

# PAST PRESIDENTS OF THE ZOOLOGICAL SOCIETY OF IRELAND

# Presidents of the Zoological Society of Ireland\*, 1833 to 1837, and 1994 to date; and the Royal Zoological Society of Ireland, 1838-1993.

Sir Philip Crampton*	1833	Sir Frederick Moore	1917-21
The Duke of Leinster*	1834	Sir Robert H. Woods	1922-26
Captain Portlock*	1835-36	Prof. A. Francis Dixon	1927-31
Sir Philip Crampton	1837-38	Sir William Taylor	1932-33
The Archbishop of Dublin	1839-40	Lord Holmpatrick	1934-42
Sir Philip Crampton	1841-42	Dr. R. Lloyd Praeger	1942-43
The Archbishop of Dublin	1843-44	Capt. Alan Gordon	1944-50
Sir Philip Crampton	1845-46	Prof. John McGrath	1951-53
The Duke of Leinster	1847-48	Dinnen B. Gilmore	1954-58
Sir Philip Crampton	1849-50	G.F. Mitchell	1959-61
The Marquis of Kildare	1851-52	N.H. Lambert	1962-64
Sir Philip Crampton	1853-54	G. Shackleton	1965-67
Lord Talbot of Malahide	1855-56	Prof. P.N. Meenan	1968-70
Sir Philip Crampton	1857-58	Prof. J. Carroll	1971-73
Doctor D.J. Corrigan	1859-63	A.E.J. Went	1974-76
Viscount Powerscourt	1864-69	Victor Craigie	1977-80
The Earl of Mayo	1870-71	Alex G. Mason	1981-83
Earl Spencer	1872-74	Aidan Brady	1984-86
J.W. Murland	1875-78	John D. Cooke	1987-89
Sir John Lentaigne C.P.	1879-84	Padraig O Nuallain	1990-91
Rev. Dr. Haughton F.R.S.	1885-89	Prof. David J. McConnell	1992-93
Sir Robert Ball F.R.S.	1890-92	Prof. David J. McConnell	1994-95*
Dr. Samuel Gordon	1893-97	Joe McCullough	1996-98*
Field Marshal Earl Roberts	1898-1902	Sean Cromien	1998-2001*
Prof. D.J. Cunningham F.R.S.	1903	Michael O'Grady	2001-04*
Earl of Dudley	1904-05	Barry Murphy	2004*
Rt. Hon. Jonathon Hogg D.L.P.C.	1906-10	Michael MacNulty	2005-08*
Sir Charles Ball	1911-15	Derek McCleane	2008-11*
W.E. Peebles	1916	Margaret Sinanan	2011-14*
		Tom Dunphy	2014*

# LETTER FROM THE PRESIDENT

Dear Member.

The Council of the Zoological Society of Ireland (ZSI) presents the 23rd Annual Report, together with the consolidated audited financial results of Dublin Zoo and Fota Wildlife Park, for the year ended 31st December 2016.

I am delighted to report that the significant progress of both our locations in Dublin and Fota in recent years has continued, and we had a combined record number of over 1.6 million visits.

Our financial results benefited from this great support from our visitors resulting in record income of €19,432,000 and a record surplus of €2,837,000.

The success has enabled Council to continue a high level of investment in both our sites. A total of €5,068,000 was invested in habitat and facilities expansion and improvement. The major investments were in the Orangutan Forest in Dublin and the Indian Lion habitat in Fota. This level of investment was a significant challenge for our executive management and their teams and I want to thank them for their very successful management of these complex projects. The reports of the Directors of Dublin Zoo and Fota Wildlife Park, Leo Oosterweghel and Sean McKeown – will detail the progress made in the continued enhancement of animal habitats, visitor experience and staff facilities in their respective locations.

Many of our habitats are now of the standards that modern world-class zoos must aim for if they are to achieve the levels of protection of endangered species, animal wellness and education programmes that are necessary for wildlife conservation in a world where

wildlife populations continue to fall at alarming rates. The ZSI Council is committed to continuing the progress achieved to date in animal welfare, ethical standards, conservation, health and safety and staff working conditions with special emphasis on sustainability and efficiency of resource utilisation. Our continued success is dependent upon providing a memorable experience for our visitors and an education programme that increases the awareness of wildlife, the dangers it faces and the important roles that zoos and wildlife parks play in its protection.

Medium and long-term investment plans, driven by the vision of Leo and Sean, are underway to continue the progress made at Dublin Zoo and Fota Wildlife Park to further advance the high reputation enjoyed by both.

The excellent results at both locations of the Zoological Society of Ireland could not have been achieved without our outstanding employees and volunteers. Their dedication and commitment are truly appreciated by the Council and acknowledged by our visitors through personal and social media feedback.

As I will complete my three years of presidency later this year, I want to say what a privilege it has been for me. I would like to thank my colleagues on the Zoological Society of Ireland Council and the Board of Governors of Fota Wildlife Park for their dedication and commitment to the success and sustainability of both locations, and for their support so generously given to me.

**Tom Dunphy President** The Zoological Society of Ireland



# NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that an Annual General Meeting of the Zoological Society of Ireland will be held at 6pm on Thursday, 14th September 2017 in Haughton House at Dublin Zoo, Phoenix Park, Dublin 8, for the following purposes:-

### Agenda

- Adoption of minutes of the Annual General Meeting of the Zoological Society of Ireland held on Thursday 15th September 2016
- 2. Receiving the Annual Report of Council
- 3. Receiving the Annual Report of the Honorary Treasurer and the Consolidated Audited Financial Statements of the Zoological Society of Ireland
- 4. Appointment of auditors
- 5. Declaration of Council President



#### Notice of Election

Pursuant of Article 37 of the constitution of the Society, notice is given that the following persons have been duly nominated to fill vacancies on the Council:

Martin O'Grady
Dorothy Kilroy
Ann Keenan
Jim McMonagle
Under the constitution of the society, the following
members are retiring from the Council at the forthcoming
AGM:

Margaret Sinanan Dorothy Kilroy Martin O'Grady

John Sweeney Company Secretary Zoological Society of Ireland Registered Office: Phoenix Park, Dublin 8



# **DUBLIN ZOO: DIRECTOR'S REPORT**

The opening of Dublin Zoo's Orangutan Forest was the major event in 2016. The new habitat is inspired by the tropical rainforests of Borneo, the orangutans' natural environment. It is five times bigger than the orangutans' old home in Dublin Zoo and extends to 1,300 square metres. The innovative habitat features nine giant rainforest trees, each between seven and twelve metres high, and made with concrete and steel with a natural finish. Six of the trees have an Irish-designed-andfabricated internal elevator to carry food to the top of the tree. The food elevators are activated by the animal care team using a remote control. This provides the apes with unexpected and random stimuli. Lianas (black ropes) hanging from the branches encourage them to climb up the trees to find the food and cables between the trees allow them to cross from one to another.

The Orangutan Forest also features a new meandering island that is 80 metres long and 20 metres wide. The apes access the island by crossing over the visitors' path using cables connected to the trees. Now the Bornean

orangutans and siamang gibbons can exercise their natural arboreal behaviours as they climb the trees and move from treetop to treetop along the cables.

Houthoff Zoo Design, a Rotterdam-based company, created the giant trees. Mario Campos of Jones & Jones Architects and Landscape Architects in Seattle assisted with the design of the habitat. The entire project was completed on schedule and within budget.

In May, prior to the opening, the orangutans and siamang gibbons settled in quickly despite the fact that the two species, both native to Southeast Asia, had never shared the same space in Dublin Zoo before. Both species





established new daily routines whilst exploring the habitat. The incentive of being able to find food high up in the trees works well and a very significant increase in climbing behaviour has been observed.

An aviary for the endangered citron-crested cockatoos is another small part of the Orangutan Forest.

On 8 June, the opening of the Orangutan Forest took place in sunny weather with several hundred invited guests. It was opened by the winner of a children's poetry competition, Ruth Breen from Burnchurch National School in Kilkenny, who read her poem beautifully. The media were well represented and the orangutans were in excellent form. There was extensive media coverage including a 20-page supplement in the Irish Independent. That weekend, Dublin Zoo took to the streets of the city for an orangutan weekend packed with fun and education

on South King
Street. At the
Zoo, extra keeper
talks took place
as well as keeper
meet-and-greets,
face painting, a
pop-up shop and
a biofacts display.
Money raised for
the Orangutan
Foundation in
Borneo was a
very impressive
€18,872.12.

A brief behavioural study was conducted on the Dublin Zoo orangutans by Kelli Howard, MSc. The recommendation was to connect additional trees with ropes to encourage more arboreal activity.

There were major changes in the Western lowland gorilla troop in 2016. In April, two hand-reared, 4-year-old gorillas were received from Wilhelma Zoo, Stuttgart, Germany. Female Vana and male Tebogo were born at Wuppertal Zoo, Germany, and transferred for hand-raising to Stuttgart at an early age. Stuttgart is the dedicated zoo in the German region for hand-raising great apes, which is a last resort when everything else fails. The decision to transfer these animals to Dublin Zoo was based on the quality and experience of the Dublin Zoo animal care team, the size and quality of the Gorilla Rainforest and, above all, the tolerant and accepting nature of the Dublin Zoo silverback, Harry. Prior to the transfer, keepers Brendan Walsh and Yvonne McCann visited the Stuttgart Zoo to familiarise themselves with the gorillas. The transport was flawless and two German keepers travelled with the gorillas and stayed at Dublin Zoo for a week to ensure they settled in.





Then in May, Harry the silverback died suddenly of a stroke. He was born in Frankfurt Zoo in 1986 and arrived at Dublin Zoo in 1995. He was a gentle and calm gorilla. During his time in Dublin Zoo, Harry fathered two females and four males. The

outpouring of sympathy, grief and support for Harry and the Dublin Zoo team was unprecedented in the history of the Zoo. The press coverage was huge and the Dublin Zoo Facebook post was seen by more than 1.4 million people within 24 hours. Western lowland gorilla Lena, who was Harry's mate of 21 years and was close to giving birth, became more assertive and the troop continued to display harmonious behaviour. University College Dublin student Antonia Cremin, BSc, studied the gorilla group. Drawing on data before and after the death of the silverback, her study found that the impact of the loss

of the silverback was not significant. In July, gorilla Lena gave birth to a male, Kitoko. She is a very experienced mother and, despite the loss of Harry, all went very well. In August, Kituba, a young Dublin-born male gorilla, died after an illness, despite the very best veterinary care.





In February, seven males and one female grey wolf arrived from Osnabrück Zoo in Germany. They are young, healthy and well-adjusted animals and, after several weeks, were introduced to the established Dublin wolf pack. It is interesting to note that the Osnabrück wolves howl at a much higher pitch than the Dublin wolves.

In July, there was the significant birth of seven healthy African painted dogs. The female dug a very deep burrow and was not seen for weeks while she gave birth and suckled her pups. All of the pups thrived and became part of the impressive and harmonious pack of 11 animals.

In preparation for the start of the new Zoorassic World development, most of the birds in the Roberts House were moved to other zoos in Britain and Denmark. In April, all Chilean flamingos were caught and had their feet inspected. A very significant improvement in their feet was noticed now that they are standing on high-quality mud at Flamingo Lagoon. In December, the highly pathogenic H5N8 strain of bird flu was reported in Ireland. Humboldt penguins, waldrapp ibis, blue peafowl and the Chilean flamingo colony were moved indoors where they could

not have contact with wild birds that might carry the strain.

An important event during the year involved the move of a Dublin Zoo-bred female red-ruffed lemur to Madagascar as part of a breeding program. The female is to play an important part in the reintroduction of this species into the wild



In August, southern white rhinoceros Ashanti gave birth to a healthy male calf. The newborn is Ashanti's fifth calf, and the birth and parental care were excellent. The calf was successfully introduced to the herd of six animals in the African Savanna. After a public competition, he was named Zuko, which means 'glory' in the Zulu language. It is estimated that there are 20,000 southern white rhinoceros in the wild; poaching for rhino horn is the most significant threat to the wild population. Dublin Zoo financially supports the conservation organisation Lowveld Rhino Trust, which is based in Zimbabwe and helps to protect rhinos from poachers. In September, the Zoo hosted Rhino Awareness Weekend with many activities for families.

In June, the aging, non-breeding pair of Sumatran tigers were transferred out of Dublin Zoo. This has created more space for the breeding pride of Asian lions. An Asian lioness was moved to Helsinki.

Other significant births included a female scimitar-horned oryx, two male Goeldi's monkeys, a male white-faced saki, three Sulawesi crested macaques, a red-ruffed lemur, Tamworth pigs and waldrapp ibis. Moves included a female white-naped mangabey to Duisburg, Germany. Deaths included a female oryx, a female Rothschild giraffe, a female Amur tiger who died as a result of multiple tumours, a female white-naped mangabey and a female painted dog.

In July, Dublin Zoo was inspected by the Department of Arts, Heritage and the Gaeltacht under the European Communities Regulation, 2003 (S.I. No. 440 of 2003). The report was excellent and no additional conditions were

noted on the report. Dublin Zoo's operating licence has been renewed.

# **Elephants**

On the evening of 19 September, Asian elephant Asha gave birth to a female calf while surrounded by the entire herd. After approximately 10 minutes, the calf attempted to walk. The calf was observed drinking on numerous occasions but there were disappointing moments when Asha did not allow the calf to drink. Supplementary feeding through the protected contact wall ensured that the calf did not lose condition but staved hungry enough to approach Asha for milk. The elephant calf was called Zinda, a name suggested by Michaela Brogan. This is Asha's first calf and the fourth calf born in Dublin Zoo in the past four years. Asha, daughter of Bernhardine, was the first elephant calf born at Dublin Zoo. Asha's calf is the fourth generation of zoo-bred Asian elephants. According to studbook keeper Harald Schmidt at Rotterdam Zoo, this is a world's first.

Husbandry processes for the elephant calves made excellent progress, especially with regard to trunk washes that provide test samples. International elephant expert Alan Roocroft visited Dublin Zoo to assist with the conditioning of the calves. All procedures took place under protected contact and the calves walked away from their mothers to be inspected.

Protocols and procedures to deal with an outbreak of elephant herpes were revisited and written up. In June, scientific testing of elephant blood and trunk fluids for the Elephant Endotheliotropic Herpes Virus (EEHV) was carried out by scientist Erin Latimer of the

Smithsonian Institute in the United States, working with the Irish Equine Centre in Kildare. This is an important development because in the near future all testing will be done within Ireland, saving time and expense.

Dublin Zoo has now reached maximum capacity as a result of a very successful breeding programme. A forward plan for Asian elephants has been discussed with the animal care team and the European Association of Zoos and Aquaria (EAZA) species coordinator. It is proposed to split the herd vertically and move female Yasmin; her daughter, Anak; and their two calves, Ashoka and Kavi, to another suitable zoo that is willing to continue the Dublin Zoo elephant management tradition of protected contact. Matriarch Bernhardine, her daughter, Asha; and their calves, Samiya and Zinda; and the breeding bull, Upali, will remain in Dublin

In August, Dublin Zoo was cited in a WAZA magazine about the future of zoo and aquarium design. Former Jones & Jones employee Julia Hanuliakova researched and wrote an article titled 'Wellness Inspired Design for Elephants'. The Kaziranga Forest Trail featured prominently in this article. Once again, the entrance has been very busy with a record 1,143,904 visitors in 2016. This year, the tickets featured Sibu, the male orangutan.



# ANIMAL WELLNESS AND ETHICS

Animal wellness, ethics and our responsibilities towards the animals continue to be at the heart of our work at Dublin Zoo. In April, the Zoo received a questionnaire from EAZA about the practice of pinioning birds. Dublin Zoo terminated this practice in 2013 and was one of the first zoos to do so. Also in April, the BBC broadcast a programme titled 'Should we close zoos?' as part of the Horizon series. The programme raised many questions and generated large media interest. It featured on the popular Channel 4 programme Gogglebox, which brought the subject to the attention of a wider audience. The Gogglebox exposure prompted a response from the British and Irish Association of Zoos and Aquariums (BIAZA) with reference to the euthanasia of animals in zoos.

At the end of April, a Norwegian zoo, Kristiansand Dyrepark, killed a healthy zebra and fed the headless body to the tigers. Once more, the killing of a healthy animal in a zoo became international news. In May, Susan Hunt, the recently elected president of the World Association of Zoos and Aquariums (WAZA) and CEO of Perth Zoo, Australia, and Jenny Gray, chairman of the WAZA Welfare

Committee, wrote a letter to colleagues titled: 'Are vou operating a good zoo or aquarium?' They referred to two strategies recently launched by WAZA, 'Committing to conservation' and 'Caring for wildlife'. Concerning the second strategy, they stated that, 'Everyone who chooses to work in a zoo or aquarium accepts the responsibility to care for animals and is compelled to act in the best interests of these animals.' They also announced the first WAZA Welfare Conference, which will be held in 2017. They concluded their letter by stating, 'Good zoos and aquariums develop strong connections and emotional bonds between people and animals... Good animal welfare is the foundation of our operations and platform from which we can deliver our unique and important conservation role.' Dublin Zoo noted with interest a public statement by Susan Hunt in 2014 following the killing of Marius the giraffe in Copenhagen Zoo; she is quoted as saying that 'Euthanasia is seen as an absolute last resort and only where an animal's welfare is compromised.' This is similar to the policy of the Zoological Society of Ireland, which is to always let our animals live out their lives, as long as their quality of life is not compromised.

#### 'Wellness' in zoos

Animal wellness is key to what we do in Dublin Zoo. The concept of 'wellness' is now being applied to animal care in zoos, especially with regard to elephants. In his article titled 'Elephant wellness: the care of Asian elephants (Elephas maximus) in Dublin Zoo as a model for the future', Discovery and Learning teacher Dr Shane McGuinness states, 'Across various developments in the keeping of elephants specifically, 'wellness' has emerged, representing

a combination of biology and psychology which facilitates expression of wild-type group dynamics under protected contact husbandry conditions.' Julia Hanuliakova, in an article in WAZA Magazine, v. 17, 2016, also defines the concept: wellness, she states, 'is more than being free of illnesses and well cared for, it is a dynamic process of change and growth that involves a sense of beauty, achievement, responsibility and personal fulfilment.' Hanuliakova's article uses Dublin Zoo and Zurich Zoo to illustrate the concept.

### **ENTRANCE AND RETAIL**

The use of online ticketing, mainly by families, continued to rise, increasing by 10 per cent. The Meridian EPOS booking system for groups, introduced in 2016, made group handling more efficient, especially during the busy school season in spring and early summer. Discovery and Learning department administrator Christine O'Connor was instrumental in its design and tailoring to ensure that its efficiency was optimised.

The retail shop enjoyed another successful year, with sales rising by 7%. Two years ago, the layout of the shop at the main entrance was changed and the number of stands reduced. The changes have made a big difference: the shop is less cluttered, there is easy access for parents with buggies, and children can easily find items on which to spend their discretionary budget.

In response to demand for Dublin Zoo-branded merchandise, this range has increased with a wide selection in the lower price bracket. It includes soft toys, key rings, mugs and stationery. A montage of our more famous animals is used on branded merchandise, including the return-to-school range of pencils, rubbers, rucksacks, water bottles, magnets, notebooks of different sizes and lunch boxes. The price range is €3.50 to €5.50 and is proving to be very popular. Zoo-branded chocolates are also on sale.

In 2016, the focus was on the orangutans with notebooks, T-shirts, pencils, rulers, coasters and magnets featuring Sibu. In the month following the opening of the Orangutan Forest, a pop-up shop was placed there on busy days during keeper talks. The shop was extremely successful. T-shirts were very popular and the keepers

were often asked to sign them.

Besides Dublin Zoo-branded merchandise, merchandise from three other suppliers is also on sale. The Nature Planet is a Fairtrade company and a percentage of the profits from its range goes to Plan International. The other two suppliers are Millers Ark and Dowman; both are British companies that cater to shops in many zoos and animal parks.

With the new book corner, sales in books have increased over the last two years by over 60 per cent. A wider selection is available in in the shops and the highest demand is for reference books for young people and books about baby animals. The T-shirts, introduced in 2015, are also popular, especially with American visitors. The montage is used on these and the Zoo offers sizes from small to extra-extra large.

Artist Anthony Wyatt continues to provide sketches of the animals, which are used as pictures in frames in two sizes, and on magnets and key rings. When Harry the silverback gorilla died, there was a massive demand for images of him.

The online shop grew by 25 per cent. Gift cards, adoption packages, the Dublin Zoo history and 'The Zoo' television series on DVD are the main sellers.

# **Catering**

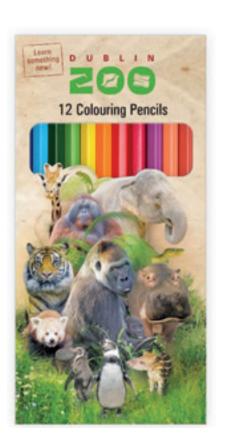
2016 was another great year in Dublin Zoo for BaxterStorey. The Cove food outlet is proving to be very successful. Thirty new, green picnic tables were purchased to increase seating capacity. On a sunny day, The Cove outperforms the Meerkat Restaurant. The opposite is true

during inclement weather.

BaxterStorey provided the catering at the official opening of the Orangutan Forest in June. The good weather allowed the caterer to set up buffet points outside. Guests were greeted with iced teas and homemade lemonades followed by trays of hot and cold Asian-themed canapés.







# MAINTENANCE AND DEVELOPMENT

The first half of 2016 was dominated by the construction and completion of the Orangutan Forest. Other significant projects included work on the cottage ornée, the original entrance lodge which dates from 1833 and was in a delicate condition. As part of the work, the thatch was fully restored. The Asian lion habitat landscape was changed significantly with the creation of a dry river bed and the addition of a giant tree so that the river bed can be crossed. Copious planting also took place.

Building work on Zoorassic World started in October. This will be located in the historic Roberts House, which opened in 1902. The roof was replaced and the bricks were cleaned and pointed. Throughout this process, the original brick, wood and steel works were respected. Experts included a conservation architect, an architect/engineer who advised on sustainability and insulation, designers of habitats for a variety of living reptiles, and specialists in the field of exhibition design and interpretation. Mario Campos of Jones & Jones Architects and Landscape Architects visited regularly to assist with the design.

# **Health and Safety**

Dublin Zoo carried out a Health and Safety report with Willis Insurance in July 2016 for comparison with the 2013 report. The five key elements have all improved, including structures, safety management documentation and site practices. In particular, progress has been made in the development and implementation of a proactive Safety Management System. Dublin Zoo is putting together a three-year forward plan with Health and Safety consultant John Munro. Training and strategy are key components and the ultimate aim is to generate a cultural change that

ensures best practice.

Dublin Zoo has conducted a thorough audit of all roads, footpaths and steel manhole covers to identify trip hazards and reduce risks. This audit will be translated into an action plan with a Spring 2017 completion deadline. Two emergency response drills were undertaken before the start of the busy season. The Zoo team's response was judged to be excellent.

In July, a child was lifted over the stand-off fence at the southern white rhinoceros habitat. Pictures appeared on social media followed by the print media. Dublin Zoo has clearly communicated house rules about adult supervision of children at the Zoo at all times. The response on social media was huge and the public were highly critical of the adult accompanying the child. Dublin Zoo is confident that it provides a safe environment for all visitors who adhere to the rules, which are clearly displayed at the entrance.





# **HORTICUITURE**

A mild winter followed by a wet summer made 2016 a very good growing year. Some of the shrubs, especially Escallonia resinosa grown from cuttings in the Dublin Zoo nursery and planted along the stream at Sea Lion Cove, grew very quickly to two metres. The team considered cutting them back but decided that they were firm enough to leave. The Flamingo Lagoon planting also grew exceptionally well with the willows hitting the mesh roof after two growing seasons. The giant reed Arundo donax reached four or five metres, which is one year's growth from a now-well-established root system. Some plants grew too well. These included the hawthorn hedge, alongside the farm meadow, which became so tall that it was pruned by hand three times and, in late autumn after the bird-nesting season, the height was reduced by half.

The Orangutan Forest was the main effort during the spring. It was very complicated as so much of the work was done near water with limited access. Many days were spent in a boat trying to get pockets of water-loving Iris pseudoacorus and Carex pendula – both vigorous native plants – established in between the rocks. The well-tested system of securing water-edge planting with bundles of birch twigs kept most of them safe from nesting swans, erosion and changes in the water level. When the orangutans returned to their new habitat, they respected the bulk of the planting on the new island but fully stripped the new plants on their original island.

In the revamped Asian lion habitat, large root-balled specimens of Hawthorn Crataegus x lavalleei were planted and, it is hoped, will give the right appearance of the lions' natural habitat, in time. Large numbers of thorny Crataegus monogyna and Hippophae rhamnoides were

planted as small, cheap whips to discourage the lions from scratching and destroying the trees. Following the use of plastic reinforcement mesh under an urban soil mix in the okapi habitat, the same work was carried out in the bongo habitat where a small demonstration area laid three years ago had proved effective. This system, developed in-house, protects tree roots and prevents the poaching which leads to soggy, water-logged grass and compaction. Grass should reestablish itself in the bongo habitat during the next growing season as it has in the okapi habitat. The opportunity was taken to plant four new trees here, Tilia x europaea 'Pallida'. These replaced several trees that had died due to soil compaction. Protection with large pieces of cut holly was essential to reduce the potential for damage by the bongo.

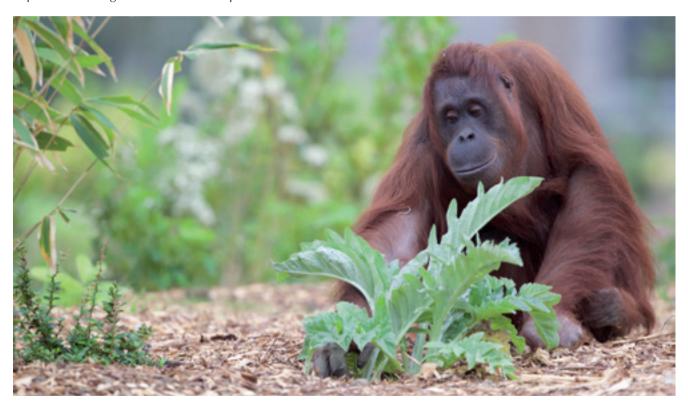
The horticulture nursery, opened in 2011, again proved very useful. In 2016, apart from the usual deliveries and holding of plants, the team grew 1,000 home-grown Luzula sylvatica, a native wood rush that survives well in challenging shady dry conditions, such as under trees or bamboo. The plant had already been used through parts of Sea Lion Cove, but the autumn saw bulk planting along the main road of the Kaziranga Forest Trail, where overarching bamboo has made grass growth impossible. A further 2000 Luzula sylvatica have been grown from seed for planting in a year or so. Equally useful will be the 600 Moraea huttonii, also grown from seed from one plant in the African Savanna, a good replacement for many of our Libertia, which are becoming old and worn out.

Tropical rainforests host an array of epiphytic plants growing on the tree branches. Several years ago, Dublin

Zoo bought 200 Fascicularia bicolor, an epiphytic bromeliad, which were planted onto small mats of netting. This year, these were big enough to try on the trees in the Gorilla Rainforest. Time was spent securing them in cavities, on large branches, in forks in the branches, and on a large fallen tree.

Dublin Zoo hosted a meeting of the BIAZA Plant Working Group steering committee, of which the Zoo has been a member for many years, with our main input being Unit 9 Principles of Horticulture in Zoos and Aquaria for the Diploma in Management of Zoo and Aquarium Animals within BIA7A

Curator of Horticulture Stephen Butler attended the regional meeting of Plant Heritage at Antrim Castle, Northern Ireland, and gave two talks, one each to the Cork and Mullingar garden clubs. Both talks were well attended. Many people in the audiences had not been to the Zoo for years and were not aware of the vast changes in recent times. As always, attendance at the joint EAZA/BIAZA Zoo Horticulture Conference at Bristol Zoo gave ideas for landscaping and examples of clever plant use.



# DISCOVERY AND LEARNING

The year 2016 was busy for Discovery and Learning. There was an eight per cent growth in demand for inhouse curriculum-linked programmes and a 29 per cent growth in demand for informal education programmes. Formal education programmes continued to book to capacity from March to June and September to mid-December (except for ASTI strike days, which took place in October and November).

At the primary school level, Dublin Zoo enjoyed another healthy season with 4,731 students and teachers taking part in a taught programme with Dublin Zoo educators. During May and June, 10,002 students and teachers booked school tours. Four staff members took tours and delivered talks on the lawn. Volunteers supported them with a warm 'Meet and Greet' welcome at the groups' gate and supported the talks on the lawn with biofact tables.

Additionally, 12,618 secondary school students booked a course with our teaching team. Zooardship and Biodiversity, both of which are classes linked to the Civic Social and Political Education (CPSE) junior cycle curriculum, saw the biggest growth in secondary programming.

There were numerous new initiatives in informal education programmes during the year. These included 'Meet the Monkeys' workshop, which took place in February to celebrate the Chinese New Year of the Monkey. Thirty young students, 6 to 12 years old, learnt about the monkeys at Dublin Zoo and took part in an enrichment activity with the animal care team.

The 'Design your Habitat' workshop for secondary school students was held again in 2016 as part of Science, Technology, Engineering and Maths (STEM) education during Engineers Week in March and as part of Science Week in November. This year, the students addressed principles of design, engineering and animal care for orangutans. They were encouraged to come back to Dublin Zoo to visit the new habitat. The workshop received fantastic feedback from the secondary schools.

The Parent and Toddler programme grew in 2016 with two sessions running per morning every second Wednesday of the month from February to June and September to October. Sessions sold out quickly and there were long waiting lists. Beth Routledge led the group with the assistance of another volunteer. On 13 and 14 April, Dublin Zoo and Early Childhood Ireland (ECI) hosted 'Habitat Days' at the Zoo for ECI members with 141 pre-school children, parents and other adults attending. Volunteers and teaching staff coordinated play activities, talks and classes on Family Farm and at the Flamingo Lagoon. The highlight of the day was the keeper talk and sea lion training at Sea Lion Cove. The Zoo also participated in the ECI conference at Croke Park on 14 and 15 April. There was a lot of interest in the Dublin Zoo pre-school programmes and Parent and Toddler sessions.

The Dublin Zoo Kids Club was a new initiative to encourage 8-12 year-olds to learn more about Dublin Zoo animals and conservation. Fifteen participants, who met once a month from April to October, were given a specially designed T-shirt and a 'passport' in which they recorded new knowledge. The programme was designed by the teaching team, and volunteers supported

the delivery. Many keepers took part with enrichment activities and special feeds to educate the budding zoologists. It was a huge success with a very high level of in-depth learning. Volunteers enjoyed the new element to their involvement in informal programming at Dublin Zoo.

The spring and autumn day camps had a good uptake with 41 campers visiting over two days in March and 80 more during the mid-term break in autumn, double the number of the previous year. Campers also prepared enrichment for our animals and learnt about the life of a zoologist.

Five week-long Summer Camps took place in July and August with 76 children ages 6 to 12 attending each week. The campers were based in the expedition tents at Camp Kaziranga and Camp Congo, and at the Farmhouse and Society House. The children participated in a wide range of fun and exciting workshops, which gave them the chance to use their creativity and imagination while learning about animals, habitats and conservation. The theme of this year's camps was 'sustainable planet'.

Teacher Jim McMonagle retired from his outreach duties in the Discovery and Learning Department. In 2016, he visited 42 schools and six libraries, and spoke to 10,203 pupils and teachers. This initiative began seven years ago and has done wonders in promoting the work of Dublin Zoo, the Zoo's education programmes and conservation issues. It has generated many direct school bookings and specific requests for tours by 'Zoo Man' Jim. Jim continues as a part-time educator in the department. A new position, Outreach and Education Officer, was initiated.

In February, Aileen Tennant, Discovery and Learning manager, attended the Walton Initiatives/Arizona State University Sustainability Fellowship in Phoenix, Arizona, USA. The programme was delivered by experts in sustainability and it addressed various aspects of sustainability, such as the psychology of behaviour change, systems thinking and sustainable environmental activities. It was attended by 24 other heads of education from science and natural history museums in 11 countries. Throughout the week-long programme, participants reflected on their own institutions and identified ways to engage visitors in sustainability education. A \$3,000 stipend was provided to aid implementation of a sustainability education programme in Dublin Zoo and ongoing assistance is provided by the sustainability team at Arizona State University.

In preparation for the new Discovery and Learning building, which is scheduled to open in 2018, the Discovery and Learning team visited their colleagues at Bristol Zoo to familiarise themselves with one of the more progressive facilities in the BIAZA region.

In April, the winner of the poetry competition 'Wouldn't it be interesting to have a tail?' was announced on social media and the Dublin Zoo website. A poem by Hagar Soliman, 11, of Kanturk, Co. Cork, was selected from the 361 entries. As part of the prize, she was invited to visit the Zoo with her class in June. In May, 1,100 Catholic Girl Guides of Ireland completed a very successful educational scavenger hunt. Volunteers supported the event.

In July, the annual Primary Teachers Summer Course was held with 60 participants. All spaces sold out fast. The

criteria for the application to the Department of Education and Skills as a Summer Course Venue were more rigorous in 2016 because venues were being signed off for three consecutive years. The application was rewritten this year to incorporate a greater emphasis on school self-evaluation. Dublin Zoo's application was successful and remains one of the strongest face-to-face course venues in Ireland. During the course, a visioning exercise was used to support teachers in evaluating their own school environment. This learning technique was adapted from a version used at the Sustainability Fellowship in Arizona State University.

In April, an important collaboration between St. Patrick's College of Education and Dublin Zoo was established. As part of the third-year Science Education module, students visited the Zoo. Their assignment was to design a science-based lesson for primary schools visiting the Zoo. Each



group presented their final lesson to the Discovery and Learning team. The preparation and standard of each lesson was excellent with a lot of great ideas for zoo-based lessons. This initiative encourages future teachers to be aware of the huge educational opportunities at Dublin Zoo.

Three double-page articles featured in INTO's InTouch magazine, which is delivered to 39,000 teachers around Ireland. The April edition included a poster of orangutan male Sibu. Dublin Zoo also provided the beautiful illustrations of the orangutans and gibbons created by artist Cathy Callan.

#### Volunteers

In 2016, the volunteer programme peaked at 100 volunteers. They delivered 2,982 shifts (19 per cent growth over 2015 figures) providing fun and educational opportunities to visitors through themed events, tours and general out-and-about duties. Wild Cat Weekend was organised and delivered solely by volunteers and was one of the many highlights of the year.

In May, 30 Dublin Zoo volunteers went on a day trip to Fota Wildlife Park where Lynda McSweeney and her team hosted the special visit and gave them a tour of the new Asian Lion Sanctuary. Three members of the Discovery and Learning team accompanied them.

# **Family Farm**

Elizabeth Finnegan delivered numerous activities focused on agriculture at Family Farm in 2016. Pre-school programmes delivered in May and June increased in number this year.

In May, Agri Aware hosted the finalists of a National Strawberry Week Competition at Family Farm. The summer schedule got under way in June and Family Farm was very busy at weekends. Activities celebrated Irish traditions and there were blacksmith demonstrations. basket weaving, hurley making, and displays of farm antiques and traditional farming. The Farmhouse and garden were opened at weekends and led by two young farmers with a biofacts table to further the educational experience for visitors to Dublin Zoo. 'Meet the Farmer' took place during weekends throughout July with great interest shown from visitors. Each Tuesday in July, the Agri Aware teacher and the two young farmers facilitated workshops for the Zoo summer camps. On 3 July, a patrons' day event was held with Irish produce on display in the Farmhouse. The lawn was packed with families enjoying a band playing from the balcony in Haughton House. On 25 September, Family Farm was busy once more with the Harvest Festival. The Farmhouse was decorated to fit with the harvest theme and visitors met with craftsmen and women from various backgrounds to learn about calligraphy labelling, rope-making, and the spinning and weaving of wool.

On 3 July, Dr Vanessa Woods resigned from her position as CEO of Agri Aware to move to a new position elsewhere. Vanessa had driven the publicity and activities at Family Farm for five years, resulting in a number of awards and visits from European Union commissioners to Dublin Zoo. During her time as CEO, she secured four consecutive EU bids to communicate the Common Agricultural Policy.



### **MARKETING**

The year 2016 was extremely busy for the marketing team at Dublin Zoo. New arrivals, the opening of Orangutan Forest, strategic promotions and seasonal events led to plenty of opportunities to activate a number of great marketing and PR campaigns throughout the year. The total PR value for 2016 amounted to €5,543,580 and this does not include the extensive coverage online, through social media or arising from 'The Zoo' television series.

Media releases were issued to announce the arrival of 66 newborns. These announcements led to extensive coverage across all media and included news features and interviews on RTÉ, TV3 and TG4 television stations; interviews with the animal care team on radio stations across Ireland; and many articles in print and online media. The most prominent media coverage during 2016 involved the opening of the Orangutan Forest; the births of the rhinoceros calf, the Asian elephant calf, the gorilla baby and the African painted dogs; the arrival of the wolves and the death of Harry the gorilla.

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In May, the Irish Independent launched a poetry competition for primary schoolchildren, the winning entry to be read at the opening of the Orangutan Forest. In June, the marketing team and the Irish Independent produced a 20-page supplement to celebrate the

opening of the Orangutan Forest which was distributed with every copy of the newspaper on Saturday 11 June (150,000 copies). The Irish Independent also promoted the supplement on television, radio and social media, and sent 3,300 copies to primary schools. That same weekend, Dublin Zoo took to South King Street in Dublin for an orangutan weekend packed with fun and educational activities. There were also week-long promotions on 98FM and 2FM. Additionally, 98FM did an outdoor broadcast at the Zoo on Sunday 12 June to promote the Orangutan Forest.

Many aspects of life in the Zoo were featured in print and broadcast media during the year. For example, in November, the Irish Times Magazine featured a story about the food eaten by the animals at Dublin Zoo. The double-page spread focused on the orangutans, lions and macaques. A portrait of Sibu made the front cover of the magazine. The feature story was also promoted on the mast-head of the main newspaper. The Irish Times promoted the article online via its website and social media



Other media features included an interview in February by the Director with Richard Curran and Conor Brophy for the RTÉ programme 'The Business' about the success of Dublin Zoo. The Director also gave an interview with Fora.ie, which is part of The Journal.ie, and an interview with Newstalk for a radio documentary about the Phoenix Park. Helen Clarke Bennett did an interview about the Dublin Zoo gorilla troop on 'Mooney Goes Wild' on RTÉ Radio 1. In October, she also did an interview with science journalist Anthony King from The Irish Times about carnivore conservation supported by Dublin Zoo with a particular focus on the African painted dogs. And in December, the Sunday World interviewed keepers Susan O'Brien and James Creighton about working over Christmas

In March, RTÉ commenced screening 10 episodes of 'The Zoo'. Aer Lingus screened 'The Zoo' on their trans-Atlantic flights as part of their choice of programmes. In October, RTÉ news filmed various animals at the Zoo for World Animal Day on 4 October.

Four editions of 'Zoo Matters' were produced and mailed to annual pass holders. 98FM tweeted that they were very excited about receiving the summer edition of 'Zoo Matters' and shared that with 140,000 followers.

In February and again in September, Dublin Zoo and the Irish Daily Mail collaborated to produce two 16-page magazines called Zoo Mail, which were inserted into the paper. The magazines were packed with content about Dublin Zoo and its animals, and included a two-for-one promotion. Readers were also offered the chance to collect a series of five posters featuring photos taken by



photographer Patrick Bolger. With a print run of nearly 130,000 copies, Zoo Mail had a value of €221,600. The Daily Mail filmed an advert to promote the magazines, which ran as a preroll advertisement on YouTube as well as on Daily Mail social media. Banner advertisements

also ran on Mail Online and Evoke.ie.

In March, all key media contacts received VIP cards as a sign of appreciation for their continued support. In August, Dublin Zoo hosted a hugely successful, early-morning wake-up event for key bloggers who target young Irish mums. Media and blogger events were also held for the opening of the Orangutan Forest as well as for Christmas and an exclusive 'Wake up with the Elephants' morning, all building relationships and driving extensive media coverage.



The biggest promotion of the year was with An Post; during April, advertisements for the Zoo featured in every post office and on post boxes around the country. Also in April, Dublin Zoo collaborated with Disney and Movies@Cinemas for the launch of 'The Jungle Book' movie. Large posters of Dublin Zoo's orangutan



Sibu were featured in cinemas nationwide to promote a competition. Everyone who bought a ticket for the movie got a card prompting them to log onto the Dublin Zoo website to enter the competition. During the summer, Dublin Zoo took part in a nationwide promotion with McDonald's.



A number of strategic promotions ran during off-peak months. During February, a monthlong promotion to win family passes aired every Saturday on Today

FM on 'The Alison Curtis Show' (147,000 listeners). In April, there was a week-long Child Goes Free promotion with The Star. In the same month, there was a two-forone promotion with The Irish Times; this included a full page in the weekend magazine, three further adverts in the paper, display advertising on Irishtimes.com and an email to their 120,000 subscribers to promote the offer.

In September, Dublin Zoo initiated a special promotion for visitors over 50; the 'Senior Safari' on 30 September was very successful and the feedback was very positive. In November, a Kids Go Free promotion ran for two weeks with excellent online coverage of the offer. As a result of the promotion, 9,075 tickets were booked online.

During the year, it was considered time to look to other potential markets for growth beyond the domestic market. Using Fáilte Ireland's information, secondary research was carried out to gain insight into key markets that Dublin Zoo could tap into cost effectively. Search engine optimisation will become a high priority to ensure Dublin Zoo has a high profile for British and Northern Irish customers searching for places to visit in Dublin. On 6 and 9 April, market research was conducted with 150 visitors from these regions.

With the growing prominence of online and social media, Dublin Zoo created a new position within the marketing team in 2016 to focus completely on these areas. During 2016, there were 5,358,023 page views on the Dublin Zoo website. The top three geographical visitors to the Zoo website were Ireland with 688,754 visits, the United Kingdom with 192,508 visits and the United States with 33,938 visits. Other countries that registered a large number of visits were Germany, France, Canada, the Netherlands, Spain, Russia and Italy.

Social media remained a core communication channel for Dublin Zoo, with Facebook being its strongest. Dublin Zoo's Facebook page grew by 35,195 followers in 2016 and by year's end had 264,251 followers. The death of Harry, the silverback gorilla, generated the biggest level

of engagement. The Facebook post announcing his death reached over 1.7 million people! A picture taken in the Phoenix Park by one of Dublin Zoo's Facebook followers and posted the day after the announcement of Harry's death reached 391,896 people.

There was also huge engagement online around the launch of the Orangutan Forest. Drone footage taken by Moondance Productions of the Orangutan Forest reached 456,167 people with 59,508 viewing the video. Other popular videos included footage of the elephant calf birth in September on Facebook, which reached 1,326,981

people and was viewed by 448,459 people, and footage of the elephant calves playing, which reached 620,787 people and was viewed by 88,643 Facebook users. A video of Dublin Zoo's elephant calves playing with Upali was another huge hit; it reached 786,517 people and was viewed 77.044 times.

Dublin Zoo's Twitter account grew steadily and by the end of the year had 27,001 followers, a growth of 3,420 over the previous year. Dublin Zoo's Instagram following also grew, with 17,101 followers by year's end.



### **Events**

2016 was another very successful year for events in Dublin Zoo with most business coming via word of mouth, repeat business and social media. The five public BBQs, which were attended by 1,000 people in total, sold out in a week, while the four early morning visits for annual pass holders sold out online in under 10 minutes. 'Wake up with the Elephants', held in February, was the first of these and was a great success. The Orangutan Forest, the Sea Lion Cove and the Asian lions featured on subsequent mornings. Social media proved to be very powerful when promoting these events.

There were 131 birthday parties with a total of 2,250 people in attendance. All available slots were booked out a month in advance. Corporate events also remained strong with 60 events and more than 6,000 people attending. Conferences, workshops, and corporate family and team-building days were held for companies, including Lidl, A & L Goodbody, Facebook, Hertz, VHI and DHL.

In February, Dublin Zoo hosted its first wedding showcase. Sixty pre-registered couples attended. Valentine's Date Mornings were held on the 13 and 14 February with 140 couples in attendance. A record 17 weddings were held in 2016 with a total of 1,300 people attending.

Seasonal events for visitors took place throughout the year at key times, such as St Patrick's Day, Easter and Halloween. Other events included Greenfest, Elephantastic Weekend, Teddy Bear's Picnic and Senior Safari. The Santa Grotto was very popular again with 2,556 children visiting, 564 more than in 2015. The Events team coordinated the official opening of Dublin Zoo's newest habitat Orangutan Forest on 8 June, which was followed up by a special orangutan weekend in Dublin Zoo on 11 and 12 June.



# CONSERVATION AND RESEARCH

In September, Dublin Zoo transferred a 3-year-old, Dublin Zoo-born, female red-ruffed lemur to her native country of Madagascar. This female, along with a male from the French Zoo La Palmyre, will form the start of a breeding programme. Dublin Zoo is also providing financial support for a feasibility study into a reintroduction programme in northern Madagascar. This project is coordinated by Madagascar Primate Study and Research Group (GERP), in collaboration with the red-ruffed lemur European Endangered Species Programme (EEP).

In June, Rowan Sharp of the Orangutan Foundation gave a talk to the Dublin Zoo team about the foundation's work in Kalimantan, and attended the opening of the Orangutan Forest. Money raised from a major fund-raising drive for the Orangutan Foundation was a very impressive €18,872.12. Dublin Zoo gave an additional €5,000 from the conservation budget. The money will support the foundation's work in Lamandau Wildlife Reserve in Borneo

During 2016, Dublin Zoo commissioned scientist Lorraine Bull to research the products used and sold at Dublin Zoo containing palm oil. The ultimate aim is to produce recommendations for procurement. She produced a very detailed report, and a strategy for the entire Zoo to reduce the use of palm oil is being developed.

In January, Harry Hilser, programme manager of Selamatkan Yaki, gave a presentation in Dublin Zoo on the work of his organisation in Sulawesi to protect the critically endangered Sulawesi crested macaques. Dublin Zoo has been supporting Selamatkan Yaki since 2010. In February, team leader Helen Clarke-Bennett gave a presentation in Dublin Zoo about her visit to the Mbeli Bai Study in the Congo in 2015. The Mbeli Bai Study is engaged with research and conservation activities for Western lowland gorillas. Dublin Zoo has been supporting the Mbeli Bai Study since 2010. In May, representatives of Painted Dog Conservation, a conservation project in Zimbabwe that Dublin Zoo has been supporting, visited the Zoo. In September, Marissa Niranjan, director of Zoo Programs at the Snow Leopard Trust, gave a presentation to the Zoo team on the Trust's work. Dublin Zoo has been supporting the Snow Leopard Trust since 2009 and has contributed a total of €26,243.

September 24-25 was 'The Rhino Weekend' and the Zoo held an awareness and fund-raising event for visitors. Educators, keepers and volunteers all worked together to make the weekend a success. Keepers Ken Mackey and Eric McClure pedalled push bikes for a hundred kilometres and raised more than €2,000 for rhinoceros conservation in Zimbabwe. The same month, Natasha Anderson, rhino monitoring coordinator at the Lowveld Rhino Trust in Zimbabwe, gave a talk to the Zoo team on the work of the Trust, which Dublin Zoo has been supporting since 2009. Dublin Zoo was mentioned as a major contributor in the Save the Rhino magazine of autumn 2016.

To mark Earth Day, Dublin Zoo hosted a new event called Greenfest on 23-24 April. A selection of Irish organisations joined forces for a weekend of discovery and learning in celebration of Ireland's wildlife. Visitors learned about the planet we live on, sustainability, native wildlife, composting, wind turbines and where our food comes from. Ten organisations that advocate Irish wildlife

and/or sustainability set up stalls in a large marquee or in the Farmhouse in Family Farm. These included The Irish Wildlife Trust, BirdWatch Ireland, The National Museum of Ireland, The National Dairy Council, Bord Bia and Galway Atlantaquaria. There were plenty of hands-on activities and conversations about conservation. Agri Aware highlighted sustainable food practices in Family Farm and the volunteers set up lots of fun activities about native wildlife in the Roberts House.

A Conservation and Research Committee meeting took place at Dublin Zoo in June with representatives of Belfast Zoo and Fota Wildlife Park in attendance. The meeting included a talk about the decline of the lapwing in Ireland by Kieran Buckley of the Irish Grey Partridge Conservation Trust, who thanked Dublin Zoo and Fota Wildlife Park for their support over the years in helping to conserve grey partridge, red grouse and lapwing.

A scientific paper has been published in Conservation Genetics titled 'Adaptive and neutral genetic differentiation among Scottish and endangered Irish red grouse (Lagopus lagopus scotica)'. This research was partly funded by Dublin Zoo and is aiding decision making on red grouse conservation in Ireland.

In December, Dublin Zoo received a report from the National Reptile Survey, which it supports financially. In 2016, there was great engagement with the general public in the public sightings scheme. Over 250 reptile sightings were sent in and a wealth of data on lizard distribution was gathered. Initial interpretation of these results points to a healthy population of common lizards in the coastal regions of Ireland.

In December, an update was received from the Bongo Surveillance Project (BSP), which Dublin Zoo supports. An evaluation of more than 1,000 camera-trap photographs was undertaken to identify individuals. The largest groups of bongo are now in the Aberdares and Maasai Mau forests. The camera traps revealed some interesting behaviours of wild bongos. The BSP also completed some initial surveys in forests they had not visited before. These areas have bongo food and a history of bongo but unfortunately did not reveal bongo present now. Most of these forests, which are not national parks, were showing much human intrusion and activity. Ongoing community work involved meeting with community elders and providing additional employment and income-generating opportunities. They also continued to work with schools through the bongo wildlife clubs.

In April, the Director visited one of the last remaining elevated bogs in the Netherlands, National Park de Groote Peel, covering 30,000 hectares. Visitor activities and a very eco-friendly visitor centre were of particular interest. In December, Dublin Zoo donated €10,000 to the Irish Peatlands Conservation Council. This funding was placed in a special account and can only be used to buy peatland of high conservation concern.

International conservation projects supported by Dublin Zoo in 2016

- Mbeli Bai Study (Western lowland gorillas), Congo Wildlife Conservation Society
- Tacugama Chimpanzee Sanctuary Community Outreach Programme, Sierra Leone
- Lamandau Wildlife Reserve and Camp JL (Borneo) Orangutan Foundation

- WAPCA West African Primate Conservation Action (includes conservation of white-naped mangabeys) – Ghana
- Selamatkan Yaki EARS (Education and Awareness Raising Strategy) to save the Sulawesi-crested macaques, Sulawesi, Indonesia
- Golden Lion Tamarin Association, Brazil
- Conservation planning for Asian elephants in Assam, India – Asian Nature Conservation Foundation
- Lowveld Rhino Trust Save the Rhino
- Lowland Tapir Conservation Initiative, Brazil
- Mountain Bongo Surveillance Project, Kenya
- Rothschild's Giraffe Project, Kenya Giraffe Research and Conservation Trust
- Okapi Conservation Project, Democratic Republic of Congo
- Scimitar-horned oryx reintroduction programme in Tunisia
- Snow Leopard Trust (various Asian range countries)
- PRNCO (Primorskii Regional Non-commercial Organization) Tiger Centre, Russia (assistance with the purchase of a portable X-ray machine) – Amur Leopard and Tiger Alliance
- Painted Dog Conservation, Zimbabwe
- Red Panda Forest Guardian Programme, Nepal Red Panda Network
- Sphenisco, Peru and Chile (Humboldt penguins)
- Thailand Hornbill Project Hornbill Research Foundation (includes conservation of great hornbills)
- Jana Robeyst Trust Fund
- Frozen Ark Project
- Conservation Breeding Specialist Group
- Irish conservation projects supported by Dublin Zoo in 2016

- Irish Peatlands Conservation Council
- Owl monitoring and research project BirdWatch Ireland
- Northern lapwing research Irish Grey Partridge Conservation Trust
- Little Tern conservation at Baltray Louth Nature Trust
- National Reptile Survey Irish Wildlife Trust
- Nest record scheme Monitoring nest-boxes for wild birds within Dublin Zoo
- Monitoring moths within Dublin Zoo using a light trap
   Rothamsted Research

### TRAINING AND CONFERENCES

The Dublin Zoo team attended a wide range of relevant training sessions and conferences, locally and internationally. The following is a list of courses not included elsewhere in the report.

#### January

Keeper Susan O'Brien attended the EAZA Advanced Population Management course in Prague Zoo.

#### March

Operations Manager Gerry Creighton was invited by Professor Terry L. Maple, former director of Atlanta Zoo, to the first Elephant Wellness Workshop at Jacksonville Zoo, Florida, USA. Gerry gave a talk about the Dublin Zoo elephant care philosophy, which was very well received.

# **March and April**

Catherine de Courcy, Dublin Zoo historian, gave a presentation on the history of Dublin Zoo during the 1916 Easter Rising to the team and to the Council.

#### March

Team leader Helen Clarke-Bennett attended the Great Ape TAG mid-year meeting in Barcelona.

### April

Team leaders Helen Clarke-Bennett, Ciaran McMahon and Eddie O'Brien all attended a Sparsholt course on leadership at Twycross Zoo, UK. This course is part of a CMI diploma in zoo leadership.

# **April**

The horticulture team received training on the use of herbicides.

# **April**

The Director attended the EAZA Director's Day and council meeting on 15 April 2016, after being appointed the council member representing Ireland. There are 46 council members representing 28 countries.

# May

Sandra Molloy, Registrar/Research and Conservation Coordinator, attended the mid-year Bird TAG (taxon advisory group) meeting in Lagos, Portugal. Sandra cohosted the Parrot TAG meeting and gave a presentation on breeding white cockatoo species in EAZA institutions.

# May

The Dublin Zoo Firearms Team was re-certified following more training at the Midlands rifle range.

# June and July

The teaching team attended three stages of smelly biofact preparation training with the Director.

### July

Volunteers and the teaching team attended Autism Awareness training.

# July

Discovery and Learning teacher Dr. Shane McGuinness attended Child Protection Training with the National Youth Council

### **August**

Operations Manager Gerry Creighton contributed to a five-day conference on elephant management at Chester Zoo, UK.

### **September**

Stephen Butler, Curator of Horticulture, hosted a Horticulture Walk and Talk for volunteers and the education team. The Dublin Naturalist Field Club joined in this event, which proved to be a very worthwhile collaboration.

# **September**

Leo Oosterweghel, Director; Paul O'Donoghue, Assistant to the Director; Gerry Creighton, Operations Manager; Helen Clarke-Bennett, team leader; Ciaran McMahon, team leader; Sandra Molloy, Registrar/Research and Conservation Coordinator; Susan O'Brien, keeper, and Ken Mackey, keeper, attended the annual EAZA conference in Belfast. Sandra Molloy, who is also vice chair of the Parrot TAG (Taxon Advisory Group), cohosted the Parrot TAG meeting. Sandra also helped to host a workshop on how to improve the breeding of white cockatoo species in EAZA institutions.

#### October

An interview with Operations Manager Gerry Creighton appeared in the American publication of the National Elephant Herpesvirus Laboratory. The way Dublin Zoo cares for a herd of Asian elephants is explained in detail.

#### November

Dr. Shane McGuiness, Discovery and Learning teacher, gave a presentation to the Zoo team on the elephant wellness programme in Dublin Zoo.

#### November

Sandra Molloy, Registrar/Research and Conservation Coordinator, hosted a Skype conference call highlighting institutions successful with breeding white cockatoo species. The meeting was attended by 14 institutions in nine countries

#### RESEARCH

UCD student Antonia Cremin, BSc, produced a thesis titled 'Social changes in a Western lowland gorilla (*Gorilla gorilla gorilla*) troop following the loss of a silverback'. The findings were very interesting as comparisons were made between data before and after the death of Harry, the silverback. The study found that the impact of the loss of the silverback was not significant.

Keeper Pamela O'Brien investigated the efficacy of enrichment on reducing antagonistic behaviour in the large meerkat group in Dublin Zoo. Her findings were presented at the Regional Environmental Enrichment Conference organised by Shape of Enrichment in Fota Wildlife Park in May.

In September, Kelli Howard gave a presentation to the team about her research investigating the use of the Orangutan Forest by the Bornean orangutans and siamang gibbons and how both species were interacting. The orangutans were found to spend a much greater proportion of their time arboreal than noted in an earlier study that had been conducted when they were in their previous habitat.

In November, Dublin Zoo assisted the Irish Midlands Ringing Group with catching and colour ringing some of the swans residing at the zoo. This is part of a large research project investigating the swan population around Dublin

In addition to the named projects, Dublin Zoo participates in a wide range of multi-zoo collaborative research projects.

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McGuinness (in press). Elephant wellness: the care of Asian elephants (Elephas maximus) in Dublin Zoo as a model for the future. Proceedings of the Elephant Wellness Workshop, Jacksonville, Ohio, 2016.

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Sumerling, Patricia (2016) **Elephants and egotists: in search of Samorn of the Adelaide Zoo. Introduction by Leo Oosterweghel. Adelaide, Wakefield Press.** 

### **VISITORS TO DUBLIN ZOO, 2016**

#### March

Registrar/Research and Conservation Coordinator Sandra Molloy and keeper Susan O'Brien hosted two visitors from Belfast Zoo to discuss zoo population management. Both Sandra and Susan coordinate European zoo breeding programmes.

### **April**

The following visitors came to Dublin Zoo to familiarise themselves with the Zoo's elephant care programme: the director of Osnabrück Zoo, Germany, Prof Dr Böer and his team of elephant keepers; the chair of the Board of Houston Zoo, USA, Stacy Methvin; the Director of The Elephant Sanctuary in Tennessee; the Elephant Manager of Zoo Atlanta, Georgia; and the team leader of the Elephant Team of the National Zoo in Washington, D.C.

### Mav

American zoo designer Julia Hanuliakova paid Dublin Zoo a visit seeking input into an article she is writing about world best practice in elephant care. Julia has experience with designing habitats for wolves.

### lune

Director Darren Webster and the team from Blackpool Zoo and Ross Brown from Marwell Zoo's in the UK paid Dublin Zoo a visit to familiarise themselves with the way Dublin Zoo cares for elephants.

### Iulv

Lauren Booth, team leader, and Amy Robbins, keeper from Auckland Zoo, New Zealand, visited the Zoo to learn about Dublin Zoo's tiger management and the new facilities for Bornean orangutans.

### July

Recently appointed Mike Barclay, CEO of the five zoo experiences in Singapore, including the Singapore Zoo, paid Dublin Zoo a visit. Mike is interested in best practice of zoo habitat design and marketing. American colleagues encouraged Mike to visit Dublin Zoo.

### July

Sally Sherwan, PhD candidate at the University of Melbourne and employed by Zoos Victoria in Australia, visited Dublin Zoo. Sally studies and advises on animal wellness and behaviour in collaboration with the Animal Welfare Science Centre, Melbourne, the University of Queensland and the Australia Animal Welfare Strategy.

### July

Sarah Chapman, a veterinarian who advises the BIAZA elephant welfare group; Albert Paimes Palazuelo of Barcelona Zoo, and Pieter Giljam of Kolmarden Zoo all spent time observing and learning about elephant management at Dublin Zoo.

# **September**

The EAZA conference was held in Belfast this year and 600 to 700 delegates from 28 countries attended. More than a hundred of these delegates took the opportunity to visit Dublin Zoo before, during or after the conference. The Dublin Zoo team was very busy showing these overseas visitors around. Many of the visitors are eminent zoo professionals, including Dr Thomas Kölpin, director of Stuttgart Zoo; Fabian Smith, curator, and Prof Dr Jörg Junhold, director of Leipzig Zoo; Dr Christian Schmidt, the former director of Frankfurt Zoo; André Stadler, curator, Wuppertal Zoo; Erna Walraven, curator, Taronga Zoo; Dr Tom de Jongh, curator, Arnhem Zoo; Dr Matthias Reinschmidt, Karlsrue Zoo; Dr Koen Brouwer, zoo designer; Mark Craig, director Life Sciences, Al Ain Zoo; and Dr Eric van Vliet, zoo designer, to name but a few. Representatives from Chester Zoo, Knowsley Safari Park, Miami Zoo, Zurich Zoo, Zoo Olomouc, Disney Animal Kingdom, Kaunas Zoo, the Alpen Zoo, Innsbruck, Wroclaw Zoo and Sofia Zoo also visited. A delegation from Toronto Zoo and Wellington Zoo visited especially to see the Orangutan Forest. Feedback from the many delegates was very positive and Dublin Zoo's innovation, animal care and ethics were particularly commented on with approval.

# **September**

The welfare manager from World of Birds Foundation, the Netherlands, came to visit Dublin Zoo to learn about our bird management.

The director of Kleve Tiergarten, Germany, Dietmar Cornelissen, paid Dublin Zoo a visit and was impressed with Dublin Zoo.

### **Horticulture**

It is interesting to note that Dublin Zoo has started to attract regular visits from professional gardeners such as the Association of Members of the Kew Staff Past and Present. Their visit to Dublin Zoo in June 2015 was noted in the Journal of the Kew Guild, Volume 16, number 120. There were many other horticulture visitors during 2016. Cor van Gelderen (Esveld Nursery, Holland), Xiao Ying Xie and Xiaowei Ma (China) came with one of our nursery suppliers, Peter Stam (Stam Bamboo), as a pre-conference tour with the Garden and Landscape Designers Association. Seven Chinese students came around with UCD School of Horticulture. Eleven students came from Niagara Parks School of Horticulture, Ontario, Canada, with one teacher. The Irish Society of Botanical Artists enjoyed an evening tour, and three staff from Paignton Zoo came to see our landscaping, especially in the African Savanna.



#### **CENSUS OF ANIMALS IN DUBLIN ZOO DURING 2016**

# Summary of Census of Animals in Dublin Zoo on 1st January 2017

Taxon	Total Species	<b>Total Specimens</b>
Mammals	39	241
Birds	16	180
Reptiles	21	68
<b>Total vertebrates</b>	76	489
Invertebrates	9	91

\*Approximate numbers

# Summary of Births and Hatchings of Animals in Dublin Zoo during 2016

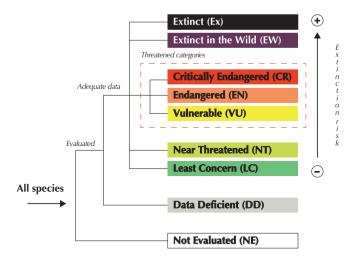
Taxon	Total Species	<b>Total Specimens</b>
Mammals	12	58
Birds	8	35
Reptiles	0	0
<b>Total vertebrates</b>	20	93
Invertebrates	6	2290

Summary of European Endangered species Programmes & European Studbooks which Dublin Zoo participated in throughout 2016

Number of European Endangered species Programmes (EEP)	32
Number of European studbooks (ESB)	10

# Summary of Animal Species on the IUCN Red List of Threatened Species in Dublin Zoo during 2016

IUCN status	Number of species/ subspecies
Extinct in the wild – EW	1
Critically endangered – CR	11
Endangered – EN	16
Vulnerable – VU	10
Near threatened – NT	8
Least Concern – LC	30
Data deficient – DD	1
Not Evaluated – NE	15

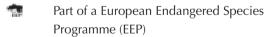


Source: Source: IUCN 2017. IUCN Red List of Threatened Species.

Version 2017-1 Available at: http://www.iucnredlist.org.

Downloaded on 01/06/2017.

#### **Key to Census Tables Opposite**



Recorded in a European studbook

**Column 1:** The number of animals in the collection at 1st January 2016.

**Column 2:** The number of animals received in 2016 through donation, loan or exchange.

**Column 3:** The number of animals born or hatched during 2016.

**Column 4:** The number of animals dying within 30 days of birth or hatching, in 2016

**Column 5:** The number of animals dying having survived more than 30 days, in 2016.

**Column 6:** The number of animals leaving the collection through donation, loan, exchange theft etc. during 2016.

**Column 7:** The number of animals in the collection at 1st January 2017.

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
O <sup>T</sup>	$\bigcirc$	?

This census does not include animals which have been sent on deposit to other collections, nor does it include several species, which generally breed well in the gardens, i.e. Coot, Moorhen, Grey Heron etc.

	CITES	IUCN Status	SPECIES		Total at 01.01.16	Arrivals	Births	Dead within 30 Days	Dead	Departed	Total at 01.01.17
			VERTEBRATES	VERTEBRATA							
			CLASS:MAMMALS	MAMMALIA							
			BATS	CHIROPTERA							
10	II/A	CR	Rodrigues flying fox	Pteropus rodricensis	1. 11. 0						1.11.0
			PRIMATES	PRIMATES							
ESB	I/A	EN	Ring-tailed lemur	Lemur catta	5. 3. 0						5. 3. 0
10	I/A	CR	Red ruffed lemur	Varecia rubra	4. 3. 0		1.0.0			0.1.0	5. 2. 0
13	I/A	VU	Goeldi's monkey	Callimico goeldii	2.3.0		0.1.0		1.0.0		2. 4. 0
	II/B	LC	Eastern pygmy marmosets	Callithrix pygmaea niveiventris	2.1.0						1. 1. 0
13	I/A	EN	Golden lion tamarin	Leontopithecus rosalia	1.1.0						1. 1. 0
13	II/B	LC	Bolivian squirrel monkey	Saimiri boliviensis boliviensis	7. 0. 0						7. 0. 0
10	II/B	LC	White-faced saki	Pithecia pithecia	3. 1. 0						3. 1. 0
13	II/B	EN	White-naped mangabey	Cercocebus atys lunulatus	4. 5. 0		1.0.1	1.0.1	0.1.0	1.0.0	3. 4. 0
ESB	II/B	VU	Red-capped mangabey	Cercocebus torquatus	4. 0. 0						4. 0. 0
13	II/B	CR	Sulawesi crested macaque	Macaca nigra	11. 8. 2		0.0.3				11. 8. 5
10	I/A	EN	Siamang	Symphalangus syndactylus	1. 1. 0						1. 1. 0
10	I/A	CR	Western lowland gorilla	Gorilla gorilla	2. 4. 0	1. 1. 0	1.0.0		2.0.0		2. 5. 0
ESB	I/A	EN	Chimpanzee	Pan troglodytes	2. 1. 0						2. 1. 0
13	I/A	CR	Western chimpanzee	Pan troglodytes verus	1.3.0						1.3.0
100	I/A	CR	Bornean orangutan	Pongo pygmaeus pygmaeus	1.3.0						1.3.0
			XENARTHANS	XENARTHRA							
ESB	NL	LC	Linne's two-toed sloth	Choloepus didactylus	1.1.0						1.1.0
			INSECTIVORES	INSECTIVORA							
	NL	LC	African pygmy hedgehog	Atelerix albiventris	1.0.0						1.0.0
			CARNIVORES	CARNIVORA							
	II/A	LC	Grey wolf	Canis lupus	3. 1. 0	7. 1. 0			1. 0. 0		9. 2. 0
13	NL	EN	Painted dogs	Lycaon pictus	3. 2. 0		2. 5. 0		0. 1. 0		5. 6. 0
13	I/A	EN	Red panda	Ailurus fulgens fulgens	1. 2. 0					1. 0. 0	0.2.0
	NL	LC	Slender-tailed meerkat	Suricata suricatta	11. 6. 0				1. 0. 0		10. 6. 0
13	I/A	EN	Asiatic lion	Panthera leo persica	2. 5. 0					0.1.0	2. 4. 0
1	I/A	EN	Amur tiger	Panthera tigris altaica	1. 2. 0				0.1.0		1. 1. 0

	CITES	IUCN Status	SPECIES		Total at 01.01.16	Arrivals	Births	Dead within 30 Days	Dead	Departed	Total at 01.01.17
13	I/A	CR	Sumatran tiger	Panthera tigris sumatrae	1. 1. 0					1. 1. 0	0. 0. 0
131	I/A	EN	Snow leopard	Uncia uncia	1.2.0		0. 0. 1	0.01			1. 2. 0
ESB	NL	LC	California sealion	Zalophus californianus	1.3.0						1. 3. 0
			ELEPHANTS	PROBOSCIDAE							
13	I/A	EN	Asiatic elephant	Elephas maximus	3.5.0		0.0.1				3.6.0
			ODD-TOED UNGULATES	PERISSODACTYLA							
	NL	NT	Common/Grant's zebra	Equus quagga boehmi	2.5.0						2.5.0
137	II/B	VU	South American tapir	Tapirus terrestris	1.2.0					0.0.2	1.2.0
137	I/A	NT	Southern white rhinoceros	Ceratotherium simum simum	2.4.0		1.0.0			1.0.0	3.4.0
			EVEN-TOED UNGULATES	ARTIODACTYLA							
13	NL	LC	Red river hog	Potamochoerus porcus pictus	3.6.0				1.0.0		2.6.0
ESB	II/B	VU	Hippopotamus	Hippopotamus amphibius	1.1.0						1.1.0
13	NL	VU	Giraffe	Giraffa camelopardalis	2.2.0						2.2.0
131	NL	EN	Baringo/Rothschild's giraffe	Giraffa camelopardalis rothschildi	3.3.0		1.0.0		1.1.0		3.2.0
137	NL	EN	Okapi	Okapia johnstoni	2.0.0						2.0.0
	III/C	NT	Blackbuck	Antilope cervicapra	1.4.0				0.1.0		1.3.0
133	III	CR	Eastern bongo	Tragelaphus eurycerus isaaci	1.3.0		0.1.0		0.1.0		1.3.0
137	I/A	EW	Scimitar-horned oryx	Oryx dammah	1.3.0	0.1.0			0.2.0		1.2.0
			DOMESTIC								
			Flemmish Giant rabbit	Oryctolagus cuniculus domestic flemish _giant	1. 0. 0				1. 0. 0		0. 0. 0
			Tamworth pig	Sus scrofa scrofa tamworth	1.1.0	0. 4. 0	15. 17. 4	0. 0. 4			5. 4. 0
			Friesian cow	Bos taurus taurus friesian	0.1.0	0. 1. 0	0. 1. 0			11. 18. 0	0.1.0
			Charolais cow	Bos taurus taurus charolais	0.1.0		0.1.0			0. 2. 0	0.1.0
			Small East African goat	Capra hircus domestic small_east_af- rican	0. 6. 0					0.1.0	0. 6. 0
			Cheviot sheep	Ovis aries aries cheviot	0. 0. 0	0.1.0					0. 1. 0
			Shropshire sheep	Ovis aries aries shropshire	0. 0. 0	0.1.0					0. 1. 0
			Suffolk sheep	Ovis aries aries suffolk	0. 4. 0	2. 4. 0					0. 1. 0
			Texel sheep	Ovis aries aries texel	0. 0. 0	0. 2. 0				2. 7. 0	0. 2. 0
			Labrador dog	Canis lupus familiaris labrador	0. 1. 0						0. 1. 0

	CITES	IUCN Status	SPECIES		Total at 01.01.16	Arrivals	Births	Dead within 30 Days	Dead	Departed	Total at 01.01.17
			CLASS:BIRDS	AVES							
			OSTRICHES	STRUTHIONIFROMES							
	NL	LC	Ostrich	Struthio camelus	1.7.0				0.1.0		1.6.0
			PENGUINS	SPHENISCIFORMES							
1	I/A	VU	Humboldt penguin	Spheniscus humboldti	7.6.3				0.1.0		7.5.3
			HERONS/STORKS	CICONIIFORMES							
	/A	LC	Little egret	Egretta garzetta	2.0.0						2.0.0
17	I/A	CR	Waldrapp ibis	Geronticus eremita	12. 11. 2		0.0.6	0.0.1	0.0.2		12. 11. 5
			FLAMINGOS	PHOENICOPTERIDAE							
	II/B	NT	Chilean flamingo	Phoenicopterus chilensis	41. 32. 9				0. 2. 0		41. 30. 9
			GALLINACEOUS BIRDS	GALLIFORMES							
	NL	LC	Helmeted guinea fowl	Numida meleagris	2.4.0		0.0.7	0.0.7			2.4.0
	III/C	LC	Common peafowl	Pavo cristatus	1.4.0		2.1.7		1.0.0	0. 0. 6	2.5.0
	NL	NT	Crested wood partridge	Rollulus rouloul	2.2.0		1.0.3	0.0.3		1. 1. 0	2.1.0
	NL	LC	Red junglefowl	Gallus gallus	1.0.0					1. 0. 0	0.0.0
			DUCKS/GEESE/SWANS	ANSERIFORMES							
	NL	LC	White-cheeked pintails	Anas bahamensis		3. 3. 0					3. 3. 0
			PIGEONS/DOVES	COLUMBIFORMES							
	I/A	NT	Nicobar pigeon	Caloenas nicobarica nicobarica	0. 2. 0					0. 2. 0	
9	III/C	EN	Pink pigeon	Nesoenas mayeri	1. 0. 0						1.0.0
	NL	LC	Green imperial pigeon	Ducula aenea aenea	0. 1. 0					0.1.0	
	NL	LC	Pied imperial pigeon	Ducula bicolor	4. 4. 0		0. 1. 1	0.0.1		4. 5. 0	
SB	II/B	NT	Victoria crowned pigeon	Goura victoria	1. 1. 0		0.1.0			1.2.0	
			PARROTS	PSITTACIFORMES							
	I/A	LC	Scarlet macaw	Ara macao	1. 0. 0					1. 0. 0	0. 0. 0
	I/A	VU	Military macaw	Ara militaris	1. 1. 0					1. 1. 0	0. 0. 0
SB	I/A	VU	Mexican military macaw	Ara militaris mexicana	5. 2. 0					4. 1. 0	1. 1. 0
100	I/A	CR	Citron-crested cockatoo	Cacatua sulphurea citrinocristata	0. 0. 0	2.2.0			1.0.0		1.2.0
			TURACOS/CUCKOOS	CUCULIFORMES							
SB	II/B	LC	Red-crested turaco	Tauraco erythrolophus	1.0.0		0.0.2	0.0.2		1.1.0	
			HORNBILLS ETC.	CORACIIFORMES							
8	I/A	NT	Great hornbill	Buceros bicornis	1.1.0						1.1.0
ESB	NL	LC	Abyssinian ground hornbill	Bucorvus abyssinicus	1.1.0						1.1.0

CITES	IUCN Status	SPECIES		Total at 01.01.16	Arrivals	Births	Dead within 30 Days	Dead	Departed	Total at 01.01.17
		PERCHING BIRDS	PASSERIFORMES				,			
NL	LC	Black-throated laughing thrush	Dryonastes chinensis	0.1.0				0.1.0		0.0.0
		DOMESTIC FOWL								
		Australorp chicken	Gallus gallus domestic australorp	2. 3. 0		2. 0. 1	0.0.1		6.0.0	4.3.0
		Sussex chicken (light)	Gallus gallus domestic sussex light	1. 2. 0				0.1.0		1.1.0
		Brahma bantem	Gallus gallus domestic brahma	0. 4. 0				0.1.0		0.3.0
		Rhode Island red chicken	Gallus gallus domestic rhode_is- land_red	0. 2. 0	0.1.0					0. 2. 0
		Indian runner duck	Anas platyrhynchos domestic indian_runner	1.1.0						1.1.0
		CLASS:REPTILES	REPTILIA							
		CHELONES	TESTUDINES							
II/B	CR	Annam leaf turtle	Mauremys annamensis	2.3.0						2.3.0
III/C	EN	Chinese three-keeled pond turtle	Mauremys reevesii	0. 0. 1						0. 0. 1
II/C	EN	Chinese stripe-necked turtle	Mauremys sinensis	1. 0. 0						1. 0. 0
NL	NE	Central America wood turtle	Rhinoclemmys pulcherrima manni	0. 2. 0						0. 2. 0
NL	LC	Yellow-bellied slider	Trachemys scripta scripta	0.1.2						0.1.2
NL	LC	Red-eared slider	Trachemys scripta elegans	0. 0. 8				0. 0. 3		0. 0. 5
II/B	NE	Red-footed tortoise	Chelonoidis carbonaria	1. 4. 0				0.1.0		1.3.0
II/B	VU	Star tortoise	Geochelone elegans	2. 3. 0						2.3.0
II/B	VU	African spurred tortoise	Geochelone sulcata	1. 1. 0						1.1.0
		CROCODILES	CROCODILIA							
I/A	LC	West African Crocodile	Crocodylus niloticus suchus	0.2.0						0.2.0
		LIZARDS	SAURIA							
NL	NE	Green crested lizards	Bronchocela cristatella	11. 4. 7				1. 0. 2		10. 4. 5
NL	DD	Forest dragon	Hypsilurus magnus	2. 0. 0						2. 0. 0
/D	NE	Asian water dragon	Physignathus cocincinus	2. 0. 0				1. 0. 0		1. 0. 0
NL	LC	Leopard gecko	Eublepharis macularius	0. 2. 0						0.2.0
NL	NE	Tokay gecko	Gekko gecko	1. 0. 0						1. 0. 0
II/B	LC	Mangrove monitor	Varanus indicus	0. 1. 0						0.1.0

CITES	IUCN Status	SPECIES		Total at 01.01.16	Arrivals	Births	Dead within 30 Days	Dead	Departed	Total at 01.01.17
		SNAKES	SERPENTES				,			
II/B	LC	Green tree python	Morelia viridis	1.0.0						1.0.0
II/B	VU	Burmese rock python	Python bivittatus	2.0.0						2.0.0
II/B	LC	Royal python	Python regius	0.0.3						0.0.3
/D	NE	King ratsnake	Elaphe carinata	1.1.0						1.1.0
NL	LC	Cornsnake	Elaphe guttata guttata	2.1.0						2.1.0
NL	LC	Common gartersnake	Thamnophis sirtalis	1.0.0						1.0.0
		INVERTEBRATES	INVERTEBRATA							
		CLASS:ARACHNIDS	ARACHNIDA							
		SPIDERS	ARANEAE							
NL	NE	Chilean rose tarantula	Grammostola rosea	0.2.0						0.2.0
		CLASS:INSECTS	INSECTA							
		STICKINSECTS	PHASMATOPTERA							
NL	NE	Jungle nymph	Heteropteryx dilatata	0. 0. 0	0. 2. 0			0. 1. 0		0.1.0
NL	NE	Spiny/Thorny stick insect	Trachyaretaon brueckneri	3. 3. 10		3. 2. 26	0. 0. 14	2. 3. 19		4. 2. 3
NL	NE	Leaf insect	Phyllium spp.	0. 0. 0	0. 0. 2	0. 0. 5		0. 0. 2		0. 0. 5
NL	NE	Indian green stick insects	Carausius morosus	0. 14. 0		0.1652. 0	0.1639.13	0. 13. 0		0. 14. 0
NL	NE	Magnus stick insect	Phoebaticus magnus	0.1.0		0. 25. 0	0. 14. 0	0.1.0		0. 11. 0
NL	NE	Macleays spectre	Extatosoma tiaratum	0. 2. 0		0.205.0	0.176. 0	0. 6. 0		0. 25. 0
NL	NE	Black beauty stick insect	Peruphasma schultei	5. 5. 2				0. 0. 2		5. 5. 0
NL	NE	Zompro's/Thai stick insect	Parapachymorpha zomproi	0. 9. 0		2. 364. 6	0.317. 6	2. 42. 0		0. 14. 0

<sup>\*</sup> approximate numbers

#### **DIRECTOR'S REPORT**

### **Asian Sanctuary Phase 3**

The Asian Lion Habitat, Phase 3 of the Asian Sanctuary, opened to the public in June 2016 and included the following:

- Lion House with 4 separate pens
- One large + one small outdoor pen
- Two viewing shelters for the public



During 2016, nine fourth-year student projects were completed in conjunction with the School of BEES, University College Cork.



The standout research project was the master's thesis of Juliana Damasceno entitled: Influence of environmental enrichment and enclosure size on the behaviour of wild cats in captivity.



Natterjack toad eggs and tadpoles were collected from a site in Kerry under the supervision of the NPWS and were taken directly to Fota. Over 80% of the eggs and tadpoles survived and

went through metamorphosis to the small toad stage. On the 25th July, forty of these young toads were transported to their release site in Kerry.

#### Introduction

Fota Wildlife Park had another successful year with the highest attendance figures since opening in 1983, despite the difficult weather conditions for the months of July and August. Additionally, the Wildlife Park experienced the highest monthly



attendances since opening for the off-peak months of February, March, October, November and December. Fota Wildlife Park remains the largest visitor attraction in the Southwest of Ireland with 465,281 visitors during 2016.

### Summary: 31st December 2016

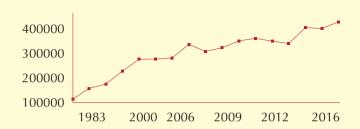
• Total visitor numbers as of 31st December 2016 were 465,281 compared to 436,386 for a similar period in 2015. The 2016 total is an increase of 28,895, or 7%,



- over the total for 2015.
- Membership sales in 2016 were up 9% for Park memberships and 12% for Conservation memberships when compared to 2015 levels.
- Attendance by members rose by 7% for those in possession of park membership and by 16% for those holding conservation membership.
- The number of full-rate-paying visitors increased by 4% in 2016 compared to the number in 2015. However, the number of 'under 3's and other 'frees' decreased by 2% and 11%, respectively, compared to 2015 levels.

- Total gate admission income was up 8% over the total for 2015.
- Gift Shop sales were up 5% and total visitor income was up 8% in 2016 compared to 2015 levels.

# Fota wildlife park annual attendances



### **Key**



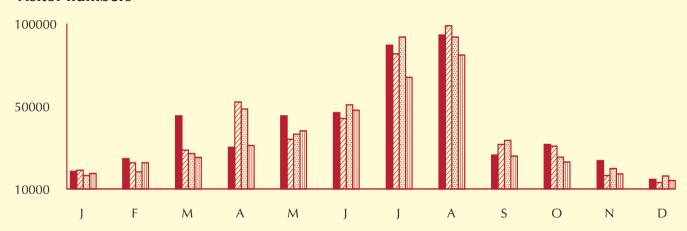


2014

2015

2016

# **Visitor numbers**



# **Animal Highlights during 2016**

In the first week of January 2016, the Agile gibbon group moved onto their new Island habitat in the Asian Sanctuary. They settled in well to their new house and island and have exhibited higher levels of activity along with a marked increase in the frequency of vocalizations being heard after moving to their new home. Agile gibbons are classified as endangered in the wild with less than a hundred currently being held as part of the captive breeding programme, which is ongoing in a number of zoological institutions throughout the world.



Four (3.1) scimitar-horned oryx calves were born during March 2016 of which three (2.1) survived and went on public display over Easter. Unfortunately, an inhalation of embryonic fluid had been cited as the cause of death for the male calf. A male scimitar-horned oryx born at Fota in 2014 was sent to Planète Sauvage, France, as the zoological park's new breeding bull. A new male scimitar-horned oryx arrived in early December 2016 from

Marwell Zoo and will be the breeding bull in our herd for the 2017 season.

In the spring, a male Eastern grey kangaroo arrived from Krefeld Zoo in Germany and is now the new breeding male within the current group of approx. 14 animals. This is the first new male or female introduced to the Fota kangaroo group since the late 1980s. Early in 2016, the female Colombian black spider monkey 'Batty' gave birth, and both the baby and mother are progressing well.



There has been considerable breeding success during 2016 amongst the amphibians in the Tropical House with both Kaiser's spotted newts and Green mantella producing large numbers of offspring. The Kaiser's spotted newt (Neurergus kaiseri) is a very colorful salamander species and is endemic to the southern Zagros Mountains in Iran where it is known to occur in just four freshwater streams. It is critically endangered (CR) and a captive breeding programme has been established in several zoos.

The Green mantella, Mantella viridis, is a species of frog



that is endemic to Madagascar. Its natural habitats are subtropical or tropical dry forests, rivers, intermittent rivers, and heavily degraded former forest. Wild populations are threatened by both habitat loss and Chytrid fungus, which destroys the skin structure of many amphibians. It is currently classified as endangered (EN) in the wild but population numbers continue to decline dramatically in the wild. There is also a captive breeding programme for the Green mantella in zoos which provides a safety net against possible extinction in the wild.

On 25th June 2016, Fota collected Natterjack toad eggs and tadpoles from a site in Kerry under the supervision of the NPWS and these were taken directly to Fota. Over 80% of the eggs and tadpoles survived and went through metamorphosis to the small toad stage. On the 25th of July, forty of these young toads were transported to their release site in Kerry while the remaining ten small toads stayed at Fota. All ten are the subjects of an ongoing research project to provide vital information regarding growth rate and, eventually, age of breeding. The release site will be monitored by the NPWS over the next three years in order to provide a greater understanding as to the successes and limitations associated with this pilot release project.

Seven male European bison were sent to Spain as part of a reintroduction program led by 'Rewilding Europe'. The seven bison were released into the Reserva de Valdeserrillas, Valencia, Spain, and can be seen in the picture attached.

The Giraffe female 'Aria' started to give birth much earlier than expected and it quickly became clear that the calf

was already dead and that she was unable to deliver it. The vet successfully removed the dead calf, which clearly was only three-quarters term and 'Aria' made a successful recovery.

Colombian black spider monkey 'Tia' developed ovarian cancer 15 months ago and had a hysterectomy and underwent treatment. However, her condition started to deteriorate in December and she died under anaesthesia during treatment for her condition.

Lions went on public display here for the first time, 33 years after Fota Wildlife Park opened in June 1983. Two female Indian lions (Gera and Gita) arrived from Helsinki Zoo on 27th May after a three-day journey across six countries from their Finnish home and eventually arrived safely at Fota. Subsequent to their arrival, they were joined by a male who arrived on the 7th July from Santillana Zoo in Northern Spain. All three went on public display on the 19th July within the new Asian lion exhibit. There was immense public interest in the arrival of the lions especially after the male lion took possession of his new 'Rock' and started interacting with the females.

As you can see, there are some similarities with the New Lion habitat and the lion billboard poster and cinema campaign which took place in Munster and Leinster during the spring and summer of 2016.

# **Capital Developments**

### **Indian Lion Habitat (Sanctuary Phase 3)**

The contract for the Lion Habitat was signed with O'Reilly Brother Builders on 23rd Dec 2015. Construction of the Lion Habitat commenced on Jan 5th 2016 and completed on 25th May 2016 within budget.

#### Yard Staff Canteen:

Construction of the Staff Centre in the yard area, which commenced in the last week of August 2015, was completed in early 2016. The wet weather in December 2015 delayed its completion with issues regarding floors drying out and tarring around the exterior of the site. The facility was completed within budget and staff commenced use of this facility on 25th Feb 2016.



# Meetings

In 2016, the Director, Sean McKeown, with Tony O'Dwyer (Operations Manager) and John McLaughlin attended the EAZA annual conference in Belfast. Sean McKeown attended the mid-year EAZA Council meeting and AGM at the end of April in Opel Zoo, Germany, as the Irish zoo's EAZA Council representative.

Sean McKeown attended the BIAZA Annual Conference in Marwell Wild Animal Park, England, as Vice Chairman of BIAZA.

#### **Education**

In 2016, Fota Wildlife Park's Education Department welcomed its highest attendance figures since its establishment in 1995. In excess of 15,200 students attended formal educational courses in Fota Wildlife Park during the 2016 season. This figure represents a 7% increase in attendance when compared to a similar period in 2015 and a 13% increase when compared to the total for the 2014 season.

Lynda McSweeney, head of Education, represented Fota Wildlife Park in a number of prestigious events, including the following:

- BT Young Scientist and Technology Exhibition
- UCC Postgraduate Research Showcase
- UCC+ Programme

The Education Department hosted a number of public educational events during the summer months. All were well received by members of the public and also facilitated the development of strategic and collaborative relations with a number of research facilities as well as an array of organisations representing the field of biodiversity conservation.

- Going Green Staying Green (Environmental Awareness Weekend)
- Native Species Weekend
- Mad Scientist Weekend



In all, sixteen interns were accommodated by the Education Department during the 2016 season. Each student received training in the field of ecological assessment and the provision of formal educational modules to both primary and secondary school students. The establishment of an internship programme has facilitated the development of an informative learning experience for both visiting graduates and the park's Education Department.

#### **Conservation and Research:**

Throughout the year, 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. The Conservation and Research activities are highlighted in the Annual Accounts.



As part of Gill Weyman's PhD research and survey work on ladybirds, she has found several Kidney Spot Ladybirds

(opposite) in the main car park at Fota Wildlife Park. These are among the first records for this species of ladybird in Ireland.

I'd like to take this opportunity to thank the Board of Governors and staff for their support and endeavours over what was a very successful year for Fota.

Sean McKeown Director

# **Fota 2016 Animal Inventory**

IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
	INVERTEBRATA	INVERTEBRATES						
	CLASS: SCYPHOZA	CLASS: JELLYFISH						
	Mastigias papua *	Spotted lagoon jelly	0.0.2	0.0.0	0.0.3	0.0.5	0.0.0	0.0.0
	CLASS: MALACOSTRACA	CLASS: CRUSTACEANS						
	Pagurus hirsutiusculus *	Hairy hermit crab	0.0.0	0.0.0	0.0.1	0.0.0	0.0.0	0.0.1
	CLASS: INSECTA	CLASS: INSECTS						
	Papilionoidea *	Butterflies	0.0.140	0.0.0	0.0.0	0.0.0	0.0.0	0.0.140
	VERTEBRATA	VERTEBRATES						
	CLASS: PISCES	CLASS: FISH						
NT	Chiloscyllium punctatum	Brownbanded bamboo shark	0.0.0	0.0.0	0.0.1	0.0.0	0.0.0	0.0.1
	Gymnomuraena zebra *	Zebra moray	0.0.0	0.0.0	0.0.2	0.0.0	0.0.0	0.0.2
	Sahyadria denisonii *	Denison's barb	0.0.10	0.0.0	0.0.0	0.0.0	0.0.0	0.0.10
	Chromobotia macracan- thus *	Clown loach	0.0.3	0.0.0	0.0.0	0.0.0	0.0.0	0.0.3
	Hyphessobrycon anisitsi *	Buenos Aires tetra	0.0.10	0.0.0	0.0.0	0.0.0	0.0.0	0.0.10
	Panaque nigrolineatus *	Royal plecostomus	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
NT	Bedotia madagascariensis *	Madagascar rainbowfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
VT	Glossolepis incisus *	Red rainbowfish	0.0.3	0.0.0	0.0.0	0.0.0	0.0.0	0.0.3
EN	Melanotaenia boesemani *	Boeseman's rainbowfish	0.0.4	0.0.0	0.0.0	0.0.0	0.0.0	0.0.4
	Melanotaenia trifasciata *	Goyder River rainbowfish	0.0.5	0.0.0	0.0.0	0.0.0	0.0.0	0.0.5
EW	Ameca splendens *	Butterfly splitfin	0.0.110	0.0.0	0.0.0	0.0.0	0.0.0	0.0.11
EW	Skiffia francesae *	Golden sawfin	0.0.100	0.0.0	0.0.0	0.0.0	0.0.0	0.0.100
	Sargocentron xantheryth- rum *	Hawaiian squirrelfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
	Pterois volitans *	Red lionfish	0.0.1	0.0.0	0.0.1	0.0.1	0.0.0	0.0.1
	Toxotes jaculatrix *	Banded archerfish	0.0.7	0.0.0	0.0.0	0.0.0	0.0.0	0.0.7
	Monodactylus sebae *	African silverfish	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
	Amphiprion ocellaris *	Peacock clownfish	0.0.5	0.0.0	0.0.0	0.0.0	0.0.0	0.0.5
	Chromis viridis *	Bluegreen chromis	0.0.4	0.0.0	0.0.0	0.0.0	0.0.0	0.0.4
	Chrysiptera cyanea *	Sapphire damselfish	0.0.4	0.0.0	0.0.0	0.0.0	0.0.0	0.0.4
	Chrysiptera parasema *	Goldtail damselfish	0.0.4	0.0.0	0.0.0	0.0.0	0.0.0	0.0.4



	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
		Stigmatogobius sadanun- dio *	Fandancer goby	0.0.3	0.0.0	0.0.0	0.0.0	0.0.0	0.0.3
		Siganus vulpinus *	Foxface rabbitfish	0.0.2	0.0.0	0.0.1	0.0.1	0.0.0	0.0.2
		Acanthurus fowleri *	Fowler's surgeon	0.0.0	0.0.0	0.0.1	0.0.0	0.0.0	0.0.1
		Paracanthurus hepatus *	Blue tang	0.0.0	0.0.0	0.0.1	0.0.1	0.0.0	0.0.0
		Zebrasoma desjardinii *	Red Sea sailfin tang	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
		Zebrasoma flavescens *	Yellow tang	0.0.2	0.0.0	0.0.0	0.0.0	0.0.0	0.0.2
		Sufflamen albicaudatus *	Bluethroat triggerfish	0.0.0	0.0.0	0.0.1	0.0.0	0.0.0	0.0.1
		Acreichthys tomentosus	Bristletail filefish	0.0.0	0.0.0	0.1.0	0.0.0	0.0.0	0.1.0
		CLASS: AMPHIBIA	CLASS: AMPHIBIANS						
	CR	Ambystoma mexicanum *	Axolotl	2.2.2	0.0.0	0.0.0	0.0.0	0.0.0	2.2.2
	CR	Neurergus kaiseri *	Emperor spotted newt	0.0.8	0.0.22	0.0.0	0.0.2	0.0.0	0.0.28
	EN	Epipedobates tricolor *	Phantasmal poison dart frog	0.0.10	0.0.8	0.0.0	0.0.4	0.0.0	0.0.14
	LC	Trachycephalus venulo- sus *	Veined tree frog	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
	LC	Agalychnis callidryas *	Red-eyed tree frog	0.0.3	0.0.0	0.0.0	0.0.2	0.0.0	0.0.1
	CR	Agalychnis moreletii	Morelet's tree frog	0.0.1	0.0.0	0.0.0	0.0.0	0.0.0	0.0.1
SB	CR	Leptodactylus fallax	Mountain chicken frog	2.4.0	0.0.0	0.0.0	0.2.0	0.0.0	2.2.0
	CR	Mantella aurantiaca *	Golden mantella	0.0.8	0.0.0	0.0.0	0.0.0	0.0.0	0.0.8
	EN	Mantella viridis *	Green mantella	0.0.9	0.0.6	0.0.0	0.0.0	0.0.0	0.0.15
	LC	Polypedates otilophus *	Bornean eared frog	0.0.3	0.0.0	0.0.0	0.0.1	0.0.0	0.0.2
		Theloderma corticale	Tonkin bug-eyed frog	2.2.0	0.0.11	0.0.0	0.1.0	0.0.0	2.1.11
		CLASS: REPTILIA	CLASS: REPTILES						
		Chelonoidis carbonaria	Red-footed tortoise	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
	EN	Indotestudo elongata	Elongated tortoise	1.3.2	0.0.0	0.0.0	0.0.0	0.0.0	1.3.2
	LC	Chamaeleo calyptratus	Veiled chameleon	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0
	EN	Brachylophus fasciatus	Lau banded iguana	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0
		Iguana iguana	Green iguana	2.1.0	0.0.0	0.0.0	1.1.0	0.0.0	1.0.0
	LC	Phelsuma madagascariensis	Madagascar giant day gecko	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0
	LC	Python regius	Royal/ball python	2.3.0	0.0.0	0.0.0	0.0.0	0.0.0	2.3.0
	LC	Acrantophis dumerili	Dumeril's ground boa	3.0.0	0.0.0	0.0.0	0.0.0	0.0.0	3.0.0
	VU	Epicrates subflavus	Jamaican boa	0.0.0	0.0.0	1.0.3	1.0.0	0.0.0	0.0.3

	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
	LC	Pantherophis guttatus	Corn snake	0.0.2	0.0.0	0.0.0	0.0.0	0.0.0	0.0.2
		Lamprophis fuliginosus	Brown house snake	0.0.2	0.0.0	0.0.0	0.0.0	0.0.0	0.0.2
		CLASS: AVES	CLASS: BIRDS						
	LC	Struthio camelus	Common ostrich	2.4.0	0.0.0	0.0.0	0.0.0	0.0.0	2.4.0
	LC	Dromaius novaehollandiae	Emu	1.1.0	0.0.0	0.0.0	1.1.0	0.0.0	0.0.0
	LC	Numida meleagris	Helmeted guineafowl	10.6.18	0.0.0	0.0.0	0.0.2	0.0.0	10.6.16
	LC	Pavo cristatus	Common peafowl	4.9.0	0.0.2	0.0.0	0.1.0	0.0.0	4.8.2
	LC	Anser anser	Greylag goose	11.8.14	0.0.0	0.0.0	0.0.0	0.0.0	11.8.14
	LC	Anser caerulescens	Snow goose	1.6.7	0.0.0	0.0.0	0.0.1	0.0.0	1.6.6
	NT	Anser canagicus	Emperor goose	2.2.0	0.0.0	0.0.0	0.0.0	0.0.0	2.2.0
	VU	Anser cygnoid	Swan goose	0.2.0	0.0.0	0.0.0	0.0.0	0.0.0	0.2.0
	LC	Anser indicus	Bar-headed goose	10.8.5	0.0.0	0.0.0	1.2.0	0.0.0	9.6.5
	LC	Branta leucopsis	Barnacle goose	13.7.9	0.0.1	0.0.0	0.0.3	0.0.0	13.7.7
	VU	Branta sandvicensis	Ne-ne	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
	LC	Cereopsis novaehollandiae	Cereopsis goose	1.3.1	0.0.0	0.0.0	0.0.0	0.0.0	1.3.1
	LC	Coscoroba coscoroba	Coscoroba swan	1.4.0	0.0.0	0.0.0	0.0.0	0.0.0	1.4.0
	LC	Aix galericulata	Mandarin duck	15.8.8	0.0.3	0.0.0	2.2.0	0.0.0	13.6.11
	LC	Aix sponsa	North American wood duck	6.2.4	0.0.0	0.0.0	0.0.0	0.0.0	6.2.4
	LC	Aythya fuligula	Tufted duck	4.3.11	0.0.0	0.0.0	0.0.0	0.0.0	4.3.11
	NT	Aythya nyroca	Common white-eye	2.1.2	0.0.0	0.0.0	0.0.0	0.0.0	2.1.2
	LC	Netta rufina	Red-crested pochard	9.8.0	0.0.0	0.0.0	2.1.0	0.0.0	7.7.0
	LC	Somateria mollissima	Eider	3.2.4	0.0.0	0.0.0	0.0.0	0.0.0	3.2.4
	NT	Phoenicopterus chilensis	Chilean flamingo	1.4.1	0.0.0	0.0.0	0.0.0	0.0.0	1.4.1
ESB	VU	Goura scheepmakeri	Scheepmaker's crowned pigeon	1.0.0	0.0.0	0.0.0	1.0.0	0.0.0	0.0.0
	LC	Crex crex	Corncrake	13.11.3	6.5.1	0.0.0	2.2.4	3.3.0	14.11.0
EEP	VU	Spheniscus humboldti	Humboldt penguin	10.12.9	0.0.3	0.0.0	1.0.2	0.0.0	9.12.10
	LC	Pelecanus onocrotalus	Eastern white pelican	3.1.0	0.0.0	0.0.0	0.0.0	0.0.0	3.1.0
	LC	Accipiter gentilis	Northern goshawk	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0
EEP	LC	Haliaeetus albicilla	White-tailed sea eagle	0.2.0	0.0.0	1.0.0	0.0.0	0.0.0	1.2.0
	LC	Ara ararauna	Blue-and-yellow macaw	4.4.0	0.0.0	0.0.0	0.0.0	1.1.0	3.3.0
	LC	Ara chloropterus	Green-winged macaw	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
	LC	Ara macao	Scarlet macaw	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0



	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
		CLASS: MAMMALIA	CLASS: MAMMALS						
		MARSUPIALIA	MARSUPIAL						
ESB	LC	Macropus giganteus	Eastern grey kangaroo	4.9.0	0.0.2	1.0.0	1.1.2	0.0.0	4.8.0
	LC	Macropus rufogriseus *	Red-necked wallaby	0.0.61	0.0.0	0.0.0	0.0.9	0.0.0	0.0.52
		PRIMATES	PRIMATES						
ESB	EN	Lemur catta	Ring-tailed lemur	3.7.0	0.0.0	0.0.0	0.1.0	0.3.0	3.3.0
EEP	CR	Varecia rubra	Red ruffed lemur	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0
EEP	CR	Varecia variegata	Black-and-white ruffed lemur	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
EEP	LC	Pithecia pithecia	White-faced saki	3.5.0	0.0.0	0.0.0	0.0.0	0.0.0	3.5.0
ESB	LC	Alouatta caraya	Black howler	2.2.0	0.0.0	0.0.0	0.0.0	0.0.0	2.2.0
EEP	CR	Ateles fusciceps	Black-headed spider monkey	2.4.0	1.1.1	0.0.0	1.1.0	0.0.0	2.4.1
	LC	Lophocebus albigena	Grey-cheeked mangabey	1.3.0	0.0.0	0.0.0	0.0.0	0.0.0	1.3.0
EEP	EN	Macaca silenus	Lion-tailed macaque	8.12.0	0.0.0	0.0.0	0.0.0	0.0.0	8.12.0
ESB	LC	Colobus guereza	Eastern black-and-white colobus	4.0.0	0.0.0	0.0.0	0.0.0	0.0.0	4.0.0
EEP	EN	Trachypithecus francoisi	Francois' langur	2.0.0	0.0.0	0.0.0	0.0.0	0.0.0	2.0.0
EEP	EN	Hylobates agilis	Agile gibbon	1.2.1	0.0.1	0.0.0	0.0.0	0.0.0	1.2.2
EEP	EN	Hylobates lar	Lar gibbon	1.3.0	0.0.0	0.0.0	0.0.0	0.0.0	1.3.0
EEP	EN	Symphalangus syndactylus	Siamang	4.2.0	0.0.0	0.0.0	0.0.0	0.0.0	4.2.0
		RODENTIA	RODENTS						
	LC	Cynomys ludovicianus	Black-tailed prairie dog	2.3.0	0.0.0	0.0.0	0.0.0	0.0.0	2.3.0
	NT	Dolichotis patagonum *	Patagonian mara	0.0.19	0.0.0	0.0.0	0.0.2	0.0.0	0.0.17
	LC	Hydrochaeris hydrochaeris	Capybara	1.0.0	0.0.0	0.0.0	0.0.0	0.0.0	1.0.0
		CARNIVORA	CARNIVORES						
EEP	VU	Acinonyx jubatus	Cheetah	8.6.0	0.0.0	0.0.0	0.0.0	0.0.0	8.6.0
EEP	EN	Panthera leo	Lion	0.0.0	0.0.0	1.2.0	0.0.0	0.0.0	1.2.0
EEP	CR	Panthera tigris	Tiger	2.1.0	0.0.0	0.0.0	0.0.0	0.0.0	2.1.0
	LC	Suricata suricatta	Slender-tailed meerkat	4.5.8	0.0.0	0.0.0	0.0.1	0.0.0	4.5.7
	LC	Phoca vitulina	Harbor seal	0.1.0	0.0.0	0.0.0	0.0.0	0.0.0	0.1.0
EEP	VU	Ailurus fulgens	Red panda	2.1.0	1.0.0	0.0.0	1.0.0	0.0.0	2.1.0
		PERISSODACTYLA	ODD-TOED UNGULATES						
	LC	Equus quagga	Plains zebra	3.2.0	0.0.0	0.0.0	0.0.0	0.0.0	3.2.0
EEP	VU	Tapirus terrestris	South American tapir	2.1.0	0.1.0	0.0.0	0.0.0	0.0.0	2.2.0
EEP	VU	Rhinoceros unicornis	One-horned rhinoceros	2.0.0	0.0.0	0.0.0	0.0.0	0.0.0	2.0.0

	IUCN Status	SPECIES		Beginning	Births	Acquisitions	Dead	Dispositions	Ending
		ARTIODACTYLA	EVEN-TOED UNGULATES						
EEP	CR	Sus cebifrons	Visayan warty pig	1.1.0	0.0.0	0.0.0	0.0.0	0.0.0	1.1.0
EEP	EN	Rusa alfredi	Alfred's spotted deer	0.3.0	0.0.0	0.0.0	0.0.0	0.0.0	0.3.0
EEP	VU	Giraffa camelopardalis	Giraffe	4.8.0	0.0.1	0.0.0	0.0.1	0.0.0	4.8.0
EEP	VU	Bison bonasus	European wisent	10.8.0	2.2.0	0.0.0	2.2.0	7.0.0	3.8.0
EEP	EW	Oryx dammah	Scimitar-horned oryx	1.5.0	2.1.1	1.0.0	0.0.1	1.0.0	3.6.0
ESB	VU	Kobus leche	Southern lechwe	4.11.0	1.0.1	0.0.0	3.1.1	0.0.0	2.10.0
		TOTAL		227.243.660	13.10.64	5.3.15	20.19.46	12.7.0	213.230.693

\* = Group Inventory Counts Included In Row \*\* = Colony counts included in Row



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

Reports and Consolidated Financial Statements for the financial year ended 31 December 2016

Registered number: 207824

CONTENTS	PAGE
MEMBERS OF COUNCIL AND OTHER INFORMATION	58
COUNCIL'S REPORT	60
COUNCIL'S RESPONSIBILITY STATEMENTS	63
INDEPENDENT AUDITOR'S REPORT	64
CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT	67
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME	68
CONSOLIDATED BALANCE SHEET	69
COMPANY BALANCE SHEET	71
CONSOLIDATED STATEMENT OF CHANGES IN EQUITY	73
COMPANY STATEMENT OF CHANGES IN EQUITY	74
CONSOLIDATED STATEMENT OF CASH FLOWS	75
notes to the consolidated financial statements	76
SUPPLEMENTARY INFORMATION	106

#### MEMBERS OF COUNCIL AND OTHER INFORMATION

**Members of Council:** 

Council president Tom Dunphy FCA

Immediate past president Margaret Sinanan

Ordinary Council members Dorothy Kilroy

Paul Burke Kennedy Richard Collins Martin O'Grady Michael Daly Nigel Bell Ann Keenan

Other information:

Past presidents Michael O'Grady FCIPD

Seán Cromien BA, MRIA, FNCI, F (Mgt), IMI, FZSI

Joseph McCullough BE, C Eng, FZSI Michael MacNulty MBA (Harvard)

Derek McCleane

Vice president Michael Daly

Richard Collins

Honorary secretary Dorothy Kilroy

Honorary treasurer Nigel Bell

Secretary and registered office John Sweeney

The Zoological Gardens, Phoenix Park, Dublin 8

### MEMBERS OF COUNCIL AND OTHER INFORMATION (Continued)

**Auditors** Deloitte

Chartered Accountants and Statutory Audit Firm

Deloitte & Touche House

**Earlsfort Terrace** 

Dublin 2

Bankers Ulster Bank Limited, 33 College Green, Dublin 2

Bank of Ireland, 2 College Green, Dublin 2

AIB, 37 Upper O'Connell Street, Dublin 1

Rabo Bank, Charlemont Place, Dubin 2

AIB, 66 South Mall, Cork

Solicitors Mason Hayes & Curran,

South Bank House, Barrow Street, Dublin 4

Ronan Daly Jermyn & Company, 12 South Mall, Cork

Kilroy Solicitors, 66 Leeson Street Lower, Dublin 2

Charity Number CHY2964

Company Number 207824

#### COUNCIL'S REPORT

The Council presents its annual report together with the audited consolidated financial statements for the financial year ended 31 December 2016.

#### Consolidation

These accounts form the Consolidated Accounts of the Zoological Society of Ireland which includes the results of both Dublin Zoo and Fota Wildlife Park for the financial year ended 31 December 2016.

# Principal Activities, Business Review And Future Developments

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

- (a) The operation of a Zoo in the Phoenix Park, Dublin.
- (b) To maintain the Fota Wildlife Park.
- (c) 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 31 December 2016 at Dublin Zoo was 1,143,908 (2015: 1,103,378). This was the sixth year in a row that Dublin Zoo has had visitation surpassing the one million mark and 2016 was an all-time record. The attendance at Fota Wildlife Park for the financial year ended 31 December 2016 was 465,281 (2015: 436,386).

The Council do not foresee any significant change to the operations in the short term.

#### **Principal Risks And Uncertainties**

The Council considers that the principal risks and uncertainties to the Society relate to weather conditions affecting visitor numbers, uncertainty impacting on the Society relating to an outbreak of animal disease and changes in the economic environment.

#### 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, the statement of comprehensive income and balance sheet on pages 68 to 72 respectively.

#### **Council and Secretary**

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

Tom Dunphy

Margaret Sinanan

Dorothy Kilroy

Paul Burke Kennedy

Richard Collins

Martin O'Grady

Conor Quinn

Michael Daly

Nigel Bell

Ann Keenan

#### **Secretary:**

John Sweeney

Conor Quinn resigned as a director on 17 November 2016. Ann Keenan was appointed as a director on 15 September 2016. On 22 August 2016, Dorothy Kilroy resigned as company secretary and John Sweeney was appointed.

#### **Legal status**

The Society is limited by guarantee and has no share capital.

#### **Subsidiaries**

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

#### Governance

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

The Council delegates the management of the day to day operation of the Society and Fota Wildlife Park, the implementation of policy and strategy to the Directors (Chief Executives) of Dublin Zoo and Fota Wildlife Park. The executive management teams, chaired by the Directors and consisting of key senior executives, is the main day to day decision making forum of the Society and Fota Wildlife Park

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

The Society has a clear and detailed process for reporting management information to the Council. The Council is provided with regular information, which includes key performance and risk indicators for all aspects of the organisation. The Council meets regularly as required and met 11 times during 2016.

The Council recognise their 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 Council to meet its responsibilities for the integrity and accuracy of the Society's accounting records.

The Council is supported by a number of sub-committees (not confined to Council members) established for good

governance, as follows:

#### **Audit & Remuneration Committee**

The function of the Audit and Remuneration Committee is to review Dublin Zoo and Fota Wildlife Parks internal financial controls, treasury, and risk management processes. The Committee liaises with the external auditors and reports directly to the Council/Govenors. It also monitors and reviews the financial performance, including remuneration issues of the Society. Key tasks completed in the financial year:

- Audit review and consideration to upcoming changes in Charity legislation
- 2. Management remuneration review
- 3. Budget review

#### **Nominations Committee**

The function of the Nominations Committee is to ensure that the composition of the Council and its Committees have the appropriate skills, knowledge and experience. It also ensures that there is effective succession planning. Key tasks completed in the financial year:

1) Review and appointment of council members

#### **Conservation & Research Committee**

The responsibility of this Committee is to oversee conservation and research projects undertaken and supported by the Society. Key tasks completed in the financial year:

- 1. Policy review
- 2. Research review

#### **Ethics Committee**

The Ethics Committee was established Dublin Zoo and Fota Wildlife Park to provide guidance and advice on all ethical matters that may arise. The Committee comprises members of the Council/Governors, the Dublin Zoo Director/Fota Wildlife Park Director and some external appointments. Key tasks completed in the financial year:

1. Policy creation and review

#### **Health & Safety Committee**

The responsibility of this Committee is to oversee the health and safety function and ensure that any changes and improvements are implemented. The Committee comprises two members of Council and the Zoo Director. Key tasks completed in the financial year:

1. Policy review and implementation

#### **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 company's accounting records are maintained at the Society's registered office in The Zoological Gardens, Phoenix Park, and Dublin 8.

#### Post halance sheet events

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

#### Health and safety policy

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

#### Political donations

The Society 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 1.

#### 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 Council Members and Governors have taken all the steps that they ought to have taken as Council

Members and Governors in order to make themselves aware of any relevant audit information and to establish that the Company's auditors are aware of that information.

#### **Auditors**

The auditors, Deloitte, 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:

Tom Dunphy

Nigel Bell

**Council President** 

**Honorary Treasurer** 

Date: 22nd June 2017

#### COUNCIL'S RESPONSIBILITIES STATEMENT

The Council is responsible for preparing the Council's report and the financial statements in accordance with the Companies Act 2014.

Irish company law requires the members of the Council to prepare financial statements for each financial year. Under the law, the Council has elected to prepare the financial statements in accordance with FRS 102 The Financial Reporting Standard applicable in the UK and Republic of Ireland ("relevant financial reporting framework"). Under company law, the Council 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 Group and Society as at the financial year end date

and of the surplus or deficit of the Group for the financial year and otherwise comply with the Companies Act 2014. In preparing those financial statements, the Council members are required to:

- select suitable accounting policies for the Group and Society's 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 Society will continue in business.

The Council members are responsible for ensuring that the Society keeps or causes to be kept adequate accounting records which correctly explain and record the transactions of the Society, enable at any time the assets, liabilities, financial position and surplus or deficit of the Society to be determined with reasonable accuracy, enable them to ensure that the financial statements and Council's 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 Society 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 IRFLAND

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

We have audited the financial statements of The Zoological Society of Ireland for the financial year ended 31 December 2016, which comprise the Consolidated Income and Expenditure Account, the Consolidated Statement of Comprehensive Income, the Consolidated Balance Sheet, the Company Balance Sheet, the Consolidated Statement of Changes in Equity, the Company Statement of Changes in Equity, the Consolidated Statement of Cash Flows and the related notes 1 to 21. 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 ("relevant financial reporting framework").

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 auditors' 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.

# Respective responsibilities of Council members and auditors

As explained more fully in the Council's Responsibilities Statement, the Council members 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. Our responsibility is to audit and express an opinion on the financial statements in accordance with the Companies Act 2014 and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's Ethical Standards for Auditors.

#### Scope of the audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the Group and company's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the Council; and the overall presentation of the financial statements. In addition, we read all the financial and non-financial information in the Reports and Consolidated Financial Statements for the financial year ended 31 December 2016 to identify material inconsistencies with the audited financial statements and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by us in the course of performing the audit. If we become aware of

any apparent material misstatements or inconsistencies we consider the implications for our report.

#### **Opinion on financial statements**

In our opinion, the financial statements:

- give a true and fair view of the assets, liabilities and financial position of the Group and company as at 31 December 2016 and of the Group's surplus 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.

# Matters on which we are required to report by the Companies Act 2014

- 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 company were sufficient to permit the financial statements to be readily and properly audited.
- The financial statements are in agreement with the accounting records.
- In our opinion the information given in the Council's report is consistent with the financial statements.

#### Matters on which we are required to report by exception

We have nothing to report in respect of the 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 Richard Howard

For and on behalf of Deloitte & Touche Chartered Accountants and Statutory Audit Firm Dublin

Date: 22nd June 2017

# CONSOLIDATED INCOME AND EXPENDITURE ACOUNT FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016

	Notes	2016 €′000	2015 €′000
INCOME	3	19,432	18,346
EXPENDITURE			
Operating costs Administration expenses		(15,752) (834)	(14,977) (740)
TOTAL EXPENDITURE		(16,586)	(15,717)
OPERATING SURPLUS	5	2,846	2,629
Interest payable	6	(50)	(58)
Interest income	6	9	44
Amortisation of government grants	14	32	33
SURPLUS FOR THE FINANCIAL YEAR		<u>2,837</u>	2,648

# CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016

	Notes	2016 €′000	2015 €′000
SURPLUS FOR THE FINANCIAL YEAR		2,837	2,648
Remeasurement of net defined benefit asset	15	(31)	114
TOTAL COMPREHENSIVE INCOME		2,806	2,762

CONSOLIDATED BALANCE SHEET			
AS AT 31 DECEMBER 2016		2016	2015
		€′000	€′000
FIXED ASSETS	Notes		
Tangible assets	8	23,364	20,517
CURRENT ASSETS			
Stocks	10	235	216
Debtors	11	856	529
Cash at bank and in hand			
<ul> <li>Restricted - OPW grant</li> </ul>	12	30	30
<ul> <li>Unrestricted</li> </ul>		6,251	6,946
		7,372	7,721
<b>CREDITORS:</b> (Amounts falling due within one year)	12	(3,786)	(4,098)
NET CURRENT ASSETS		3,586	3,623
TOTAL ASSETS LESS CURRENT LIABILITIES		26,950	24,140
CREDITORS: (Amounts falling due after more than one year)	13	(330)	(290)
OTHER DEFERRED GRANTS	14	(379)	(411)
NET ASSETS EXCLUDING PENSION		26,241	23,439
Pension asset	15	279	275
NET ASSETS INCLUDING PENSION ASSET		26,520	23,714

# Represented by:

· /		
Accumulated surplus	5,252	9,450
Development reserve	19,000	12,000
Emergency reserve		
	26,520	23,714

The financial statements were approved and authorised for issue by the Board of Directors on 23 May 2016 and signed on its behalf by:

Tom Dunphy Nigel Bell

Council President Honorary Treasurer

# **COMPANY BALANCE SHEET AS AT 31 DECEMBER 2016**

		2016	2015
FIXED ASSETS	Notes	€′000	€′000
Tangible assets	8	12,941	10,476
Financial assets	9	500	500
		13,441	10,976
CURRENT ASSETS			
Stocks	10	174	142
Debtors			
– Due within one year	11	1,021	575
– Due after one year	11	700	400
Cash at bank and in hand:			
<ul> <li>Restricted - OPW grant</li> </ul>	12	30	30
<ul> <li>Unrestricted</li> </ul>		5,446	6,764
		7,371	7,911
<b>CREDITORS:</b> (Amounts falling due within one year)	12	(2,595)	(2,770)
Net current assets excluding pension asset		4,776	5,141
Pension asset	15	167	165
Net current assets including pension asset		4,943	5,306
NET ASSETS		18,384	16,282

### Represented by:

Accumulated surplus	5,141	7,018
Development reserve	10,975	7,000
Emergency reserve		2,264
	18,384	16,282

The financial statements were approved and authorised for issue by the Board of Directors on 23 May 2016 and signed on its behalf by:

Tom Dunphy Nigel Bell

Council President Honorary Treasurer

## CONSOLIDATED STATEMENT OF CHANGES IN EQUITY FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016

	Notes	Development Reserve €′000	EmergencyA Reserve €'000	ccumulated Surplus €′000	Total €′000
Balance at 1 January 2015		12,000	2,001	6,951	20,952
Surplus for the financial year		_	_	2,648	2,648
Remeasurement of net defined benefit asset		_	_	114	114
Transfers between reserves			263	(263)	
At 31 December 2015		12,000	2,264	9,450	23,714
Surplus for the financial year		-	-	2,837	2,837
Remeasurement of net defined benefit asset		-	-	(31)	(31)
Transfers between reserves		7,000	4	(7,004)	
At 31 December 2016		19,000	2,268	5,252	26,520

The Council members have decided to transfer €4,000 (2015: €263,000) from the accumulated surplus to the emergency reserve and €7,000,000 from accumulated surplus to the development reserve. The Council members continue to monitor the strategic development of the Zoo & park facilities and have set aside funds to finance future capital investment projects.

## COMPANY STATEMENT OF CHANGES IN EQUITY FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016

		Development	EmergencyAccumulated		
		Reserve	Reserve	Surplus	Total
	Notes	€′000	€′000	€′000	€′000
Balance at 1 January 2015		7,000	2,001	5,202	14,203
Surplus for the financial year		_	_	2,011	2,011
Remeasurement of net defined benefit asset		_	_	68	68
Transfers between reserves		_	263	(263)	_
At 31 December 2015		7,000	2,264	7,018	16,282
Surplus for the financial year		-	-	2,120	2,120
Remeasurement of net defined benefit asset		-	-	(18)	(18)
Transfers between reserves		3,975	4	(3,979)	_
At 31 December 2016		10,975	2,268	5,141	18,384

The Council members have decided to transfer €4,000 (2015: €263,000) from the accumulated surplus to the emergency reserve. Also it has been decided to transfer €3,975,000 from Accumulated surplus. The Council members continue to monitor the strategic development of Dublin Zoo and have set aside funds to finance future capital investment projects.

## CONSOLIDATED STATEMENT OF CASH FLOWS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016

NET CACH INFLOW	Notes	2016 €′000	2015 €′000
NET CASH INFLOW FROM OPERATING ACTIVITIES	17	4,016	4,376
Cash flows from investing activities			
Payment to acquire tangible fixed assets		(4,704)	(6,509)
Interest received		3	41
Interest paid		(50)	(58)
Net cash outflow from investing activities		(4,751)	(6,526)
Cash flows from investing activities			
Receipt of bank loan		250	_
Repayment of bank loan		(210)	
Net cash inflow from financing activities		40	
DECREASE IN CASH			
IN THE FINANCIAL YEAR	17	(695)	2,150
Cash and cash equivalents at beginning of financial year		6,976	9,126
Cash and cash equivalents at end of financial year		6,281	6,976

## NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016

#### 1. ACCOUNTING POLICIES

The principal accounting policies are summarised below. They have all been applied consistently throughout the financial year and to 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 58. The nature of the company's operations and its principal activities are set out in the Council's report on pages 60 to 62.

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 2016.

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 annual pass and membership subscriptions relating to the current period. Where subscriptions are received in advance, they 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.

#### **Taxation**

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

### **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 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**

Investment in subsidiary is 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.

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.

### **Government Support**

The land in the Phoenix Park occupied by the Zoo ("the Society") is used under a licence from the State, the Society being a tenant at will. No value is reflected in these financial statements in respect of this licence or this land.

The Government Capital Investment Programme in the Society is provided and accounted for by the Office of Public Works (OPW) and any related assets are therefore excluded in these financial statements. The accounts of the Society reflect only its disbursements for the OPW under this programme. The facilities provided under this Programme are used by the Society 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.

#### Leases

Rentals under operating leases are charged on a straightline 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.

#### Grants

Capital grants are accounted for in the financial year in which they are received and credited to the Income and Expenditure Account on the same basis as the related fixed assets are depreciated.

#### **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. Measurement 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.

#### **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.

### **Going Concern**

Based on budgets and cashflow projections, the Council 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 Council have prepared the financial statements of the company on a going concern basis.

## 2. CRITICAL ACCOUNTING JUDGEMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

In the application of accounting policies, which are described in note 1, the Council 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 Council 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 15.

#### **Provisions**

The company provides for defective stock and stock losses. The amount recognised as a provision is the best estimate of the stock write off required based on historical evidence.

#### **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. INCOME	2016	2015
Income arises from the following activities undertaken wholly within Ireland.	€′000	€′000
Gate receipt income	12,577	11,829
Annual pass and membership income	2,583	2,562
Shop income	2,621	2,559
Other income	1,651	1,396
	<del></del>	
	19,432	18,346

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 4. EMPLOYEE INFORMATION

	2016	2015
Staff numbers and costs		
Average number of employees:		
Management	10	10
Administration	26	19
General staff		
– full time	95	103
– part time	13	15
Shop	15	0
	159	157
The aggregate payroll costs of these persons were as follows	2016	2015
	€′000	€′000
Wages and salaries	5,634	5,541
Social welfare costs	672	582
Retirement benefit costs (Note 15)	269	362
	6,575	6,485

The total remuneration for fourteen key management personnel for the financial year totalled €920,924 (2015: €933,281 for thirteen key management personnel)

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

5. OPERATING SURPLUS	2016	2015
The operating surplus is stated after charging:	€′000	€′000
Remuneration of Council members	-	-
Auditor's remuneration in respect of		
the audit of the entity	19	19
the audit of subsidiary entity	7	7
• tax services	11	1
• other services	1	1
Depreciation	2,221	1,736
·	2,221	1,730
Operating lease charges	<u>7</u>	5

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

6. INTEREST Interest payable	2016 €′000	2015 €′000
On bank loans due within five years	<u>50</u>	58
Interest income	2016 €′000	2015 €′000
Deposit interest Other finance income (Note 15)	3 6 9	41 3 44

### 7. TAXATION

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

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 8. TANGIBLE FIXED ASSETS

### Group

•	Lord	Plant Machinery	Computer	Motor	Buildings &	Total
	Land €′000	& Equipment €′000	Equipment €′000	Vehicles €′000	Habitats €′000	Total €′000
Cost:	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000
At 1 January 2016	191	4,278	1,675	512	26,080	32,736
Additions	-	90	5	8	4,965	5,068
Disposals		(490)	(690)		(173)	(1,353)
At 31 December 2016	191	3,878	990	520	30,872	36,451
Depreciation:						
At 1 January 2016	-	3,714	1,452	361	6,692	12,219
Charge for financial year	-	216	108	39	1,858	2,221
Disposals		(490)	(690)		(173)	(1,353)
At 31 December 2016		3,440	<u>870</u>	400	8,377	13,087
Net Book Value:						
At 31 December 2016	191 	<u>438</u>	<u>120</u>	<u>120</u>	22,495	23,364
At 31 December 2015	191	564	223	151	19,388	20,517

### 8. TANGIBLE FIXED ASSETS (Continued)

Company	Land €′000	Plant Machinery & equipment €'000	Computer equipment €′000	Motor vehicles €'000	Buildings & Habitats €′000	Total €′000
Cost:						
At 1 January 2016	191	2,323	1,675	246	13,679	18,114
Additions	-	26	5	-	4,080	4,111
Disposals		(490)	(690)		(173)	(1,353)
At 31 December 2016	191	1,859	990	246	17,586	20,872
Depreciation:						
At 1 January 2016	_	2,095	1,452	228	3,863	7,638
Charge for financial year	_	94	108	7	1,437	1,646
Disposals		(490)	(690)		(173)	(1,353)
At 31 December 2016		1,699	870	235	5,127	7,931
Net Book Value:						
At 31 December 2016	191	<u>160</u>	<u>120</u>	11	12,459	12,941
At 31 December 2015	191 	<u>228</u>	223	18	9,816	10,476

Included in habitats at 31 December 2016 are assets under construction which amounted to €1,292,000. Adjustment figures are for assets that have been replaced that were 100% depreciated.

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 8. TANGIBLE FIXED ASSETS (Continued)

### In respect of prior financial year

### Group

	Land €′000	Plant Machinery & Equipment €′000	Computer Equipment €′000	Motor Vehicles €'000	Buildings & Habitats €′000	Total €′000
Cost:						
At 1 January 2015	191	4,177	1,531	487	19,841	26,227
Additions		101	144	25	6,239	6,509
At 31 December 2015	191	4,278	1,675	512	26,080	32,736
Depreciation:						
At 1 January 2015	-	3,465	1,343	323	5,352	10,483
Charge for financial year		249	109	38	1,340	1,736
At 31 December 2015		3,714	1,452	361	6,692	12,219
Net Book Value:						
At 31 December 2015	191 	564	<u>223</u>	151	19,388	20,517
At 31 December 2014	191	712	188	164	14,489	15,744

### 8. TANGIBLE FIXED ASSETS (Continued)

Company	Land €′000	Plant Machinery & equipment €'000	Computer Equipment €′000	Motor vehicles €′000	Habitats €′000	Total €′000
Cost:						
At 1 January 2015	191	2,272	1,531	240	9,438	13,672
Additions		51	144	6	4,241	4,442
At 31 December 2015	191		1,675	246	13,679	18,114
Depreciation:						
At 1 January 2015	-	1,993	1,343	221	2,895	6,452
Charge for financial year	-	102	109	7	968	1,186
At 31 December 2015		2,095		228	3,863	7,638
Net Book Value:						
At 31 December 2015	<u>191</u>	<u>228</u>	<u>223</u>	18	9,816	10,476
At 31 December 2014	191	<u>279</u>	188	19	6,543	7,220

Included in habitats at 31 December 2015 are assets under construction which amounted to €1.5m.

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

#### 9. FINANCIAL ASSETS

Company	2016	2015
	€′000	€′000
At beginning and end of financial year	500	500

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 y	ear		2015	2014
			€′000	€′000
At beginning and end of finan	icial year		500	500

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	Prir	ncipal activity	
Fota Wildlife Park Limited	Ireland	Оре	eration of a wil	dlife park
10. STOCKS		Group	Con	npany
	2016	2015	2016	2015
	€′000	€′000	€′000	€′000
Shops	212	192	151	117
Consumables	23	24	23	25
	<u>235</u>	<u>216</u>	<u>174</u>	142

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

11. DEBTORS		Group	Con	npany
	2016	2015	2016	2015
	€′000	€′000	€′000	€′000
Amounts falling due within one y	ear:			
Trade debtors	455	210	356	178
Prepayments and other debtors	400	316	273	274
VAT	1	3	-	-
Amounts due from subsidiary	-	-	172	23
Loan to subsidiary			220	100
	<u>856</u>	<u>529</u>		575 
Amounts falling due after more the Loan to subsidiary	an one year:	<u> </u>	700	400

During the financial year, the company advanced an additional loan of  $\leq$ 500,000 to Fota which is repayable over five years. This brings the total loans to  $\leq$ 1,000,000 less the repayment in September 2016 of  $\leq$ 100,000. The interest rate applied to the loan is 2%.

### 12. CREDITORS

(Amounts falling due within one year)		Group	Com	pany
	2016	2015	2016	2015
	€′000	€′000	€′000	€′000
- 11				
Bank loan (Note 13)	210	210	-	-
Trade creditors	1,212	1,216	922	661
Accruals	674	987	417	823
Deferred income	1,433	1,412	1,042	1,064
PAYE/PRSI	178	197	135	146
VAT	49	46	49	46
	3,756	4,068	2,565	2,740
OPW grant	30	30	30	30
	3,786	4,098	2,595	2,770

In prior periods, the OPW issued grants to the Society. These funds are to be used solely for purposes of development projects authorised by the OPW. All expenditure on such projects is approved by the OPW prior to payment. At 31 December 2016, €30,000 (2015: €30,000) remained unspent from the grant received and has been included in creditors and cash.

	2016	2015
	€′000	€′000
At beginning and end of financial year	30	30

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

2015

2014

500

**540** 

## 12. CREDITORS (Amounts falling due within one year) (Continued)

In respect of prior financial year

in respect of prior financial year	2013	2014
	€′000	€′000
At beginning of financial year	30	30
13. CREDITORS: Amounts falling due after more than one year		Group
	2016	2015
	€′000	<b>€</b> ′000
Bank loan	330	<u>290</u>
Loan maturity analysis:	2016 €′000	2015 €′000
In one year or less, or on demand	210	210
Between two and five years	330	290
After more than five years	_	_

The bank loan is repayable in installments over the next five years. It is subject to an interest rate of 1 - 3%.

### 14. OTHER DEFERRED GRANTS

	G	roup
	2016	2015
	€′000	€′000
Government grants		
Received and receivable:		
At beginning of financial year	835	835
Received during the financial year	-	_
At end of financial year	835	835
Amortisation:		
At beginning of financial year	424	391
Amortised to income and expenditure	32	33
At end of financial year	456	424
At end of financial year	379	411

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.

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

#### 15. 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 2016 was €144,111 (2015: €307,000). Included in creditors at year end are pension accruals amounting to €Nil (2015: €10,926).

### **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 8 March 2017.

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

	2016	2015
	%	%
Rate of general increase in salaries	3.00	3.00
Rate of increase in pensions in payment	0.00	0.00
Discount rate of scheme liabilities	1.80	2.20
Inflation	1.50	1.50

#### 15. RETIREMENT BENEFIT SCHEMES (Continued)

### 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	21.5	23.0
65 in 25 years	24.5	25.4

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

	2016 €′000	2015 €′000
Current service cost	(54)	(53)
Net interest income	6	3
	(48)	(50)
Recognised in other comprehensive income	(31)	114
Total cost relating to defined benefit scheme	(79)	64

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 15. PENSION ASSET (Continued)

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

	2016	2015
	€′000	€′000
Fair value of assets	3,720	3,499
Present value of defined benefit obligations	(3,441)	(3,224)
Net asset recognised in the balance sheet	<u>279</u>	<u>275</u>
Movements in the fair value of scheme assets were as follows:		
	2016	2015
	€′000	€′000
At 1 January	3,499	3,299
Contributions	83	181
Benefits paid	(83)	(100)
Expected return on pension scheme assets	77	70
Actual return less expected return on pension scheme assets	144	49
At 31 December	3,720	3,499

### 15. PENSION ASSET (Continued)

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

	2016	2015
	€′000	€′000
At 1 January	3,224	2,269
Service cost	54	53
Interest cost	71	67
Benefits paid	(83)	(100)
Actuarial loss/(gain)	175	(65)
At 31 December	3,441	3,224

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

	Fair value	Fair value
	at	at
	<b>31 December</b> 3	1 December
	2016	2015
	€′000	€′000
Equities	1,619	1,646
Bonds	1,811	1,457
Property	34	69
Other	256	327
Total market value of assets	3,720	3,499

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

15. PENSION ASSET (Continued)

### **Company**

#### Defined contribution scheme

The company 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 2016 was €110,765 (2015: €207,000). Included in creditors at year end are pension accruals amounting to €Nil (2015: €10,926).

#### 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.

#### 15. PENSION ASSET (Continued)

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

	2016	2015
	€′000	€′000
Current service cost	(32)	(31)
Net interest income	4	2
	(28)	(29)
Recognised in other comprehensive income	(18)	69
Total cost relating to defined benefit scheme	(46)	<u>40</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:

	2016 €′000	2015 €′000
Fair value of assets Present value of defined benefit obligations	2,232 (2,065)	2,099 (1,934)
Net asset recognised in the balance sheet	167	165

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 15. PENSION ASSET (Continued)

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

	2016	2015
	€′000	€′000
At 1 January	2,099	1,980
Contributions	<b>50</b>	109
Benefits paid	<b>(50)</b>	(60)
Expected return on pension scheme assets	47	42
Actual return less expected return on pension scheme assets	86	28
At 31 December	2,232	2,099

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

	2016	2015
	€′000	€′000
At 1 January	1,934	1,962
Service cost	32	31
Interest cost	43	40
Benefits paid	(50)	(60)
Actuarial loss/(gain)	105	(39)
		<del></del>
At 31 December	2,064	1,934

### **16. FINANCIAL INSTRUMENTS**

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

	2016	2015
	€′000	€′000
Financial assets		
Measured at undiscounted amount receivable		
Trade and other debtors (Note 11)	<u>855</u>	<u>526</u>
	2016	2015
	€′000	€′000
Financial liabilities		
Measured at amortised cost		
Bank loans (Note 12 & 13)	540	500
Measured at undiscounted amount payable		
Trade and other payables (Note 12)	3,559	3,645
	4,099	4,145
		<u> </u>
	2016	2015
	€′000	€′000
Interest company		
Interest expense		
Interest expense on financial liabilities measured at     amortised cost (Note 6)	50	ΕO
amortised cost (Note 6)		58 

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 16. FINANCIAL INSTRUMENTS (Continued)

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

	2016 €′000	2015 €′000
Financial assets		
Measured at cost less impairment		
• Investment in subsidiary (Note 9)	500	500
Measured at cost less impairment		
Loan to subsidiary (Note 11)	900	500
Measured at undiscounted amount receivable		
Trade and other debtors (Note 11)	629	452
Amount due from subsidiary (Note 11)	172	23
	2,201	1,475

### 16. FINANCIAL INSTRUMENTS (Continued)

Operating surplus	€′000	€′000
Operating surplus Depreciation of tangible fixed assets Adjustment for retirement benefit plan (Increase)/decrease in stocks	2,846 2,221 (29) (19)	2,629 1,736 (128) (33)
Increase in debtors Increase in non OPW creditors	(327) (676) 4,016	(67) 239 4,376

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2016 (Continued)

### 17. CASH FLOW STATEMENT (Continued)

Analysis of movement in net funds

	At beginning of year €′000	Cashflows €′000	At end of year €′000
Cash at bank and in hand Bank loan	6,976 (500)	(695)	6,281 (500)
Net funds	6,476	(695)	5,781

### **18. COMMITMENTS AND CONTINGENCIES**

	2016	2015
	€′000	€′000
Authorised and contracted for commitments	2,475	3,900
Authorised but not contracted for commitments	_	872

#### 19. POST BALANCE SHEET EVENTS

There have been no significant events affecting the Zoological Society of Ireland since the year end that would result in an adjustment to the financial statements or inclusion of a note thereto.

### **20. COMPARATIVE AMOUNTS**

Comparative amounts have been reclassified, where necessary, on the same basis as those for the current financial year.

#### 21. APPROVAL OF FINANCIAL STATEMENTS

The consolidated financial statements were approved by the Council on.

## **SUPPLEMENTARY INFORMATION** (NOT COVERED BY THE INDEPENDENT AUDITOR'S REPORT)

OPERATING COSTS	2016 €′000	2015 €′000
Staff costs	6,613	6,485
Shop expenses	1,211	1,193
Repairs and maintenance	941	901
Animal feed	995	889
Insurance	282	251
Light and heat	627	721
Advertising and public relations	636	489
Depreciation	2,221	1,736
Security	300	244
IT costs	249	276
Waste removal	159	169
Veterinary expenses	265	265
Other expenses	1,253	1,358
	15,752	14,977



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