Feed

- at Dublin Zoo. BSc, Technological University Dublin.
- To what extent do the Sustainable Development Goals play a role in influencing Irish tourism business' sustainable policies and strategies? BSc, Technological University Dublin.

Multi-institution research

- Advancing zoo research: A horizon scan for EAZA EEP Canids. MSc, University Centre Sparsholt and the University of Portsmouth.
- All-Ireland Nathusius's Pipistrelle bat project. NPWS and All-Ireland Nathusius's Pipistrelle Bat Working Group.
- Breeding curlew and large carnivore faeces as fox-deterrent. Irish Grey Partridge Conservation Trust.
- A comparative analysis of visitor experience with the 'ignored taxa' at four institutions in Ireland. Postdoctoral research, University College Cork.
- Comparative multi zoo research into the enclosure use of captive Goeldi's monkeys (*Callimico goeldii*). MRes, University of Portsmouth.
- Comparison of current therapies, pain assessment methods, and perceived challenges when managing osteoarthritis associated pain in large felids and great apes. MSc, Royal Veterinary College, London.
- Differences in meerkat behaviour in zoos in Ireland and Britain. BSc, University College Cork.
- The effect of ambient noise stereotypic behaviour in captive ring-tailed lemurs. MSc, Trinity College Dublin.
- Elephant facial recognition program. Postdoctoral research, Indiana University Bloomington.
- Estimating the accuracy of identifying individuals using remotely triggered cameras. Snow Leopard Trust.
- An investigation into the prevalence and aetiology of regurgitation and reingestion (R/R), coprophagy and hair plucking in great apes in British and Irish zoos. MSc, University of Chester.
- An investigation into the prevalence and perception of mixed-species exhibits. MSc, University Centre Sparsholt.
- More-than-food: Reimagining diets in the modern zoo and the impact of zoo professionalisation on changing captive primate diets. PhD, University of Exeter.
- Okapi pair compatibility. MSc, Antwerp Zoo and Utrecht University.
- Play, joy and humour in great apes. Postdoctoral research, University of California, Los Angeles.
- Retrospective mortality review of the ex-situ population of scimitar-horned oryx (*Oryx dammah*) in European zoos from 2012-2022. MSc, University of Edinburgh and Zoological Society of London.
- Tinder for orangutans: identifying long-distance methods to test mate preference in zoo-housed orangutans. PhD, Apenheul and Leiden University.

Publications by Dublin Zoo staff or supported by Dublin Zoo (Dublin Zoo staff highlighted in bold font)

- Bolton, R. L., **Mooney, A.**, Pettit, M. T., Bolton, A. E., Morgan, L., Drake, G. J., Appeltant, R., Walker, S. L., Gillis, J. D., Hvilsum, C. (2022). Resurrecting biodiversity: advanced assisted reproductive technologies and biobanking. *Reproduction and Fertility* 3(3), R121-R146. Retrieved from: <https://doi.org/10.1530/RAF-22-0005>
- da Silva, R., Conde, D. A., Baudisch, A., Colchero, F. (2022). Slow and negligible senescence among testudines challenges evolutionary theories of senescence. *Science* 376 (6600), 1466-1470. Retrieved from: <https://doi.org/10.1126/science.abl7811> [Dublin Zoo contributed

- data to this paper.]
- **Dublin Zoo** (2022). Conservation education master plan 2023–2031: cultivating the next generation of conservationists. Dublin Zoo. 33 pp.
 - **Dublin Zoo** (2022). Conservation master plan 2022–2031: becoming a zoo-based conservation organisation of national and global significance. Dublin Zoo. 56 pp.
 - **Dublin Zoo** (2022). Your official guide to Dublin Zoo. Dublin Zoo. 50 pp.
 - Langner, C., Pfau, B., Bernardes, M., Gerlach, U., Hulbert, F., van Schingen-Khan, M., Schepp, U., Arranz, C., Riedling, M., Kwet, A. (2022). Evaluation of the Captive Breeding Potential of Selected Amphibian and Reptile Taxa Included in Appendices I and II at CITES CoP18: Results of the identical F+E-project (FKZ: 3520 53 2054). Bundesamt für Naturschutz 627, 271 pp. Retrieved from: <https://bf.n.bsz-bw.de/frontdoor/deliver/index/docId/1062/file/Skript627.pdf> [Dublin Zoo contributed data to this report.]
 - Mandl, I., Rabemananjara, N., Holderied, M., **Schwitzer, C.** (2022). Measuring the Impact of Forest Edges on the Highly Arboreal Sahamalaza Sportive Lemur, *Lepilemur sahamalaza*, in North-Western Madagascar. "International Journal of Primatology." <https://doi.org/10.1007/s10764-022-00333-8>
 - Marsh, C. J., Sica, Y. V., Burgin, C. J., Dorman, W. A., Anderson, R. C., **Schwitzer, C.**, "et al." (2022). Expert range maps of global mammal distributions harmonised to three taxonomic authorities. "Journal of Biogeography" 00, 1– 14. Retrieved from: <https://doi.org/10.1111/jbi.14330>
 - Mittermeier, R. A., Reuter, K. E., Rylands, A. B., Jerusalinsky, L., **Schwitzer, C.**, Strier, K. B., Ratsimbazafy, J., Humle, T. (eds.) (2022). Primates in Peril: The World's 25 Most Endangered Primates 2022–2023. Washington, DC: IUCN SSC Primate Specialist Group, International Primatological Society, Re:wild. 163pp. https://cdn.www.gob.pe/uploads/document/file/3574458/Primates_in_Peril_2022_2023.pdf.pdf
 - Moittié, S., Jarvis, R., Bandelow, S., Byrne, S., Dobbs, P., Grant, M., Reeves, C., White, K., Liptovszky, M., Baiker, K. (2022). Vitamin D status in chimpanzees in human care: a Europe wide study. *Scientific Reports* 12 (17625). <https://doi.org/10.1038/s41598-022-21211-6> [Dublin Zoo contributed samples from our chimpanzees as part of this study.]
 - Reuter, K. E., Mittermeier, R. A., Williamson, E. A., Jerusalinsky, L., Refisch, J., Sunderland-Groves, J., Byler, D., Konstant, W. R., Eichler Vercillo, U., **Schwitzer, C.**, Rylands, A. B. (2022). Impact and Lessons Learned from a Half-Century of Primate Conservation Action Planning. *Diversity* 14, 751. <https://doi.org/10.3390/d14090751>
 - Rose, J. B., Leeds, A., Yang, L. M., LeMont, R., Fayette, M. A., Proudfoot, J. S., Bowman, M. R., "et al." (2022). Treatment and Outcomes of Tusk Fractures in Managed African Savanna and Asian Elephants (*Loxodonta africana* and *Elephas maximus*) across Five Continents. *Animals* 12(9), 1125. MDPI AG. Retrieved from: <http://dx.doi.org/10.3390/ani12091125> [Dublin Zoo contributed data to this paper.]
 - Rose, P., **Mooney, A.**, Klass, J. (2022). The behavioural biology of waterbirds. In *The Behavioural Biology of Zoo Animals* (pp. 153–170). Boca Raton, FL: CRC Press. 351 pp. <https://doi.org/10.1201/9781003208471>



CONFERENCE ATTENDANCE, PROFESSIONAL VISITS AND VISITORS

January

- Dr Christoph Schwitzer sat on the Employer Panel for South Gloucestershire & Stroud College's Undergraduate Employability Conference and talked about career opportunities in the zoo sector.
- Dr Schwitzer attended meetings of BIAZA's Membership and Licensing Committee and Finance and Resources Committee, as well as a meeting of the BIAZA Charity Zoo Conservation Directors.

February

- Dr Schwitzer chaired a Board meeting of the Lemur Conservation Association, AEECL, in Calviac, France, in his role as President of AEECL.

March

- Dublin Zoo hosted an EAZA zoo licensing training course for zoo licence authorities from various EU countries.
- HR Business Partner Amy Vickers and Dr Christoph Schwitzer sat on the Allyship Panel at BIAZA's International Women's Day conference.
- Conservation and Research Officer Dr Andrew Mooney and Director Dr Christoph Schwitzer attended a stakeholder workshop on the draft fourth National Biodiversity Action Plan (NBAP) organised by consultants KPMG on behalf of the National Parks and Wildlife Service, and made a case for adding ex-situ conservation prominently into the draft.
- Dr Schwitzer attended a BIAZA Charity Zoo Conservation Directors meeting.

April

- Dr Schwitzer attended a meeting of the National Biodiversity Forum at the invitation of Minister for

Heritage and Electoral Reform, Malcolm Noonan TD.

- Dr Schwitzer attended a meeting of the BIAZA Finance and Resources Committee.
- Dr Mooney attended EAZA's Bird TAG mid-year meeting.

May

- Dr Schwitzer attended a meeting of the BIAZA Membership and Licensing Committee, and chaired a meeting of BIAZA Council held at Chester Zoo.

June

- Dr Mooney attended an introductory stakeholder workshop of the Citizens' Assembly on Biodiversity Loss, which formed part of the public consultation process on the fourth National Biodiversity Action Plan for Ireland (NBAP).
- Dublin Zoo chaired a session on the importance of zoos, aquaria and botanic gardens in conserving Ireland's biodiversity at the second National Biodiversity Conference, held in Dublin Castle. Speakers included Dublin Zoo director Dr Christoph Schwitzer, Dr Kira Mileham (Global Director of Strategic Partnerships for the IUCN SSC), Andrea Dempsey (Programme Manager for West African Primate Conservation Action), Sean McKeown (director, Fota Wildlife Park), John Lusby (raptor officer, BirdWatch Ireland), Laura Gardner and Suzanne Kynaston (Wildwood Trust, UK) and Dr Matthew Jebb (director, National Botanic Gardens). We also hosted a social evening for the conference delegates at the Zoo.
- Dublin Zoo hosted the BIAZA Annual Conference and AGM on 15-17 June, with more than 120 attendees. Several of our staff gave presentations and contributed to panel discussions. Dr Schwitzer gave

an opening speech, chaired the AGM and one of the programme sessions. Dublin Zoo won two gold and one bronze award, as well as an Outstanding Achievement Award for our education work during lockdown. The AGM marked the last day of Dr Schwitzer's tenure as chair of BIAZA Council.

- Jon Taylor, managing director of Save the Rhino International, visited the Zoo, spent time with our rhino team, and delivered a talk in Haughton House, which was open to all zoo staff and volunteers. The talk highlighted the work of Save the Rhino International in protecting all five species of rhinos around the world and reaffirmed the crucial role of zoos in supporting conservation efforts in the wild. Dublin Zoo has been supporting Save the Rhino International since 2009, through their partner, the Lowveld Rhino Trust in Zimbabwe. Our support, amounting to more than €120,000 to date, has been used to track and monitor black and white rhinos, treat snare and bullet wounds, and translocate rhinos. The success of the Lowveld Rhino Trust has allowed them to supply a new founder population to Gonarezhou National Park, reintroducing rhinos to an area from which they were previously eradicated by poaching.

July

- Dr Mooney attended the annual BIAZA Research Conference, hosted by the Zoological Society of London, and gave a presentation on the value of biobanking for species conservation.
- Dr Schwitzer was invited to give the keynote address at the launch of the 'Animals of Dublin' exhibition at The Little Museum of Dublin.

September

- Eight staff members commenced the Diploma in Management of Zoo and Aquarium Animals at Sparsholt College in Britain.
- Dr Schwitzer attended the Zoohistorica meeting at Prague Zoo, Czech Republic.
- Dr Schwitzer, General Curator Miguel Bueno and Conservation and Research Officer Dr Andrew Mooney attended the EAZA Annual Conference in Albufeira, Portugal. Dr Schwitzer chaired the Annual General Meeting of the Lemur Conservation Association, AEECL. Dr Mooney presented on the newly formed EAZA Cockatoo Working Group as part of the Parrot TAG meeting. He was also invited to a meeting to discuss the formation of an EAZA cryopreservation network. A memorandum of understanding was drafted with Nature's SAFE, EAZA's cryopreservation partner.
- Dr Mooney attended the IUCN SSC Conservation Planning Specialist Group (CPSG) annual meeting in Tenerife, Spain. The meeting focussed on the development and operation of IUCN SSC Centres for Species Survival and saw the first meeting of the IUCN SSC Animal Conservation Biobanking Specialist Group, which Dublin Zoo would hope to become more involved in. During the CPSG meeting, Dr Mooney filmed an interview with American Humane as part of the upcoming documentary 'Escape from Extinction 2'.

October

- Dr Schwitzer attended the WAZA Annual Conference in Puerto de la Cruz, Tenerife.
- Head of Discovery & Learning Aileen Tennant delivered a talk to delegates attending the Tenth World Child in the City Conference, which was hosted at Dublin Castle. Twenty-five delegates came to Dublin Zoo for the talk, followed by a tour of the child-friendly learning opportunities with Discovery & Learning Team Lead Kelly Mara.

November

- Dr Mooney attended meetings of the BIAZA Diversity, Equity, Accessibility and Inclusion Working Group, and catch-up meetings for the IUCN SSC Centres for Species Survival.
- Dr Schwitzer gave a tour of the Zoo and of Wild Lights to the staff of the German Embassy in Ireland. The director also greeted at Wild Lights President Michael D. Higgins with his wife, children and granddaughter; Minister Simon Harris TD; and the Dutch Ambassador, Adriaan Palm.
- Discovery & Learning Manager Niamh Potter, and Head of Discovery & Learning Aileen Tennant took part in EAZA Academy Training on Conservation Education Master Planning. Dublin Zoo was in a good position to contribute advice and insights to the sessions.
- Dr Schwitzer attended a BIAZA Board meeting in London and chaired a virtual AEECL Board meeting.

December

- German Foreign Secretary Annalena Bärbock visited the Zoo and Wild Lights for meetings in Haughton House, along with the German Ambassador and the Irish Ambassador to Berlin. Dr Schwitzer greeted the delegation.
- Aileen Tennant and Niamh Potter attended the BIAZA Regional Conservation Education Meeting in Fota Wildlife Park on Thursday 8 December.



CENSUS OF ANIMALS IN DUBLIN ZOO DURING 2022

Summary of Census of Animals in Dublin Zoo on 31st December 2022

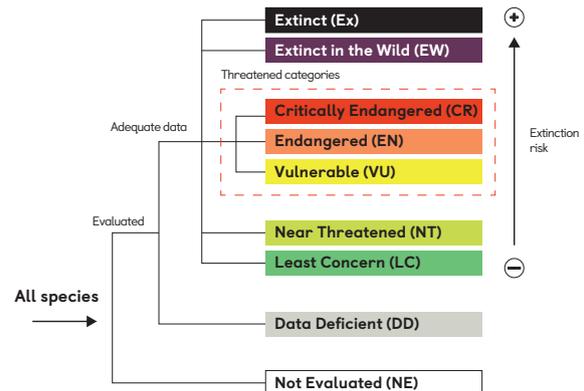
Taxon	Total Species	Total Specimens
Mammals	42	193
Birds	9	169
Reptiles	20	47
Total vertebrates	71	409
Invertebrates	4	4 colonies

Summary of Births and Hatchings of Animals in Dublin Zoo during 2022

Taxon	Total Species	Total Specimens
Mammals	6	27
Birds	2	7
Reptiles	0	0
Total vertebrates	8	34

Summary of Animal Taxa on the IUCN Red List of Threatened Species in Dublin Zoo during 2022

IUCN status	Number of species/ subspecies
Extinct in the wild – EW	1
Critically endangered – CR	10
Endangered – EN	16
Vulnerable – VU	8
Near threatened – NT	5
Least Concern – LC	22
Not Evaluated – NE	8



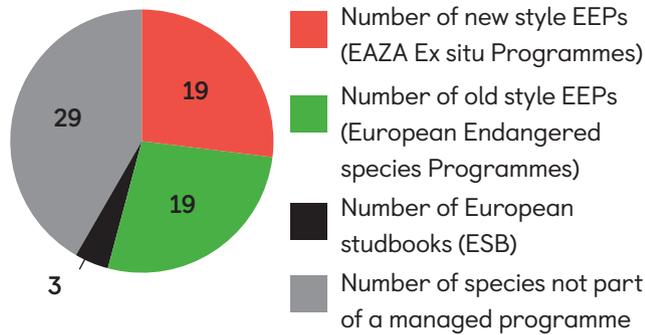
During 2022, Dublin Zoo held 72 species/subspecies of which 35 (48%) have been assessed as being globally threatened, i.e. falling into the IUCN Red List categories from Vulnerable to Extinct in the Wild. A further 5 species/subspecies fall into the Near Threatened category. The remaining species/subspecies are either of Least concern (#22 – 30%) or have not been evaluated yet (#8 – 11%).

Note – the domestic breeds in Family Farm are not included in these figures.

Summary of species management programmes which Dublin Zoo was part of during 2022

Number of new style EEPs (EAZA Ex situ Programmes)	19
Number of old style EEPs (European Endangered species Programmes)	19
Number of European studbooks (ESB)	3
Number of species not part of a managed programme	29

Note – the domestic breeds in Family Farm are not included in these figures.



During 2022, Dublin Zoo held 72 species/subspecies of which 41 (55%) were part of an EAZA species management programme. Historically, EAZA had two categories for species management; EEP (European Endangered species Programme) and the less intensively managed ESB (European Studbook). However, in recognition that these two management options were not suited to all species, EAZA redeveloped the species management programmes. All new species management programmes are called European Ex situ Programmes (EEPs) with each programme being designed to fit the needs of species. This redevelopment process is taking place over several years and therefore, some species are still part of old style EEPs and ESBs, while others are now part of the new style EEPs.

Key to Census Tables



Part of an EEP (EAZA Ex situ Programme/
European Endangered species Programme)

ESB Recorded in a European studbook

Column 1: The number of animals in the collection at 1st January 2022.

Column 2: The number of animals received in 2022 through donation, loan or exchange.

Column 3: The number of animals born or hatched during 2022.

Column 4: The number of animals dying within 30 days of birth or hatching, in 2022.

Column 5: The number of animals dying having survived more than 30 days, in 2022.

Column 6: The number of animals leaving the collection through donation, loan, exchange, theft etc. during 2022.

Column 7: The number of animals in the collection at 31st December 2022.

The first figure indicates the male numbers; the second female numbers and the third unsexed numbers (e.g. 1.2.4 reads 1 male, 2 females and 4 unsexed specimens).

Male	Female	Unknown
A circle with an arrow pointing up and to the right.	A circle with a cross pointing down.	A large black question mark.

This census does not include animals which have been sent on loan to other collections, nor does it include wild animals living within the Zoo, e.g. many native bird species.

	CITES	IUCN Status	SPECIES		Total at 01.01.22	Arrivals	Births	Deaths within 30 Days	Deaths	Departures	Total at 31.12.22
			VERTEBRATES	VERTEBRATA							
			Class: Mammals	Mammalia							
			Primates	Primates							
	I/A	EN	Ring-tailed lemur	<i>Lemur catta</i>	5. 1. 0						5. 1. 0
	I/A	CR	Red ruffed lemur	<i>Varecia rubra</i>	3. 5. 0		0. 0. 2	0. 0. 2			3. 5. 0
	I/A	VU	Goeldi's monkey	<i>Callimico goeldii</i>	1. 2. 0		0. 0. 1	0. 0. 1	0. 1. 0	0. 1. 0	1. 0. 0
	I/A	EN	Golden lion tamarin	<i>Leontopithecus rosalia</i>	1. 1. 0						1. 1. 0
	II/B	LC	Bolivian squirrel monkey	<i>Saimiri boliviensis boliviensis</i>	4. 0. 0						4. 0. 0
	II/B	LC	White-faced saki	<i>Pithecia pithecia</i>	3. 1. 0						3. 1. 0
	II/B	VU	White-naped mangabey	<i>Cercocebus lunulatus</i>	2. 5. 0			0. 1. 0			2. 4. 0
	II/B	EN	Red-capped mangabey	<i>Cercocebus torquatus</i>	4. 0. 0					2. 0. 0	2. 0. 0
	II/B	CR	Sulawesi crested macaque	<i>Macaca nigra</i>	13. 9. 0				0. 1. 0		13. 8. 0
	I/A	EN	Siamang	<i>Symphalangus syndactylus</i>	2. 1. 0				1. 0. 0		1. 1. 0
	I/A	CR	Western lowland gorilla	<i>Gorilla gorilla gorilla</i>	2. 4. 0						2. 4. 0
	I/A	EN	Chimpanzee	<i>Pan troglodytes</i>	2. 0. 0						2. 0. 0
	I/A	CR	Western chimpanzee	<i>Pan troglodytes verus</i>	1. 3. 0						1. 3. 0
	I/A	CR	Bornean orangutan	<i>Pongo pygmaeus pygmaeus</i>	1. 3. 0		1. 0. 0	1. 0. 0			1. 3. 0
	II/B	LC	Venezuelan red howler	<i>Alouatta seniculus</i>	2. 0. 0						2. 0. 0
	I/A	EN	Aye aye	<i>Daubentonia madagascariensis</i>	0. 0. 0	2. 1. 0					2. 1. 0
			Xenarthrans	Xenarthra							
ESB	NL	LC	Linne's two-toed sloth	<i>Choloepus didactylus</i>	1. 1. 0						1. 1. 0
			Carnivores	Carnivora							
	II/A	LC	Grey wolf	<i>Canis lupus</i>	6. 1. 0						6. 1. 0
	NL	EN	Painted dog	<i>Lycaon pictus</i>	2. 2. 0				1. 1. 0		1. 1. 0
	I/A	EN	Red panda	<i>Ailurus fulgens fulgens</i>	1. 1. 0	0. 3. 0					1. 4. 0
	NL	LC	Slender-tailed meerkat	<i>Suricata suricatta</i>	6. 3. 0				0. 3. 0		6. 0. 0
	I/A	EN	Asiatic lion	<i>Panthera leo persica</i>	1. 3. 0						1. 3. 0
	I/A	EN	Amur tiger	<i>Panthera tigris altaica</i>	1. 2. 0				0. 1. 0		1. 1. 0
	I/A	VU	Snow leopard	<i>Panthera uncia</i>	1. 1. 0	1. 0. 0			1. 0. 0		1. 1. 0
	NL	LC	California sealion	<i>Zalophus californianus</i>	3. 3. 0						3. 3. 0
	II/B	EN	Dhole	<i>Cuon alpinus lepturus</i>	0. 0. 0	5. 0. 0					5. 0. 0

	CITES	IUCN Status	SPECIES	Total at 01.01.22	Arrivals	Births	Deaths within 30 Days	Deaths	Departures	Total at 31.12.22
	I/A	EN	Elephants Asiatic elephant	Proboscidae <i>Elephas maximus</i>	2. 7. 0					2. 7. 0
	NL	NT	Odd-toed ungulates Grant's zebra	Perissodactyla <i>Equus quagga boehmi</i>	2. 4. 0					2. 4. 0
	II/B	VU	South American tapir	<i>Tapirus terrestris</i>	1. 2. 0			1. 0. 0		0. 2. 0
	I/A	NT	Southern white rhinoceros	<i>Ceratotherium simum simum</i>	2. 4. 0					2. 4. 0
			Even-toed mammals	Cetartiodactyla						
	NL	LC	Red river hog	<i>Potamochoerus porcus</i>	4. 0. 0			1. 0. 0		3. 0. 0
	II/B	VU	Hippopotamus	<i>Hippopotamus amphibius</i>	0. 1. 0					0. 1. 0
	II/B	VU	Giraffe	<i>Giraffa camelopardalis</i>	2. 1. 0					2. 1. 0
	II/B	NT	Baringo/Rothschild's giraffe	<i>Giraffa camelopardalis rothschildi</i>	4. 3. 0			0. 1. 0		4. 2. 0
	NL	EN	Okapi	<i>Okapia johnstoni</i>	1. 2. 0	1. 0. 0			0. 1. 0	2. 1. 0
	III/C	LC	Blackbuck	<i>Antelope cervicapra</i>	0. 3. 0					0. 3. 0
	NL	NT	Eastern bongo	<i>Tragelaphus eurycerus isaaci</i>	2. 2. 0	1. 0. 0	1. 0. 0	1. 1. 0		1. 1. 0
	I/A	EW	Scimitar-horned oryx	<i>Oryx dammah</i>	5. 6. 0			0. 1. 0		5. 5. 0
			Domestic							
			Tamworth pig	<i>Sus scrofa scrofa tamworth</i>	1. 1. 0	11. 10. 0			5. 5. 0	7. 6. 0
			Friesian cow	<i>Bos taurus taurus friesian</i>	0. 1. 0					0. 1. 0
			Kerry cow	<i>Bos taurus taurus kerry</i>	0. 1. 0					0. 1. 0
			Small East African goat	<i>Capra hircus domestic small_east_african</i>	0. 4. 0			0. 1. 0		0. 3. 0
			Domestic Sheep	<i>Ovis aries</i>	0. 3. 0	0. 4. 0		0. 1. 0	0. 4. 0	0. 2. 0
		EN	European rabbit	<i>Oryctolagus cuniculus</i>	0. 0. 0	1. 1. 0		0. 1. 0		1. 0. 0
			Class: Birds	Aves						
			Ostriches	Struthioniformes						
	NL	LC	Ostrich	<i>Struthio camelus</i>	0. 1. 0				0. 1. 0	0. 0. 0
			Penguins	Sphenisciformes						
	I/A	VU	Humboldt penguin	<i>Spheniscus humboldti</i>	9. 7. 2			0. 0. 1		9. 7. 1
			Hérons/storks	Ciconiiformes						
	/A	LC	Little egret	<i>Egretta garzetta</i>	1. 0. 0					1. 0. 0
	I/A	CR	Waldrapp ibis	<i>Geronticus eremita</i>	14. 16. 1					14. 16. 1
			Flamingos	Phoenicopteriformes						
	II/B	NT	Chilean flamingo	<i>Phoenicopterus chilensis</i>	58. 45. 0			1. 1. 0		57. 44. 0

	CITES	IUCN Status	SPECIES		Total at 01.01.22	Arrivals	Births	Deaths within 30 Days	Deaths	Departures	Total at 31.12.22
			Gallinaceous birds	Galliformes							
	/C	LC	Common peafowl	<i>Pavo cristatus</i>	2. 4. 0		0. 0. 6		0. 1. 1	0. 0. 5	2. 3. 0
	NL	NT	Crested wood partridge	<i>Rollulus rouloul</i>	2. 0. 0						2. 0. 0
			Parrots	Psittaciformes							
	I/A	CR	Citron-crested cockatoo	<i>Cacatua sulphurea citrinocristata</i>	2. 3. 0				1. 0. 0		1. 3. 0
			Hornbills etc.	Coraciiformes							
	NL	LC	Abyssinian ground hornbill	<i>Bucorvus abyssinicus</i>	1. 1. 0		0. 0. 1	0. 0. 1			1. 1. 0
			Domestic fowl								
		NE	Indian runner duck	<i>Anas platyrhynchos domestic indian_runner</i>	1. 3. 2						1. 3. 2
			Class: Reptiles	Reptilia							
			Chelones	Testudines							
	I/A	CR	Annam pond turtle	<i>Mauremys annamensis</i>	2. 2. 5						2. 2. 5
	III/C	EN	Chinese stripe-necked turtle	<i>Mauremys sinensis</i>	1. 0. 0						1. 0. 0
	NL	NE	Central America wood turtle	<i>Rhinoclemmys pulcherrima manni</i>	0. 2. 0						0. 2. 0
	II/B	NE	Red-footed tortoise	<i>Chelonoidis carbonaria</i>	1. 3. 0						1. 3. 0
	I/A	CR	Indian star tortoise	<i>Geochelone elegans</i>	0. 2. 4						0. 2. 4
	II/B	EN	African spurred tortoise	<i>Centrochelys sulcata</i>	1. 1. 0						1. 1. 0
			Crocodiles	Crocodylia							
	NL	NE	West African crocodile	<i>Crocodylus suchus</i>	1. 1. 0						1. 1. 0
			Lizards	Sauria							
	NL	NE	Green crested lizard	<i>Bronchocela cristatella</i>	5. 0. 0						5. 0. 0
	II/B	LC	Panther chameleon	<i>Furcifer pardalis</i>	1. 0. 0						1. 0. 0
ESB	I/A	CR	Turquoise dwarf gecko	<i>Lygodactylus williamsi</i>	1. 0. 0						1. 0. 0
	NL	LC	Leopard gecko	<i>Eublepharis macularius</i>	0. 1. 0						0. 1. 0
	II/B	LC	Mangrove monitor	<i>Varanus indicus</i>	0. 1. 0						0. 1. 0
ESB	I/A	EN	Lau banded iguana	<i>Brachylophus fasciatus</i>	0. 0. 0	1. 1. 0					1. 1. 0
			Snakes	Serpentes							
	II/B	LC	Green tree python	<i>Morelia viridis</i>	1. 1. 0				0. 1. 0		1. 0. 0
	II/B	VU	Burmese python	<i>Python bivittatus</i>	2. 0. 0						2. 0. 0
	II/B	LC	Royal python	<i>Python regius</i>	0. 0. 2						0. 0. 2
	/D	NE	King ratsnake	<i>Elaphe carinata</i>	1. 1. 0						1. 1. 0

CITES	IUCN Status	SPECIES		Total at 01.01.22	Arrivals	Births	Deaths within 30 Days	Deaths	Departures	Total at 31.12.22
NL	LC	Cornsnake	<i>Pantherophis guttatus</i>	1. 0. 0						1. 0. 0
NL	LC	Viperine snake	<i>Natrix maura</i>	0. 0. 1						0. 0. 1
NL	LC	Common gartersnake	<i>Thamnophis sirtalis</i>	1. 0. 0						1. 0. 0
		INVERTEBRATES	INVERTEBRATA							
		Class: Insects	Insecta							
		Stick Insects	Phasmoptera							
NL	NE	Indian green stick insects	<i>Carausius morosus</i>	1 colony						1 colony
NL	LC	Macleays spectre	<i>Extatosoma tiaratum</i>	1 colony						1 colony
NL	CR	Black beauty stick insect	<i>Peruphasma schultei</i>	1 colony						1 colony
NL	NE	Zompro's/Thai stick insect	<i>Parapachymorpha zomproi</i>	1 colony						1 colony



FOTA WILDLIFE PARK: DIRECTOR'S REPORT

Fota Wildlife Park's Purpose

Fota Wildlife Park is operated by a limited company with charitable status committed to inspiring people to understand and conserve the biodiversity of our natural world. The Wildlife Park's mission and values are set out below.

Mission Statement

Fota Wildlife Park's mission is to be a leading contributor to the conservation of national and global biodiversity through education, research, the breeding of endangered species and the support of conservation projects worldwide.

Values

Fota Wildlife Park's core values of conservation, education, research and sustainability have ensured that the Wildlife Park is uniquely placed to promote greater understanding of the threats to plant and animal habitats and decreasing global biodiversity.

2022 Attendance Numbers

Fota Wildlife Park experienced the highest first-quarter visitation and income levels during 2022, compared to any other first quarter since the Wildlife Park opened to the public in 1983. This was accomplished despite some Covid restrictions remaining in place, such as the continued closure of the Tropical House, Giraffe Indoor Viewing Area, Playgrounds, or Madagascan Village. The tour train was also inoperable until the beginning of May.

The latter eight months of 2022 saw some decline in visitors to the Wildlife Park. Visitor numbers totalled

415,200 in 2022 (2021: 474,974). As with all outdoor amenities, inclement weather conditions had a knock-on effect on visitor numbers.

There was a change in accommodation choices for potential visitors compared to 2011-2021, with hotel stays down 21% in 2022, but an increase in those staying in their own home or the home of friends and family, (Behavioural & Attitudes Survey of Fota Visitors; 2020 not included due to Covid-19 closures).

Visitor Experience

Ongoing improvements associated with the Wildlife Park's buildings, infrastructure, and animal habitats have allowed us to maintain an impressive visitor experience rating with over 95% of those surveyed citing it as excellent or very good. The excellent rating was at its highest level since the visitor surveys began in 2011.

Monthly Visitor Numbers



CAPITAL PROJECTS

Education Conservation and Research Centre (ECRC), 'Understanding our Sustainable Future'.

Fota Wildlife Park's ten-year development strategy "FOTA 2030 VISION" outlined the construction of a cutting-edge Education Conservation and Research Centre (ECRC) at the park as the priority development project for the years 2022– 2023. It is the most substantial project ever undertaken by the park and one of major significance, as its development coincides with the park's 40th anniversary.

With planning permission received in June, the project was able to begin in early November of 2022, thanks to the signing of a fixed-price contract with the contractor, MMD Construction.

The ECRC is being developed at a cost of €5.5m, with the continued generosity and much appreciated support from the Government of Ireland through the Office of Public Works to the amount of €1.0m in 2022, as well as a commitment of a further €1.0m in 2023. The remaining €3.5m will be funded from Fota Wildlife Park's resources.

The completion of this sustainably built, passive design development will emphasise Fota Wildlife Park's 40th anniversary pledge and its commitment to be a leading contributor to the conservation of national and global biodiversity through education, research, the breeding of endangered species and by actively supporting conservation projects worldwide. The building will be environmentally friendly, producing as much energy as it requires. It is being constructed with as much recyclable materials as feasible and includes living

walls, bird nest boxes and bat roosting boxes.

The project's construction is continuing on schedule, within budget and is anticipated to be completed by November 2023.

Seawall

Investment in animal and public facilities continued throughout the Wildlife Park during 2022. The most significant of these was the upgrading and raising of the 480-metre-long southern seawall and embankment, which prevents the lower end of the Wildlife Park from flooding, particularly at high tides.

In the last eight years, with rising sea levels due in part to climate change, the sea water flowed over the top of this wall more frequently, leading to flooding. Work on the seawall repair began in October 2021, with the underpinning of the wall base and the raising and the capping of the wall with a 450mm high concrete beam. A new 3m high chain-link boundary fence was added to the top of the wall and a new sluice gate was installed adjacent to the seal enclosure. This was all completed by the end of April 2022.

Other investments

Commencing in 2021, the new Howler monkey habitat development (House 9) was finished in April 2022, along with a new sluice gate on the northern side of the Wildlife Park, which controls the flow of sea water both in and out of the park. Other substantial internal infrastructural investments included the development of 2000m² of tarmac roads. The newly tarred roads were very much appreciated by the public and allowed

for improved accessibility, as well as ease of movement for both children's buggies and wheelchairs throughout the park. These newly tarred roads also benefited the tour-train experience, which is much smoother and helps to reduce wear and tear on park vehicles.

SPECIES CONSERVATION / REINTRODUCTION PROJECTS SUMMARY UPDATE

During 2022, Fota Wildlife Park received extensive media coverage relating to the various ongoing conservation projects. Four of these projects have resulted in the return of several species back to the wild within Europe, with the aim of the augmentation of critically endangered wild populations. These projects have facilitated the return of species such as the Curlew, Corncrake and Natterjack toad to habitats within Ireland, as well as the



transfer of European bison to both Kent in England and the Shahdag National Park in the Caucasus Mountains of Azerbaijan. It is interesting to note that sixteen of the nineteen animals that departed the park during the summer of 2022 were all assigned to participate in rewilding projects (this does not include the 700 natterjack toads, of which 500 were captive bred at Fota).

Curlews

There is only a single breeding pair of Curlews in the Cork and Kerry region, which have been unsuccessful in rearing any chicks since 2017 because of predation from foxes, ravens, and grey crows. The National Parks and Wildlife Service (NPWS) requested Fota's assistance in the hatching and rearing of any eggs laid in 2022. The pair laid a total of four eggs that year, which were collected by the NPWS and brought to Fota. Four Curlew chicks hatched and were successfully reared at Fota Wildlife Park. At twenty-two days old, they were returned to the Stacks mountains for release to the wild.



Corncrakes

Fota Wildlife Park is an Associated Beneficiary in the Corncrake EU Life Project under the direction of the National Parks and Wildlife Service (NPWS), which began in January of 2021. One of its main objectives is to develop the protection, rescue, and research initiatives for Corncrakes and to ensure suitable capacity for egg incubation, hatching and rearing of chicks is available in Fota. Fortunately, this protocol and capacity was in

place on Monday 13th June 2022, when a Corncrake nest was disturbed by a farmer cutting silage in the Fanad Peninsula in Donegal. Two NPWS Corncrake Officers witnessed the hen flying off the nest and some of the 11 eggs had been moved out of the nest by the force of the harvester. The 'at risk nest and eggs' protocol went into action and the eggs were quickly placed in a mobile incubator for transportation to Fota. On arrival at Fota, all eggs were confirmed fertile.

On the 19th of June, all eleven eggs hatched. On the 8th of July, nine surviving chicks were transported back to a release pen in the Fanad Peninsula. The chicks did well in the release pen and were returned to the wild on the 1st of August after a health check was completed and leg rings were placed for identification. Two Corncrake juveniles were fitted with tracking devices to fully understand the species dispersal patterns post-release.

In 2022, the Fanad Peninsula recorded its first calling male Corncrake for the first time in over 15 years, along with the presence of a laying female. With the addition of the nine juveniles reared in Fota, the total known population of Corncrakes in the Fanad Peninsula has increased by 400% thanks to the rescue actions that were undertaken. This story of the nine Corncrakes released to the wild featured in the New York Times on the 4th of August 2022.

Natterjack Toads

The very dry and cold spring of 2022 prevented the Natterjack toads from breeding in many areas of their traditional home range in Kerry, with no breeding recorded in the sand dune habitats such as the

Magharees. Fortunately, the park's successful, ex-situ breeding efforts early in the year facilitated the release of 140 captive-bred Natterjack toadlets back to the wild on the 25th of July in Castlegregory in the first release phase of toadlets during 2022.

This took place in the presence of Minister for Heritage and Electoral Reform Malcolm Noonan TD, with Fota Wildlife Park Animal Care Manager, Declan O'Donovan, and John McLaughlin, Natterjack toad Project Coordinator.



(Right) Minister for Heritage and Electoral Reform Malcolm Noonan TD, with Fota Wildlife Park Animal Care Manager, Declan O'Donovan, and John McLaughlin, Natterjack toad Project Coordinator (Far right) European bison

Minister Noonan said: “This project is a fantastic example of scientists, conservationists and communities coming together to protect this rare amphibian and the habitat it depends on. I want to commend my staff in NPWS, the team in Fota Wildlife Park and the nature lovers of Castlegregory for their efforts. I’m also delighted that local farmers can now benefit from a new results-based farm plan scheme specifically for Natterjack toads. This will pay farmers to manage their land in a way that helps ensure the conservation of this endangered species, and I hope that everyone will get involved.”

Additional Natterjack toadlets were released in Kerry during August and September, bringing the total number of Natterjack toadlets released into the wild in 2022 to 700 individuals. Fota Wildlife Park has released 7200 Natterjack toadlets back to the wild in the Magharees in the past six years. This is another success story of the cooperative management with the National Parks and Wildlife Service of a Red-listed native species at Fota.

European Bison

Three Fota-bred European bison, Europe’s largest land mammal species, were released back into the wild during 2022. The most notable of the release projects took place on the 18th of July when two female European bison were transferred from Fota to the Wilder Bleau project, near Canterbury, England. This was an appraisal to see how well the European bison can act as natural “ecosystem engineers” and help restore wildlife habitats. A more natural woodland absorbs more carbon, helping to tackle the climate crisis. Global warming was evident as the bison were released, with England in the grip of a heatwave, and the release of the bison was scheduled

early in the day to allow the bison to reach the shade of the woods before temperatures started to climb. The females were fitted with tracking collars to allow the team to plot the animals’ movements and glean insights into the plants they interact with as they move through the woodland. The European bison initially have access to 200 hectares, with plans to expand this further as the herd grows.

In September 2022, another female European bison left for the Shahdag National Park in the Caucasus Mountains of Azerbaijan. This female bison travelled to Tierpark Berlin, Germany, where she was integrated with a group of young female European bison for three weeks before they all travelled on to Azerbaijan for release into the wild in the Shahdag National Park.



ANIMAL HUSBANDRY



Births

In early 2022 it was noted that the female Indian rhino 'Maya' has not cycled in over 4 months, and a series of faecal samples were sent to Chester Zoo for pregnancy testing. The test results indicated that she was pregnant and due to give birth in late September 2022.

On the 19th of September, 'Maya' gave birth to a male Indian rhino calf 'Jai'. This was the most significant animal event at Fota during 2022. 'Maya' has shown exceptional parenting skills and the mother and calf have been progressing very well, despite this being her first calf and Ireland's first Indian rhino birth. The rhino calf weighed 72 kilos when born, and his weight increased by 2 kgs per day from birth for the first 6 weeks.

Another notable birth was that of a female Linne's two-toed sloth, this is the first time that this species has bred at Fota Wildlife Park. Other births include one male and two female critically endangered Black-and-white ruffed lemurs, a male Colombian black spider monkey and two European bison calves.

Deaths

The adult male Asiatic lion Shanto was diagnosed with kidney issues in early February, and despite veterinary treatment over a three-week period, his condition deteriorated, and on the 23rd of February it was decided to euthanise 'Shanto' on veterinary advice. The necropsy found extensive renal failure.

The 10-year-old female Rothschild's giraffe 'Cuileann' was found with a broken back leg outdoors in the main African Plains area after a fall in the paddock. The vet

was immediately contacted and, upon his inspection, and after consultation with veterinary colleagues, it was decided to euthanise 'Cuileann'. Both of these animals were dearly loved and appreciated by staff and visitors.

Transfers

As referenced to earlier, three female European bison were released back into the wild as part of ongoing rewilding projects, with the bison transfers recommended by the European bison EEP programme.

Other animal transfers out of Fota included a female Lar gibbon to Dubai Safari, a female Agile gibbon to Germendorf Zoo, Germany, a male Francois langur to London Zoo, three male cheetahs to Whipsnade Zoo, England, female Sumatran tiger Dourga to West Midlands Safari Park, male Sumatran tiger 'Dash' to Chester Zoo and a female Brazilian tapir to Blackpool Zoo.

The following animals arrived to Fota; a male Drill from Saarbrücken Zoo, Germany, two female Francois langurs from Twycross Zoo, England, a male Francois langur from London Zoo, a male Ring-tailed lemur from Reynou Zoo, France, four Black and white colobus monkeys from Bojnice Zoo, Slovakia, a male Visayan spotted deer from Liberec Zoo, Czechia, and a female Visayan spotted deer from Munster Zoo, Germany.

On the 31st of December 2022 there were 110 animal species and 1226 specimens under direct human care at Fota Wildlife Park. This does not take into consideration the number of wild native species that frequent the Wildlife Park.



AN OVERVIEW OF FOTA WILDLIFE PARK'S EDUCATIONAL ACTIVITIES IN 2022

In 2022, Fota Wildlife Park's education department welcomed more than 16,000 students through its formal education programmes. Despite social distancing restrictions, the department experienced substantial demand for both its secondary practical field ecology modules and its primary conservation module throughout the course of the year.

In the interest of Health & Safety, a decision was made to postpone its annual summer camps. However, the department had previously committed to collaborating with Down Syndrome Ireland in the provision of a weeklong camp, catering for children with additional needs. A total of twenty-five children between the ages of 5 – 18 years participated in the camp, and the feedback was positive. Plans are underway to ensure that it will become an annual event.

The reinstatement of public engagement activities was made possible by the lifting of previously imposed Covid limits. The education team participated in the Cork Carnival of Science in June 2022 and later that year, in November, they represented the park at several National Science Week activities. In addition, the education team organised several public engagement activities in the park during the summer of 2022, such as a weekend-long "Native Species" celebration as well as "Bug Bonanza" and "Mad Scientist" weekends.

In January of 2022, Lynda, Head of Education, was invited to participate in the BT Young Scientist & Technology Exhibition as a member of the Social and Behavioural judging panel. This was the twenty fourth year that Lynda has been a member of this prestigious panel.

In October of 2022, the Park's Head of Education was invited to become a voluntary assessor on behalf of the Sandford Trust in association with the British Heritage Education Trust. The Sandford Awards focus on formal, curriculum-aligned, heritage learning programmes that take place in a historic setting or natural environment, and use the history and collections or natural resources to engage, inform and inspire visitors.

In November of 2022, the education department transferred its services to two prefabricated classrooms to accommodate the proposed development of the park's new Education, Conservation and Research Centre (ECRC). Despite the limitations imposed by a reduction in seating capacity, the department accommodated more than 900 students during the last four weeks of the year.

Conservation Research at Fota Wildlife Park

Throughout 2022, Fota Wildlife Park continued its long-term collaboration with the School of Biological, Earth and Environmental Sciences (BEES), University College Cork, in the fields of animal behaviour, environmental enrichment, population biology and ecology. However, due to the COVID-19 pandemic and its associated restrictions, some research projects could not be undertaken, while others have been suspended but will commence again in 2022.

Undergraduate projects completed in 2022

Fota continues to work with fourth Year Honours research projects by students from the School of BEES in UCC.

Fourth Year Honours research projects completed in 2022 by students from the School of BEES in UCC.

- **R. Lucey**– How diet affects a dominance-based hierarchy in captive Siamang gibbons, *Symphalangus syndactylus*. Supervisor Dr Ruth Ramsey and Dr Courtney Collins.
- **B. Foster**– A Behavioural Study of the Ongoing Integration of Drill monkeys, *Mandrillus leucophaeus*, to Fota. Supervisor Dr. Ger Killeen.
- **M. Feeney** – Influence of seasonal weather conditions on the temporal distribution of territorial vocalisations by captive Asiatic lions. Supervisor Dr Ruth Ramsey and

Dr Courtney Collins.

- **A. Callanan** – The addition of enrichments in the enclosures of hoof stock at Fota Wildlife Park. Is it worth the effort? Supervisor Dr Ruth Ramsey and Dr Courtney Collins.
- **R. Collier** – Multi-species Behavioural Comparison and Enclosure Utilisation Study after Enclosure expansion. Supervisor Dr Ruth Ramsey and Dr Courtney Collins.
- **D. Twomey** – Night-time behaviour of captive giraffes in Fota Wildlife Park.
Supervisor Dr Ruth Ramsey and Dr Courtney Collins.
- **C. Jordan** – Behaviour dynamics in reforming a group of Ring-tailed lemurs, *Lemur catta*, in Fota Wildlife Park. Supervisor Dr Ruth Ramsey and Dr Courtney Collins.

Third-Level Research Projects

Thanks to the continued collaboration with the Irish



Research Council and their part-funding, it has been possible to undertake the following postgraduate and postdoctoral research projects.

PhD Project

Daniel Moloney: 'An investigation into how conservation strategies, employed both in captive and wild settings, inform our understanding of animals' movement and behaviour'. Commenced 1st September 2021.

Due to an ever-increasing need for more effective conservation efforts both in captivity and in the wild, there is always a requirement for research which improves our understanding of what is essential for creating successful conservation projects. The overall aim of this study is to examine how analysis of animal behaviour and movement of captive species can be used to improve the success of projects such as the European Endangered Species Programme (EEP).

Post-Doctoral

Rebecca Newman: 'Improving animal welfare through environmental enrichment: creating practical enrichment assessment for use in zoos' Commenced 1st March 2022.

Environmental enrichment aims 'to enhance the quality of captive animal care by identifying and providing the environmental stimuli necessary for optimal psychological well-being'. Enrichment initiatives can vary from food based or physical (e.g., toys), to sensory (e.g. scents), to social or cognitive, including any methods that improve enclosure complexity, or introduce greater variability or choice, or even animal training techniques. Evaluation is essential to ensure the effective use of

enrichment in promoting good animal welfare and efficient use of resources. The evaluation of enrichment is a requirement for any British and Irish Association of Zoos and Aquariums (BIAZA) or European Association of Zoos and Aquariums (EAZA) organisation but is often neglected, carried out incorrectly or not to its greatest efficacy due to limited resources or training.

University of Kent, England.

This research project was conducted by this MSc student as part of a multi zoological park assessment of cheetah footprints using footprint identification technology to assist in the identification and conservation of Northeast African cheetah, *Acinonyx jubatus soemmeringii*.

K. Grant - Validation of a non-invasive footprint identification technology to assist in the conservation of the Northeast African cheetah, *Acinonyx jubatus soemmeringii*.



FOTA WILDLIFE PARK 2022 ANIMAL INVENTORY

NO. SPECIES	EAZA	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
3			INVERTEBRATA	INVERTEBRATES						
			CLASS: INSECTA	CLASS: INSECTS						
			<i>Gromphadorhina oblongonota</i> *	Madagascar hissing cockroach	0.020	0.00	0.00	0.00	0.00	0.020
			<i>Achrioptera manga</i> *	Walkingstick	0.020	0.020	0.00	0.00	0.00	0.040
			<i>Papilionoidea</i> *	Butterflies	0.080	0.00	0.00	0.00	0.00	0.080
30			VERTEBRATA	VERTEBRATES						
			CLASS: PISCES	CLASS: FISH						
		LC	<i>Gymnothorax favagineus</i>	Laced moray	0.01	0.00	0.00	0.00	0.00	0.01
		EN	<i>Sahyadria denisonii</i> *	Denison's barb	0.010	0.00	0.00	0.05	0.00	0.05
		LC	<i>Chromobotia macracanthus</i> *	Clown loach	0.03	0.00	0.00	0.00	0.00	0.03
			<i>Hyphessobrycon anisitsi</i> *	Buenos Aires tetra	0.032	0.00	0.00	0.02	0.00	0.030
			<i>Panaque nigrolineatus</i> *	Royal plecostomus	0.01	0.00	0.00	0.00	0.00	0.01
		EN	<i>Bedotia madagascariensis</i> *	Madagascar rainbowfish	0.054	0.00	0.00	0.01	0.00	0.053
		VU	<i>Glossolepis incisus</i> *	Red rainbowfish	0.028	0.00	0.00	0.00	0.00	0.028
		EN	<i>Melanotaenia boesemani</i> *	Boeseman's rainbowfish	0.019	0.00	0.00	0.00	0.00	0.019
		LC	<i>Melanotaenia trifasciata</i> *	Goyder River rainbowfish	0.034	0.00	0.00	0.00	0.00	0.034
		EN	<i>Pachypanchax omalonota</i> *	Powderblue panchax	0.011	0.00	0.00	0.00	0.00	0.011
		EN	<i>Pachypanchax sakaramyi</i> *	Panchax	0.011	0.00	0.00	0.00	0.00	0.011
		CR	<i>Ameca splendens</i> *	Butterfly splitfin	0.0110	0.00	0.00	0.00	0.00	0.0110
	EW	<i>Skiffia francesae</i> *	Golden sawfin	0.057	0.00	0.00	0.00	0.00	0.057	
	LC	<i>Hippocampus abdominalis</i> *	Pot-bellied seahorse	0.014	0.00	0.00	0.02	0.00	0.012	

NO. SPECIES	EAZA	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending	
9		LC	<i>Toxotes jaculatrix</i> *	Banded archerfish	0.014	0.0.0	0.0.0	0.0.0	0.0.0	0.014	
		LC	<i>Monodactylus argenteus</i>	Diamond fish	0.0.9	0.0.0	0.0.0	0.0.3	0.0.0	0.0.6	
			<i>Monodactylus sebae</i> *	African silverfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Chaetodon unimaculatus</i>	Teardrop butterflyfish	0.0.2	0.0.0	0.0.0	0.0.2	0.0.0	0.0.0	
		LC	<i>Chelmon rostratus</i>	Copperband butterflyfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Heniochus diphreutes</i>	Schooling coachman	0.0.3	0.0.0	0.0.0	0.0.0	0.0.0	0.0.3	
		LC	<i>Pomacanthus paru</i>	French angelfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		VU	<i>Paretroplus kieneri</i> *	Kieneri cichlid	0.0.10	0.0.0	0.0.0	0.0.0	0.0.0	0.0.10	
			<i>Amphiprion ocellaris</i> *	Clown anemonefish	0.0.10	0.0.0	0.0.0	0.0.4	0.0.0	0.0.6	
			<i>Chrysiptera parasema</i> *	Goldtail damselfish	0.0.4	0.0.0	0.0.0	0.0.2	0.0.0	0.0.2	
		LC	<i>Scatophagus argus</i> *	Spotted scat	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Siganus vulpinus</i> *	Foxface rabbitfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Acanthurus fowleri</i> *	Fowler's surgeon	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Paracanthurus hepatus</i>	Palette surgeonfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Zebbrasoma desjardini</i> *	Red Sea sailfin tang	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1	
		LC	<i>Zebbrasoma flavescens</i> *	Yellow tang	0.0.2	0.0.0	0.0.0	0.0.2	0.0.0	0.0.0	
				CLASS: AMPHIBIA	CLASS: AMPHIBIANS						
			CR	<i>Ambystoma mexicanum</i> *	Axolotl	0.0.5	0.0.0	0.0.0	0.0.1	0.0.0	0.0.4
		EN	<i>Epidalea calamita</i>	Natterjack toad	3.5.0	0.0.500	0.0.0	0.0.0	0.0.500	3.5.0	
		CR	<i>Neurergus kaiseri</i> *	Emperor spotted newt	0.0.32	0.0.0	0.0.0	0.0.0	0.0.0	0.0.32	
	EN	<i>Epipedobates tricolor</i> *	Phantasmal poison dart frog	0.0.44	0.0.0	0.0.0	0.0.0	0.0.0	0.0.44		
	ESB	CR	<i>Leptodactylus fallax</i>	Mountain chicken frog	0.0.0	0.0.0	0.2.0	0.0.0	0.0.0	0.2.0	
		CR	<i>Mantella aurantiaca</i> *	Golden mantella	0.0.4	0.0.0	0.0.0	0.0.1	0.0.0	0.0.3	

NO. SPECIES	EAZA	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending	
8		EN	<i>Mantella viridis</i> *	Green mantella	0.06	0.0.0	0.0.0	0.0.3	0.0.0	0.0.3	
		LC	<i>Dyscophus guineti</i>	Sambava tomato frog	0.0.3	0.0.0	0.0.0	0.0.2	0.0.0	0.0.1	
		LC	<i>Polypedates otlophus</i> *	File-eared Tree Frog	0.0.2	0.0.0	0.0.0	0.0.1	0.0.0	0.0.1	
			<i>Theloderma corticale</i>	Tonkin bug-eyed frog	0.0.4	0.0.0	0.0.0	0.0.2	0.0.0	0.0.2	
			CLASS: REPTILIA	CLASS: REPTILES							
			<i>Chelonoidis carbonarius</i>	Red-footed tortoise	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
		CR	<i>Indotestudo elongata</i>	Elongated tortoise	5.4.7	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	5.4.7
		EN	<i>Brachylophus fasciatus</i>	Lau banded iguana	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
		LC	<i>Iguana iguana</i>	Green iguana	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
		LC	<i>Phelsuma grandis</i>	Giant madagascar day gecko	1.2.5	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.2.5
25	EEP	LC	<i>Python regius</i>	Royal/ball python	2.0.0	0.0.0	0.0.0	0.0.0	0.0.0	2.0.0	
		LC	<i>Acrantophis dumerili</i>	Dumeril's ground boa	3.0.0	0.0.0	0.0.0	0.0.0	0.0.0	3.0.0	
		VU	<i>Chilabothrus subflavus</i>	Jamaican boa	0.0.2	0.0.0	0.0.0	0.0.0	0.0.0	0.0.2	
			CLASS: AVES	CLASS: BIRDS							
		LC	<i>Struthio camelus</i>	Common ostrich	1.2.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.2.0
		NT	<i>Rhea pennata</i>	Lesser rhea	2.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	2.0.0
		LC	<i>Numida meleagris</i>	Helmeted guineafowl	0.0.25	0.0.3	0.0.0	0.0.1	0.0.0	0.0.0	0.0.27
		LC	<i>Perdix perdix</i>	Grey partridge	1.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.1.0
		CR	<i>Lophura edwardsi</i>	Vietnam pheasant	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
		LC	<i>Pavo cristatus</i>	Common peafowl	5.14.1	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	5.15.1
EEP	LC	<i>Anser anser</i>	Greylag goose	11.8.20	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	11.8.20	
	LC	<i>Anser brachyrhynchus</i>	Pink-footed goose	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0	
	NT	<i>Anser canagicus</i>	Emperor goose	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0	

NO. SPECIES	EAZA	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
		VU	<i>Anser erythropus</i>	Lesser white-fronted goose	1.00	0.00	0.00	0.00	0.00	1.00
		LC	<i>Anser indicus</i>	Bar-headed goose	2.00	0.00	0.00	0.00	0.00	2.00
		LC	<i>Branta leucopsis</i>	Barnacle goose	4.10	0.00	0.00	2.00	0.00	2.10
		EN	<i>Branta ruficollis</i>	Red-breasted goose	1.30	0.03	0.00	0.00	0.00	1.33
		VU	<i>Branta sandvicensis</i>	Ne-ne	1.00	0.00	0.00	0.00	0.00	1.00
		LC	<i>Cereopsis</i>	Cereopsis goose	1.00	0.00	0.00	1.00	0.00	0.00
		LC	<i>Coscoroba coscoroba</i>	Coscoroba swan	1.00	0.00	0.00	1.00	0.00	0.00
		LC	<i>Aix galericulata</i>	Mandarin duck	4.30	0.08	0.00	0.00	0.00	4.38
		LC	<i>Netta rufina</i>	Red-crested pochard	1.10	0.13	0.00	0.03	0.00	1.20
		NT	<i>Somateria mollissima</i>	Common eider	1.10	0.00	0.00	1.00	0.00	0.10
		NT	<i>Phoenicopterus chilensis</i>	Chilean flamingo	1.40	0.00	0.00	0.00	0.00	1.40
		LC	<i>Crex crex</i>	Corncrake	7.30	1.300	0.00	2.10	0.00	6.50
	EEP	VU	<i>Spheniscus humboldti</i>	Humboldt penguin	10.80	0.01	0.00	1.11	0.00	9.70
		LC	<i>Pelecanus onocrotalus</i>	Eastern white pelican	2.00	0.00	0.00	0.00	0.00	2.00
	EEP	LC	<i>Haliaeetus albicilla</i>	White-tailed sea eagle	0.20	0.00	0.00	0.00	0.00	0.20
	EEP	CR	<i>Ara glaucogularis</i>	Blue-throated macaw	1.10	0.00	0.00	0.00	0.00	1.10

NO. SPECIES	EAZA	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
36			CLASS: MAMMALIA	CLASS: MAMMALS						
2			MARSUPIALIA	MARSUPIAL MAMMALS						
			DIPROTODONTIA	KOALAS, WOMBATS & KANGAROOS						
	ESB	LC	<i>Macropus giganteus</i>	Eastern grey kangaroo	8.90	1.10	0.00	2.00	0.00	7.10.0
		LC	<i>Macropus rufogriseus</i> *	Red-necked wallaby	0.0157	0.00	0.00	0.00	0.00	0.0157
			PLACENTALIA	PLACENTAL MAMMALS						
1			PILOSA	SLOTHS & ANTEATERS						
	ESB	LC	<i>Choloepus didactylus</i>	Linne's two-toed sloth	1.10	0.10	0.00	0.00	0.00	1.20
15			PRIMATES	PRIMATES						
	EEP	VU	<i>Eulemur rubriventer</i>	Red-bellied lemur	0.40	0.00	0.00	0.00	0.00	0.40
	EEP	EN	<i>Lemur catta</i>	Ring-tailed lemur	1.70	0.00	1.00	0.00	0.00	2.70
	EEP	CR	<i>Varecia variegata</i>	Black-and-white ruffed lemur	5.40	1.20	0.00	0.00	0.00	6.60
	EEP	LC	<i>Pithecia pithecia</i>	White-faced saki	1.30	0.00	0.00	0.00	0.00	1.30
	EEP	NT	<i>Alouatta caraya</i>	Black howler	1.20	0.00	0.00	0.00	0.00	1.20
	EEP	EN	<i>Ateles fusciceps</i>	Geoffroy's Spider Monkey	3.50	1.00	0.00	0.00	0.00	4.50
	EEP	CR	<i>Cercopithecus rolaway</i>	Roloway monkey	1.20	0.00	0.00	0.00	0.00	1.20
		VU	<i>Lophocebus albigena</i>	Grey-cheeked mangabey	1.20	0.00	0.00	0.00	0.00	1.20
	EEP	EN	<i>Macaca silenus</i>	Lion-tailed macaque	10.13.0	0.00	0.00	2.00	0.00	8.13.0
	EEP	EN	<i>Mandrillus leucophaeus</i>	Drill	0.40	0.00	1.00	0.00	0.00	1.40
	EEP	LC	<i>Colobus guereza</i>	Eastern black-and-white colobus	3.00	0.00	0.40	0.00	0.00	3.40
	EEP	EN	<i>Trachypithecus francoisi</i>	Francois' langur	1.00	0.00	1.20	0.00	1.00	1.20
		EN	<i>Hylobates agilis</i>	Agile gibbon	2.20	0.00	0.00	0.00	0.10	2.10
	EEP	EN	<i>Hylobates lar</i>	Lar gibbon	1.30	0.00	0.00	0.00	0.10	1.20
	EEP	EN	<i>Symphalangus syndactylus</i>	Siamang	4.20	0.00	0.00	0.00	0.00	4.20

NO. SPECIES	EAZA	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
2		NT	RODENTIA <i>Dolichotis patagonum</i> *	RODENTS Patagonian mara	0.01	0.00	0.00	0.00	0.00	0.01
		LC	<i>Hydrochoerus hydrochaeris</i>	Capybara	1.00	0.00	0.00	0.00	0.00	1.00
7			CARNIVORA	CARNIVORES						
	EEP	NT	<i>Acinonyx jubatus</i>	Cheetah	5.15.0	0.00	0.00	1.10	3.00	1.14.0
	EEP	EN	<i>Panthera leo</i>	Lion	1.20	0.00	1.00	1.00	0.00	1.20
	EEP	CR	<i>Panthera tigris</i>	Tiger	3.20	0.00	0.00	0.00	1.10	2.10
		LC	<i>Suricata suricatta</i>	Slender-tailed meerkat	3.20	0.00	0.00	2.00	0.00	1.20
		LC	<i>Halichoerus grypus</i>	Grey seal	0.10	0.00	0.00	0.00	0.00	0.10
		LC	<i>Phoca vitulina</i>	Harbor seal	0.10	0.00	0.00	0.00	0.00	0.10
	EEP	EN	<i>Ailurus fulgens</i>	Red panda	1.30	0.00	0.00	0.10	0.00	1.20
3			PERISSODACTYLA	ODD-TOED UNGULATES						
		NT	<i>Equus quagga</i>	Plains zebra	3.20	0.00	0.00	0.00	0.00	3.20
	EEP	VU	<i>Tapirus terrestris</i>	South American tapir	2.30	0.00	0.00	0.00	0.10	2.20
	EEP	VU	<i>Rhinoceros unicornis</i>	One-horned rhinoceros	2.10	1.00	0.00	0.00	0.00	3.10
6			CETARTIODACTYLA	EVEN-TOED MAMMALS						
	EEP	CR	<i>Sus cebifrons</i>	Visayan warty pig	1.10	0.00	0.00	0.00	0.00	1.10
	EEP	EN	<i>Rusa alfredi</i>	Alfred's spotted deer	0.10	0.00	1.10	0.00	0.00	1.20
	EEP	VU	<i>Giraffa camelopardalis</i>	Giraffe	2.80	0.00	0.00	0.10	0.00	2.70
	EEP	NT	<i>Bison bonasus</i>	European wisent	8.60	1.10	0.00	4.00	0.30	5.40
	EEP	EW	<i>Oryx dammah</i>	Scimitar-horned oryx	2.70	0.00	0.00	0.00	0.00	2.70
	ESB	EN	<i>Kobus leche</i>	Southern lechwe	3.11.0	0.10	0.00	0.30	0.00	3.90
			TOTAL		157.193.885	6.11.538	5.90	20.8.38	5.7500	143.198.885

* = Group Inventory Counts Included In Row

** = Colony counts included in Row

+ = Both Group and Colony counts included in Row



THE ZOOLOGICAL SOCIETY OF IRELAND

Reports and Consolidated
Financial Statements
for the financial year ended
31 December 2022

Registered number: 207824

(A company limited by guarantee and not having a share capital)

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THE ZOOLOGICAL SOCIETY OF IRELAND

MEMBERS OF BOARD AND OTHER INFORMATION

Members of Board:

Board President	Ann Keenan
Immediate past President	Michael Daly
Ordinary Board members	Nigel Bell John McMahon Carmel O'Connor Andy Beer Tom Cassin Emma Teeling Yvonne Buckley Sharon McCabe

Other information:

Past Presidents	Tom Dunphy Michael Daly
Secretary and registered office	Tom Cassin The Zoological Gardens Phoenix Park Dublin 8
Auditors	Deloitte Ireland LLP Chartered Accountants and Statutory Audit Firm Deloitte & Touche House Earlsfort Terrace Dublin 2

(A company limited by guarantee and not having a share capital)

Bankers

Ulster Bank Limited
33 College Green
Dublin 2

Bank of Ireland
2 College Green
Dublin 2

AIB
66 South Mall
Cork

Solicitors

Mason Hayes & Curran
South Bank House
Barrow Street
Dublin 4

A&L Goodbody
3 Dublin Landings
North Wall Quay
IFSC
Dublin 1

Charity number

20003715

Charity tax number

CHY 2964

Company number

207824

THE ZOOLOGICAL SOCIETY OF IRELAND

BOARD'S REPORT

The Board presents its annual report together with the audited consolidated financial statements for the financial year ended 31 December 2022.

Consolidation

These financial statements form the Consolidated Financial Statements of the Zoological Society of Ireland which include the results of both Dublin Zoo and Fota Wildlife Park for the financial year ended 31 December 2022.

Principal activities, business review and future developments

The principal activities of The Zoological Society of Ireland ("the Group") are:

- The operation of a Zoo in the Phoenix Park, Dublin.
- The operation of a Zoo at Fota Wildlife Park.
- To promote the conservation of wildlife generally worldwide by advancing the study of environmental sciences and knowledge of zoology through science and scientific education.

The attendance for the financial year ended and the prior year was as follows:

	2022	2021
Dublin (incl Wildlights)	1,276,930	972,224
Wildlights	269,821	212,018
Fota Wildlife Park	415,200	474,794

Dublin Zoo was also able to hold the very popular Wild Lights event once again during November and December. With the support of the public, this event was hugely successful, which re-confirms the Zoo as a wonderful family attraction throughout the year.

The directors would like to acknowledge and thank the Government through the Office of public works (OPW) for its continuing support, which included capital grants of €3m for 2022. The directors are also very grateful to the public for its generous contributions.

Thanks to the support of both the Government and the public, together with a significant focus on cost control throughout the year, the Group has recorded a surplus of €1.3m.

The successful return to operations during 2022 has allowed both Zoos to continue their respective 10-year Strategic Plans. These plans envisage significant capital expenditures on both existing and new animal habitats.

(A company limited by guarantee and not having a share capital)

Dublin Zoo's 'Vision 2021-2031' ambition is to become a zoo-based conservation organisation of national and global significance, with a focussed investment in species survival, conservation, research and environmental sustainability, both nationally and globally. Full details of the strategic plan are available on the Dublin Zoo website.

Fota Wildlife Park's 2030 Vision sets the target to become one of the top 10 zoological parks in Europe, with species conservation, public education and engagement at its core, to enable a more sustainable and biodiverse future at national and global level.

Capital Expenditure

The Group spent €5.5m on Capital Expenditure during 2022 compared to €3.7m in 2021. Key projects included the completion of the Red Panda and Snow Leopard habitats and the commencement of works on Society House and Amur Tiger Habitat in Dublin, and the commencement of the new Education, Conservation & Research Centre in Fota Wildlife Park.

These projects have been facilitated by the receipt of Government capital grants of €3m and the continuing operating surpluses

The directors have authorised Capital Expenditure projects amounting to €10.4m for the period 2022-2024. This expenditure will be funded from the surplus generated in 2022, future planned surpluses, together with existing reserves and the Capital grants referred to above.

Reserves Policy

The Board strives to maintain reserves at a level that enables the Company to manage financial risk and any volatility in its annual income streams.

The surplus for the year has permitted the Board to increase the Emergency Reserve Fund by €0.5m. An amount of €3m (2021: €2.5m) has been set aside by the Board at 31 December 2022, to help protect against any future pandemic outbreaks, the threat of zoonotic disease or any other emergency that might impact on the ongoing finances of the group.

Principal risks and uncertainties

The Board has established clear procedures to establish the Company's appetite for risk and define and communicate policies and procedures regarding the management and oversight of risk to which it may be exposed.

These procedures allow the Board and the senior management team to design and implement mitigating controls to reduce the likelihood of risks occurring, and also to limit the potential impact if these risks do occur.

THE ZOOLOGICAL SOCIETY OF IRELAND

BOARD'S REPORT *(Continued)*

Risk management process

The Board sets out and reviews the Society's risk appetite statement on an annual basis. This statement sets out the amount of risk that the company is willing to seek or accept in the pursuit of its objectives. It also sets out the framework in which the company's risk management policies and procedures operate.

- The Company has a detailed risk register that contains the key risks that the senior management team and the Board consider apply to it. Risk management is an integrated part of all organisational activities, and procedures have been established for the monitoring and mitigation of risk.

Risk assessment

Risks are assessed according to their likelihood to occur and their potential impact on the Company. This provides a score that identifies the principal risks and the documenting of the controls in place to mitigate these risks.

The risk register is a standing item on the agenda of monthly Board meetings. The register is reviewed and assessed annually by the Board. Any significant changes proposed to be made to the register are reported to the Board and minuted.

Principal risks and uncertainties

The Board has considered the principal risks to which the Group is exposed, and is satisfied that suitable processes have been put in place to identify and manage these risks.

The following principal risks and uncertainties were applicable during 2022:

- Continuing uncertainties arising from the potential impact on visitor numbers due to the Covid-19 pandemic;
- Reputational damage in the event of inaction on climate change impacting animals and visitor numbers;
- Uncertainty impacting on the Group relating to an outbreak of animal disease;
- Changes in the economic environment.
- Cyber Security and Data Protection.
- Health and Safety.

Specific actions have been put in place to manage each of the risks identified above.

The Board is also conscious of the financial impact of the above risks and strives to maintain adequate cash reserves to allow it to continue to trade in the event of risks which may impact its ability to generate cashflow.

(A company limited by guarantee and not having a share capital)

Results for the financial year

The results for the financial year and state of affairs of the Group are set out in the consolidated income and expenditure account and balance sheet on pages 97 and 98.

Board and secretary

The members of the Board, who served at any time during the financial year except as noted, were as follows:

- Ann Keenan
- Michael Daly
- Nigel Bell
- John McMahon
- Carmel O'Connor
- Andy Beer
- Tom Cassin
- Emma Teeling (appointed 22/09/2022)
- Yvonne Buckley (appointed 15/11/2022)
- Sharon McCabe (appointed 15/11/2022)

Secretary

- John Sweeney (resigned 28/04/2022)
- Tom Cassin (appointed 28/04/2022)

Legal status

The Company is limited by guarantee and has no share capital. The Company has charitable status and is registered with the Charities Regulatory Authority.

Subsidiaries

The statutory information concerning subsidiary undertakings is provided in Note 9 to the financial statements.

Structure and governance

The Company is governed by a Board of Directors, who under the Society's Articles of Association, are not entitled to remuneration for their services. The directors are legally responsible for the governance and overall control and management of the Company and bring their varied experience in their respective fields to bear on guiding the Company.

The Articles of Association set out the procedures regarding the appointment and retirement of board members and the proceedings of meeting. Training is provided for directors through their terms of office. A detailed Board Induction Pack is provided to new board members. The Board has also approved and adopted a Code of Conduct for its directors.

THE ZOOLOGICAL SOCIETY OF IRELAND

BOARD'S REPORT *(Continued)*

Conflict of Interest

The company has a conflict of interests' policy and all Board members sign a conflict of interest form annually. In addition, directors sign a register of interests' declaration. Conflict of interest is a standing agenda item at all Board meetings. If a Board member has a perceived or real conflict of interest, the director concerned should declare his/her interest at the earliest possible opportunity and withdraw from any discussion, decision or action relating to the conflict.

Board Evaluation

In 2021 the Board conducted a self-evaluation, with guidance from an independent expert firm. The conclusion from the evaluation was that the Board operates effectively, with a strong governance structure in place. Certain recommendations arising from the Board evaluation to improve effectiveness were implemented during 2022 and 2023.

Governance

The Board delegates the management of the day to day operation of the Company and Fota Wildlife Park, and the implementation of policy and strategy to the Directors (Chief Executives) of both Zoos. The executive management teams, chaired by the Directors and consisting of key senior executives, are the main day to day decision making fora of the Zoos.

The Board believe that committing to a high level of corporate governance is essential to achieving the optimal standard of operation of the groups' activities. To accomplish this, the group has competent executive teams. There is clear division of responsibility with the Board retaining control of major decisions, with the Directors responsible for devising strategy and policy within authority delegated to them by the Board. The Board is responsible for providing leadership, setting strategy and ensuring control.

There are clear and detailed processes for reporting management information to the Board. The Board is provided with regular information, which includes key performance and risk indicators for all aspects of the organisation. The Board meets regularly as required and met 10 times during 2022.

The Board is satisfied that the Company is in compliance with the Charities Governance Code, and all relevant legal and regulatory requirements relating to its operations. The Board reviews its compliance with the Code on an annual basis.

The Board also considered the Guidelines for Charitable Organisations on Fundraising from the Public in respect of its digital fundraising initiatives and has adopted a Fundraising Policy, Donor Charter and Donor Complaints policy.

The Board recognises its overall responsibility for the Company's systems of internal control and for reviewing their effectiveness. They have delegated responsibility for the implementation of this system to the executive

team. This system includes financial controls, which enable the Board to meet its responsibilities for the integrity and accuracy of the Company's accounting records.

Committees

The Board is supported by a number of sub-committees (not confined to Board members) established for good governance. The terms of reference for all Board committees are updated and approved by the Board on a regular basis

ESG (Environment, Social and Governance) considerations are to the fore in all decisions made by the Zoological Society of Ireland, and underpin both Dublin Zoo's and Fota Wildlife Park's strategic plans. These areas are also a specific focus of the Board sub-committees. In particular, Environment forms part of the remit of the Conservation and Research Committee, Social matters are considered by the Ethics Committee and Governance is overseen by the Governance Committee.

Finance and Audit Committee

The function of the Finance and Audit Committee is to assist the Board of the Company on matters of financial management and in fulfilling its responsibilities by providing an independent review of financial reporting, by satisfying itself as to the effectiveness of the Company's internal controls and as to the sufficiency of the external audit process.

The Committee also monitors and reviews the financial performance of the Company, the annual budget for recommendation to the Board, and also advises on remuneration and commercial contract issues. The Committee comprises three Board members and met four times during the year.

Governance and People Committee

The principal objective of the Governance and People Committee is to advise the board on good corporate governance and, in particular, to monitor compliance with the Governance Code for Charity Organisations in Ireland. In addition, the Committee ensures that there is a robust and effective process for evaluating the performance of the Board to ensure that it fulfils its responsibilities. The Committee is also responsible for identifying and appointing suitably skilled directors to the Board, taking into account the existing balance of skills, knowledge, experience and diversity of the Board. The Committee comprises one board member, two former Presidents of the Society and the current President, and met three times during the year.

THE ZOOLOGICAL SOCIETY OF IRELAND

BOARD'S REPORT *(Continued)*

Conservation, Research and Education Committee

The purpose of the Conservation, Research and Education Committee is to assist the Board on matters relating to the conservation of endangered species and habitats within Ireland and other International Countries where the Company has an interest. The Committee helps to formulate the conservation strategy of the Company and recommends to the Board the direction this should take and which national and international initiatives are worthy of its financial support. The Committee proposes to the Board the level of support which is appropriate for nominated Conservation projects. The Committee also liaises with, and delegates to employees of the Company where appropriate, the responsibility to commission or engage in research in partnerships with relevant Universities, Higher Education Institutes or Conservation Organisations. The Committee comprises three members of the Board, a former President of the Society, the Zoo Director and some internal and external appointees and met 3 times during the year.

During 2022, the Conservation and Research Committee took part in the National Biodiversity Conference as a key stakeholder, and reviewed its support for specific conservation projects around the world and in Ireland. Funds were directed to support monitoring and site management for the Marsh Fritillary Butterfly. Financial support was given to the Wildlife Trust of India to align our support for Asian elephant conservation in situ.

A Conservation Master Plan was produced, setting out the objectives and aspirations for Dublin Zoo's conservation vision and activity.

- A report entitled 'Elephants at Dublin Zoo: Conservation and Management' was produced.
- The research policy was updated.
- The committee developed plans to strengthen support for Native Species Conservation, citing the conservation of the white - clawed crayfish as a specific example.

Ethics Committee

The purpose of the Ethics Committee is to provide a forum for advice, audit, ethical review and support of animal health, animal welfare, and ethical aspects of conservation and research activities carried out or supported by Dublin Zoo to achieve its purpose and deliver its charitable objects. In compliance with the provisions of the Irish Standards of Modern Zoo Practice (Appendix 3), the Ethics Committee fulfils the requirement to ensure a robust and documented ethical review process. The Committee comprises two members of the Board, the Zoo Director and some internal and external appointees and met 4 times during the year.

During 2022, the Committee received amendments and updates on the animal welfare and assessment toolkit which is in place for all species in the collection.

Reports from Veterinary Services gave updates on the treatment and monitoring of instances of illness in different species and how surveillance of Notifiable Diseases such as Avian Influenza is co-ordinated and

agreed with the Department of Agriculture.

Relevant sections of Zoo Licence Inspection reports were considered, and the Committee noted the commendation that Inspectors gave to the work of the Vet Team in association with the Zookeeping staff.

The composition of the Committee was strengthened by the appointment of two Zoo keepers to the Committee as representatives of the animal sections.

Programmes Committee

The purpose of the Programmes Committee is to ensure that Dublin Zoo has implemented effective security strategies, programmes and measures to protect its people, information and assets.

The Committee has the responsibility to:

Ensure the company has in place an effective set of programmes and procedures to protect its people, information and assets.

- Set the direction and priority and provide guidance for the development and implementation of improvements to the security infrastructure and associated procedures and guidelines.
- Monitor and oversee the implementation of systems pertaining to GDPR, Cybersecurity and Business Continuity.
- Ensure annual assessments are undertaken for GDPR, Cybersecurity and Business Continuity and review all reports received together with the steps management

has taken to monitor and control any exposures arising.

The Committee comprises of two members of the Board and a former President of the Society and met twice during the year.

Health & Safety and Sustainability Committee

The purpose of the Health and Safety Committee is to assist the Board to fulfil its responsibilities in ensuring that the Company's policies, procedures and working practices regarding Health and Safety meet or exceed any legal obligations, with the object of promoting the well-being and safety of the Zoo employees, the public, suppliers and others who may be affected by its activities.

The Committee's responsibilities include:

- To maintain an overall assessment of the Zoo's key health and safety risks from which priorities for action are set and reviewed annually.
- To review and approve the Zoo's Health and Safety policy, and all other policies standards and strategy for the management of health and safety at work within the Zoo and compliance with health and safety legislative and other requirements.
- To review safety performance indicators, (accidents and near misses), investigations of significant failures, independent inspection and audit reports and associated remedial actions.
- To ensure that it and the Board is kept abreast of any regulatory changes in relation to health and safety and the impact such changes may have on the activities of the Zoo.

THE ZOOLOGICAL SOCIETY OF IRELAND

BOARD'S REPORT *(Continued)*

The committee comprises two members of the board, two former Presidents of the Society, the Zoo Director, and some external and internal appointees.

The committee met twice during the year.

Capital Projects Committee

This Committee was established in 2023 to support the executive management in the assessment and evaluation of certain major capital projects.

The Committee comprises of two members of the board, the Zoo Director and certain internal and external appointees.

Accounting records

The measures that the directors have taken to secure compliance with the requirements of sections 281 to 285 of the Companies Act 2014 with regard to the keeping of accounting records, are the employment of appropriately qualified accounting personnel and the maintenance of computerised accounting systems. The accounting records are maintained at the Society's registered office in The Zoological Gardens, Phoenix Park, Dublin 8.

Post balance sheet events

No significant events have taken place since the year end that would result in adjustment to the financial statements or inclusion of a note thereto.

Health and safety policy

The Company has prepared a health and safety policy which is being complied with and satisfactorily operated.

Political donations

The Company did not make any political donations during the financial year, which require disclosure in accordance with the Electoral Act, 1997.

Going concern

Further details regarding the adoption of the going concern basis can be found in Note 3 to the financial statements.

Statement on relevant audit information

Each of the persons who are directors at the time when this Directors' report is approved has confirmed that:

So far as each of the directors in office at the date of approval of the financial statements is aware:
There is no relevant audit information of which the Company's auditors are unaware; and

The Board Members have taken all the steps that they ought to have taken as Board Members in order to make themselves aware of any relevant audit information and to establish that the Company's auditors are aware of that information.

(A company limited by guarantee and not having a share capital)

Auditors

The auditors, Deloitte Ireland LLP, Chartered Accountants and Statutory Audit Firm, continue in office in accordance with Section 383(2) of the Companies Act 2014.

Approved by the Board and signed on its behalf by:



Ann Keenan
Board President



Tom Cassin
Director/Secretary

THE ZOOLOGICAL SOCIETY OF IRELAND

BOARD'S RESPONSIBILITIES STATEMENT

The directors are responsible for preparing the directors' report and the financial statements in accordance with the Companies Act 2014.

Irish company law requires the directors to prepare financial statements for each financial year. Under the law, the directors have elected to prepare the financial statements in accordance with FRS 102 The Financial Reporting Standard applicable in the UK and Republic of Ireland issued by the Financial Reporting Council ("relevant financial reporting framework"). Under company law, the directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the assets, liabilities and financial position of the company as at the financial year end date and of the profit or loss of the company for the financial year and otherwise comply with the Companies Act 2014.

In preparing those financial statements, the directors are required to:

- select suitable accounting policies for the Company Financial Statements and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state whether the financial statements have been prepared in accordance with the applicable accounting standards, identify those standards, and note the effect and the reasons for any material departure from those

standards; and

- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the company will continue in business.

The directors are responsible for ensuring that the company keeps or causes to be kept adequate accounting records which correctly explain and record the transactions of the company, enable at any time the assets, liabilities, financial position and profit or loss of the company to be determined with reasonable accuracy, enable them to ensure that the financial statements and directors' report comply with the Companies Act 2014 and enable the financial statements to be audited. They are also responsible for safeguarding the assets of the company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE ZOOLOGICAL SOCIETY OF IRELAND

Report on the audit of the financial statements

Opinion on the financial statements of The Zoological Society of Ireland ("the company")

In our opinion the group and parent company financial statements:

- give a true and fair view of the assets, liabilities and financial position of the group and parent company as at 31 December 2022 and of the profit of the group for the financial year then ended; and
- have been properly prepared in accordance with the relevant financial reporting framework and, in particular, with the requirements of the Companies Act 2014.

The financial statements we have audited comprise:

the group financial statements:

- the Consolidated Profit and Loss Account;
- the Consolidated Balance Sheet;
- the Consolidated Statement of Changes in Equity;
- the Consolidated Cash Flow Statement; and
- the related notes 1 to 19, including a summary of significant accounting policies as set out in note 1.

The parent company financial statements:

- the Balance Sheet;
- the Statement of Changes in Equity; and
- the related notes 1 to 19, including a summary of significant accounting policies as set out in note 1.

The relevant financial reporting framework that has been applied in their preparation is the Companies Act 2014 and FRS 102 'The Financial Reporting Standard applicable in the UK and Republic of Ireland' issued by the Financial Reporting Council ("the relevant financial reporting framework").

Basis for opinion

- We conducted our audit in accordance with International Standards on Auditing (Ireland) (ISAs (Ireland)) and applicable law. Our responsibilities under those standards are described below in the "Auditor's responsibilities for the audit of the financial statements" section of our report.
- We are independent of the group and parent company in accordance with the ethical requirements that are relevant to our audit of the financial statements in Ireland, including the Ethical Standard issued by the Irish Auditing and Accounting Supervisory Authority, 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.

THE ZOOLOGICAL SOCIETY OF IRELAND

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE ZOOLOGICAL SOCIETY OF IRELAND *(Continued)*

Conclusions relating to going concern

In auditing the financial statements, we have concluded that the directors' 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 and parent company'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 Reports and Consolidated Financial Statements for the financial year ended 31 December 2022, other than the financial statements and our auditor's report thereon. The directors are responsible for the other information contained within the Reports and Consolidated Financial Statements for the financial year ended 31 December 2022. 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 or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

Responsibilities of directors

As explained more fully in the Directors' Responsibilities Statement, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view and otherwise comply with the Companies Act 2014, and for such internal control as the directors 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 directors are responsible for assessing the group and parent 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 directors

either intend to liquidate the group and parent 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 (Ireland) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on IAASA's website at: <https://iaasa.ie/publications/description-of-the-auditors-responsibilities-for-the-audit-of-the-financial-statements>. This description forms part of our auditor's report.

Report on other legal and regulatory requirements

Opinion on other matters prescribed by the Companies Act 2014

Based solely on the work undertaken in the course of the audit, we report that:

- We have obtained all the information and explanations which we consider necessary for the purposes of our audit.
- In our opinion the accounting records of the parent company were sufficient to permit the financial statements to be readily and properly audited.
- The parent company balance sheet is in agreement with the accounting records.
- In our opinion the information given in the directors' report is consistent with the financial statements and the directors' report has been prepared in accordance with the Companies Act 2014.

THE ZOOLOGICAL SOCIETY OF IRELAND

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF THE ZOOLOGICAL SOCIETY OF IRELAND *(Continued)*

Matters on which we are required to report by exception

Based on the knowledge and understanding of the group and parent company and its environment obtained in the course of the audit, we have not identified material misstatements in the directors' report.

We have nothing to report in respect of the provisions in the Companies Act 2014 which require us to report to you if, in our opinion, the disclosures of directors' remuneration and transactions specified by law are not made.

Use of our report

This report is made solely to the company's members, as a body, in accordance with Section 391 of the Companies Act 2014. Our audit work has been undertaken so that we might state to the 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 company and the company's members as a body, for our audit work, for this report, or for the opinions we have formed.



Richard Howard

For and on behalf of Deloitte Ireland LLP
Chartered Accountants and Statutory Audit Firm
Deloitte & Touche House, 29 Earlsfort Terrace, Dublin 2

Date: 02 August 2023

(A company limited by guarantee and not having a share capital)

CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

	Notes	2022	2021
		€'000	€'000
INCOME	4	<u>24,637</u>	20,352
EXPENDITURE			
Operating costs		<u>(22,408)</u>	(18,069)
Administration expenses		<u>(1,084)</u>	(838)
TOTAL EXPENDITURE		<u>(23,492)</u>	<u>(18,907)</u>
OPERATING SURPLUS BEFORE COVID RELATED INCOME SUPPORTS	6	1,145	1,445
Covid Related Income Supports	7	<u>(46)</u>	<u>2,128</u>
OPERATING SURPLUS		<u>1,099</u>	<u>3,573</u>
Amortisation of grants	13	<u>230</u>	<u>3</u>
SURPLUS FOR THE FINANCIAL YEAR		<u>1,329</u>	<u>3,576</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

CONSOLIDATED BALANCE SHEET AS AT 31 DECEMBER 2022

	Notes	2022 €'000	2021 €'000
Fixed Assets			
Tangible assets	8	<u>29,666</u>	<u>27,703</u>
Current Assets			
Stocks	10	394	253
Debtors	11	1,000	897
Cash at bank and in hand			
– Restricted – Lemur fund		12	12
– Unrestricted		<u>17,225</u>	<u>15,392</u>
		<u>18,631</u>	<u>16,554</u>
Creditors: Amounts falling due within one year	12	<u>(6,724)</u>	<u>(6,797)</u>
Net current assets		<u>11,907</u>	<u>9,757</u>
Total assets less current liabilities		41,573	37,460
Government Grants Deferred Credit	13	<u>(6,048)</u>	<u>(3,278)</u>
NET ASSETS EXCLUDING PENSION ASSET		35,525	34,182
Pension asset	14	-	<u>279</u>
NET ASSETS INCLUDING PENSION ASSET		<u>35,525</u>	<u>34,461</u>

(A company limited by guarantee and not having a share capital)

Accumulated surplus	12,563	11,999
Development reserve	19,962	19,962
Emergency reserve	<u>3,000</u>	<u>2,500</u>
	<u>35,525</u>	<u>34,461</u>

The financial statements were approved and authorised for issue by the Board of Directors on 28 July 2023 and signed on its behalf by:



Ann Keenan
Board President



Tom Cassin
Director/Secretary

THE ZOOLOGICAL SOCIETY OF IRELAND

COMPANY BALANCE SHEET AS AT 31 DECEMBER 2022

	Notes	2022 €'000	2021 €'000
Fixed Assets			
Tangible assets	8	17,630	16,647
Financial assets	9	<u>500</u>	<u>500</u>
		18,130	17,147
Current Assets			
Stocks	10	227	129
Debtors			
- Due within one year	11	775	774
Cash at bank and in hand:			
- Restricted – Lemur fund		12	12
- Unrestricted		<u>12,862</u>	<u>10,946</u>
		13,876	11,861
Creditors: Amounts falling due within one year	12	<u>(5,276)</u>	<u>(5,346)</u>
Net current assets		8,600	6,515
Total assets less current liabilities		26,730	23,662
Government Grants Deferred Credit	13	<u>(3,832)</u>	<u>(2,030)</u>
NET ASSETS EXCLUDING PENSION		22,898	21,632
Pension asset	14	-	<u>167</u>
NET ASSETS INCLUDING PENSION ASSET		<u>22,898</u>	<u>21,799</u>

(A company limited by guarantee and not having a share capital)

Represented by:

Accumulated surplus	8,923	8,324
Development reserve	10,975	10,975
Emergency reserve	3,000	2,500
	<u>22,898</u>	<u>21,799</u>

The financial statements were approved by the Council on 28 July 2023 and signed on its behalf by:



Ann Keenan
Board President



Tom Cassin
Director/Secretary

THE ZOOLOGICAL SOCIETY OF IRELAND

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

	Note	Development Reserve €'000	Emergency Reserve €'000	Accumulated Surplus €'000	Total €'000
Balance at 1 January 2021		19,962	677	10,246	30,855
Surplus for the financial year				3,576	3,576
Transfers between reserves		-	1,823	(1,823)	-
At 31 December 2021		<u>19,962</u>	<u>2,500</u>	<u>11,999</u>	<u>34,461</u>
Surplus for the financial year		-	-	1,329	1,329
Remeasurement of pension asset	14	-	-	(265)	(265)
Transfers between reserves		-	<u>500</u>	<u>(500)</u>	-
At 31 December 2022		<u>19,962</u>	<u>3,000</u>	<u>12,563</u>	<u>35,525</u>

The Development Reserve represents funds which were set aside to fund capital investment in prior periods.

The Emergency Reserve represents funds set aside by the Board to protect against the impact of any zoonotic disease or other emergency which might affect the ongoing finances of the group. The Board has increased this reserve as a result of the surplus generated in 2022.

(A company limited by guarantee and not having a share capital)

COMPANY STATEMENT OF CHANGES IN EQUITY FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

	Note	Development Reserve €'000	Emergency Reserve €'000	Accumulated Surplus €'000	Total €'000
Balance at 1 January 2021		10,975	678	8,865	20,518
Surplus for the financial year		-	-	1,281	1,281
Transfers between reserves		-	<u>1,822</u>	<u>(1,822)</u>	-
At 31 December 2021		<u>10,975</u>	<u>2,500</u>	<u>8,324</u>	<u>21,799</u>
Balance at 1 January 2022		10,975	2,500	8,324	21,799
Surplus for the financial year		-	-	1,266	1,266
Remeasurement of pension asset	14	-	-	<u>(167)</u>	<u>(167)</u>
Transfers between reserves		-	<u>500</u>	<u>(500)</u>	-
At 31 December 2022		<u>10,975</u>	<u>3,000</u>	<u>8,923</u>	<u>22,898</u>

The Development Reserve represents funds which were set aside to fund capital investment in prior periods.

The Emergency reserve represents funds set aside by the Board to protect against the impact of any zoonotic disease or other emergency which might affect the ongoing finances of the group. The Board has increased this reserve as a result of the surplus generated in 2022.

THE ZOOLOGICAL SOCIETY OF IRELAND

CONSOLIDATED STATEMENT OF CASH FLOWS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

	Notes	2022 €'000	2021 €'000
NET CASH INFLOW FROM OPERATING ACTIVITIES	16	<u>4,315</u>	<u>8,665</u>
Cash flows from investing activities			
Payment to acquire tangible fixed assets		(5,496)	(3,689)
Capital grant received relating to fixed assets		3,000	3,000
Proceeds on disposal of tangible assets		14	-
Interest received		-	-
Interest paid		-	-
Net cash outflow from investing activities		<u>(2,482)</u>	<u>(689)</u>
MOVEMENT IN CASH IN THE FINANCIAL YEAR	16	<u>1,833</u>	<u>7,976</u>
Cash and cash equivalents at beginning of financial year		<u>15,404</u>	<u>7,428</u>
Cash and cash equivalents at end of financial year		<u>17,237</u>	<u>15,404</u>

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

1. ACCOUNTING POLICIES

The principal accounting policies are summarised below. They have all been applied consistently throughout the current and the preceding financial year.

General Information and Basis of Accounting

The Zoological Society of Ireland is a company incorporated in Ireland under the Companies Act 2014. The address of the registered office is given on page 2. The nature of the company's operations and its principal activities are set out in the Board's report on pages 4 to 8.

The financial statements have been prepared under the historical cost convention and in accordance with the Companies Act 2014 and Financial Reporting Standard 102 (FRS 102) issued by the Financial Reporting Council. The consolidated financial statements incorporate the financial statements of the company and its subsidiary undertaking for the financial year ended 31 December 2022.

The functional currency of the Zoological Society of Ireland is considered to be Euro because that is the currency of the primary economic environment in which the company operates.

Income

Income comprises of gate receipts, annual pass, donations, government funding and membership subscriptions relating to the current period. Where subscriptions are received in advance or income relates to future performance requirement, the related revenue are included in deferred income in creditors and released to the income and expenditure account in the relevant period.

Life membership subscriptions are amortised to the income and expenditure account based on the estimated useful life of membership which is considered ten years.

Other income comprises the value of sales, excluding VAT and discounts, to third parties and is recognised once the related goods or services are provided to customers.

Foreign Currencies

Transactions in foreign currencies are recorded at the rate at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies at the balance sheet date are reported at the rates of exchange prevailing at that date. Exchange differences are recognised in the income and expenditure account in the period in which they arise.

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

1. ACCOUNTING POLICIES *(Continued)*

Taxation

Dublin Zoo is regarded by the Revenue Commissioners as established for charitable purposes and, accordingly, is exempt from corporation tax.

Restricted cash

Where cash balances are ring fenced for specific purposes and may not be available for general use by the Group, the cash balance is noted as being restricted.

Tangible Fixed Assets and Depreciation

Tangible fixed assets are stated at cost less accumulated depreciation and any provision for impairment. The charge for depreciation is calculated to write down the cost of tangible fixed assets to their estimated residual values by equal annual instalments over their expected useful lives as follows:

Plant, machinery and equipment	20%
Computer equipment and software	33 $\frac{1}{3}$ %
Motor vehicles	20%
Habitats	10%

Land and assets under construction are not depreciated.

Residual value represents the estimated amount which would currently be obtained from disposal of an asset, after deducting estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

An asset is impaired where there is objective evidence that, as a result of one or more events that occurred after initial recognition, the estimated recoverable value of the asset has been reduced to below its carrying amount. The recoverable amount of an asset is the higher of its fair value less costs to sell and its value in use.

Where indicators exist for a decrease in impairment loss, the prior impairment loss is tested to determine reversal. An impairment loss is reversed on an individual impaired asset to the extent that the revised recoverable value does not lead to a revised carrying amount higher than the carrying value had no impairment been recognised.

Financial Fixed Assets

Financial fixed assets are stated at cost less provision for impairment. An asset is impaired where there is objective evidence that, as a result of one or more events that occurred after initial recognition, the estimated recoverable value of the asset has been reduced to below its carrying amount.

Government Support/Grants

The land in the Phoenix Park occupied by Dublin Zoo is used under a licence from the State, Dublin Zoo being

a tenant at will. No value is reflected in these financial statements in respect of this licence or this land.

In prior periods grants under the Government Capital Investment Programme in the company were provided and accounted for by the Office of Public Works (OPW) and any related assets were therefore excluded in the financial statements. The facilities provided under this Programme are used by the company under licence from the State.

Other Government grants in respect of capital expenditure are credited to a deferred grant account and are amortised to the income and expenditure account by equal annual instalments over the expected useful lives of the related assets.

Government revenue grants received are accounted for when received or if conditions exist, when those conditions are met.

Leases

Rentals under operating leases are charged on a straight-line basis over the lease term, even if the payments are not made on such a basis. Benefits received and receivable as an incentive to sign an operating lease are similarly spread on a straight-line basis over the lease term.

Animals

No value is placed on the animals belonging to the Society.

Stocks

Stocks, other than animals, are stated at the lower of cost and net realisable value.

Retirement Benefits

For defined benefit schemes the amounts charged to the operating surplus are the costs arising from employee services rendered during the period and the cost of plan introductions, benefit changes, settlements and curtailments. They are included as part of staff costs. The net interest cost on the net defined asset/liability is charged to the income and expenditure account. Remeasurement comprising actuarial gains and losses and the return on scheme (excluding amounts included in net interest on the net defined benefit asset/liability) are recognised immediately in other comprehensive income.

A defined benefit scheme is funded, with the assets of the scheme held separately from those of the Society, in separate trustee administered funds. Pension scheme assets are measured at fair value and liabilities are measured on an actuarial basis using the projected unit method. The actuarial valuations are obtained at least triennially and are updated at each balance sheet date.

For the defined contribution scheme the amount charged to the income and expenditure account in respect of pension costs and other post-retirement benefits is the contributions payable in the year. Differences between contributions payable in the year and contributions actually paid are shown as either accruals or prepayments in the balance sheet.

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

1. ACCOUNTING POLICIES *(Continued)*

Financial Instruments

Financial assets and financial liabilities are recognised when the company becomes a party to the contractual provisions of the instrument. Financial liabilities are classified according to the substance of the contractual arrangements entered into.

All financial assets and liabilities are initially measured at transaction price (including transaction costs), except for those financial assets classified as at fair value through the income and expenditure account, which are initially measured at fair value (which is normally the transaction price excluding transaction costs), unless the arrangement constitutes a financing transaction. If an arrangement constitutes a financing transaction, the financial asset or financial liability is measured at the present value of the future payments discounted at a market rate of interest for a similar debt instrument.

Financial assets and liabilities are only offset in the statement of financial position when, and only when there exists a legally enforceable right to set off the recognised amounts and the company intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously.

Financial assets are derecognised when and only when a) the contractual rights to the cash flows from the financial asset expire or are settled, b) the company transfers to another party substantially all of the risks and rewards of ownership of the financial asset, or c) the company, despite having retained some, but not all, significant risks and rewards of ownership, has transferred control of the asset to another party. Financial liabilities are derecognised only when the obligation specified in the contract is discharged, cancelled or expires.

Financial assets and liabilities that are classified as receivable or payable within one year on initial recognition are measured at the undiscounted amount of the consideration expected to be received or paid, net of impairment.

Non-current bank debt is measured at amortised cost using the effective interest method.

2. CRITICAL ACCOUNTING JUDGEMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

In the application of accounting policies, which are described in note 1, the Board members are required to make judgements, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates. The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period or in the period of the revision and future periods if the revision affects both current and future periods.

The following are the critical judgements and estimates that the Board members have made in the process of applying the accounting policies and that have the most significant effect on the amounts recognised in the financial statements:

Retirement Benefit Obligations

The estimation of and accounting for retirement benefit obligations involves judgements made in conjunction with independent actuaries. There are estimates in respect of life expectancy of scheme members, increase in salaries, inflation as well as discount rates. The assumptions used are disclosed in note 14.

Useful economic lives

The annual depreciation charge for tangible fixed assets is sensitive to changes in the estimated useful economic lives and residual values of the assets. Determination of appropriate useful economic lives is a key judgement and the useful economic lives and residual values are re-assessed annually. They are amended when necessary to reflect current estimates, based on technological advancement, future investments, economic utilisation and the physical condition of the assets.

3. GOING CONCERN

Based on budgets and cashflow projections, the Board has a reasonable expectation that the company can meet all liabilities for a period of not less than twelve months from the date of approval of the financial statements. Accordingly, the Board have prepared the financial statements of the company on a going concern basis.

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

4. INCOME

Operating Income arising from the following activities undertaken wholly within Ireland.

	2022	2021
	€'000	€'000
Gate receipt income	16,736	14,169
Annual pass and membership income	2,899	1,792
Shop income	3,704	2,905
Other income	<u>1,298</u>	<u>1,131</u>
Operating income	24,637	19,997
Fundraising income (a)	-	<u>355</u>
	<u>24,637</u>	<u>20,352</u>

(a) In 2021, the Covid-19 pandemic resulted in both Dublin Zoo and Fota Wildlife Park being closed for a period of time and the Group suffered a reduction in income.

In order to maintain the viability of operations, Dublin Zoo developed a digital fundraising initiative to raise funds from the public to meet the costs of animal care and welfare.

Given the nature of the Zoo's activities, goods and services are donated to the Zoo by other organisations where the fair value of such goods and services may not be readily determinable.

(A company limited by guarantee and not having a share capital)

5. EMPLOYEE INFORMATION

Staff numbers and costs	2022	2021
Average number of employees:		
Management	16	16
Administration	21	14
General staff		
- full time	103	60
- part time	15	29
Shop	<u>20</u>	<u>16</u>
	<u>175</u>	<u>135</u>
The aggregate payroll costs of these persons were as follows:	2022	2021
	€'000	€'000
Wages and salaries	6,626	5,230
Social welfare costs	712	619
Retirement benefit costs (Note 14)	<u>271</u>	<u>223</u>
	<u>7,609</u>	<u>6,072</u>

The total remuneration for 17 key management personnel for the financial year totalled €1,182,169 (2021: €1,159,518 for 17 key management personnel).

All payroll costs were expensed during the current and prior financial year.

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

6. OPERATING SURPLUS

	2022 €'000	2021 €'000
The operating surplus is stated after charging:		
Remuneration of Board members	-	-
Auditor's remuneration in respect of		
- the audit of the entity	31	26
- the audit of subsidiary entity	16	8
- tax services	14	14
- other services	-	-
Depreciation	3,533	3,515
Operating lease charges	<u>5</u>	<u>6</u>

Under the Society's Articles of Association, Board members are not entitled to remuneration. Auditor's remuneration is disclosed net of VAT.

7. COVID RELATED INCOME SUPPORTS

During 2021, Dublin Zoo received government support through wage subsidy schemes together with grant aid to support animal welfare. These are one off items relating to the Covid pandemic supports that do not form part of on-going turnover. In 2022 it was noted that a refund was due back in respect of this support.

(A company limited by guarantee and not having a share capital)

8. TANGIBLE FIXED ASSETS

Group

	Land €'000	Plant & equipment €'000	Computer equipment €'000	Motor vehicles €'000	Build. & Habitats €'000	Total €'000
Cost:						
At 1 January 2022	191	4,924	1,170	815	49,537	56,637
Additions	-	275	130	138	4,954	5,496
Disposals	-	(15)	-	(38)	-	(53)
Reclassification	-	(47)	47	-	-	-
At 31 December 2022	<u>191</u>	<u>5,137</u>	<u>1,347</u>	<u>915</u>	<u>54,491</u>	<u>62,080</u>
Depreciation:						
At 1 January 2022	-	4,338	1,163	560	22,873	28,934
Charge for financial year	-	162	48	82	3,241	3,533
On disposals	-	(15)	-	(38)	-	(53)
Reclassification	-	(1)	1	-	-	-
At 31 December 2022	-	<u>4,484</u>	<u>1,212</u>	<u>604</u>	<u>26,114</u>	<u>32,414</u>
Net Book Value:						
At 31 December 2022	<u>191</u>	<u>653</u>	<u>135</u>	<u>310</u>	<u>28,377</u>	<u>29,666</u>
At 31 December 2021	<u>191</u>	<u>586</u>	<u>7</u>	<u>256</u>	<u>26,664</u>	<u>27,703</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

8. TANGIBLE FIXED ASSETS *(Continued)*

Company	Land €'000	Plant & fittings €'000	Computer equipment €'000	Motor vehicles €'000	Habitats €'000	Total €'000
Cost:						
At 1 January 2022	191	2,307	1,170	337	33,219	37,224
Additions	-	127	130	91	3,450	3,798
Disposals	-	-	-	(38)	-	(38)
Reclassification	-	<u>(47)</u>	<u>47</u>	-	-	-
At 31 December 2022	<u>191</u>	<u>2,387</u>	<u>1,347</u>	<u>390</u>	<u>36,669</u>	<u>40,984</u>
Depreciation:						
At 1 January 2022	-	2,017	1,163	287	17,109	20,576
Charge for financial year	-	76	48	30	2,661	2,816
On disposals	-	-	-	(38)	-	(38)
Reclassification	-	<u>(1)</u>	<u>1</u>	-	-	-
At 31 December 2022	-	<u>2,092</u>	<u>1,212</u>	<u>279</u>	<u>19,770</u>	<u>23,354</u>
Net Book Value:						
At 31 December 2022	<u>191</u>	<u>294</u>	<u>134</u>	<u>111</u>	<u>16,899</u>	<u>17,630</u>
At 31 December 2021	<u>191</u>	<u>290</u>	<u>7</u>	<u>50</u>	<u>16,109</u>	<u>16,647</u>

(A company limited by guarantee and not having a share capital)

9. FINANCIAL ASSETS

Company

	2022	2021
	€'000	€'000
At beginning and end of financial year	<u>500</u>	<u>500</u>

The Society's financial asset comprises its investment in Fota Wildlife Park Limited ("Fota"), a company limited by guarantee. Fota is accounted for as a subsidiary undertaking as the Society is a member of Fota Wildlife Park Limited and has the power to appoint a majority of the Governors of the Fota Board.

Details in respect of Fota are set out below:

Name and registered office	Country of Incorporation	Principal activity
Fota Wildlife Park Limited	Ireland	Operation of a wildlife park
In respect of prior financial year	2022	2021
	€'000	€'000
At beginning and end of financial year	<u>500</u>	<u>500</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

10. STOCKS

	Group		Company	
	2022 €'000	2021 €'000	2022 €'000	2021 €'000
Shops	370	229	203	105
Consumables	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>
	<u>394</u>	<u>253</u>	<u>227</u>	<u>129</u>

11. DEBTORS

	Group		Company	
	2022 €'000	2021 €'000	2022 €'000	2021 €'000
Trade debtors	491	492	466	456
Prepayments and other debtors	473	393	309	287
VAT	36	12	-	-
Amounts due from subsidiary	-	-	-	-
	<u>1,000</u>	<u>897</u>	<u>775</u>	<u>774</u>

(A company limited by guarantee and not having a share capital)

12. CREDITORS (Amounts falling due within one year)

	Group		Company	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Trade creditors	1,821	1,785	1,685	1,579
Accruals	618	710	423	503
Deferred income	3,812	3,782	2,744	2,806
PAYE/PRSI	276	247	228	185
VAT	<u>185</u>	<u>261</u>	<u>184</u>	<u>261</u>
	6,712	6,785	5,264	5,334
Lemur fund	<u>12</u>	<u>12</u>	<u>12</u>	<u>12</u>
	<u>6,724</u>	<u>6,797</u>	<u>5,276</u>	<u>5,346</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

13. GOVERNMENT GRANTS DEFERRED CREDIT

	Group	
	2022	2021
	€'000	€'000
Grants received:		
At beginning of financial year	3,865	835
Received during the financial year	<u>3,000</u>	<u>3,030</u>
At end of financial year	<u>6,865</u>	<u>3,865</u>
Amortisation:		
At beginning of financial year	587	584
Amortised to income and expenditure	<u>230</u>	<u>3</u>
At end of financial year	<u>817</u>	<u>587</u>
Net book amount	<u>6,048</u>	<u>3,278</u>

The total funding received to date of €200,000 from SECAD is subject to terms and conditions and if these are not adhered to, SECAD reserves the right to deem the contract to be invalid and all grant aid shall be immediately repayable. Government grants will be amortised over the same period as the related asset is depreciated. The related assets came into use in FY22 with additional funding received in 2022 relating to assets not yet in operation. Funding received in 2022 (Dublin Zoo 2022 OPW Grant – Society House, Amur Tiger Habitat, Walkway repairs and IT infrastructure, Fota Wildlife Park 2022 OPW Grant – Education, Conservation & Research Centre) and 2021 (Dublin Zoo 2021 OPW Grant – Red Panda and Snow Leopard Habitat, Assisted Toilet, Muck Heap and smaller capital works, Fota Wildlife Park 2021 OPW Grant – Monkey House 9, Howlers and Pelicans Habitats, Columbian Black Monkey House and Habitat and Southern Seawall Flood Protection).

14. RETIREMENT BENEFIT SCHEMES

Group

Defined contribution scheme

The Group operates a defined contribution retirement benefit scheme for all qualifying employees. The total expense charged to income and expenditure in the financial year ended 31 December 2022 was €173,866.00 (2021: €223,000).

Defined benefit pension scheme

The Group operates a defined benefit pension scheme. Pension costs for the defined benefit pension scheme members are assessed in accordance with the advice of independent qualified actuaries using the projected unit method.

The most recent actuarial valuation of the Group's pension scheme was carried out as at 1 April 2022.

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

14. RETIREMENT BENEFIT SCHEMES *(Continued)*

The financial assumptions used to calculate the value of the defined benefit pension scheme's liabilities under FRS 102 are:

	2022	2021
	%	%
Rate of general increase in salaries	3.4	2.5
Rate of increase in pensions in payment	0.0	0.0
Discount rate of scheme liabilities	3.65	1.5
Inflation	<u>2.80</u>	<u>1.9</u>

Mortality

No mortality table used pre-retirement (all members assumed to survive to NRA). Post-retirement tables used are 62% PNML 00 (Males) and 70% PNFL 00 (females) plus allowance for future mortality improvements.

Expected Lifetime

The expected lifetime of a participant who is aged 65 and the expected lifetime (from the age 65) of a participant who will be aged 65 in 25 years are shown in years below based on the above mortality tables

AGE	Males	Females
65	23.9	25.0
65 in 15 years	<u>25.8</u>	<u>26.5</u>

(A company limited by guarantee and not having a share capital)

Pension Asset

Amounts recognised in the income and expenditure account in respect of the defined benefit pension scheme is as follows:

	2022 €'000	2021 €'000
Current service cost	(41)	(47)
Net interest income	<u>5</u>	<u>2</u>
	<u>(36)</u>	<u>(45)</u>
Recognised in other comprehensive income	<u>279</u>	-
Total charge relating to defined benefit scheme	<u>243</u>	<u>(45)</u>

The amount included in the balance sheet arising from the group's obligations in respect of its defined benefit retirement scheme is as follows:

	2022 €'000	2021 €'000
Fair value of assets	2,616	3,934
Present value of defined benefit obligations	(2,382)	(3,477)
Asset Ceiling	<u>(234)</u>	<u>(178)</u>
Net asset recognised in the balance sheet	-	<u>279</u>

In assessing the carrying value of the defined benefit asset, the Directors have assessed what value is recoverable by the company in the foreseeable future. On that basis, the value of the asset has been reduced to €Nil.

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

14. PENSION ASSET *(Continued)*

Movements in the fair value of scheme assets were as follows:

	2022 €'000	2021 €'000
At 1 January	3,934	4,401
Contributions	49	-
Benefits paid	(93)	(91)
Expected return on pension scheme assets	-	-
Actual return less expected return on pension scheme assets	<u>(1,274)</u>	<u>(376)</u>
At 31 December	<u>2,616</u>	<u>3,934</u>

Movements in the present value of defined benefit obligations were as follows:

	2022 €'000	2021 €'000
At 1 January	3,477	4,030
Service cost	41	47
Interest cost	40	28
Benefits paid	(93)	(91)
Actuarial gain	<u>(1,083)</u>	<u>(537)</u>
At 31 December	<u>2,382</u>	<u>3,477</u>

(A company limited by guarantee and not having a share capital)

The analysis of the scheme's assets at the balance sheet date was as follows:

	Fair value at 31 December 2022 €'000	Fair value at 31 December 2021 €'000
Equities	-	-
Bonds	2,616	3,934
Property	-	-
Other	-	-
Total market value of assets	<u>2,616</u>	<u>3,934</u>

Company

Defined contribution scheme

Dublin Zoo operates a defined contribution retirement benefit schemes for all qualifying employees. The total expense charged to income and expenditure in the financial year ended 31 December 2022 was €130,775 {2021: €142,000}.

Defined benefit scheme

Dublin Zoo participates in The Zoological Society of Ireland Employee Benefits Plan, a defined benefit scheme which includes employees of both Dublin Zoo and Fota Wildlife Park Limited (Fota). The net defined benefit asset/cost and contributions have been allocated based on an estimate of final pensionable salary of the employees of both Dublin Zoo and Fota.

Amounts recognised in the income and expenditure account in respect of the defined benefit pension scheme is as follows:

	2022 €'000	2021 €'000
Current service cost	(41)	(47)
Net interest income	<u>5</u>	<u>2</u>
	<u>(36)</u>	<u>(45)</u>
Recognised in other comprehensive income	<u>167</u>	-
Total charge relating to defined benefit scheme	<u>131</u>	<u>(45)</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

14. PENSION ASSET *(Continued)*

The amount included in the balance sheet arising from Dublin Zoo's obligations in respect of its defined benefit retirement scheme is as follows:

	2022 €'000	2021 €'000
Fair value of assets	1,570	2,360
Present value of defined benefit obligations	(1,429)	(2,086)
Asset Ceiling	<u>(141)</u>	<u>(107)</u>
Net asset recognised in the balance sheet	-	<u>167</u>

Movements in the fair value of scheme assets were as follows:

	2022 €'000	2021 €'000
At 1 January	2,641	2,557
Contributions	-	-
Benefits paid	(56)	(63)
Expected return on pension scheme assets	-	-
Actual return less expected return on pension scheme assets	<u>(764)</u>	<u>147</u>
At 31 December	<u>1,821</u>	<u>2,641</u>

(A company limited by guarantee and not having a share capital)

Movements in the present value of defined benefit obligations were as follows:

	2022	2021
	€'000	€'000
At 1 January	2,418	2,310
Service cost	25	32
Interest cost	24	23
Benefits paid	(56)	(64)
Actuarial (gain)/loss	<u>(650)</u>	<u>117</u>
At 31 December	<u>1,761</u>	<u>2,418</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

15. FINANCIAL INSTRUMENTS

The carrying values of the Group's financial assets and liabilities are summarised by category below:

	2022 €'000	2021 €'000
Financial assets		
Measured at undiscounted amount receivable		
Trade debtors (Note 11)	<u>491</u>	<u>492</u>
	2022 €'000	2021 €'000
Financial liabilities		
Measured at undiscounted amount payable		
Trade payables (Note 12)	<u>1,821</u>	<u>1,785</u>

The carrying values of the company's financial assets and liabilities are summarised by category below:

	2022 €'000	2021 €'000
Financial assets		
Measured at undiscounted amount receivable		
Trade debtors (Note 11)	466	456
Amount due from subsidiary (Note 11)	-	31
	2022 €'000	2021 €'000
Financial liabilities		
Measured at undiscounted amount payable		
Trade and other payables (Note 12)	<u>1,685</u>	<u>1,579</u>

(A company limited by guarantee and not having a share capital)

16. CASH FLOW STATEMENT

Reconciliation of operating surplus to cash generated by operations

	2022	2021
	€'000	€'000
Operating (deficit)/surplus	1,329	3,576
Depreciation of tangible fixed assets	3,533	3,515
Amortisation of government grants	(230)	(3)
Decrease/(increase) in stocks	(141)	(50)
Decrease / (increase) in debtors	(103)	(227)
(Decrease)/increase in creditors	<u>(73)</u>	<u>1,848</u>
Cash generated by operations	<u>4,315</u>	<u>8,665</u>

Analysis of movement in net funds

	At beginning of year	Cashflows	At end of year
	€'000	€'000	€'000
Cash at bank and in hand	15,404	1,833	17,237
Bank loan	-	-	-
Net funds	<u>15,404</u>	<u>1,833</u>	<u>17,237</u>

THE ZOOLOGICAL SOCIETY OF IRELAND

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022 *(Continued)*

17. COMMITMENTS AND CONTINGENCIES

	2022	2021
	€'000	€'000
Authorised and contracted for commitments	9,898	-
Authorised but not contracted for commitments	<u>500</u>	<u>3,000</u>

18. TAXATION

No liability to taxation arose during the financial year as the Society is exempt from corporation tax.

19. POST BALANCE SHEET EVENTS

No post balance sheet events noted.



(Above) West African crocodile



*(Above) Humboldt penguin
(Far right) Red howler monkey*