



Statement: Dublin Zoo Inspection Report

Following a thorough investigation of allegations made by an anonymous whistle-blower which were raised in the Seanad on July 14th 2022 via a protected disclosure, it has been determined by the National Parks and Wildlife Service (NPWS) that there is no evidence to support the allegations of ongoing serious welfare breaches at Dublin Zoo.

This finding is available in the 'Special Zoo Inspection Report' from the NPWS that Dublin Zoo is now permitted by the NPWS to share with the public. Dublin Zoo has made the decision to release the report in full and it can be found within this document.

The Report finds that of the 23 allegations made:

- **Seventeen** were considered to be 'unfounded with no evidence supplied to support the narrative of the allegation'
- **Two** were found to have 'no basis or evidence to even substantiate the allegation'
- **Three** were classed as 'some evidence was found supporting a historical allegation, but Dublin Zoo had already resolved the case' with changes in 'process, facility or management'.

The one claim 'considered to be supported as per the stated allegation' was an issue regarding the development of the new red panda habitat as per the recommendations of the European Association of Zoos and Aquaria (EAZA) best practice guidelines. However, the report also notes this recommendation had been assessed by the management and in the professional opinion and experience of Dublin Zoo it was not considered a concern by the senior team - which the investigation team recognised as being justifiable and consistent with the other percentage of zoos which house red pandas in a similar manner within the European and North America zoo population.

The detailed report, which involved the examination of 480 records (process documents and clinical assessments) and 52 hours of testimony, vindicates Dublin Zoo and reaffirms that animal welfare is our number one priority and the foundation stone of all that we do. Only the highest standards of animal care are acceptable at Dublin Zoo, and our hard-working and passionate colleagues are testament to this.

Issues raised by members of staff regarding animal welfare at Dublin Zoo are treated with the utmost sensitivity and seriousness and are thoroughly investigated. Any disclosures are investigated immediately and rectified where appropriate. Staff can make animal welfare related disclosures through their team, Dublin Zoo management or anonymously.

The allegations examined in this report were made without any consultation with Dublin Zoo to check their legitimacy and were deeply upsetting. Those making allegations claimed to have *'exhausted all options with the Dublin Zoo grievance procedures'* and that Dublin Zoo facilitated a culture of *'hiding wrongdoing and lacked transparency'*. This has been proven to be untrue. There is no record of any grievances lodged which corresponds to any of the matters raised in the disclosure. The report also notes that *'at no time did the investigation team perceive that Dublin Zoo were attempting to hide wrongdoing'* and that *'Dublin Zoo was transparent about the cases involved in the allegations and provided the investigation team with complete access to their records, staff, documentation, images from post-mortems, film, video and other formats as requested'*.

The Report also highlights that *'Dublin Zoo promoted animal welfare throughout their operational practices'* and this is *'reflected in their approach to animal husbandry, the comprehensive health care programmes in place, and the team's passionate belief in their high standards and that they can always be better, striving for more and to continually improve the welfare for the animals in their care'*.

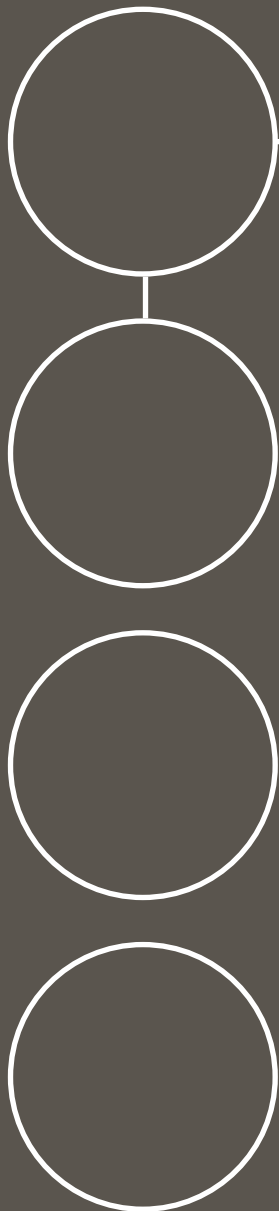
Dublin Zoo fully accepts the conditions and recommendations outlined in the investigation report and will implement all recommendations made.

Like all progressive zoos, Dublin Zoo strives to continuously improve and set new standards for its animal welfare management programme. The collective understanding of animal behaviour is ever evolving and at Dublin Zoo we do our utmost to ensure we adhere to and, where possible, exceed best practice at all times. However, human error is unavoidable when managing animal welfare and mistakes can happen - but it is the course of action we take once notified of an issue and the manner in which it is resolved which is of crucial importance. We take full responsibility for the issues identified in this report, but it must be recognised that they were immediately rectified and processes were put in place to ensure they would not happen again.

Dublin Zoo is an organisation with an outstanding track record in animal welfare management. We are pleased that the good name and reputation of Dublin Zoo and its highly committed team of employees and volunteers, who live and breathe Dublin Zoo's mandate, animal welfare, on a daily basis, has been upheld.



An tSeirbhís Páirceanna Náisiúnta
agus Fiadhúlra
National Parks and Wildlife Service



DUBLIN ZOO SPECIAL ZOO INSPECTION REPORT

14th of July to 7th of October 2022

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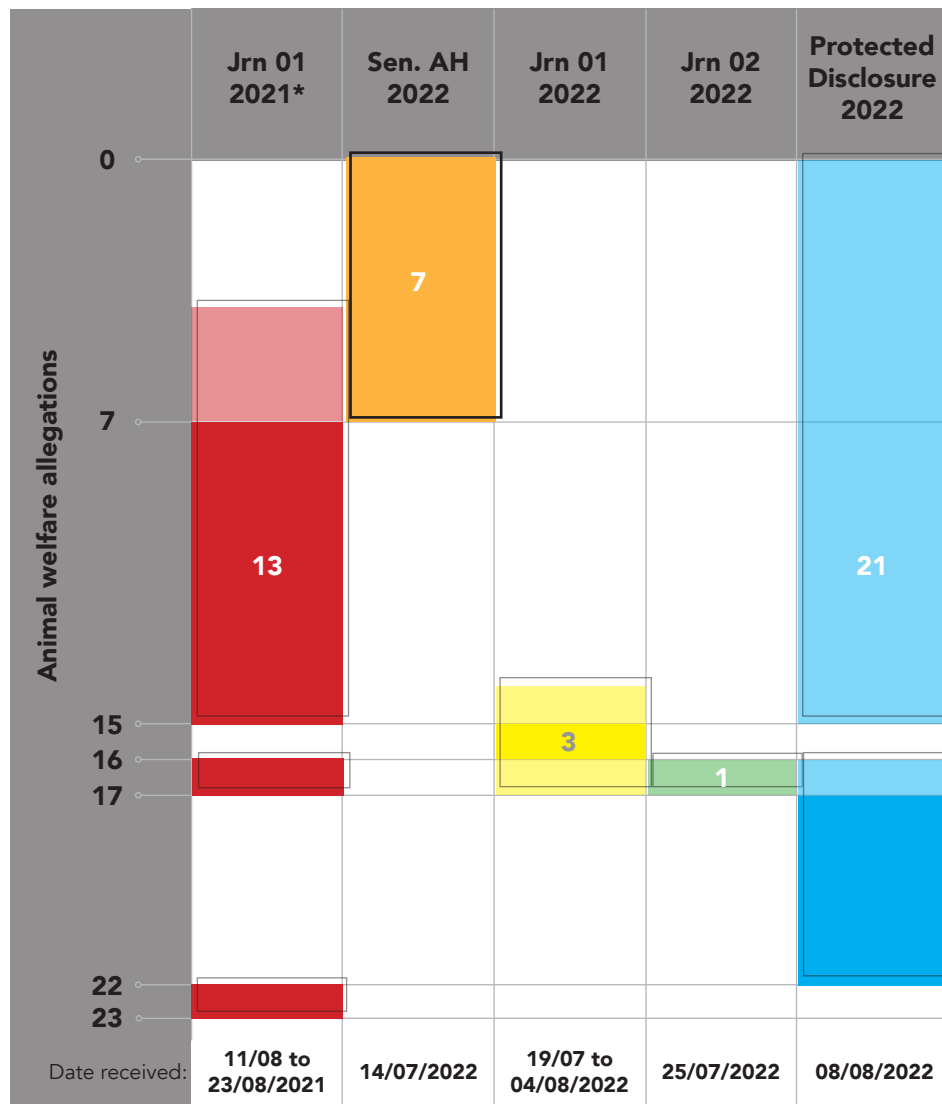
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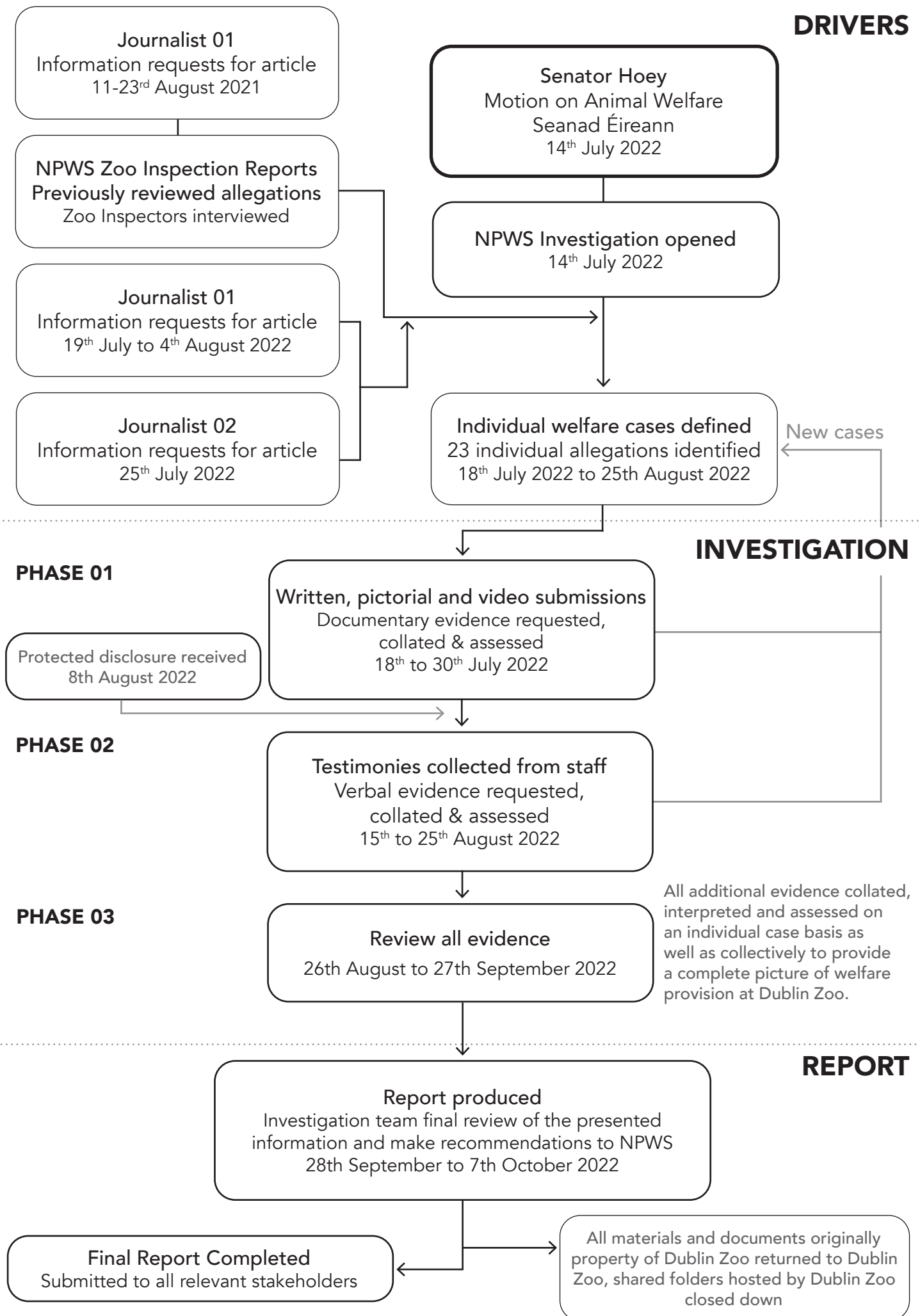
Dublin Zoo Welfare Allegations Source Material

Figure 0.01: The original Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business of the 14th of July 2022 identified seven welfare allegations, one general commentary and six specific alleged individual welfare cases or events, relating to Dublin Zoo. The NPWS Zoo Inspection team started the review of the cases but widened their case definitions to include any welfare allegations made in the last two years as there was some cross over with previous journalist allegations to those presented in the Seanad Éireann. Additional cases were added to the case series as further journalist requests came into the department and the protected disclosure was released to the investigation team on the 8th August 2022. Case definitions were based on the interpretation of the Senator or the journalists in response to the whistleblower(s)'s statements and from the wording of the protected disclosure. To date (1st October 2022), no formal complaint has been made to the NPWS Zoo Licensing Department.

Source material includes (i) Senator Hoey's statement on the 14th July 2022 from the Seanad Éireann (Sen. AH); (ii) Journalist 01 request for comment for freelance article (Jrn 01 2021); Journalist 01 request for comment for freelance article (Jrn 01 2022); Journalist 02 request for comment for freelance article (Jrn 02 2022); and the primary whistleblower's protected disclosure (protected disclosure 2022). Cases are outlined with solid colours demonstrating primary allegations and transparent colours representing repetition of the same cases from other sources. The date the allegations were received by the NPWS Zoo Licensing Department at the base of the chart.



0.02 Dublin Zoo Welfare Allegations Investigation Process



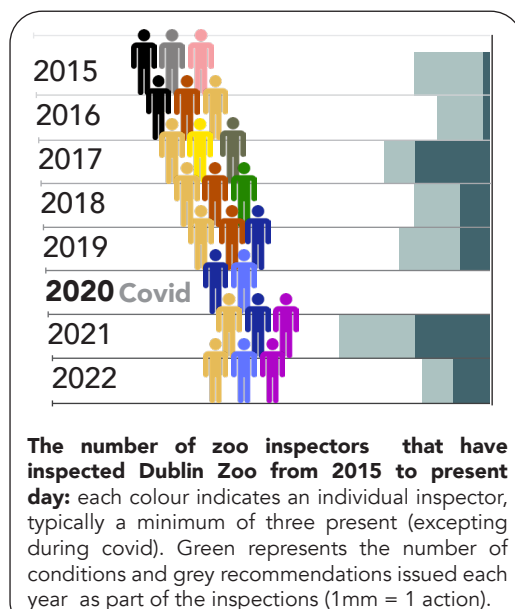
0.03 TIME LINE OF WELFARE CASE ALLEGATIONS AT DUBLIN ZOO 2016 - 2022

	SENATOR HOEY REPORTED ALLEGATIONS	JOURNALIST REPORTED ALLEGATIONS	PROTECTED DISCLOSURE ALLEGATIONS	
2016	Case 03: Harry, Lowland gorilla Died 29 th May 2016			2016
2017		Case 23: Trouble, Common ostrich Died 3 rd November 2017		2017
2018		Case 15: AA11M56, Scimitar-horned oryx Died 19 th July 2018		2018
2019	Case 04: Sulawesi crested macaque Escapes: multiple, August 2019 to present	Case 15: A19M56, Scimitar-horned oryx Died 14 th January 2020	Case 21: Goeldi's monkeys 27 th December 2019 to 17 th May 2022	2019
2020	Case 01: Kildare, Grant's zebra Euthanased 3 rd December 2020	Case 14: Nico, California sea lion Died 30 th May 2020	Case 18: Tundra, Amur tiger 29 th January 2020 to present (alive)	2020
2021	Case 05: Eline, white-naped mangabey Escaped 21 st February 2022	Case 08: Bossou, chimpanzee 17 th November 2020 to present (alive)		2021
2022	Case 06: A16B03, citron-crested cockatoo Escaped 22 nd May 2022	Case 11: Shea, Humboldt penguin Died 5 th January 2021	Case 19: Red panda exhibit 1 st April 2022 to present	2022
	Case 02: Maeve, Baringo giraffe Euthanased 28 th June 2022	Case 16: A22M01, Bornean orangutan Died 10 th February 2022	Case 22: Tafara, Hunting dog Died 29 th April 2022	
	Case 07: General allegations of wider welfare issues	Case 16: A20M12, siamang Died 25 th February 2022		
	Case 10: General allegations of lack of time for enrichment and training	Case 09: Niamh, Amur tiger Euthanased 8 th March 2022		
	Case 12: Poor quality food for sea lions and penguins (approx. 2019-2020)			
	Case 13: Dublin Zoo refuses to euthanase animals to record deaths as 'natural'			
	Case 17: Historical concerns with regard to ozone in the sea lion filtration plant			
	Case 20: Inbreeding of scimitar-horned oryx and other species			
	Cases 1-14, 16-22: also found in the protected disclosure			
	Leo Oosterweghel Director 2001 - 31/07/2020	Christoph Schwitzer Director 01/08/2020 to present	Miguel Bueno General Curator 01/07/2019 to present	Previous Vet Team Zoo Veterinarian ?? to 01/10/2018
			Current Vet Team Zoo Veterinarians 01/10/2018 to present	Formal zoo inspections

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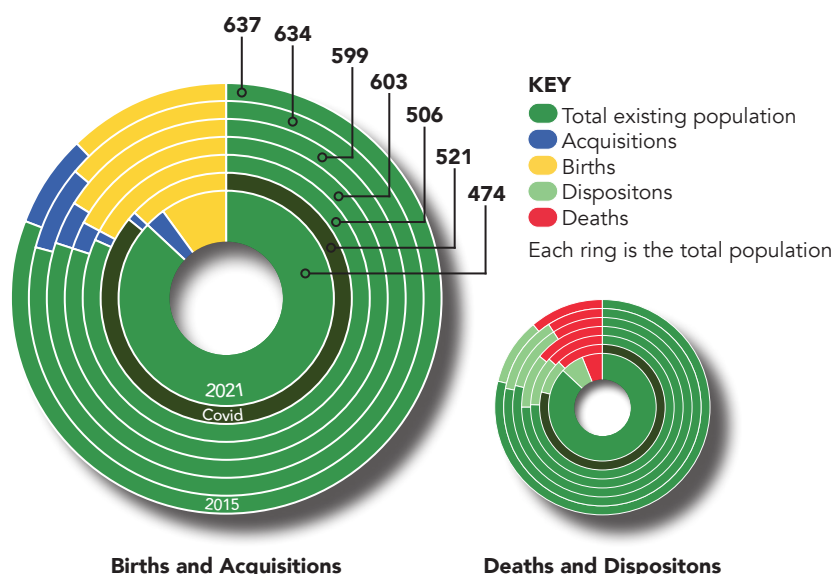
2020: (1) 13th March to 2nd June, (2) 22nd October to 2nd December
2021: (3) 1st January to 26th April

0.04 Dublin Zoo Special Inspection: Welfare Allegations Investigation Overview



23 Welfare Allegations

27 ANIMALS | 15 CASES INDIVIDUALS | OVER 6 YEARS



The percentage of the acquisitions, births, deaths and dispositions for Dublin Zoo from 2015 to 2021 as a percentage of the total peak annual population: the animal population varied little with births and acquisitions being at similar levels to deaths and dispositions, even during covid. Invertebrates (excluding arachnids) considered as single colonies for the above comparison, other species individual counts undertaken.

Breakdown of the phases of the Dublin Zoo investigation: Following the statement by Senator Hoey on the 14th July 2022 at the Seanad Éireann the NPWS Zoo Inspection team initiated the special inspection. Phase 1 (P1) consisted of initial contact with Dublin Zoo, welfare case definitions and scope of investigation were outlined, initial data collection and assessment started; Phase 2 (P2) consisted of follow up requests and oral testimonies from current staff; and Phase 3 (P3) assessed all the documents and testimonies to provide a robust, evidence-based review of all of the welfare allegations identified.



Source materials and investigation statistics

REQUESTS	281 documents	Dublin Zoo records, processes, policies, radiographs and other documents
REFERENCES	199 papers	Peer-reviewed scientific papers or technical bulletins relevant to the individual cases
MULTI-MEDIA	4.5 hours	Consideration of television media and staff submitted videos and images
TESTIMONIES	52 hours	28 hours of interviews, followed by 24 hours of testimony consideration
REPORT	159 hours	Collation of all evidence to allow an informed response to the allegations

23 Allegations → 20 Unfounded → of these → 02 Identified by Dublin Zoo
 → 03 Supported → 02 Historical & resolved
 → 01 To monitor (red panda facility)

Figure 0.05 Dublin Zoo Welfare Allegations Investigation Team Findings

Due to the number and the complexity of the cases the investigation team identified a need to clearly delineate beyond simple yes or no with regard to the allegations. There were elements of truth in most of the cases but this was variable, either due to source, the quality of the information, or whether the whistleblower was present or was reflecting on documents or observations by other members of staff. As such the credibility varied between the cases, typically with more recent cases being the most inaccurate and having limited quantifiable information. As such the investigation team assigned each case to a finding of unfounded or supported, with subcategorisation to one of five categories which would demonstrate the justification behind the decision. An allegation may have been accurate in part but based on the narrative or welfare concern outlined in the allegation meant the investigation team could consider an allegation unfounded based on whether the actions taken by Dublin Zoo were demonstrated to have been a failure to provide for the welfare needs of the animal or animals (depending on the nature of the event), or whether the emotions or perceptions of the witness were poorly reflective of the events as they transpired. These sub-categories are outlined below:

1 No evidence to support the allegation

- (a) Investigation team are unable to demonstrate that the allegation occurred at all e.g. animal does not exist
- (b) Whistleblower has not provided evidence that the allegation occurred

2 Evidence to demonstrate the allegation refers to an actual case

- (a) Investigation team are able to demonstrate that the case refers to an actual animal, event or situation

3 No evidence to support the narrative of the allegation

- (a) The inspection team are able to demonstrate the narrative of the events alleged does not agree with the events that occurred
- (b) Whistleblower has not provided evidence that the allegation occurred as stated or lacks any credibility in the narrative

4 Evidence supports the historical allegation, Dublin Zoo have resolved

- (a) The allegation is reflective of the events that occurred
- (b) Dublin Zoo identified the welfare event and directly took action to resolve, mitigate or ensure it cannot occur again

5 Evidence supports the allegation, Dublin Zoo have not resolved

- (a) The allegation is reflective of the events that occurred
- (b) Dublin Zoo have not taken action to resolve the active or potential welfare event and it is ongoing or a risk of repeat in the future

Each case was assigned a summary card that provides a snap-shot of the allegation, the decision made by the investigation team, the justification for that decision and whether additional recommendations have been made following assessment of the case. An example summary card is provided:

CASE	01. 'Kildare', Grant's zebra	    	FINDING	UNFOUNDED (R)
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In this example the case is Case 01: 'Kildare', the Grant's zebra. The justification summary confirm that the 'Kildare' case was an actual case that occurred, but in this case the allegation was not supported by the evidence, including: the television programme 'The Zoo', witness testimony and the contemporaneous documentation. As such, whilst 'Kildare' did suffer complications the management of her case was considered compliant with the Standards and was exemplary for the suspected diagnosis at the time of the event. As such, the allegation was considered unfounded. The (R) refers to recommendations made by the investigation team, in this case a recommendation has been made. Where the investigation team are of the impression that the Standards have not been met then a condition will be issued, this is marked as a (C).

CASE	01. 'Kildare', Grant's zebra	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	02. 'Maeve', Baringo giraffe	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	03. 'Harry', lowland gorilla	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	04. Escaped SC macaques	<input type="radio"/> <input checked="" type="radio"/> 2 <input type="radio"/> <input checked="" type="radio"/> 4 <input type="radio"/>	FINDING	UNFOUNDED (C)
CASE	05. 'Eline', mangabey escape	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	06. 'AL6B03' cockatoo escape	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	07. General welfare issues	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	08. 'Bossou', chimpanzee	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input checked="" type="radio"/> 4 <input type="radio"/>	FINDING	UNFOUNDED (C)
CASE	09. 'Niamh', Amur tiger	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	10. Lack of time for enrichment	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	11. 'Shea', Humboldt penguin	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	12. Fish quality, 'Seanna'	<input type="radio"/> <input checked="" type="radio"/> 2 <input type="radio"/> <input checked="" type="radio"/> 4 <input type="radio"/>	FINDING	SUPPORTED (C)
CASE	13. Refuse to euthanase animals	<input checked="" type="radio"/> 1 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	14. 'Niko', California sea lion	<input type="radio"/> <input checked="" type="radio"/> 2 <input type="radio"/> <input checked="" type="radio"/> 4 <input type="radio"/>	FINDING	SUPPORTED (C)
CASE	15. Scimitar-horned oryx death	<input checked="" type="radio"/> 1 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	16. Orangutan & siamang deaths	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	17. Ozone leakage	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	18. 'Tundra', Amur tiger	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED (R)
CASE	19. Red panda facility	<input type="radio"/> <input checked="" type="radio"/> 2 <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> 5	FINDING	SUPPORTED (R)
CASE	20. Inbreeding common	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	21. Goeldi's monkeys mortalities	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	22. 'Tafara', African wild dog	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED
CASE	23. 'Trouble', ostrich pelvis	<input type="radio"/> <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> <input type="radio"/>	FINDING	UNFOUNDED

Recommendations made to the NPWS Zoo Licensing Department (see Appendix 05): (R) Recommendation / (C) Condition

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION

DUBLIN ZOO SPECIAL INSPECTION WELFARE ALLEGATIONS INVESTIGATION

EXECUTIVE SUMMARY

- This report was produced following a comprehensive special zoo inspection investigation that was initiated in response to the welfare concerns and allegations raised by Senator Annie Hoey as transcribed from her Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business of the 14th of July 2022 (see Appendix 01 for a transcript of the Motion).
- The investigation team added additional cases from recent historical media requests and the protected disclosure itself which was released to the investigation team on the 8th August 2022 (see Figure 0.01 for case source material).
- A total of 23 welfare allegations were identified and assessed as part of this investigation.

- The investigation team consisted of a number of members of the NPWS Zoo Licensing team which consisted of experienced zoo and wildlife veterinarians, members of the professional zoo community, NPWS zoo inspectors, technical specialists called on for individual cases, and NPWS government staff. Each technically competent member of the investigation team having at least ten years' experience in the zoo and wildlife industry with wide ranging contributions to zoo and wildlife animal welfare science and some with specialist qualifications in their field. Where cases fell outside the technical knowledge or additional information was sought to clarify or obtain consensus on cases recognised technical specialists were brought in to comment on specific elements of a case.
- The investigation was broken down into three phases (see Figure 0.02):
 - **Phase 01:** An initial allegations list was produced and documentation requested from Dublin Zoo from the contemporaneous records of the time of the allegation as well as supplementary documentation as required. An initial case review of each allegation was produced which highlighted areas where additional information was needed, and specific areas for assessment through oral testimonies were required to fill in any gaps noted in the written documents;
 - **Phase 02:** oral testimonies were collected from staff and verbal accounts were compared against each other as well as the already collated documentation pertaining to each case. Credibility was assessed and taken into account in conjunction with the case evidence reviews (see Appendix 02 for basis of credibility assessments);
 - **Phase 03:** compilation of all the received evidence, follow up on any areas where still missing information or queries raised from the testimonies, and final review of the allegation cases and evidence-based conclusions were made with regard to

the allegations made (see Appendix 03 for the comprehensive welfare cases assessments, or Appendix 04 for brief summaries of each case).

- Early on the investigation team produced a clear timeline of the case allegations verses the managerial staff responsibilities and when the positions of Directors, General Curators, and veterinary team staff changed hands with different individuals in these key roles (see Figure 0.03).
- The investigation team reviewed a large number of documents and testimonies as mpart of this investigation, see Figure 0.04 for an overview, which included:
 - 281 documents were provided by, and returned to, Dublin Zoo to understand the events surrounding the allegations;
 - 199 scientific papers and professional technical bulletins were reviewed to provide base line assessment criteria against the welfare allegations and the submitted documents from Dublin Zoo;
 - 4.5 hours of media footage were reviewed and assessed in support of the documentation regarding the welfare allegations, sources included staff and media production companies;
 - 52 hours of testimony from current staff, including 24 hours of testimony auditing and correlation to case allegations;
 - One month of data logger temperature readings taken from the California sea lion pens to asses the evidence for case 14.0, 'Niko', producing 17,000 data points of which nearly 3,000 were utilised to support the speculation regarding the temperatures the weekend he died;
 - 8 zoo licence inspection reports and associated documentation (2015-2022);
 - 8 annual stock records were rebuilt for comparison and assessment of trends within the whole Dublin Zoo animal population; and
 - 159 hours of case review and assessment to allow an informed response to the allegations.
- The investigation was limited to the scope permitted within the European Communities (Licensing & Inspection of Zoos) Regulations 2003 S.I. No. 440 of 2003 and the Protected Disclosures Act 2014 (No. 14).
- The primary animal welfare model utilised as the basis for this investigation was the Five Domains model, as utilised in the 'Irish Standards of Modern Zoo Practice' (2016), National Parks and Wildlife Service and also incorporated in part in the 'Working Together for Animal Welfare: Ireland's Animal Welfare Strategy 2021-2025' (2020), Department of Agriculture, Food and the Marine.
- Welfare allegations were broken down into the key elements, focusing on the core welfare issues as stated, with each element assessed against the evidence provided and responded to in each case, with a final summary for each welfare allegation stated whether the allegation was as stated or not. Each case being outlined to a standard template as demonstrated in Appendix 03.

- Following assessment, the allegations were categorised into one of two core groups: unfounded or supported, which were then sub-categorised into five groups ranging from (1) No evidence to support the allegation occurred to (5) Evidence supported the allegation, Dublin Zoo have not resolved the welfare concerns as of yet (see Figure 0.05).
- The investigation team overall found that Dublin Zoo had high standards that promoted animal welfare in their vision and mission and this was represented by the core values of the majority of the staff interviewed, which was reflected in their approach to animal husbandry and the substantial health care programmes in place.
- Of the 23 welfare allegations the investigation found the following:
 - 2/23 had no basis or evidence to even substantiate the allegation made and as such were dismissed due to lack of any credible evidence other than that stated in the allegation, one was the general statement on refusing to euthanase animals and the other referred to the death of a scimitar-horned oryx calf which could not be substantiated despite reviewing every single oryx that has been bred at Dublin Zoo since 1980;
 - 21/23 cases referred to actual animals or events that had existed;
 - Of these 21 allegations 17/23 were considered to be unfounded with no evidence supplied to support the narrative of the allegation. Specifically regarding these cases, where they concerned the welfare of a single individual animal, the care provided was considered to have been to a high standard, ensuring the animal was treated with respect and dignity, even when the case or outcome may not have been as Dublin Zoo would have wanted;
 - Of the remaining 4/23 cases the inspection team identified 3/23 that were classed as 'evidence was found supporting the historical allegation, but Dublin Zoo had resolved the case' with changes in process, facility or management depending on the allegation case. These included the Sulawesi-crested macaque escapes (case 04), the fish quality issues for the California sea lions and Seanna's abortion (case 12), and Niko the California sea lion with the presumed hyperthermia that led to his death. The fourth case, and the only case that spanned both the criteria (3) 'No evidence to support the narrative of the allegation' and (4) 'Evidence supports the historical allegation, Dublin Zoo has resolved', was the case of 'Bossou' the chimpanzee. This was a complex case which is often found in managing fragmented chimp groups which was further exacerbated by Dublin Zoo having chimpanzees with poorly socialised backgrounds. As such there were challenging elements in this case and it is an ongoing issue that is well managed but has had some challenging moments over the last few years. The investigation team recognised the high standard and consideration with regards to the programme and that despite the efforts the outcome was not as hoped for both 'Bossou' and the troop (see case 08 for details). In this case there were elements that reflected the situation and others that were wildly different to the actual events, hence the dual classification.
 - A single case was considered to be supported as per the stated allegation, this was the failure to develop the new red panda facility as per the recommendations

of the EAZA best practice guidelines which was the case. However, this recommendation had been assessed by the management and in the professional opinion and experience of Dublin Zoo it was not considered a concern by the senior team (which the investigation team recognised as being justifiable and consistent with the other 28% of zoos that house red pandas in a similar manner within the European and North America zoo red panda holder population) (case 19).

- The investigation team's final position on the welfare cases was that three of the 23 cases were considered supported in their allegation (case 12, 14, and 19) and that cases 12 and 14 had now been resolved by self-driven programme change and restructuring of the staff involved which has resolved the issue as confirmed during both the site reviews and the assessment of the documentation over the assessment period to present day; and case 19 which is the red panda habitat which has recommendations in this report for Dublin Zoo to validate the zoo's position through behavioural assessments of the red pandas.
- As part of the original allegations Dublin Zoo has publicly been claimed to be hiding wrongdoing and lacking transparency with regard to their implementation and support of animal welfare. The investigation team would like to highlight to the readers of this report that Dublin Zoo was transparent about the cases involved in the allegations and provided the investigation team with complete access to their records, staff, documentation, images from post-mortems, film, video and other formats as requested and sometimes additional documents not requested to allow the investigation team to have a complete picture of events as they occurred to enable an accurate and evidence-based review of each case. Access to staff was provided and they openly discussed their passions, knowledge, experiences, perceptions, and concerns, where they existed. In addition, the production company for the series 'The Zoo' were extremely gracious in their access to the footage relating to the welfare cases where they had filmed them, this was especially useful in understanding how open Dublin Zoo has been about the ups and downs of the cases in this report and that many of these cases were not hidden behind closed doors as implied but had been televised on national television for all to see, including in some cases the euthanasia of animals and subsequent post-mortem findings. At no time did the investigation team perceive that Dublin Zoo were attempting to hide wrongdoing.
- The investigation team found that the majority of the cases were unfounded in their scope and storytelling, that were based on elements of truth but perception did not marry with reality in many of the descriptions found in the allegations which in many instances often lacked credibility and in some cases simply failed to capture the pertinent facts of the case, getting dates, sexes and even names wrong, for example:
 - Case 3.0: 'Harry', the Western lowland gorilla, in the protected disclosure it was stated that *"After his death as no explanations were given and no post mortem report was shown to staff"*: an episode of 'The Zoo', made available to the investigation team, features this sad case and the then zoo veterinarian is shown to take all of the gorilla care team through the post-mortem and they are even

- shown images from the post-mortem demonstrating the cause of his death, the staff then being interviewed with regard to the findings.
- Case 15.0: Scimitar-horned oryx calf death, A journalist reported, via the whistleblower, *"An oryx gave birth to a calf a number of years ago, and the mother was unable to look after it. Staff offered to hand rear the baby or euthanise it, but this request was ignored and the calf died after 2-3 days from starvation after being left to die"*: every single scimitar-horned oryx death (both adult and calf) were reviewed as far back as 1980. Every single calf that was of an age that it was dependent on its mothers milk had a robust diagnosis as to the cause of death and in each and every case they had a full stomach of milk, none starved to death. There was no evidence in all of the post-mortems reviewed that any animal, of any age had starved to death.
 - Case 20.0 Inbreeding at Dublin Zoo, in the protected disclosure it states that *"There have been a number of cases of inbreeding of different species such as the Scimitar horned Oryx. The Dublin Zoo herd is made up of 11 animals, of the group 9 are inbred"*. Reviewing the lineage and the studbook for the scimitar-horned oryx in fact 9 of the 11 are not inbred. Depending on the definition of inbred (see case discussion on this rationale), only two may be considered inbred, however the herd is non-breeding and all the males are now castrated so there is no impact to the breeding-programme. The two animals in question were accidents due to parents becoming sexually mature early than expected for the species, this was not due to a managerial decision. No other examples of inbreeding were offered nor identified.
 - Case 22.0: 'Tafara', African wild dog, in the protected disclosure it was stated that *"...on the 21/04/2022 a female hunting dog suffered severe injuries...a vet did not examine the animal until the 25/04/2022... the animal died later on the 27/04/22 due to the management's failure to get the animal veterinary attention for 4 days"*: where in actual fact the animal was male, it was injured on the 19th April 2022, it was seen by a veterinarian on the 20th April 2022, and died on the 29th April 2022 after having had six vet visits, two general anaesthetics and considerable pain relief, antibiotic support, medical therapy and surgical management of the wounds.
- This is not to say that the allegations were not totally unfounded and there had been a small number of cases that did not stand up to the high standards normally expected at Dublin Zoo, this included the case of 'Niko' and that of 'Seanna', both California sea lions. However, these were noted at the time they occurred by Dublin Zoo and they responded rapidly at the time with robust assessments of the cases and introduction of considered mitigation processes to ensure they do not occur again. In the investigation team's opinion this demonstrates that Dublin Zoo is only human and that mistakes can happen, but where Dublin Zoo shows its true values is how and when it responds to these failures. These were single isolated cases, rather than ongoing representations of chronic welfare problems at the zoo.
 - Animal welfare is a core part of Dublin Zoo and it continues to strive to move forward raising standards and building on its strong foundations, adapting when mistakes occur

and providing a culture that promotes world class husbandry and strives to be the best it can. They are clear in these goals and have been nothing but transparent in their communication of what they believe and how they want to take Ireland forward in global conservation and best practices in zoo animal husbandry.

- Dublin Zoo's own Animal Welfare Policy states that "*Animal welfare is fundamental to the work of Dublin Zoo – it is our mandate to operate*". The investigation team have only identified numerous cases that uphold this position during this investigation, and a small number where they failed to deliver on this policy but recognised those failings and changed their operation to make sure they do not happen again.
- As such the investigation team believe the overall picture of animal welfare at Dublin Zoo is a continually evolving, culture of positive welfare that builds on strong foundations and does not stand still, integrating animal welfare science in its operational programmes.
- The investigation team noted a number of areas where improvements could be made and these are outlined in Appendix 05. There are sixteen recommendations and six conditions, with recommendations being non-mandatory comments where Dublin Zoo can improve and conditions that are mandatory and Dublin Zoo needs to take action. Of these six conditions two relate to historical allegations from staff regarding poor biosecurity management of the gorillas, one is with regard to improvements in documentation following escape drills or real cases, one is with regard to having a documented chimpanzee management strategy for the split troop which has been verbally discussed but not captured on paper, and two pertain to minor improvements in the California sea lion management programme to ensure the historical allegations are mitigated as far as practicable.
- The investigation team are satisfied that there was no evidence submitted to the team that supported the allegations made of ongoing serious welfare breaches. The team accept that there may be additional evidence as alluded to at the Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business of the 14th of July 2022 which the investigation team were not privy to and this may change the position on some of the cases, but taking into account the wealth of corroborated information received during the investigation the inspection team is confident of its findings in these allegations.

END EXECUTIVE SUMMARY

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION

DUBLIN ZOO SPECIAL INSPECTION WELFARE ALLEGATIONS INVESTIGATION

AIM

This special inspection report was produced following a comprehensive special zoo inspection investigation that was initiated in response to the welfare concerns and allegations raised by Senator Annie Hoey as transcribed from her Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business of the 14th of July 2022 (See Appendix 01 for a transcript of the Motion). In addition, due to cross over with regard to some of the allegations made, the special inspection report also reviews the NPWS Zoo Inspectorate response to previous press requests for information pertaining to animal welfare concerns in relation to Dublin Zoo since 2015, since the Irish Standards of Modern Zoo Practice (ISMZP) (2016) were implemented in Ireland. Recommendations are made with regard to the findings of the investigation including: critical appraisal of each animal welfare allegation made with respect to Dublin Zoo; critical appraisal of the zoo inspection process with regards to Dublin Zoo, and recommendations for any further action to be taken with regard to Dublin Zoo based on the evidence available and assessed at this investigation.

SPECIAL INSPECTION SCOPE

This document provides an evidence-based investigation into the allegations of failings with regard to the provision of animal welfare as defined within the Irish Standards of Modern Zoo Practice (2016) as reported by Senator Hoey on the 14th of July 2022, acting on information provided by the protected disclosure from the whistleblower(s), and subsequent allegations from journalists reported to have access to the same whistleblowers. Assumptions were made that the journalist requests were viable as the information provided mirrors the allegations reported by Senator Hoey and in some cases expanded upon them. This investigation was carried out without prejudice and solely reviewed the factual evidence made available to the investigation team. On the 8th August 2022 an anonymised protected disclosure was provided to the investigation team which confirmed the source of the journalist requests and added a number of additional welfare allegations not reported by the journalists or Senator Hoey which were subsequently investigated as part of the wider investigation. Figure 0.01 outlines the sources of the animal welfare or non-compliance welfare related cases that were collated as part of this investigation.

It is noted that at the time of completion of this investigation report no formal allegations regarding concerns for animal welfare at Dublin Zoo have been made to the NPWS Zoo Inspectorate. Nor have any documents or images referred to in the Motion on Animal Welfare on the 14th July 2022 been shared with the investigation team. Nor have any documents nor formal allegations been made in reference to the press comments. As such the investigation to date is limited solely to welfare allegations as described by:

- Freelance journalist 01 (JRN 01), 11th to 23rd August 2021;
- Senator Annie Hoey comments, 14th July 2022 Motion on Animal Welfare, Seanad Éireann;
- Freelance journalist 01 (JRN 01), 19th July to 4th August 2022;
- Freelance journalist 02 (JRN 02), extract alleged from the protected disclosure (reference staff and management issues and ozone leaking), 25th July 2022;
- Protected disclosure from whistleblower (not dated, redacted anonymous), received 8th August 2022;
- Verbal testimonies from current Dublin Zoo staff, 15th to 25th August 2022.

The allegations are reviewed in order as outlined by Senator Hoey and then in chronological order as they were communicated through the journalist information requests. Appendix 03 details the investigation findings for each welfare allegation, with a summary found in Appendix 04.

Where allegations pertain solely to human resources concerns, where there are no direct links to animal welfare or public safety, these were not considered appropriate nor under the remit of the NPWS Zoo Inspectorate and these have been left to be assessed with the relevant authorities and will not be discussed in this investigation.

Zoo inspection reports have been assessed for the period 2014 to the present day, with the current inspection team starting in 2015. Comments with regard to general animal welfare management have been assessed as well as any specific responses to previous allegations made. It is noted that since 2015 no formal nor formal complaints against Dublin Zoo have been made to the department, other than freelance journalists requesting details of potential welfare allegations. The responses are reviewed as part of this investigation. Recommendations are made, where required.

INFORMATION SOURCES FOR THE INVESTIGATION

This initial aspect of the investigation with regard to the welfare allegations pertaining to Dublin Zoo were limited to second or third hand source material as reported by individuals, namely:

- Freelance journalist 01 (JRN 01), 11th to 23rd August 2021;
- Senator Annie Hoey comments, 14th July 2022 Motion on Animal Welfare, Seanad Éireann;
- Freelance journalist 01 (JRN 01), 19th July to 4th August 2022;
- Freelance journalist 02 (JRN 02), extract alleged from the protected disclosure (reference staff and management issues and ozone leaking), 25th July 2022;
- Verbal testimonies from current Dublin Zoo staff, 15th to 25th August 2022.

The initial review was prior to the protected disclosure being made available on the 8th August 2022 which was then used to confirm the original allegations made and each case was re-reviewed to ensure that the interpretation by Senator Hoey and the journalists was representative of the original welfare concerns. In addition, the protected disclosure flagged

a number of additional cases that were not previously highlighted and these were added to the scope of the investigation.

In total twenty-three welfare allegations were identified, which included one that was a general statement of wider welfare failings at Dublin Zoo.

The information assessed with regard to the actions of Dublin Zoo with regard to the stated allegations was limited to:

- Information, records, clinical data, and post mortems provided by Dublin Zoo and Dublin Zoo's veterinary team on request with regard to the specific allegations made (it is noted that rather than redact information, where a specific case is mentioned in a document the whole document was provided, rather than only the specific elements requested). These were returned to Dublin Zoo following the investigation.
- The NPWS zoo inspection reports
- Interviews with zoo inspectors where relevant
- Interviews with Dublin Zoo staff
- Video evidence, taken of specific cases pertaining to the welfare allegations, from the television series 'The Zoo', in some cases these were specifically referred to by Senator Hoey in her motion on the 14th July 2022.

As this was not considered a formal investigation of animal welfare failings, simply a review of compliance with the Standards and a special zoo inspection carried out under the powers of the European Communities (Licensing and Inspection of Zoos) Regulations 2003, S.I. No. 440 of 2003, interviews with ex-members of staff nor undisclosed whistleblower(s) nor Senator Hoey herself were undertaken due to the lack of a formal complaint being made to the Department, the whistleblower(s) being anonymous and identity unknown, and the investigation team having no authority under the powers provided in the S.I. 440 of 2003 to call on additional potential witnesses not currently within the employ of Dublin Zoo. All interviews were undertaken on a voluntary basis.

With regard to the whistleblower(s) the investigation team were unaware of the identities of the actual whistleblower(s). Senator Hoey and journalist requests referred to at least two, one being an ex-member of staff and one being a current member of staff, with an additional four alleged during the investigation by journalist 01. One of these possible whistleblowers was reported to have been named in the newspaper articles related to the events but these articles were not reviewed as part of the investigation being considered third hand accounts and open to interpretation, rather than primary evidence sources. The investigation team were uninterested in the identity of the whistleblowers and were solely focused on the factual evidence of the events and whether the allegations were supported or not by documentary evidence and verbal testimonies and whether animal welfare failings had occurred at Dublin Zoo.

INVESTIGATION PROCESS

The aim of the investigation into the welfare allegations at Dublin Zoo were initiated in response to Senator Hoey's Motion on Animal Welfare presented to the Seanad Éireann at

NPWS ZOO INSPECTORATE DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION

the Private Members' Business of the 14th of July 2022. The following process was undertaken and provides an overview of the investigation timeline:

14 th July 2022	<ul style="list-style-type: none"> • Senator Hoey's Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business of the 14th of July 2022 • No formal notification made to the NPWS Zoo Inspectorate • Investigation discussed and initiated by NPWS Zoo Inspectorate
15 th July 2022	<ul style="list-style-type: none"> • Initial investigation team constructed and potential conflicts of interests reviewed (standard process within the team) • Review of Senator Hoey Motion on Animal Welfare undertaken with clear individual case definitions created and these assessed against historical and previously reviewed allegations referenced by journalist requests with new allegations identified and defined • Definition of scope of investigation under the powers authorised in S.I. 440 of 2003 discussed and clarified
PHASE 01 INVESTIGATION	
16 th July 2022	<ul style="list-style-type: none"> • Dublin Zoo contacted regarding the welfare allegations and details of the new cases requested
18 th July to 30 th July 2022	<ul style="list-style-type: none"> • Final investigation team confirmed, no conflicts of interest identified • Senator Hoey's Motion on Animal Welfare 14th July 2022, transcribed and validated against the original Motion act as primary basis of the investigation • Scope of the investigation expanded to include journalist requests pertaining to animal welfare allegations from the previous five years and any formal complaints (there were none) • Clear welfare case definitions created for each allegation and Senator Hoey, journalist reports and other information available were collated to provide the primary investigation list which evolved as the investigation grew to provide a total of 23 allegations pertaining to failings of animal welfare at Dublin Zoo, this includes the redacted protected disclosure information which was not made available until the 8th August 2022
	<ul style="list-style-type: none"> • NPWS Zoo Inspectorate investigation team requested documents, records, video, images and other sources pertaining to each welfare case which Dublin Zoo provided • These documents were reviewed as part of the case discussions between the investigation team, each case being broken down into a standardised template to ensure consistency and that information was not lost due to the wealth of cases and large number of documents being inspected • Where additional information was identified as being required this was requested from Dublin Zoo and was provided in all cases. Where not available (in the more historical cases records were poor

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	<p>or limited) then this was noted and interviews with staff were used as an alternative to contemporaneous accounts</p> <ul style="list-style-type: none"> • Zoo inspection reports were reviewed in general and with regard to specific elements of the welfare allegations, these were commented on a case-by-case basis in the case reviews • Where specific cases were identified in the zoo inspection reports zoo inspectors were interviewed as to the investigations taken at the time and their interpretation of the events, again these were commented on a case-by-case basis in the case reviews
3 rd August 2022	<ul style="list-style-type: none"> • Phase 1 initial documentation reviews completed, identified requirements for verbal testimonies and interview with relevant staff • Videoconference call with Dr Christoph Schwitzer and the investigation team to outline Phase 2 of the investigation which was to interview the staff and undertake site visits where pertinent to the individual welfare cases • Selection criteria for staff developed and implemented, with programme for site visits planned for the week commencing the 15th August 2022
8 th August 2022	<ul style="list-style-type: none"> • A redacted version of the protected disclosure was received by the NPWS Zoo Inspectorate investigation team and the initial case review documents were re-reviewed and where needed additional information was added. • New welfare allegations were identified (additional 5 new cases) and information requested from Dublin Zoo
9 th August to 13 th August 2022	<ul style="list-style-type: none"> • Case file updated with the new cases and the standard template produced for the new cases • Final working copy produced to form the basis of the staff interviews • Interview questions produced for each case to clarify areas or fill in gaps where records were historical records were limited
PHASE 02 INVESTIGATION	
14 th August 2022	<ul style="list-style-type: none"> • Unannounced site visit to the zoo as a paying member of the public to assess site condition, layout and primary areas involved in the welfare case allegations independent of the actual inspection days
15 th August to 25 th August 2022	<ul style="list-style-type: none"> • Staff interviews carried out on site at Dublin Zoo, initial three days (15-17th) with follow up interviews on videoconference on the 25th for those that were off or unavailable the previous week • Scoring criteria assessing credibility developed and assessed for each interviewee • Additional documentation or information requested from Dublin Zoo in response to new information gleaned at interview or with regard to new welfare allegations as they arose during this period • Site assessments undertaken with Dublin Zoo staff and scenarios and facility set up were discussed in detail and assessed against

	<p>expected operation as well as concerns raised in some of the relevant allegations</p> <ul style="list-style-type: none"> Sea lion facility data loggers installed to log temperatures found within the areas relating to the sea lion welfare concerns
PHASE 03 INVESTIGATION	
26 th August to 27 th September 2022	<ul style="list-style-type: none"> Review of all documentation, testimonies and associated media to compile first draft of the final investigation report Interpretation of documentation undertaken by core team that drew on technical specialists to ensure accuracy and technical assessments were reflective of the events that occurred
12 th September 2022	<ul style="list-style-type: none"> Sea lion facility data loggers retrieved after approximately one month as part of case 14 assessment
29 th September 2022	<ul style="list-style-type: none"> First draft sent for review within the Department
6 th October 2022	<ul style="list-style-type: none"> Final complete draft sent for review with whole investigation team, including agreed summary and executive summary.
14 th October 2022	<ul style="list-style-type: none"> Final version of the report agreed and submitted to relevant stakeholders

Due to the number of individual animal welfare allegations and general statements regarding concerns with regard to both staff and animal welfare the cases were broken down into individually clearly defined welfare cases or areas of general investigation. As such each individual complaint or concern was investigated individually with discussions and recommendations made for each case. For the summary of this report, the individual cases are considered as one to allow a holistic commentary with regard to the picture of animal welfare at Dublin Zoo as well as compliance with the Irish Standards of Modern Zoo Practice (2016).

Each individual allegation was assessed using a standard template to ensure consistency, accurate data and evidence collection, and clear requirements for additional information as may have arisen. Each case considered the following points:

- Case title
- Date of alleged incident
- Species and identification
- Allegation as worded from the secondary source material – please note that where there are errors in species or names of animals these remain faithful to the original submissions
- Origin of the source material
- Documents and other sources reviewed as part of the investigation
- Summary review of the investigation documents
- Findings of the investigation with regards to the specific case
- Interpretation of the findings from the investigation

- Verbal testimonies, specifically with reference to the contemporaneous documentation
- Case commentary reflected in the zoo inspection documents, where present
- Request for further information, interviews and other potential source material if required to make an informed judgement (not included in the final version of the report)
- Outcome of the investigation with regard to the specific case
- References (where applicable)

The individual case reviews were then followed by a review of the overall situation regarding the welfare allegations at Dublin Zoo and, where historically appropriate, the response from the NPWS Zoo Inspectorate and the zoo inspection process.

ORAL TESTIMONIES

Oral testimonies formed an important part of the evaluation of animal welfare allegations at Dublin Zoo. This was in part due to animal records often missing elements of the decision-making process as well as a lack of understanding of who was involved and whether discussions occurred at managerial levels or involved whole members of the team. For the more historical cases the records were limited when compared to the more recent cases.

Typically, comments made in the allegations were emotive and based on the feelings of staff at the time of the incident and potentially how those feelings have manifested as time has passed. The investigation team recognised that the animal husbandry and similar records would not capture these elements and as such the inspection team were reliant on the verbal testimonies to address the areas where information was lacking.

As in any investigation of this nature the descriptions and language used in the allegations are highly emotive and perception of witnesses to events are key to later recollection. In an attempt to assess credibility of witness testimony each interviewee was scored on a 1-3 scale of defined criteria under the topics of accuracy, recall, credibility and knowledge of the events (see Appendix 02 for details). This scoring system was carried out by members of the investigation team independently and scores were then averaged to provide a measure for reliability of the verbal record. This is not to say that people were intentionally deceitful, or had their own agendas to voice during the interviews, simply that human memory is fallible, and accuracy of verbal evidence can vary based on a number of factors. The assessment criterion was an attempt by the investigation team to develop a quantifiable means to capture the consideration and acceptance of the verbal word by the interviewers when this report was subsequently reviewed by future readers. No judgement was made on the individuals, solely the testimony, this simply being a qualitative measure scored by the interviewers as to the reliability and credibility of the verbal accounts. Credibility was challenging to define and the investigation team utilised a number of sources (Exall, 2022; Genn, 2016; Fieldfisher, 2016; De Rosa, 2018; Colwell, 2002; and Cooper, 2013) to ensure that there was an element of critical appraisal of the oral testimonies provided. In many instances there was robust

contemporaneous records, both that provided by the zoo and those that were external e.g. Met Éireann weather reports from the Phoenix Park monitoring station, which allowed validation of known elements but also assessment of the accuracy and quality of each testimony. Cases were reviewed repeatedly within the same interviews to establish consistency and accuracy in recall, or even variation considered normal in recalling events. Knowledge was simply scored on whether individuals had been present at the incident, had worked on section that week but not in on the day, or worked on a different section and were second hand opinions based on other staff knowledge or comments.

Selection criteria for interviewees was determined to ensure that a cross section of staff were interviewed and that the staff members were not selected by Dublin Zoo to avoid any bias that may inadvertently occur. The investigation team produced a list of all of welfare allegations and requested an initial list from Dublin Zoo that outlined all of the relevant staff that were either (i) team leaders for the event that occurred, (ii) were staff working on the day or involved in the incident directly, or (iii) were working on the section but were off on the day of the incident. Staff were listed only as initials to ensure no selection bias was introduced. A separate member of the investigation team, whom did not have direct knowledge of the documentation provided at the time of selection, chose the staff initials to ensure we interviewed the relevant team leader and a minimum of 2-3 persons per case as well as the veterinarians involved, where the staff were still working at Dublin Zoo. The complexity of the assessment criteria was to ensure no bias nor criticism could be aimed at the investigation team and so that the investigation team interviewed a range of relevant and key animal care staff pertinent to each case. Staff no longer working for the zoo, despite their relevance to a case, were not sought out for interview as this was outside the permitted scope of this investigation.

A total of twenty-five staff were interviewed; including the Director of Dublin Zoo, the General Curator, three team leaders, two veterinarians, and eighteen animal care staff. The mean total credibility scores over the four categories were 93% (range 46-100%), and the sub-categories (scored out of a maximum of 3) were accuracy 2.82/3 (range 1.5 - 3), recall 2.84 (range 1.5 - 3), credibility 2.78 (range 1 - 3), and knowledge 2.76 (range 1 - 3). The percentage of those scoring 3 in all four categories was 80% (20/25 interviewees) which demonstrates the credibility and robustness of the majority of the interviewees, for those with scores of 2 above the percentage rose to 84% (21/25 interviewees). Typically, low scoring individuals were either not on site, loosely involved in the cases or openly failed to recall the details from the events.

With regard to case coverage the randomly selected staff interviewed covered a mean of 8.0 (range of 2 – 23) persons per case, with all bar 1 case having 4 or more people per case.

Due to the large number (twenty-one) of interviews undertaken over the first three days interviews were recorded utilising Otter.ai, a software package that records the interview whilst transcribing the discussion into a word document format. These were utilised the same day to review the notes and fill in any gaps, correct misunderstanding in the handwritten notes, or to clarify any points that were not clear in the written records. Once confirmed that

the pertinent information had been accurately collated the transcripts and audio files were deleted as had been agreed with the interviewees at the start of each discussion to ensure that their comments remained anonymous. For the remaining four interviewees these were carried out using videoconferencing and the software was not found to be effective, especially where accents were present, and as such this process was abandoned at this stage. Where staff felt uncomfortable with recording of the discussions, at their request no recordings were made other than handwritten notes. One individual brought in their union representative which the investigation team welcomed to demonstrate transparency and balanced assessment during the interview process.

Requests were made by two members of staff for copies of their transcripts but this was over 24 hours after interviews had been completed and they had been deleted at that point.

INTERPRETATION AND ASSESSMENT OF DOCUMENTATION AND TESTIMONIES

Each case was approached in a similar manner to ensure consistency in auditing cases and to allow for a standardised process of documentation and justification for the final position on each case as outlined by the investigation team.

All of the documentation was reviewed and summarised with an accurate timeline of events captured as reported in the contemporaneous documentation, the video footage, the oral testimonies and any other documentation that may have been made available. These were then reviewed and the key, relevant points summarised again to demonstrate the salient points of each case as they related to the allegation. These were then cross-referenced against, or added to, the details from the oral testimonies which often filled in gaps or validated original source material. Where oral testimonies differed these were captured and comment made on the consensus opinion, with majority or consistent recollection taking precedence, especially where it validated the physical evidence available at the time. A considerable number of cases were documented by the television series 'The Zoo' which were kindly provided by the production company. These were extremely useful documentary evidence of the time, showing the events of the welfare cases and providing useful evidence as the cases unfolded. The range and exposure of the elements of each case from 'The Zoo' was noted by the investigation team as being highly transparent and in each case mirrored the documentary and oral testimonies provided. Unfortunately, this was not available for all of the cases.

Assessment of the documentation was then cross-referenced against peer-reviewed references to ensure events reflected expected practices or knowledge of current welfare and husbandry management. These consisted of scientific papers, husbandry guidelines produced by zoo professional bodies and other recognised and relevant technical documents.

The investigation team then reviewed the allegations and broke them down line by line, responding to the points of the allegation. In each case the investigation team outlined whether there was sufficient evidence available to support or refute that element of the

allegation. At the end, taking into account the various components of the allegation the inspection team made an evidence-based decision on whether the allegation was supported regard to Dublin Zoo's provision of welfare needs as well as whether the actions were compliant with the ISMZP. Each case ending with a final statement outlining the outcome and findings of the investigation team with regard to the allegation as stated. This being based on the justification and documentation provided in the review of each individual case. Each allegation was categorised as supported or unfounded and subsequently each allegation was categorised into one of five groups as outlined in Figure 0.05, these varied from (1) No evidence to support the allegation through to (5) Evidence supports the allegation, Dublin Zoo have not resolved.

The investigation team note that reference was made to images and other documents in the original Motion on Animal Welfare but none of this was made available to the investigation team, the importance of these documents not being clear to the final interpretation made. Whilst the investigation team would like to have had access to these, as no formal complaint had been made and no one had been forthcoming with the documents, despite knowledge of the investigation occurring, the investigation team's ability to request these was outside the parameters of the scope of the investigation which was constrained by the S.I. No. 440 of 2003 and the requirements of the Protected Disclosure Act (2014) S.I. No. 14 of 2014.

The investigation team consisted of a number of members of the NPWS Zoo Licensing team which consisted of experienced zoo and wildlife veterinarians, members of the professional zoo community, NPWS zoo inspectors, technical specialists called on for individual cases, and NPWS government staff. Each technically competent member of the investigation team having at least ten years' experience in the zoo and wildlife industry with wide ranging contributions to zoo and wildlife animal welfare science and some with specialist qualifications in their field. Where cases fell outside the technical knowledge or additional information was sought to clarify or obtain consensus on cases recognised technical specialists were brought in to comment on specific elements of a case. This wide ranging approach ensured that the assessments and final judgements were considered accurate, robust and independent to the sole opinion of Dublin Zoo and the NPWS Inspectorate.

Once each case had been assessed an overview of the philosophy, understanding and implementation of the animal welfare programmes at Dublin Zoo was undertaken. This formed the basis of the executive summary for this report, with the processes and detailed findings found in the Appendices. Where required this special inspection report outlined improvements that could be made through recommendations, conditions and directions where needed as per S.I. No. 440 of 2003.

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION

DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION FINDINGS

INTRODUCTION

The investigation into the welfare allegations with regard to Dublin Zoo made initially by Senator Annie Hoey at her Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business of the 14th of July 2022 initially identified seven welfare allegations which expanded to twenty-three welfare allegations following access to the protected disclosure from the whistleblower on the 8th August 2022 and reviews of recent historical requests from journalists dating a year previously in August 2021, which had been addressed but were a result of the same or similar whistleblower statements. Due to the number of allegations, the six-year period over which they spanned, and the complexity of many of the cases, this investigation needed to be extensive and required multiple different technical experts to be consulted, across a wide range of taxa and disciplines. The result being the investigation has taken just over two months to complete following access to the protected disclosure. The investigation required assimilation and assessment of several hundred documents, which were cross referenced against technical bulletins and peer-reviewed scientific papers, which were then compared against witness testimonies, which was then complied and assessed by the investigation team to determine whether the allegations were supported or unfounded.

COMPREHENSIVE ASSESSMENT

The following is a summary of the findings, assimilating all of the welfare cases that have been reviewed. Readers are advised not to read this in isolation but to review the detailed case assessments found in Appendix 3 which outlines the documentation, events, oral testimonies, assessment and final finding with references where relevant.

ORIGIN AND CREDIBILITY OF THE SOURCE MATERIAL

The source material was primarily the statement by Senator Hoey from the 14th July 2022 which interpreted or quoted the protected disclosure and was reported to add elements to the statements following long discourses with the original whistleblower. There were considerable similarities in Senator Hoey's comments with that provided a year earlier by the journalists in August 2021 that it was felt that the source material was consistent and from the same source, this was at least inferred in correspondence from the journalists. Many of the older cases in Senator Hoey's motion were already known from the August 2021 journalist requests and had been investigated to the Department's satisfaction at the time. These cases were re-opened alongside the new allegations as more detail had become available and they were intrinsically linked. Additional journalists had access to the same protected disclosure and several requests for information came directly to the NPWS Zoo Licensing Department.

Once access had been given to the protected disclosure it was clear that there had been interpretative elements added to certain versions of the statements or misinterpretation of the source material e.g. macaques (primate) being referred to as a macaw (bird). Finally obtaining access to the anonymised protected disclosure material clarified the original, and some new, allegations and allowed the investigation to progress more effectively. The only documentation that was not accessible to the investigation team was the images and video reported by Senator Hoey at the Seanad Éireann which she was obviously moved by. However, the investigation team received comprehensive documentation, video and images from Dublin Zoo and the investigation team suspect that these additional unseen documents would bring little additional information to the assessments carried out, especially as numerous staff present at the time were interviewed and provided first-hand evidence.

Having undertaken the reviews of the allegations made in light of the contemporaneous records and the oral testimonies the twenty-three allegations were considered to fall into one of five groups:

- No evidence to support the allegation (2/23 cases)
- Evidence to demonstrate the allegation refers to an actual case (21/23 cases)
- No evidence to support the narrative of the allegation (17/23 cases)
- Evidence supports the historical allegation, Dublin Zoo has resolved the issue (4/23 cases)
- Evidence supports the allegation, Dublin Zoo have not resolved the issue (1/23 cases)

The allegations appeared to be a mixture of first-hand experience where there was reasonable detail that married with the contemporaneous record and other verbal accounts through to the majority having a sound basis of an event having occurred e.g the death of an African wild dog, but the allegation having no further sound or accurate information, a narrative being attempted to be built around a few known facts. In many of the cases the primary oral evidence provided by staff present at the events and the documentation from the time of the incident did not match the narrative found within the allegation. As such the credibility of many of the allegations is brought into question and made the assessment of each case challenging for the investigation team.

As a result, the investigation team had to identify the cases where there was an element of truth (21/23 of the allegations), critically appraise the wording and concerns of the allegations, and take a step back and look afresh at the evidence, independent of the original allegation's poor interpretation of the facts of the case, as to whether there was a welfare case present or not. This was compounded by second-hand interpretation by both Senator Hoey and the journalists who put their own interpretation on the original source material which appeared to be second or third hand in the first instance. A good example is the African wild dog: the allegation got most of the facts of the case wrong and focused on the failure of management to provide vet care leading to the death of the animal. The allegation itself was relatively easy to prove most of it was factually incorrect and lacked any credibility, however an African wild dog did die from wounds from another wild dog and as such the causality and facts of this case needed to be assessed independent of the allegation itself to ascertain whether there

was an actual welfare case independent of the allegators evidence. This approach was taken in all of the welfare cases and is reflected in the assessment categories that are outlined in Figure 0.05. In most instances the allegations lacked credibility with multiple inconsistencies, factual inaccuracies and in one case there was no evidence even that an animal had existed at Dublin Zoo. However, the majority of the allegations were built around real events. When reviewing each individual case the investigation team was unable to find alternative welfare issues or interpretation, nor failings on Dublin Zoo's part to treat their animals with dignity and respect.

The investigation team were of the opinion that the allegations clearly fell into two additional categories – (1) those that were perceptions of first-hand experiences (e.g. cases 1, 2, 12, 14, and 19) where there was a wealth of detail and these married with the facts of the case, even if the perception or emotional experiences did or did not; and (2) allegations (the remaining 18 cases) that appeared to be second or third-hand interpretation of events based on either verbal or animal records findings that had a small number of key facts that appeared to then be used to build a narrative that in most cases could easily be discredited with the known evidence. In the later cases the footage from the television series 'The Zoo' was especially useful in clearly demonstrating the events as they happened which, in all cases, were corroborated by the oral testimonies of the staff. A similar pattern was seen in some of the oral testimonies where staff could talk in detail about an event, express their feelings, the practical elements of the incident and how they felt, through to staff that knew no more than that printed in the media but had an opinion that had no basis of fact when compared against the contemporaneous materials. The later group, often when pressed admitted they had not been present or had been on section but not at an event.

The investigation team adds a caveat to this position in that some of the journalists and Senator Hoey have seen images and video that have supported their beliefs in the allegations. Whilst the investigation team have reviewed hundreds of documents and video for this investigation it is plausible that these videos and images are key documents that could refute the findings or put an alternative viewpoint on the wider case. Whilst the investigation team feels that this is unlikely, simply due to the wealth of documentation and oral testimony that has been assessed in these cases, the team is open to this possibility and would be willing to review any new information that came to light which may alter the interpretation made of the existing documents, animal records and the oral testimony of the current staff present at these cases.

INVESTIGATION FINDINGS

The investigation team overall found that Dublin Zoo promoted animal welfare throughout their operational practices. A reputation that has long been held by Dublin Zoo and one that appears to be as current today as it has over the zoo's history. This position is represented by the core values of the majority of the staff interviewed, which was reflected in their approach to animal husbandry, the comprehensive health care programmes in place, and the team's passionate belief in their high standards and that they can always be better, striving for more and to continually improve the welfare for the animals in their care.

The outcome of the investigation found of the twenty-three welfare allegations that the following could be robustly evidenced:

- 2/23 of the allegations had no basis or evidence to even substantiate the allegation made and as such were dismissed due to lack of any credible evidence other than that stated in the allegation: one was the general statement on refusing to euthanase animals and the other referred to the death of a scimitar-horned oryx calf which could not be substantiated despite reviewing every single oryx that has been bred at Dublin Zoo since 1980;
- 21/23 cases referred to actual animals or events that had existed;
- Of these 21 allegations 17/23 were considered to be unfounded with no evidence supplied to support the narrative of the allegation. Specifically, where concerning the welfare of a single individual animal, the inspection team noted that the care provided was considered to have been to a high standard, ensuring the animal was treated with respect and dignity, even when the case or outcome may not have been as Dublin Zoo would have wanted;
- Of the remaining 4/23 cases the inspection team identified 3/23 that were classed as 'Evidence was found supporting the historical allegation, but Dublin Zoo had resolved the case' with changes in process, facility or management depending on the allegation case. These included the Sulawesi-crested macaque escapes (case 04), the fish quality issues for the California sea lions and Seanna's abortion (case 12), and Niko the California sea lion with the presumed hyperthermia that led to his death. The fourth case, 1/23, was failure to develop the new red panda facility as per the recommendations of the EAZA best practice guidelines which was the case, however this had been assessed with the management and in the professional opinion and experience of Dublin Zoo it was not considered a concern by the senior team (which the investigation team recognised as being justifiable and consistent with the other 28% of zoos that house red pandas in a similar manner within the European and North America zoo red panda holder population) (case 19).
- The only case that spanned both the criteria (3) 'No evidence to support the narrative of the allegation' and (4) 'Evidence supports the historical allegation, Dublin Zoo has resolved' was the case of 'Bossou' the chimpanzee. This was a complex case which is often found in managing fragmented chimp groups which was further exacerbated by Dublin Zoo having chimpanzees with poorly socialised backgrounds. As such there were challenging elements in this case and it is an ongoing issue that is well managed but has had some challenging moments over the last few years. The investigation team recognised the high standard and consideration with regards to the programme and that despite the efforts the outcome was not as hoped for both 'Bossou' and the troop (see case 08 for details). In this case there were elements that reflected the situation and others that were wildly different to the actual events, hence the dual classification.

The investigation team's final position on the welfare cases was that three of the 23 cases were considered supported in their allegation (case 12, 14, and 19) and that cases 12 and 14

had now been resolved by self-driven programme change and restructuring of the staff involved which has resolved the issue as confirmed during both the site reviews and the assessment of the documentation over the assessment period to present day; and case 19 which is the red panda habitat which has recommendations in this report for Dublin Zoo to validate the zoo's position through behavioural assessments of the red pandas.

In summary, of the 23 allegations pertaining to animal welfare breaches at Dublin Zoo the investigation team only found evidence to support three of the cases as alleged and the rest were unfounded as per the original wording of the allegation. In reviewing the potential for other welfare concerns in the case records as presented by Dublin Zoo, independent of the statements found within the allegations, the investigation team were unable to demonstrate any further welfare cases nor breaches.

SUPPORTED CASES

Whilst the majority of the allegations were mainly unsupported they were not all unfounded and there had been a small number of cases that did not stand up to the high standards normally expected at Dublin Zoo, this included the case of 'Niko' and that of 'Seanna', both California sea lions. However, these were noted at the time they occurred by Dublin Zoo and the zoo responded with robust assessments of the cases and introduction of considered mitigation processes to ensure they did not occur again. In the investigation team's opinion this demonstrates that Dublin Zoo is only human and that mistakes can happen, but where Dublin Zoo shows its true values is how and when it responds to these failures. These were considered single isolated cases, rather than ongoing representations of chronic welfare problems at the zoo.

In case 12 the allegation focused on a failure to provide appropriate nutrition to the California sea lions which led to gastrointestinal clinical signs in a number of animals and in one, 'Seanna', this was alleged to have led in part to an abortion. Whilst there were elements of truth to the allegation the timelines and events were mixed and the abortion and the gastrointestinal signs occurred during separate time periods based on the medical and husbandry notes. As such the narrative as stated was not accurate but on further examination the investigation team did recognise that there had been a number of failures by the animal care team to follow the zoo's own policies: the staff had failed to weigh 'Seanna' for almost 6 months; they had failed to provide for her needs as a pregnant animal; they had failed to recognise she was pregnant; and they even failed to identify it was her that had had the abortion, this being initially attributed to another female but was only recognised months later when the other sea lion gave birth to a pup herself. The fish quality issue was a problem but this was recognised and proactive steps were taken to address this including change of suppliers, new storage equipment and changes in management and storage processes combined with quality analysis of the fish stocks prior to their arrival. This is an ongoing process and was considered resolved with fish fit for human consumption currently being fed to both the sea lions and the penguins. The failure by the animal care team running the sea lion section at the time the allegation occurred has been resolved with an extremely competent marine mammal trainer now overseeing the section and the standards are

currently considered very good, as such this was considered a historical but unacceptable compromise of the sea lion 'Seanna's' welfare.

In case 14 'Niko' the California sea lion was put into a pen for an extended period of time, approximately five hours, compared to the normal 15-20 minutes, without water or a sprinkler system being provided despite this being available within a few meters of the pen. The day was hot, but not excessively so and the temperature was considered under the published range where action needs to be taken as outlined in the current EAZA and EAAM Best Practice Guidelines for Otariidae and Phocidae. However, 'Niko' was found dead later that day. Evidence is speculative at best but highly plausible that he died from hyperthermia. Either way, 'Niko' was provided with no access to water for five hours in a pen with limited shade and this was not considered appropriate by the investigation team and nor did it meet his welfare needs providing no choice nor any of the needs outlined by the Five Freedoms. This alone was considered a breach of the welfare needs for this individual, whether he died from hyperthermia or not. The investigation team have reviewed the extraneous evidence at the time and whether the animal should have been penned or not, the reasons why and the other elements of the situation at the time were considered important but did not overcome the keeper error in not providing the basic needs for that animal i.e. a basic requirement of water which is essential for thermoregulation in California sea lions in temperatures in excess of 20°C was not provided for the animal (see the detailed case discussion for this allegation).

Case 19 is the third supported case. On the face of the case it is black and white. The EAZA Best Practice Guidelines for red panda (2015) state: "*Enclosures should not be located near aggressive animals, which can disturb the red pandas: a distance of at least 50 m between a red panda exhibit and that of a large carnivore is recommended*". The enclosure is not and cannot be altered, as such the allegation is supported. However, the position of Dublin Zoo is that there is considerable evidence to refute this recommendation, that many other zoos have red panda in close proximity to large carnivores with no long-term concerns noted, and that this is simply a recommendation not a mandatory requirement for the red panda. With which the investigation team agree in principle, as such the allegation is supported in that Dublin Zoo's new red panda facility does not meet all of the recommendations as stipulated by EAZA but the investigation team also recognise this may or may not be a welfare issue for the red pandas at Dublin Zoo. This is reflected in the recommendations at the end of this report.

So, in closing three of the twenty-three allegations are supported, two of which are historical and have been addressed by Dublin Zoo and one is questionable as to whether it is a welfare issue at all, with the inspectors recommending for this last case that additional behavioural monitoring is put in place for the red pandas. Overall, the picture at Dublin Zoo is one of positive welfare driven programmes and processes that respond to issues noted in a practical and considered manner.

TRANSPARENCY

As part of the original allegations Dublin Zoo has publicly been claimed to be hiding wrongdoing and lacking transparency with regard to their implementation and support of animal welfare. Senator Hoey quoted the whistleblower as saying “(with regards to Maeve) *And this is another attempt by Dublin Zoo to intimidate, conceal the wrongdoing and animal welfare problems*”. The investigation team would like to highlight to the readers of this report that Dublin Zoo was transparent about the cases involved in the allegations and provided the investigation team with complete access to their records, staff, documentation, images from post-mortems, film, video and other formats as requested and sometimes additional documents not requested to allow the investigation team to have a complete picture of events as they occurred to enable an accurate and evidence-based review of each case.

Access to staff was provided and they openly discussed their passions, knowledge, experiences, perceptions and concerns and on the whole the investigation team were welcomed by the Dublin Zoo staff. At no time did the investigation team feel that staff were coerced or unable to speak freely, indeed the investigation team were surprised at how confident staff were in openly challenging the allegations or supporting them when considered correct.

In addition, the production company for the series ‘The Zoo’ were extremely gracious in their access to the footage relating to the welfare cases where they had filmed them, this was especially useful in understanding how open Dublin Zoo had managed the ups and downs of the cases in this report and that many of these cases were not hidden behind closed doors as implied but had been televised on national television for all to see, including in some cases the euthanasia of animals and subsequent post-mortem findings.

At no time did the investigation team perceive that Dublin Zoo were attempting to hide wrongdoing.

RECOMMENDATIONS and CONDITIONS

Appendix 5 outlines the recommendations and conditions that have arisen from this investigation process. A number of these are to ensure that historical allegations and concerns noted during the investigation have been fully resolved and processes are in place to ensure they do not occur again, whilst others are simply to increase to the robustness of the existing policies where gaps were identified by the investigation team.

CLOSE

The investigation team took the allegations as stated and investigated them robustly and in an evidence-based manner to ensure that if there were welfare failings at Dublin Zoo that steps would be put in place to address them. No preconceived ideas or judgement were made with regard to the allegations and each case was approached in an open manner to ensure the dignity, respect and welfare of the animals and the staff that look after them was

protected. Only three of the twenty-three allegations were supported, two of which were historical and had been addressed, with the third being questionable as to whether it was a welfare issue in the first instance. As such the investigation team are confident that the animal welfare programmes, which continue to evolve and develop, are in the best interests of the animals at Dublin Zoo and the staff at Dublin Zoo have the best interests of the animals, as individuals or as populations, in everything that they do.

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION
APPENDIX 01

SENATOR HOEY MOTION ON ANIMAL WELFARE TRANSCRIPTION

DATE:	14 th JULY 2022	
DATE TRANSCRIBED:	15 th JULY 2022	

The following was transcribed from the Motion on Animal Welfare presented to the Seanad Éireann at the Private Members’ Business of the 14th of July 2022 by Senator Hoey. The transcription was undertaken with the use of Otter.ai and was then proofread against the video record of the Motion, errors may occur but all efforts have been made to ensure this is not the case. This Motion formed the basis and justification for this investigation. The bold and red font are highlights added by the investigation team demonstrating the key case allegations that formed the initial part of the investigation:

SUMMARY KEYWORDS

animals, animal welfare, zoo, died, whistleblower, Dublin, motion, keepers, breaches, raised, march, missing, freedom, issue, staff, concerns, happening, management, injury, extremely

Timelines from the video taken from the Seanad Éireann presentation.

00:01

“You might consider giving me the same latitude. Thank you so much, Clan Cora(?), and thank you to the Green Party. I want to commend my colleagues for bringing this issue to the chamber during the private members today. There are a significant number of issues in this motion that I feel very strongly about and I would like to speak to as I have, in my past two years in this chamber, the treatment of animals and the racing sector, the need to better fund our animal welfare organisations, the current standard and needs improvement in our agri-food sector. And while this motion is extremely comprehensive, I did notice that there's a gap in one area of animal welfare matters in Ireland. The motion does not mention the seven zoos or wildlife parks that we have in this country, which are responsible for the care and preservation of rare and endangered animals and we assumed there are guaranteed safe space for animals. However, it has been my great misfortune over the past couple of months to learn that that is not so and that is not always a guarantee.

The motion brought forward today discusses that animals are entitled to the widely acknowledged five freedoms. I reflect on the convention Freedom from Hunger and thirst, discomfort, pain, injury and disease to express normal and behaviour and fear for freedom

from stress, and I'm going to outline some concerning breaches of these freedoms. A number of months ago, I began a series of meetings with both former and current staff members in Dublin Zoo. Through this engagement I've been made aware of a number of breaches of these freedoms for animals and Dublin Zoo, the most detailed accounts of which have recently been issued to me by a whistleblower via protected disclosure. Regarding animal welfare management failings in Dublin Zoo. I've been told by the whistleblower that there's been serious welfare issues near misses safety and management concerns at Dublin Zoo because I have exhausted all options for Dublin Zoo grievance procedures, which failed to act on my concerns. I feel I've no option but to expose my experiences of what I've witnessed in the zoo.

In the motion before today there are reference to animals rights, freedom from pain, injury and disease.

And I want to tell you about **Kildare a zebra** who is not free from that freedom, female zebra Kildare died after complications during a tooth extraction procedure on the second of the 12 2020. She was darted twice and suffered from capture myopathy. She was kept alive even though staff requested the animal be euthanized. The tooth was extracted and the animal was severely paralysed when she came around from the anaesthetic. The animals was left to recover overnight. After no change, the animal was going to be hung overnight in a harness even though she was severely paralysed. One staff member pleaded at the end of the second day to end the animal suffering, management and veterinary team were planning to leave her hanging in the harness, despite being severely paralysed. Staff were extremely distraught after witnessing the zebra's treatment and they felt they could not raise concern for fear of reprisals. Kildare was featured on the Zoo TV series on the 26th of the sixth 2022.

02:50

In the motion before us today there was reference to animals freedom from pain injury and disease and I want to tell you about **Maeve the giraffe** who died only last month. Staff were informed in a meeting by a team leader in March that Maeve was 'on watch' which means that she was on quality of life assessment. Maeve was not being observed consistently or being assessed to determine her quality of life and there was no quality of life assessment filled out from March until her death on 28th of the sixth 2022. Where staff had to watch her lay and slowly die while kicking out trying to gain her footing. This should never have happened to Maeve or her keepers. After her death and post mortem, staff were called to a meeting and offered counselling and then told to delete any videos of Maeve and how she died. And this is another attempt by Dublin Zoo to intimidate, conceal the wrongdoing and animal welfare problems. And before Maeve's death I saw photos of her gaunt frame and her bones sticking out and she was clearly an extremely unwell animal.

03:38

*In the motion before you today, there was reference to animals right to freedom from pain, injury and disease. And I want to tell you about **Harry the silverback** gorilla and I think we all know about Harry as he was one of the most famous attractions in the zoo, all throughout my childhood and into recent times. Harry was a silverback male gorilla that died on the 29th of fifth 2016. Keepers consistently raised concerns leading up to his death. It was reported daily reports that his behaviour was abnormal. He was losing weight and his condition. Keepers repeatedly asked for a vet to examine him and eventually a vet was called and he died shortly after. This has had an adverse effect on the rest of the troop. This is one of the hardest stories for me to hear from many staff that I spoke to as the pain and their voice over how he was treated in the run up to his death was unbearable. And I sanitised the details here as I don't think I could read all of them out. But I saw the photos of Harry at the end and he's suffered greatly.*

04:33

*I have seen **photos of photographs of the animals** I've mentioned here today and the visible and unnecessary suffering they will have to endure is unfathomable and Tom McCree Brissa (??). This is not what care and compassion for animals is supposed to look like. This is not the standard of care which we as members of the public and the parliament have come to expect from Dublin Zoo, a much trusted and beloved public Institute. However, the pain of sick and dying animals are not the only animal welfare issues that were detailed to me in the protected disclosure and from the former and current staff I have spoken to.*

05.05

*There is a major breach of guidelines happening in the form of missing animals. In the motion before us today there's reference to animals freedom from fear and distress. November 2019. **Two crested macaws** went missing or were presumed dead. In February and March of this year, **a white collared mangabey** went missing also presumed dead. Despite staff raising the issue of them not being found, management have not looked thoroughly for these animals or raised the public's awareness in the event that a member of the public were to encounter it. Staff raised the concerns of the **two missing macaws** saying there were 24 but now there are only 22 in the group, the team leader quoted the curator saying, but there was always 22 insisting that the keepers cannot count to 24.*

*A **crizon-crested cockatoo** escaped on the 21st of the fifth 2022 from its aviary. This is a critically endangered species and since its escape there have been no efforts to locate the animal or raise the public's awareness if they were to see such a bird in the hope of being able to return it to the zoo. The **zoo has failed to follow any protocols** to either retrieve the animals or inform or warn the public to either retrieve the animal or to prevent anyone from sustaining an injury from one of the missing animals, and I'm nearly done.*

*What I've raised today is only a snapshot of the stories which I've just shared today about the failings and animal welfare in Dublin Zoo. **I have pages and pages and pages of testimony***

from both current and former staff and I was on the phone until very, very late last night, *hearing more stories* that I don't have time to go through today. These events are not in the far past. They're also happening quite recently. I have outlined some very recent breaches. I want to thank all of those who have taken the time to speak with me and inform me of these issues over the past number of months. I particularly want to commend the whistleblower who had the bravery to come forward with their protected disclosure to me and trusting me to help share a light on these serious breaches of animal welfare in Dublin Zoo. These are people who have come forward who care deeply for the animals they care for and have put themselves in the firing line and work to raise these concerns. And is it a pity that their voice is the only one the animals in their care have, have fallen on deaf ears. In closing, I hear it's only appropriate to quote the whistleblower once again when they say, *"I have exhausted all of my options to date and I can't in good conscience wait until my serious misgivings result in the death of a colleague, and as is already happening with the unnecessary death and mishandling of endangered animal species within Dublin Zoo"*. So I want to thank the Greens for bringing this motion forward, and I hope I've raised a light or shone a light on something that is extraordinarily serious and I will be engaging with the relevant Minister, the relevant department and the relevant committees in the days coming forward on behalf of the whistleblower on this issue, but I wanted to tell it here at first."

END TRANSCRIPTION

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION
APPENDIX 02

TESTIMONY CREDIBILITY MATRIX AND ASSESSMENT PROCESS

DATE:	4 th OCTOBER 2022
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TESTIMONY CREDIBILITY MATRIX AND ASSESSMENT PROCESS

The credibility matrix was an attempt by the investigation team to capture the credibility of the testimonies and produce a basic qualitative score for each interviewee. No judgement was made on the individuals, solely the testimony, this simply being a qualitative measure scored by the interviewers as to the reliability and credibility of the verbal accounts.

Credibility was challenging to define and the investigation team utilised a number of sources to ensure that there was consistent critical appraisal of the oral testimonies provided (Exall, 2022; Genn, 2016; Fieldfisher, 2016; De Rosa, 2018; Colwell, 2002; and Cooper, 2013). Scores were written immediately after the testimony by each of the interviewers and then the mean taken as the final overall credibility score.

In many instances there were robust contemporaneous records, both that provided by the zoo and those that were external e.g. Met Éireann weather reports from the Phoenix Park monitoring station, which allowed validation of known elements but also assessment of the accuracy and quality of each testimony. Cases were reviewed repeatedly within the same interviews to establish consistency and accuracy in recall, or even variation considered normal in recalling events. Knowledge was simply scored on whether individuals had been present at the incident, worked on section that week but not in on the day, or worked on a different section and were second hand opinions based on other staff knowledge or comments.

The four points assessed were as follows:

Accuracy

Assessed on non-contentious evidence that was agreed by all and was consistent with the contemporaneous records, video evidence or other testimonies, through to testimonies that lacked even basic facts known about the case. Scored 1-3:

1. Poor accuracy
2. Average accuracy
3. Good accuracy

Recall

Evidence provided had good recall and excellent detail, they were able to outline the events providing specific data or facts that developed the narrative of the events, through to those individuals that were only able to repeat the words of the whistleblower verbatim or those published in the media, unable to provide any additional comments or evidence that were a witness to events. Scored 1-3

1. Poor detail
2. Average detail
3. Good detail

Credibility

This was the most important driver in assessing witness testimony and the assessment of the score was based on commentary from Exall, 2022, quoting Onassis v Vergottis (1968), referencing credibility in the courts:

"Credibility' involves wider problems than mere 'demeanour' which is mostly concerned with whether the witness appears to be telling the truth as he now believes it to be. Credibility covers the following problems. First, is the witness a truthful or untruthful person? Secondly, is he, though a truthful person telling something less than the truth on this issue, or though an untruthful person, telling the truth on this issue? Thirdly, though he is a truthful person telling the truth as he sees it, did he register the intentions of the conversation correctly and, if so has his memory correctly retained them? Also, has his recollection been subsequently altered by unconscious bias or wishful thinking or by over much discussion of it with others? Witnesses, especially those who are emotional, who think that they are morally in the right, tend very easily and unconsciously to conjure up a legal right that did not exist. It is a truism, often used in accident cases, that with every day that passes the memory becomes fainter and the imagination becomes more active. For that reason a witness, however honest, rarely persuades a Judge that his present recollection is preferable to that which was taken down in writing immediately after the accident occurred. Therefore, contemporary documents are always of the utmost importance. And lastly, although the honest witness believes he heard or saw this or that, is it so improbable that it is on balance more likely that he was mistaken? On this point it is essential that the balance of probability is put correctly into the scales in weighing the credibility of a witness. And motive is one aspect of probability. All these problems compendiously are entailed when a Judge assesses the credibility of a witness; they are all part of one judicial process. And in the process contemporary documents and admitted or incontrovertible facts and probabilities must play their proper part."

Every judge is familiar with cases in which the conflict between the accounts of different witnesses is so gross as to be inexplicable save on the basis that one or some of the witnesses are deliberately giving evidence which they know to be untrue . . . more often dishonest evidence is likely to be prompted by the hope of gain, the desire to avert blame or criticism, or displaced loyalty to one or other of the parties. The main tests needed to

determine whether a witness is lying or not are, I think, the following, although their relative importance will vary widely from case to case:

- 1. the consistency of the witness's evidence with what is agreed, or clearly shown by other evidence, to have occurred;*
- 2. the internal consistency of the witness's evidence*
- 3. consistency with what the witness has said or deposed on other occasions;*
- 4. the credit of the witness in relation to matters not germane to the litigation;*
- 5. the demeanour of the witness.*

The first three of these tests may in general be regarded as giving a useful pointer to where the truth lies. If a witness's evidence conflicts with what is clearly shown to have occurred, or is internally self-contradictory, or conflicts with what the witness has previously said, it may usually be regarded as suspect. It may only be unreliable, and not dishonest, but the nature of the case may effectively rule out that possibility".

Utilising these five points and the position outlined above on what the definition of credibility is considered to be the investigation scored testimonies as either:

1. Not credible
2. – (No score)
3. Credible

There were only a small number of staff that did not score 3 (credible) (4/25) in this assessment. The reasons included: (i) staff that flipped their statements back and forth between adamantly supporting the allegation and then adamantly challenging the allegation as being false, in a consistently inconsistent manner; (ii) staff that lacked any contemporaneous knowledge and fabricated a narrative which was forgotten when coming back to the same events later in the discussion; (iii) staff that were easily led by statements from the investigation team and then were built into the narrative as having occurred at the time of the events, even when such events were known not to have happened or could not be known by any party; and (iv) staff that were unable to add any elements to the events other than accounts that had already been published in the media or statements in the Senate, that after discussion the staff members admitted they had not been present and had only second or third hand accounts that had shifted from an earlier position were they had inferred that had been actively present and contributed in a case. Credibility was independent of whether the person providing testimony was supportive or challenging to an allegation as both situations were noted during the investigation team meetings with the staff.

The majority of the interviewees (21/25) provided robust testimonies that were considered credible and married the facts with opinion and perception: there was an obvious passion in the statements made and in general a pride in the work staff had

carried out and continued to do. This was reflected not only in the credibility scoring but across all four categories with 20/25 scoring 100% across the four categories.

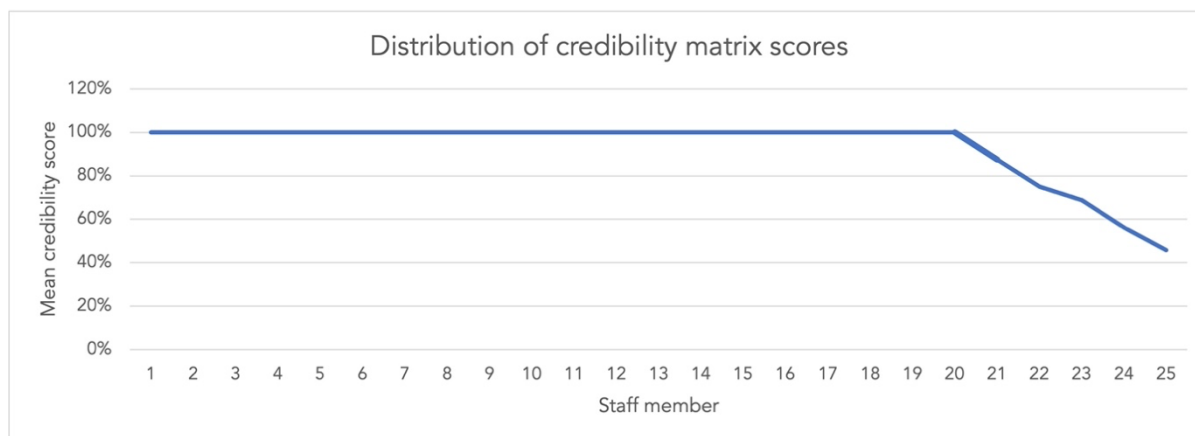
Knowledge

Knowledge was a quantitative score based on one of three criteria, ascertained at the end of an interview:

1. Second hand information, not on section at the time
2. On section, but not at the event
3. On section, present at the event

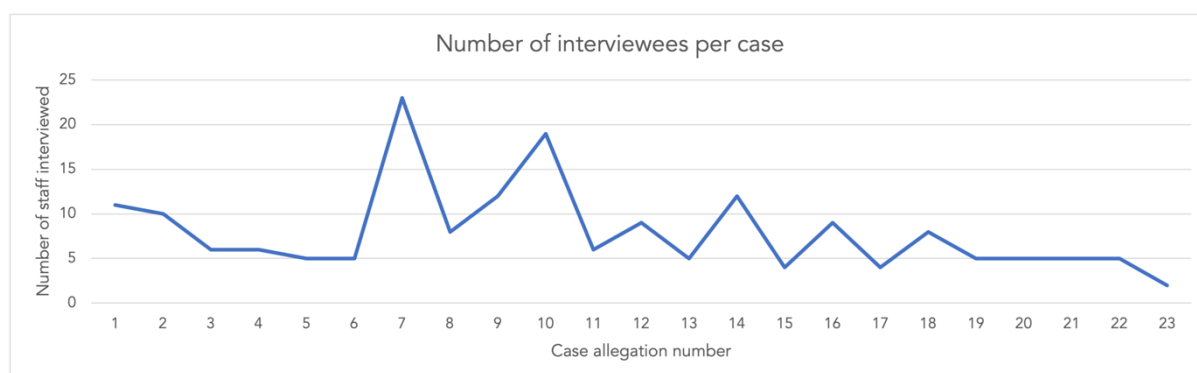
Where a member of staff was interviewed with regard to a number of cases a decision was made on the primary testimony given e.g. if three cases were discussed with a member of staff and 95% of the discussion was regarding events where the person was present in two of the cases but in the third (5% of the discussion) they had not but they had an opinion, then a score of 3 would be accredited, whereas if the majority of the discussion was admitted to be second hand and no first-hand information then a score of 2 or a 1 may have been appointed depending on where the staff member had been working in relation to the event in question. Due to the selection criteria for interviewees only one person scored a score of 1 as they had been away on the day of the event and had shown little interest in the events of the allegation with no new information to add.

Distribution of Credibility Matrix Scores



The graph above demonstrates that the majority of the testimonies were considered robust and credible across those interviewed. Due to the anonymous selection criteria, the broad range of staff interviewed (including management, veterinary and animal care team), and the consistent, specific, targeted nature of the questions the investigation team are confident that the amalgamated responses provide an accurate reflection of the events as they occurred within each of the allegation case reviews. In addition, the target for a minimum of three interviewees per case was exceeded in all bar one which was primarily due to the historical nature of that allegation but in these cases the contemporaneous documentation was more than sufficient for an assessment to be made with confidence. It is noted that in many cases

the team size working on a section was relatively small and for specific cases there would not have been large numbers of staff present, when compared to the wider general statements that impact welfare allegations across the whole of Dublin Zoo where more staff could be interviewed.



YEARS OF EXPERIENCE

In addition, when considering the data to be used to assess credibility consideration was given to assessing the years of experience working in the zoo profession and working at Dublin Zoo. In the end it was felt that this was not a useful criterion to determining credibility as there was a large variation between length of service and credible experience that was impossible to quantify with such simple metrics. For instance, a person that had 20 years' experience may not always reflect quality of experience or represent an understanding of modern welfare or technical elements of zoo operation because of their niche interests and skills set, equally a person with only a few years' experience was not treated as being of less value than someone that had been present in the industry for a long time. Simply, length of service did not translate into robustness or credibility of testimony in all cases.

What was interesting from this data collection exercise though was that the majority of staff had only ever worked at Dublin Zoo during their zoo professional lives. When considering the individual staff member's career, passion for their animals and the need to 'do right by them' this was considered significant in that if staff felt that there were serious breaches of animal welfare then there would have been a higher turnover of staff, which simply was not present:

Category	Years
Total years' experience in the zoo industry (mean, 25 staff)	16.04
Total years' experience working at Dublin Zoo (mean, 25 staff)	13.66
Total years' experience in the zoo industry (total, 25 staff)	401
Total years' experience working at Dublin Zoo (total, 25 staff)	341.5

Of these 8 staff had worked at Dublin Zoo for less than five years (including the senior managers and the veterinary team), the mean for the remaining 20 staff was 18.9 years working in the zoo industry and 18.8 years working at Dublin Zoo, a total of 321 years' experience in the industry and 320 years of that at Dublin Zoo. Whilst this did not alter the

consideration of the quality of the testimonies it was a notable fact demonstrating the retention and experience of the staff at Dublin Zoo, with that experience being predominantly worked within Dublin Zoo.

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NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION
APPENDIX 03

WELFARE ALLEGATIONS – INDIVIDUAL DETAILED CASE ASSESSMENTS

DATE:	14 th JULY 2022 – 29 th SEPTEMBER 2022	
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The following are the detailed welfare allegation case reviews. Each assesses the original allegation, the source material, the course of the events as described in the contemporaneous record, the salient key points of the contemporaneous records, the oral testimonies, the interpretation of the supplied information compared against the allegation, the zoo inspection reports and whether they were reflective of the case findings (where applicable), the outcome of the case investigation, and any relevant references utilised in the case review. They are listed in the chronological order in which they were received by the Department.

1.0 'Kildare', Grant's zebra, euthanased due to post operative complications

Date of incident:

Euthanased 3rd December 2020

Species & identification:

Grant's zebra (*Equus quagga boehmi*), female,
23 years and 5 months old,
Local ID A0M060

Allegation:

Senator Annie Hoey: "In the motion before us today there are reference to animals rights, freedom from pain, injury and disease, and I want to tell you about Kildare a zebra who is not free from that freedom, a female zebra Kildare died after complications during a tooth extraction procedure on the second of the 12 2020. She was darted twice and suffered from capture myopathy. She was kept alive even though staff requested the animal be euthanized. The tooth was extracted and the animal was severely paralysed when she came around from the anaesthetic. The animals was left to recover overnight. After no change, the animal was going to be hung overnight in a harness even though she was severely paralysed. One staff member pleaded at the end of the second day to end the animal suffering, management and veterinary team were planning to leave her hanging in the harness, despite being severely paralysed. Staff were extremely distraught after witnessing the zebra's treatment and they felt they could not raise concern for fear of reprisals. Kildare was featured on the Zoo TV series on the 26th of the sixth 2022".

Journalist 01: "A zebra who received an accidental overdose of an anaesthetic which left the animal immobilised, was hung in a strap for around 3 days from a ceiling, despite pleas from staff to put the animal out of its misery – which it eventually was".

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:

Senator Annie Hoey, 14th July 2022
Journalist 01, 11th August 2021
Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2019 10 th October	Clinpath and welfare meeting, Dublin Zoo Minutes
2019 19 th December	Clinpath and welfare meeting, Dublin Zoo Minutes
2020 7 th July	Clinpath and welfare meeting, Dublin Zoo Minutes
2020 20 th November	Clinpath and welfare meeting, Dublin Zoo Minutes
2020 2 nd December	Surgical report, Dr Rodney Gale, UCD School of Veterinary Medicine
2020 2 nd December	Anaesthesia report for Kildare
2020 3 rd December	Kildare biochemistry and haematology report

2020 3 rd December	ZIMS report for Kildare, 25/01/2019 to 03/12/2020
2020 3 rd December	Summary of keeper and veterinary communication notes
2020 4 th December	Gross post mortem report for Kildare
2020 4 th December	ZIMS medical notes from 24/08/2019 to 04/12/2020
2021 14 th January	Clinpath and welfare meeting, Dublin Zoo Minutes
2022 2 nd August	'The Zoo' Kildare story footage
2022 8 th August	External veterinary testimony supporting case at the time

Summary review of the documents reviewed as part of the investigation:

Kildare, a 23 year old, female Grant's zebra is mentioned in the 'Clinpath and welfare meeting minutes' for the 10th October 2019 where a hind lameness was reviewed. This was first noted on the 6th September 2019 and was treated with pain killers (meloxicam) and supportive treatment (arthriaid). She was initially checked daily and slowly responded to the pain relief. By the 26th September she had improved significantly and was considered stable with no obvious signs of pain. Started a monitoring form at this point (presumably a Quality of Life Assessment (QOL)). On the 27th November 2019 had an altered gait on hind limbs, planned examination under anaesthesia on the 19th December 2019. Anaesthetised with detomidine and butorphanol (doses not in submitted documentation) with two darts given and was noted to have a suspected previous pelvic fracture involving the ischium – this explained the abnormal gait. Conservative treatment issued with limited yard access and pain relief (switched to phenylbutazone). Responded well and able to stand with minimal difficulty. By the 19th of January 2020 this was considered to have healed well and pain relief weaned off. The case was reviewed in the 'Clinpath and welfare meeting minutes' In December 2019 and again in the July 2020 meeting where Kildare was considered fit for transport to another collection and the case resolved (note this move was never actioned).

On the 16th November 2020 Kildare was noted to be quidding (the symptom in horses of dropping food from the mouth while in the process of masticating it) and had lost some weight over a few days. Suspected a dental issue and altered the diet to build condition whilst a general anaesthetic was planned. The case was discussed with the team at the 'Clinpath and welfare meeting' on the 20th of November 2020 and the planned procedure outlined to be carried out in the next two weeks to sedate, examine, radiograph, microchip and assess and correct the dental issues.

The surgical plan and anaesthesia were carried out with the zoo veterinary team working with staff from the University College Dublin Veterinary School. The surgical report identified that the cheek teeth (308 and 408) were loose and 308 was tipped causing a large erosion (ulcer) on the mucosa of the cheek. In addition, there were multiple diastema with large periodontal pockets leading below the gum line. Whilst under anaesthesia it was decided that extraction was the optimal option, in conjunction with the points rasped and hooks reduced on the remaining teeth.

The anaesthetic record was supplied and reviewed; the anaesthesia team were from UCD. The first dart with detomidine and ketamine was fired 0955hrs but whilst it hit Kildare it

failed to discharge. At 1005hrs a second dart was made up and administered to Kildare, this dart discharged but so did the initial first dart giving a double dose of induction agent. Anaesthesia started at 1023hrs, she was provided with oxygen (4-5l/m moving to 2l/m) via nasotracheal intubation, morphine analgesia and maintenance with propofol TIVA, and intravenous fluid therapy (Hartmann's). Blood gases were taken from the coccygeal artery at 1125hrs – appear to be consistent with a respiratory acidosis and moderate, bordering severe hypoxaemia (considering on supplemental oxygen) and no evidence of a metabolic acidosis. In response to the blood gas analysis and to support Kildare mechanical ventilation was initiated to resolve the blood gas changes. Post-surgery Kildare was extubated and breathing normally at 1203hrs. Analgesia was provided along with supplemental oxygenation. Two hours later placed into sternal and efforts made to rouse her. By 1530hrs hoisted on to bales and assisted to a standing position using a hand-made sling. Venous blood sample for blood gas taken and blood gas parameters normal with no evidence of metabolic acidosis, the respiratory acidosis having now resolved. Bloods taken – a mild raised CK (likely from manipulation, possible exertion at capture), marginally raised glucose, and a marginally raised potassium. AST was normal. Kildare was left in supported sternal recumbency using hay bales overnight.

In the morning she had been observed drinking, eating and had stood briefly supported by the padding on the walls of her stall. She was moved to the main habitat for massaging and support as well as additional pain relief and antibiotics for the dental surgery. Intravenous fluid therapy and other support was given. However, there were some signs of abnormal central nervous system function. An Anderson sling was sourced from UCD – this is a purpose built support sling for horses that is commonly utilised in animal rescue and support for recovery and rehabilitation of equids. It arrived circa 1700hrs and was utilised to support her. Unfortunately, her condition deteriorated, and she was euthanased later that evening on welfare grounds.

Gross post-mortem examination was carried out the following day with moderate pulmonary oedema and congestion, pericardial effusion and haemorrhagic cystitis being the main findings. Histopathology identified severe haemorrhagic cystitis with a vasculitis, multifocal mild haemorrhages and cardiomyocyte necrosis, and moderate oedema of the brain, very mild and multifocal, with perivascular haemorrhages and neuronal lipofuscin depositions. The skeletal muscle and pelvis were not mentioned in the post-mortem report and as such were presumed normal.

Kildare's case was discussed and reported at the 14th January 2021 Clinpath and welfare meeting where the successful dental surgery was outlined and the complications on recovery from anaesthesia were discussed, the report states *"We used the Anderson sling from UCD to aid mobility, but we could sense that her health and fight to live were dissipating. She was in lateral recumbency with a weak pulse and we decided to euthanase her. Preliminary post mortem findings describe a pericardial effusion and haemorrhagic cystitis"*. Note this was prior to receipt of the histopathology which further expanded the diagnosis.

Findings of the investigation with regards to the specific case

- Kildare was 23 years old, in the wild 20 years is common, in captivity into the early 30s is not uncommon with one of the oldest being 40 years but life expectancy is 25-30 years on average, with age related diseases such as dental pathology becoming more common post 20 years.
- The procedure was undertaken by the competent zoo veterinary team at Dublin Zoo supported by specialists from the UCD School of Veterinary medicine – technical specialists in equine surgery and equine anaesthesia supporting the care programme for Kildare.
- The dental issues identified and addressed during surgery were the cause of quidding and could not be left, therefore the justification for the anaesthesia for both investigation and resolution of the dental pathology was the best option for the welfare of this animal.
- Induction and double dosing of the induction agents was due to equipment failure and is not uncommon, albeit the subsequent injection of the first dart was a very unusual event. It is not reported how Kildare responded to being darted twice but this may have had a potential effect on the subsequent events, especially if she was stressed at this point e.g. excessive running in the paddock (this is not mentioned and the second dart was administered quickly so it is considered unlikely that she was excessively stressed at this point). Addendum: review of the footage from 'The Zoo' and discussions at interview highlight that she was calm during induction and so this is considered unlikely to have impacted the subsequent events that occurred.
- The double dose of ketamine and detomidine, whilst not ideal, was not considered significant – Kildare was reported to be responsive in the anaesthesia record on approach and respiratory rates were not significantly impaired initially. When comparing the induction doses to domestic equids the total dose was only 43% higher than expected weight for weight. She responded to the tooth being removed but then soon settled i.e. she was not at an excessively deep plane of anaesthesia based on the information on the anaesthetic record.
- The surgical procedure and anaesthesia were as expected, even the blood gas analysis was considered normal for equine anaesthesia with a respiratory acidosis being present and no evidence of a metabolic acidosis. The blood gas picture does not support a picture of capture myopathy being the cause of death, it showed a respiratory acidosis that was resolved soon after anaesthesia was finished. This is considered 'normal' for equine anaesthesia.
- The biochemistry and haematology showed very mild increases in CK, glucose and potassium but these could be attributed to the manipulations from supportive care and stimulation to get Kildare to stand. When compared to published capture myopathy values for zebra only the CK was in the low end of the expected ranges that would be consistent with capture myopathy but even then typical capture myopathy CK values have been reported at levels 4-6 times higher than those reported in Kildare; in these separate cases the animals died.
- The records demonstrate good communication between the veterinary team at the zoo, the veterinary team at UCD and the animal care team at the zoo. There is no record of

concerns captured or issues raised in the documents presented. Decision making was a shared responsibility combining the different skills sets of the stakeholders for her care.

- The case management, including the use of an Anderson sling, are all recognised techniques and no fault or concern is raised with regard to the justification of their use in this case. Indeed, some improvement had been seen overnight and action was taken when she deteriorated and the decision made to euthanase her.
- The gross post-mortem did not provide a clear diagnosis for the cause of the clinical signs noted that led to the decision to euthase her, unfortunately there was no mention of the adrenal glands, skeletal muscle nor the historical pelvic fractures being assessed which would have confirmed if this was capture myopathy or not but there were no other indications in the kidney or the heart that were considered significant enough to make a diagnosis of capture myopathy. Indeed, the findings were non-descript and did not shed light on the diagnosis. Addendum: further investigation and discussion with those involved does not identify capture myopathy as the causal factor in the death of Kildare, the brain oedema and video of the events are suggestive of a central nervous system disorder, i.e. a lesion within the brain itself.
- It was noted by Senator Hoey that this case was reported to have been filmed and broadcast in Series 11 of the RTE programme The Zoo, on the 26th June 2022, this footage was subsequently reviewed along with video supplied by the veterinarians which support the comments and timelines outlined above.

Interview responses to the alleged welfare case

No. of staff interviewed:

11

- Where asked, the staff agreed that the footage from 'The Zoo' was accurate and reflected the issues that arose.
- The term capture myopathy was mentioned by a number of the staff interviewed but this was simply recollection of an early discussion as a possible cause of what her presenting signs appeared to be – this was later proven not to be the case despite clinical similarities being present throughout.
- *"The final diagnosis, although not confirmed at post-mortem, was considered to be a neurological disorder of the central nervous system. This was not a simple recumbent animal but one that displayed other neurological signs as well which were retrospectively reviewed by specialist neurologists that confirmed likely a central brain lesion. Cause of this was unknown".*
- Decision making with regard to the case was collaborative, if anything a small group of individuals criticised the vet team for being too inclusive and for involving everyone at the scene. The investigation team were impressed by the inclusive nature of the vet team and found no evidence of decisions being made that did not involve discussions with the wider team present. Noted that staff identified that Frank O'Sullivan, primary vet in this case, was reported to "...always give a voice..." to those in the room, no matter what level or status.
- Majority of persons felt involved and none recall staff begging for Kildare to be euthanased, staff adamant and even state that "absolutely not" when asked if persons

were begging for euthanasia. The team were professional and focused on the event, with all options, including euthanasia being openly discussed.

- *"The decision to euthanase was made taking into consideration decreasing clinical parameters, decreasing demeanour, loss of effort to try to stand, a decrease in willingness to move and a general reduction in the parameters which at that point had given hope to the team".*
- *"The decision to use the harness was indicated in this case and the appropriate equipment in the deployment of the Anderson sling was the last attempt to provide Kildare with every chance, once this failed in the face of a failing clinical picture the decision to euthanase was made. Consideration to leaving her in the sling overnight on the first day was discussed, along with many other options, but was discarded almost immediately"* (which is supported by the actions taken).
- The number of attempts in the sling were not accurately recorded but were in the region of 5-15 minutes maximum and only 3 attempts made during the 48 hours was the general consensus. Although one person thought the total time may have been 90 minutes maximum over the 48 hours.
- The veterinary team felt that the timing of the euthanasia was *"not too soon and not too late"*. The vet nurse was reported by two staff members to recommend euthanasia towards the afternoon of the second day, but it was not possible to confirm this as the individual no longer works at the zoo.
- One person felt that Kildare should be euthanased the morning of the second day.
- General consensus from the staff interviewed was that they *"had exhausted all chances and options for her"* and *"...it was the right time to euthanase her"*.
- Staff not present on the day but working on section were not aware of the details and it wasn't really discussed, no reason given as to why that was.

Interpretation by the investigation team

Whilst it is not the intention of the investigation to comment or pass judgement on the decision-making processes of the animal care and veterinary teams, the veterinary care and consideration is intrinsically linked to the subsequent welfare concerns raised in this case. The welfare concerns raised do not look at the decision making and justification to the dental procedure and its management but do reference the induction and post-operative care. The initial clinical examination, justification, discussion at senior levels in the Clinpath and Welfare Meeting and the subsequent involvement of UCD supporting the Dublin Zoo veterinary team were considered appropriate and followed standard protocols for the management of a case such as this.

The allegation states that, ***"She was darted twice and suffered from capture myopathy"***. There is no evidence of capture myopathy being present in this case after review of the anaesthetic record, the blood gas results and the clinical chemistry which would be expected to show metabolic acidosis, hyperkalaemia and reduced calcium levels – none of which were present in this case; nor was there any reference to skeletal muscle changes at gross post-mortem nor on histology. Hypothetically, if the double darting had been excessively stressful then it is possible that this set up events for capture myopathy to be

initiated but this is not mentioned in the anaesthetic report nor notes and the physiological values and timing of the second dart do not suggest this was the case., and nor does the recollection of staff present nor the video footage from "The Zoo". It is noted that if it were a capture myopathy case the treatments administered, whilst given for different reasons, would have been appropriate as the animal was primarily being treated as a recumbent animal.

For different reasons safe anaesthetists and standard anaesthesia protocols can have varying results and prolonged recoveries are not uncommon in zoo and wildlife anaesthesia. In this case the induction and maintenance followed typical equine anaesthesia management where intramuscular options only are available for induction. It is unlikely that the anaesthesia drugs led directly to the outcome that occurred. Whilst there are multiple options for induction and maintenance of anaesthesia it is presumed that this approach was designed to provide optimal oral access for the dental surgery, hence naso-oral intubation and propofol maintenance was selected.

The historical ischial fracture was not reported in the gross post-mortem which is unfortunate but is unlikely to have been related to the clinical signs noted which were neurological and equally affecting the behaviour, forelimbs and hindlimbs of this animal. In the investigators opinion, the historical fracture is not related to the events that occurred.

The central nervous system signs had been mentioned in the history prior to the anaesthesia and it could equally be likely that there were functional issues attributed to this. Ultimately there was no diagnosis from post-mortem that attributed to the behavioural and clinical signs seen other than the central oedema.

The allegation states that ***"She was kept alive even though staff requested the animal be euthanized"***. This is not reflected in the documents provided with notes made both by the veterinarian and the keeper team in the record. If there was a cultural issue and staff felt that they could not voice their own opinions then this is challenging to decipher from the documents but this position is not reflected as an option in the Clinpath and Welfare meeting minutes nor was there a history of this animal suffering, indeed no clinical notes are made from February 2020 and the plan for Kildare was for her to move to another collection. The investigators cannot see a justification why staff would request euthanasia prior to the dental procedure, which may have been curative, being undertaken. Interviews with staff may clarify this issue but to date no evidence is found to support this.

An alternative interpretation of this statement is that the stated timeline of events in the allegation is non-chronological and this refers to euthanasia post recovery from the surgery. General consensus from the 10 staff interviewed with regard to this case is that euthanasia was always discussed from the onset as one of many options but was often not given precedence whilst Kildare had multiple potential successful outcomes available to her. Once these were exhausted, she was euthanased. There were potentially some minor disagreements between staff in the last few hours of her life, such as when to euthanase Kildare but this was openly discussed and the majority consensus was taken, with

agreement made soon after the Anderson sling had been trialled and failed. As such, this animal was kept alive whilst she was considered to have a chance of survival but not at any cost and in the opinion of the investigation team, considering all the evidence, the belief is the correct and proper course of action was taken. It is noted that she was receiving pain relief and other supportive therapies all throughout this process.

The allegation states that ***"The tooth was extracted and the animal was severely paralysed when she came around from the anaesthetic"***. This is reflective in part from the case notes. Anaesthesia was terminated at 1204hrs, following a procedure of 2 hours from the start of induction. By 1530hrs she was supported into a standing position but was still not considered to have come around from anaesthesia, she was placed in sternal and left to recover which is not uncommon practice in cases where recovery is longer than expected. Whether she was paralysed or sedated or other co-morbidities compounded by anaesthesia and a poor recovery is not clear and that is still the case retrospectively when looking at the post-mortem findings. "Severely paralysed" was an incorrect statement as she was either paralysed or simply recumbent. The animal was left to recover overnight.

The allegation states that ***"After no change, the animal was going to be hung overnight in a harness even though she was severely paralysed. One staff member pleaded at the end of the second day to end the animal suffering, management and veterinary team were planning to leave her hanging in the harness, despite being severely paralysed"***. The use of a sling, made in-house and then transferred to a commercially available Anderson sling, was the correct and optimal support that Kildare could have had. Indeed, to not have attempted this could have been considered negligent in Kildare's care as Winfield et al (2014) clearly demonstrate that not using a sling in the management of a recumbent horse increases the risk of death significantly. Whilst the veterinary team were continuing to endeavour to give Kildare the best chance of survival this was considered the correct and best option in response to the clinical signs displayed. In addition, Kildare's condition was assessed on the evening of the second day and the decision made to euthanase her. The allegation does miss out that supportive care was provided on both the first and the second day and that there was communication between all parties, working from an initial situation that Kildare had actually improved in herself in the morning of day two and did manage to stand at one point, but this then deteriorated despite supportive care. This is an important omission as the wording in the allegation does miss this ongoing support from staff and vet teams. During the interviews no staff members recall any staff having to plead for her to be euthanased and decisions were collective with everyone in the room having the opportunity to be heard. The interviewed staff felt that the decision process was consistent and reflected general consensus at the time.

Finally the allegation states that ***"Staff were extremely distraught after witnessing the zebra's treatment and they felt they could not raise concern for fear of reprisals"***. The clinical management and subsequent decision to euthanase was considered best practice and reflective of combined considerations with regard to welfare and preservation of Kildare's life. The impact this had on staff is not evidenced in the provided documentation and staff at interviews reflected that she was a popular animal that had been present for almost all

of their careers. It was obvious to the investigation team that she was well loved and her death was a loss to the team but was not reflective of witnessing poor treatment at all. Not one member of the team raised issues of mistreatment or inappropriate critical care during the two days.

Equally, the question of whether the animal was suffering is difficult to quantify based on the submitted documents. Kildare did attempt to stand, did eat and did drink initially and towards the end deteriorated to a point where she does not appear to have been aware of her surroundings and so was unlikely to be suffering on the evening of the second day, simply that she was clinically deteriorating and the welfare cost benefit analysis was in favour of supporting her death with euthanasia rather than persisting at any cost. Kildare was supported by a team of animal carers, capable zoo veterinarians and technical specialists from UCD right until the end. It is the opinion of this investigation, based on the evidence received that she was under veterinary care and decisions were made in her best interests and with best intentions to give her every chance rather than write her off and at the point where this was no longer viable she was euthanased.

Whether Kildare lost her right to *freedom from pain, injury and disease* is challenging to comment on simply from the clinical notes as behavioural assessment is not possible. However, it is noted that to not have undertaken the surgery would have led to Kildare losing her right to freedom from pain, injury and disease. Clinical examination identified quidding and correct steps were taken and raised at all levels of staff at Dublin Zoo, the surgery identified significant dental pathology that was causing pain and was resolved, this was also retrospectively reviewed in the Clinpath and welfare meeting in January 2021. In the opinion of the investigation team, the care provided post operatively was aimed at providing an optimal chance of survival for Kildare, was considered appropriate and best practice and took into consideration her needs and her welfare. Ultimately, despite the supportive care, she did not recover and even at the time of the difficult decision to euthanasia her, Kildare's welfare, respect and dignity were present until the end.

The original freelance journalist request for information alleged that: ***A zebra who received an accidental overdose of an anaesthetic which left the animal immobilised, was hung in a strap for around 3 days from a ceiling, despite pleas from staff to put the animal out of its misery – which it eventually was.*** The first point is true in that an accidental overdose did occur but this was considered insignificant to the events that transpired (one drug is cleared relatively quickly and the other has an antagonist 'reversal' agent which was administered). The animal was to be immobilised as it was undergoing surgery, so this was the intention and not a result of accidental overdose. Kildare was supported periodically on the first afternoon, the day of the surgical procedure but not permanently slung and the Anderson sling was only available around 1700hrs on the second day where she was euthanased a few hours later, not 3 days as suggested. The period of suspension is a recognised and appropriate technique and was no more than 90 minutes maximum, but more likely around 45 minutes over the two days. There was communication between all parties evidenced and the decision to euthanase was made approximately 32 hours after the end of surgery in response to Kildare's deteriorating condition.

With regard to the protected disclosure contents the main salient points and responses are addressed in the statements above. Where there are slight variations in the protected disclosure the evidence provided both in the documentation and the verbal testimonies does not reflect on the events reported in the allegation.

Zoo Inspection process reflective of addressing the welfare concerns

No formal complaint was raised to the NPWS Zoo Inspectorate but a request for information was received by the department on the 11th August 2021 which included the case of a zebra as outlined above, which turned out to be Kildare. This case, along with the other allegations was thoroughly reviewed and investigated on the 18th October 2021 which was the formal inspection for Dublin zoo. The inspection was carried out by two zoo and wildlife veterinarians, one of whom holds Specialist Status. Due to the nature of the complaints, despite no formal complaint being received nor able to confirm the valid nature of the contents, these were all thoroughly discussed with Dublin Zoo and formed the primary core of the 9 hour inspection. The inspectors stated on the report: *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*.

At the same inspection in response to question 3.4 of the inspection process Do animals receive prompt and appropriate attention when problems are noted? The inspectors responded *"Yes, The zoo clearly have an excellent working relationship with the veterinary team and have clear and traceable channels of communication"*. They went on to say in the discussion *"The relationship between the zoo operators and the relatively recently appointed veterinary team is clearly very good and this is reflected in the high standard of veterinary care noted during the inspection. The inspectors understand that the operators intend to continue to progress the veterinary department with a definite shift towards more structured preventative care and further formal qualifications for the veterinary team"*.

The inspectors did raise a minor point in the recommendations that *"It is recommended that a less senior member of the keeping team is present during the ethics meetings and that there is a clear channel of communication to allow junior members of the animal staff to raise issues that they wish to be reviewed by the ethics committee"*. Which may give way to some of the concerns regarding staff not being able to voice their concerns.

No conditions nor concerns were raised with regard to general welfare with only a few minor issues flagged that needed to be addressed.

Specifically with regard to this case, following lengthy discussion and review with the Dublin Zoo team the inspectors stated that there were no concerns noted. Which is consistent with findings of this investigation team based on the current submitted documents.

Outcome of the investigation with regard to the specific case

Based on the submitted information there is no evidence to substantiate the allegation, and that whilst Kildare was compromised post-operatively the animal care and veterinary team undertook supportive care in her best interests using recognised best practice methodology. Whilst the animal died this was not due to any disregard for her welfare status at any time and all efforts were made to promote life and welfare, this ultimately failed and the difficult decision was made to euthanase her.

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2.0 'Maeve', Baringo giraffe, euthanased due to acute recumbency

Date of incident:	Euthanased 28 th June 2022
Species & identification:	Baringo giraffe (<i>Giraffa camelopardalis rothschildi</i>), female 23 years and 11 months old Local ID A9M030
Allegation:	

Senator Annie Hoey: "In the motion before us today there was reference to animals freedom from pain injury and disease and I want to tell you about Maeve the giraffe who died only last month. Staff were informed in a meeting by a team leader in March that Maeve was 'on watch' which means that she was on quality-of-life assessment. Maeve was not being observed consistently or being assessed to determine her quality of life and there was no quality-of-life assessment filled out from March until her death on 28th of the sixth 2022. Where staff had to watch her lay and slowly die while kicking out trying to gain her footing. This should never have happened to Maeve or her keepers. After her death and post-mortem, staff were called to a meeting and offered counselling and then told to delete any videos of Maeve and how she died. And this is another attempt by Dublin Zoo to intimidate, conceal the wrongdoing and animal welfare problems. And before Maeve's death I saw photos of her gaunt frame and her bones sticking out and she was clearly an extremely unwell animal".

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:	Senator Annie Hoey, 14 th July 2022 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2019 5 th June	Clinpath and Welfare Meeting Minutes
2021 28 th October	Clinpath and Welfare Meeting Minutes
2021 30 th December	Maeve clinical history ZIMS 2019-2021
2022 2 nd October	Clinpath and Welfare Meeting Minutes
2022 13 th June	Specimen report Giraffe AM030
2022 22 nd June	Giraffe Maeve Clinical History ZIMS
2022 22 nd June	Post-mortem (final) Giraffe Maeve
2022 19 th July	Veterinary comments Frank O'Sullivan and Emma Flynn
2022 29 th July	Animal weight comparison Maeve versus global giraffe population
2022 20 th July	Maeve's age compared to the ZIMS global population
-	Maeve reference condition video and images 2018 - 2022
2022 3 rd August	Giraffe Maeve post-mortem images

2022 16th August

Giraffe Maeve image taken at time of euthanasia

Summary review of the documents reviewed as part of the investigation:

Comprehensive medical ZIMS records submitted for Maeve from 2nd January 2019 to the 22nd June 2022. A total of 65 records for the period with 24 in 2019, 11 in 2020, 15 in 2021 and 12 up until June 2022. June 2019 the Clinpath and Welfare Meeting minutes makes note that Maeve is pregnant, in good body condition score (BCS), and receiving extra rations but is still lame on and off. It includes an image of a well-conditioned giraffe putting weight on the right hind, with the left in a passive stance. Medical records in 2019 focused on pregnancy support and ongoing long-term management of lameness (initial records from 2017 where appears to have started). Lameness monitored in person and on CCTV reviews. Maeve gave birth to a calf on the 10th October 2019 which was soon integrated into the wider herd. Oddly the birth was not mentioned in the specimen report. Lameness support and monitoring continued but noted improvement since she passed the calf.

Early in 2020 Maeve received what was thought to be a kick from another giraffe on the right hind which exacerbated the chronic left hind lameness, bilateral forelimb lameness being noted also. Contraception utilised to prevent Maeve becoming pregnant again. The lameness improved but in February 2020 her left fore hoof developed a crack which further exacerbated the hind limb lameness. A proactive conservative plan was implemented as the risks of general anaesthesia were considered terminal. She improved well with the care provided by the animal keeper team. This continued on and off over the year with comments made in early October 2020 that cracks had appeared again in the left fore and that keepers were concerned there was some loss in body condition. Her food intake was increased and recommendations to wean her calf to reduce the energy deficit which would also have contributed to the possible weight loss. By November she was in good condition with no lameness noted and she continued on the higher ration portions.

2021 saw continued management of the lameness with periods where she was weaned off analgesia and put back on as needed. Her BCS was low but stable throughout 2021. She had reasonable mobility but mechanical issues that resulted in a stiff, dragging gait. By July BCS was improving. In October Maeve developed a similar horn crack on the left fore but was not lame with this. This was thought to be due to laminitis interfering with the integrity of the horn. She continued to do well with the chronic left hind hip arthritis that has been an issue now for some years. BCS dropped slightly in November 2021. December the 30th saw Maeve become (presumably sternally) recumbent for a number of hours but was up and eating later that evening. In response her analgesia regime was altered. Clinpath and Welfare Meeting minutes reviewed the case to date.

In January 2022 keepers reported that on occasions Maeve made a clicking noise from her left hip. Behaviour varies from good days to bad. February, she got a mild bursitis of the medial right hock. In March 2022 the section developed their own BCS chart with Maeve at BCS 3/8 whilst rest of herd were at 6/8, BCS slowly improving. In April the section was using a different BCS system and scored at 2/5 with a good BCS. BCS stable

as was mobility, happy with condition. May BCS continues at 2/5, no change in condition but stable and happy in self. 13th June reported previous day non-weight bearing on the left hind but on assessment was walking fine and as before. The last entry on the 22nd June 2022 in her medical record states *"Maeve's body condition is stable and her appetite remains good with very positive interactions with her cohorts and keepers. Her left hind lameness is stable and keeper reports it is only intermittently apparent (not observed today). Previous mild skin lesions affecting her hocks on both sides are as before and do not affect her movement. Her overall welfare is positive and stable with no deterioration noted over the past month"*.

On the morning of the 28th June 2022 Maeve became laterally recumbent and was unable to return to a normal sitting or standing position. Her clinical parameters together with her medical history prompted a discussion on euthanasia. The veterinary opinion was of a grave prognosis and any further interventions were deemed unsuitable for this case. On humane grounds, Maeve was sedated and subsequently euthanased by intravenous injection.

Maeve had regular Focal Welfare Assessments carried out reviewing important indicators of her welfare – this included 27 points of assessment considering topics such as health and physiology, physical condition behaviour, stressors, and the environment. These were carried out monthly or so, on the following dates: 06/11/2021, 30/12/21, 18/01/22, 10/02/22, 28/02/22, 18/04/22, 09/05/22 and 22/06/22 six days before she died. Summaries demonstrated positive improvements in welfare and maintenance of BCS. These were carried out by animal keeper teams as well as the veterinarians so that there was consensus between all parties.

The Clinpath and Welfare meeting in February 2022 discussed the two chronic mobility issues of Maeve – the left hind hip arthritis and the recurring left forelimb horn growth abnormality similar to laminitis. It was flagged that support was provided from UCD with regard to improved analgesia regimes and these were implemented and provided her with reasonable mobility.

The post-mortem report of the 28th June 2022 noted; minimal visceral fat reserves, moderate muscle condition, superficial lesions to the skins of the limbs, a superficial laceration of the left head attributed to the fall when she was found, moderate dental pathology, normal heart (no comment on coronary fat), no mention of any long term affects of the analgesia on the gastrointestinal system which was considered normal with well masticated food, and renal gross anatomy was also relatively normal. The left hip exhibited fibrous thickening of the joint capsule with 15ml serosanguinous fluid in the joint space, there was complete interruption, full thickness damage to the cartilage on the articular joint of the femoral head with associated erosions, with osteophytic proliferation on the edge of the articular zone. The acetabulum (pelvis) demonstrated remodelling of the bone and inflammatory changes to the articular surfaces. The right hip had similar but not as advanced lesions as the left. The left hock demonstrated erosions of the medial trochlear.

The pathologist noted that *"There were degenerative cartilaginous and bony lesions on the articular surfaces of both the left acetabulum and left femoral head. Multifocal cartilage erosions and osteophytic proliferations were present (degenerative joint disease). The post-mortem examination confirmed chronic degenerative joint disease of the left hip joint. This pathology correlates to the left hindlimb lameness. There was also some evidence of joint disease in the right hip and left hock"*.

"The underlying cause of acute recumbency is not clear from gross exam. The giraffe's age and underlying joint pathology may have contributed to the inability of the animal to regain an upright ambulatory position". Histology did not add anything to the gross findings except for some changes of the kidney which were not considered relevant other than age related by the investigators.

Addendum: Images of the gross post-mortem were subsequently requested and reviewed by the investigation team. Having considerable experience of giraffe gross post-mortems, the images were suggestive of an aged giraffe in low end of normal range body condition score with muscle atrophy. Adipose tissue was reasonable for the species, especially of note was the coronary fat which was moderate in coverage. Maeve's teeth were worn but in reasonably good condition for her age and the rumen contents were well masticated. No immediate concerns were noted other than that already mentioned in the original post-mortem report.

As part of the focal welfare assessments and veterinary visits regular videos along with still images were taken of Maeve to provide reference video of her condition. These were submitted as part of the documentation provided to the investigation team. A total of 16 videos dated from the 2nd November 2018 until the 1st May 2022 were submitted alongside 16 photographs of Maeve. These were assessed by the investigation team and Maeve easily identified as she was missing the bottom part of her tail (cause not reported in the submitted documents, but not relevant to the welfare assessment of this case). In some of the videos the veterinarian has recorded himself discussing the case in an open manner with the persons present, presumed keepers. During these videos the vet comments regarding the reviews of the BCS are reflective of those seen in the submitted documents..

Findings of the investigation with regards to the specific case

- Maeve was an aged giraffe at 23 years and 11 months old with only 9 older females in the whole European population of 303 females.
- Maeve's actual weight (750kg) was in the low range of the captive European population (720 – 900kg). when compared to the current population in July 2022.
- The presumptive diagnosis of degenerative joint disease and arthritis was supported by the post-mortem findings but also the behavioural and clinical signs noted and the positive responses to supportive therapy and pain relief.

- The inspectors were of the opinion that the treatment plan was considered consistent with similar cases and was well considered for the species, modulated with support from veterinary anaesthetists at UCD.
- Nutritional support and nutraceuticals were appropriate and well considered, especially taking into account the impact of her last calf and the decision to no longer allow her to become pregnant.
- The records were robust and supported by video and images which validate the written records.
- The veterinary records and the Focal Welfare Assessments repeatedly stated that BCS was being maintained or was stable. Reviewing the videos and using the recently published BCS system by Clavadetscher et al (2021), figure 2.01, the BCS for Maeve was consistently scored as 3/7 (1 being emaciated to 7 being morbidly obese) for the period Nov 2018 to May 2022 (total of 10 videos used as not all in the correct position for assessment with this system deployed), which is consistent with the different system deployed by Dublin Zoo. In addition, video of Maeve taken in 2022 was reviewed blindly (no details of the case discussed) for assessment of her BCS by a member of the BIAZA Giraffe focus group whom specialises in giraffe husbandry and they were of the opinion that she was a little thin but not excessive and was considered low end of normal/top end of thin, which is consistent with the investigation team's findings.




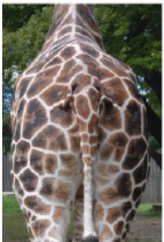

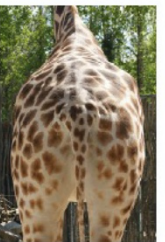
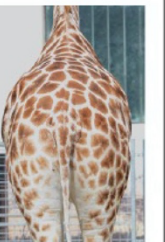







Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	Score 7
						
Individual spinous processes visible, area on both sides of backbone sunken, hip bones angular in appearance, hip area very concave	Spine prominent, clear dent on both sides, hip bones very prominent, still angular, less sloping on both sides, hip area concave	Slight dent on both sides of spine, still concave, hip bones more circular in outline, hip area flattened	No dents along spine, but still pointy, hip bones prominent, hip area slightly convex	Backbone pointy but on a wider base, slightly convex on both sides, hip bones still clearly visible, hip area slightly convex	Clearly convex both sides of spine, hip bones barely identifiable, hip area convex, filled up	Very convex both sides of spine, back flat, hip bones completely covered, hip area full and convex
						

Figure 2.01: The relatively new body condition scoring system for giraffe as published by Clavadetscher et al (2021) demonstrates the wide range of body condition scores that a giraffe can be assigned to. Maeve was consistently scored as a BCS 3 by the investigation team when assessing the video documentary evidence for the period November 2018 to May 2022, a total of 10 assessments made. This shows that Maeve was not gaunt as suggested in the allegations and was the low end of normal / top end of thin.

Source: Figure used with permission of the lead author, from Development of an image-based body condition score for giraffes *Giraffe camelopardalis* and a comparison of zoo-housed and free-ranging individuals, Clavadetscher, Bond, Martin, Schiffmann, Hatt, and Clauss, In *Journal of Zoo and Aquarium Research*, Vol. 9 (3), 2021, <https://doi.org/10.19227/jzar.v9i3.615>. Drawings by Emilia Clauss.

- The post-mortem report states that *"the giraffe was in moderate muscle condition with minimal visceral fat reserves"*. This is not uncommon with regard to the visceral fat as many giraffe lack significant visceral fat reserves. Unfortunately no comment was made

on the coronary groove fat which is a useful marker for serous fat atrophy in giraffe, seen in emaciated states which were part of the concern raised with this case. However, assessment of the images taken at post-mortem were extremely useful and demonstrated good fat coverage and no evidence of serous fat atrophy or even poor body condition.

- Weights were not recorded post 2018 due to failures of the scales and issues with the surface of the weigh scale base plate.

Interview responses to the alleged welfare case

No. of staff interviewed:

10

- Several of the staff interviewed were able to review the CCTV footage in the giraffe barn on the day the event occurred. The CCTV was not available as it was not realised the system was on a 30-day loop and when they went to retrieve it the footage had been automatically wiped.
- The timings from the CCTV were consistent between the staff with her noted as:
05.30hrs Maeve was sat down in sternal recumbency for approximately 2 hours;
07.47hrs Maeve stood up and was standing normally for approximately 20 minutes;
08.05hrs Maeve fell laterally *"like a tree being felled"*, falling left laterally in an arc;
08.40hrs Maeve was found by two members of the team, who then rang the Team Leader to inform her of the situation, she then called the vets and brought staff in to assist and review the situation. Options were discussed but euthanasia was agreed as the most likely option for her welfare, status and ongoing lameness – her prognosis being guarded.

10.30hrs approximately the vets arrived on scene, assessed the situation and discussed with the staff on site the options available, euthanasia was agreed as the only option.

11.14hrs Maeve was euthanased following sedation using intravenous agents.

- When asked whether Maeve struggled or was in distress, the majority of staff, especially the limited number present with her after being found and being euthanased advised she was calm and attempted once to get up and then only moved her legs three, maybe four times: this is supported by an image taken at the time euthanasia was being induced at 11.14hrs (time from image metadata) (see Figure 2.02). In this scrape marks in the wood chip can be clearly seen and are consistent with a small number of sweeps rather than thrashing or multiple attempts to get up. One individual did refer to Maeve as kicking and thrashing her legs at approximately 10.50hrs, however this individual was accompanied by another person whom did not mention this when questioned, and those in the room with Maeve whilst awaiting the vets stated that their appearance suddenly at the door caused one of the three reported leg movements in response to being startled.
- Post-mortem was reported to start at approximately 13.00hrs, with support from a number of vets from the practice.
- The comments with regard to her condition and whether she should have been euthanased earlier were generally positive in that staff were involved in the focal welfare

assessments and she was in good condition for her at the time of her incident. This was actively discussed and shared with the staff interviewed. Her welfare was considered normal and good for her condition and staff have stated that if she had undergone a welfare assessment the day before she fell the outcome would have been the same, she was doing well.

- With regards to the comment Senator Hoey made with regard to staff being “told to delete any videos of Maeve and how she died” this was reported by staff interviewed. This request was made to the team in on the day but was in response to a member of staff having been seen to pass under hessian barriers installed over the windows to prevent people seeing into the house and who was

then reported to appear at the window to openly film Maeve as she laid on the ground awaiting the veterinarians. A number of staff witnessed this or saw the individual within the vicinity of the hessian window covering. After the general discussion regarding counselling and deletion of videos (standard Dublin Zoo policy), this individual was taken to one side and was challenged as to why they would be filming Maeve in this condition and they were individually asked to delete the videos, they responded that other staff were lying (investigation team understood this to indicate that the individual had not taken video footage), however other staff reported that the same individual was then quite annoyed and challenged a number of individuals in the team as to “...who



Figure 2.02: Maeve, the Baringo giraffe, in her last minutes whilst the veterinary and the animal care team administer euthanasia. This image demonstrates that Maeve was calm in her last hours and that there had been little struggling, with only two or three disturbances of the wood chip in front of her limbs, rather than the picture as stated in the allegation. This image also demonstrates that Maeve had slight muscle atrophy but was in reasonable condition considering her long standing degenerative joint disease, again in opposite of the allegation as stated.

Source: image courtesy of Dublin Zoo, whose copyright remains.

had told them I was taking pictures". Whether this individual did or did not take pictures is a moot point but Senator Hoey does refer to images taken of *"Maeve's gaunt frame"*.

- With regard to Maeve's management during the period she was down and her subsequent euthanasia the team were consistent, bar one, that Maeve's euthanasia was *"the most peaceful and calm euthanasia I ever saw, I would want all of my animals to go that way"*.
- Staff acknowledged that they were upset – she was a popular animal and had had long term one-on-one care for some years. However, the same staff also reported that death is a normal part of looking after animals and it was more that she had died, rather than any failings in managing her.
- A number of single comments were made at the interviews that were subsequently reviewed with other staff and found to be unfounded, these included: (i) *"Maeve had been three-legged lame"* (no evidence in notes, videos or testimony by others to support this position); (ii) *"...she should have been euthanased earlier"* (majority of staff felt that her welfare was well managed and up until the day prior to her death she was doing well, and scoring well on the animal welfare assessments); (iii) one staff member believed that any giraffe requiring treatment with meloxicam (pain relief) should be euthanased earlier due to a past experience of seeing a giraffe suffer but in this case they admitted that the other individual in question was in much worse condition when compared to Maeve; and (iv) *"...the post-mortem was set up before she was dead"* (no equipment was taken into the area where she was housed, but equipment was made ready outside of the building to ensure the post-mortem was completed efficiently and the house returned to normal for the giraffe to return that evening. Maeve was euthanased at 11.14hrs and the post-mortem started almost two hours later).
- All of the staff interviewed felt that Maeve's welfare was well managed and that immediately prior to the time of her death her focal welfare assessments were good for her and the fall came as a surprise. The focal welfare assessments were being carried out frequently and staff did have input into them, in most cases they undertook the assessments.

Interpretation by the investigation team

The investigation team believe that Dublin Zoo provided Maeve with a high standard of care for a giraffe since she arrived in 2009, aged 11years until she died at aged 23 years. The investigation team, in reviewing the animal care and medical records believe that Maeve was well managed and was frequently assessed as to her arthritis and her pain management which was modulated in response to changes in her behaviour and need, as well as being supported by multi-modal approaches to arthritis management in a giraffe. In reviewing the clinical aspects there are no obvious additional methods of supportive care that could have been provided in the opinion of the investigation team. Maeve was a chronic arthritis case that finally succumbed after becoming recumbent with a grave prognosis with no options other than euthanasia.

The allegation states that ***"Staff were informed in a meeting by a team leader in March that Maeve was 'on watch' which means that she was on quality-of-life assessment. Maeve was***

not being observed consistently or being assessed to determine her quality of life and there was no quality of life assessment filled out from March until her death on 28th of the sixth 2022". The investigation team can confirm that staff were informed that Maeve was on Focal Welfare Assessments and her quality of life was being assessed. However, the statement that *"Maeve was not being observed consistently or being assessed to determine her quality of life and there was no quality of life assessment filled out from March until her death on 28th of the sixth 2022"* is factually incorrect as there is considerable evidence of assessments being carried out by the veterinary team in conjunction with the animal care team that go back as far as 2018 in the documents provided. Indeed, the dedicated document entitled 'Giraffe Maeve Focal Welfare Assessment' was created on the 24th September 2021 at 1339 hrs by the veterinarian and outlined a standardised approach to undertaking and documenting Maeve's welfare which was subsequently rolled out across the zoo for other elderly chronic cases. In this there were three monthly welfare assessments and quality of life monitoring carried out on the 18th April 2022, 9th May 2022, and the 22nd June 2022. These were consistent and regularly carried out which is in direct opposition with the allegation.

The allegation states that *"Where staff had to watch her lay and slowly die while kicking out trying to gain her footing. This should never have happened to Maeve or her keepers"*. The description in the allegation does not reflect the comments provided by 9 of the 10 staff interviewed, nor does it match the images and other documentation provided from the day. The tenth interviewee's comments does match this statement but they were not present for the majority of the time Maeve was being managed but was linked to disturbing Maeve and causing her to kick out, hence the discrepancy in the comments. The statement infers that the collapse was a predictable event, which the investigation team do not believe was the case. A welfare assessment and review of Maeve's lameness and condition was made with a veterinary visit on the 22nd June 2022 which stated *"Maeve's body condition is stable and her appetite remains good with very positive interactions with her cohorts and keepers. Her left hind lameness is stable and keeper reports it is only intermittently apparent (not observed today). Previous mild skin lesions affecting her hocks on both sides are as before and do not affect her movement. Her overall welfare is positive and stable with no deterioration noted over the past month"*. The events of the 28th June 2022 do not appear to have been predictable nor was it possible to mitigate the incident where she lost her footing or her hip gave out and she became recumbent. Members of the investigation team have dealt with giraffe that are recumbent or have succumbed to infectious disease and it is distressing for both the animal and the care team. The wording of the allegation implies that Dublin Zoo, presumably management, were complicit in allowing this to happen whereas the presented evidence demonstrates a robust, consistent, and regular quality of life programme that was undertaken with the veterinary and keeper teams and then reviewed regularly by senior management which continued to support Maeve in the later years of her life. Less than seven days before her accident and subsequent euthanasia she was assessed by a veterinarian and was found to be stable with no concerns. Euthanasia, being the only other option at this time, was not indicated then and would have been unlikely to have been agreed by staff, vets, or management as she was in a good place taking into account her musculoskeletal issues. In this case there was no evidence that

Maeve was distressed following her fall and that her attempts to stand were few and infrequent – ideally none of this should have happened but it was not a result of poor consideration of her welfare, it appears to have simply been an accident that was addressed after consideration with Maeve’s euthanasia. The position that *“staff had to watch her lay and slowly die while kicking out trying to gain her footing”* is also not factually correct in that being laterally recumbent she had already given up after the initial attempts and was resigned to being recumbent. Dublin Zoo did not allow Maeve to slowly die, the submitted documents and statements describe a discussion on options for Maeve and the whole team agreed on euthanasia due to the grave prognosis, which was accepted and carried out on humane grounds in the safest and fastest possible way available to the zoo. To quote a member of the euthanasia team, *“there was no wasted time when she did collapse, it was a very quick decision to euthanase her, there was no faffing”*.

The allegation states that *“After her death and post-mortem, staff were called to a meeting and offered counselling and then told to delete any videos of Maeve and how she died. And this is another attempt by Dublin Zoo to intimidate, conceal the wrongdoing and animal welfare problems. And before Maeve’s death I saw photos of her gaunt frame and her bones sticking out and she was clearly an extremely unwell animal”*. The investigation team have commented on this in the interview section above and to say anymore on this specific element of the allegation is outside the welfare arguments of the case. However, the investigation team do note that Dublin Zoo has provided all of the documentation, including post-mortem images, in an open and transparent manner. The investigation team also note that videos of Maeve’s condition from 2018 to present day were willingly provided to the investigation team by Dublin Zoo which was not considered concealment nor limited to ‘good days’ as they correlate to the dates of the veterinary medical notes flagging that some of the videos were days where Maeve was having particularly bad episodes of her arthritis.

With regard to the statement of *“And before Maeve’s death I saw photos of her gaunt frame and her bones sticking out and she was clearly an extremely unwell animal”*. The inspection team do not believe anyone would dispute Maeve was an unwell animal. This is why she was under regular focal welfare assessments and veterinary care for chronic lameness and other recurrent orthopaedic problems along with dental pathology that was identified at the end, all of which can account for the clinical problems noted. This was not in dispute, but she was under veterinary care and with the regular welfare assessments she was reported as stable and continuing to play an important part in the herd. She had choice and a reasonable quality of life, the core foundations of the five domains and the five needs. In reviewing the literature and personal records of the zoo investigation team of the several giraffe post mortems examined, both dying a natural death or euthanased, only one had noticeable abdominal and visceral fat present. The investigation team can understand that a thin giraffe can look like an emaciated domestic cow but this is believed to be individual perception and interpretation rather than specific welfare concerns that were not being addressed. The reader is directed towards Clavadetscher et al (2021) for images of wild and captive thin giraffe which highlight the difference, see figure 2.01 and 2.02.

There is no evidence of neglect, maleficence or failure to provide for the needs of Maeve in the opinion of the investigation team and the animal care provided by Dublin Zoo in this case was considered to be of a high standard with well-considered processes in place to ensure Maeve was regularly assessed as to her quality of life and her welfare safeguarded. The zoo opting for euthanasia as a response to an extreme situation and incident.

Finally the allegation starts with concerns regarding Dublin Zoo's failure to provide "**freedom from pain injury and disease**". We believe this statement is unsubstantiated with regard to Maeve. Maeve had a chronic disorder that left untreated would have caused pain yet was under a constantly monitored and modulated regimen of pain relief provided by the Dublin Zoo veterinary team and supported by technical specialist advice from UCD. The effect of which was continually monitored as was her welfare over the whole disease process. It was believed to be well managed, and the evidence suggests it was right up until the point of the incident that led to her being euthanased. At this point, where her pain, injury and disease could no longer be appropriately managed the decision was made to euthanase her. No evidence has been provided to the investigation team to the contrary of this position at this time.

Zoo Inspection process reflective of addressing the welfare concerns

This case had occurred since the last formal inspection of Dublin Zoo. However, in the last formal zoo inspection carried out on the 16th May 2022, the zoo inspectors stated in their report that *"Dublin Zoo is a modern facility which, in our opinion, is well run and has the welfare of the animals it cares for at the heart of each decision made by the operators"*.

In addition, the zoo inspectors spot checked at random the welfare audit processes for named individual species and they were impressed at the quality of Dublin Zoo's processes and documentation which is held on the zoo grounds.

It is noted that the zoo inspectors specifically acknowledged Maeve in the zoo inspection report from 16th September 2019 where they stated in response to question 3.2 Do animals on display appear in good health? *"Yes, it is noted that an elderly tiger (Niamh, Case 9.0) and female giraffe are on daily welfare watch"* which predates the journalist allegation by almost 23 months and Senator Hoey's statement by almost three years with regard to failure to undertake welfare reviews.

Outcome of the investigation with regard to the specific case

Based on the submitted information there is no evidence to substantiate the allegations made or infer that any distress on staff and Maeve on the day she became recumbent was a consequence of decisions made by Dublin Zoo, their keepers or supporting veterinary teams. Whilst Maeve died this was not due to any disregard for her welfare status at any time, her welfare being proactively managed and assessed by multiple members and levels of the Dublin Zoo team. This was an unfortunate accident that could not have been

predicted and Maeve was managed with respect and humaneness at the end of her life, however distressing the events of the 28th June may have appeared on the day.

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3.0 'Harry', Western lowland gorilla, failure to respond to abnormal behaviour and subsequent death

Date of incident:	Died naturally 29 th May 2016
Species & identification:	Western lowland gorilla (<i>Gorilla gorilla gorilla</i>), male, 29 years and 8 months Local ID 95M040
Allegation:	

Senator Annie Hoey: "In the motion before you today, there was reference to animals right to freedom from pain, injury and disease. And I want to tell you about Harry the silverback gorilla and I think we all know about Harry as he was one of the most famous attractions in the zoo, all throughout my childhood and into recent times. Harry was a silverback male gorilla that died on the 29th of fifth 2016. Keepers consistently raised concerns leading up to his death. It was reported daily reports that his behaviour was abnormal. He was losing weight and his condition. Keepers repeatedly asked for a vet to examine him and eventually a vet was called and he died shortly after. This has had an adverse effect on the rest of the troop. This is one of the hardest stories for me to hear from many staff that I spoke to as the pain and their voice over how he was treated in the run up to his death was unbearable. And I sanitised the details here as I don't think I could read all of them out. But I saw the photos of Harry at the end and he's suffered greatly".

Journalist 01: "Harry the Gorilla was distressed prior to his stroke. We have been told he was trying to settle his family in the African planes when two new gorillas were quickly introduced to him when "he was not ready and trying to settle his family in new surroundings". We have been told he became distressed and suffered a stroke. We have been told he lay dying "in his own vomit and urine and faeces" and received little medical attention and pain relief during this time. Staff has described his death as "the most inhumane thing that we have ever witnessed" and he died in "appalling conditions". We have Harry's post mortem report which we will detail including having no food in his stomach for 5 days. We have been told he should have been put down but requests for this were ignored".

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable. In this case the concerns raised are the same as those outlined above with one added element: "After his death as no explanations were given and no post mortem report was shown to staff" (original wording).

Origin of the allegation:	Senator Annie Hoey, 14 th July 2022 Journalist 01, 11 th August 2021 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2015 1 st January	Gorilla section diary – requested but lost (all others available)
2016 1 st January	Gorilla section daily diary – reviewed every day notes made
2016 6 th April	'The Zoo' Arrival of Vana and Tebogo
2016 17 th May	ZIMS record – first introduction of Vana and Tebogo to Kafi
2016 27 th May	Faecal sample parasitology
2016 29 th May	Gorilla Harry ZIMS Medical History
2016 29 th May	Gorilla Harry Husbandry and behavioural notes, 2014 to 2016
2016 29 th May	Gorilla Harry Husbandry and behavioural notes, 2016 to death
2016 30 th May	Gorilla Harry post-mortem report
2016 ??	'The Zoo' Harry death and post-mortem
2016 16 th September	ZIMS medical history Kituba
2016 19 th September	Gorilla Kituba post-mortem report
2017 19 th November	ZIMS medical history Kitoko
2017 21 st November	Gorilla Kitoko post-mortem report
2018 10 th August	ZIMS medical history Lena
2018 10 th August	Gorilla Lena post-mortem report

Summary review of the documents reviewed as part of the investigation:

Historical archive is limited but reflective of what was held at Dublin Zoo at the time, changes and development in robust record keeping have been improved since this case occurred six years ago. However, it is noted that the records while basic were compliant with the Section 9.3 of the ISMZP (2016) which states that *'Records must be kept up to date and be available on site for six years. Provision should be made for long-term archiving in a secure format'*.

The medical records submitted were from 27th May 2016 to the 29th May 2016, a total of only 10 entries. The ZIMS husbandry record was also limited in content. In May 2016 the records were primarily parasitology and microbiology of the vomitus material which was unremarkable. Various drugs were prescribed but rationale was not recorded. Then Harry's death is recorded with the following statement *"History: 5-day history of not doing well, being dull. Three days ago he began to have episodes of watery diarrhoea. Vomited once. Died on the morning of the PM (29 May)"* which was taken directly from the post-mortem. This was not a reflection of lack of action, simply the limited use of ZIMS medical at the time of the case.

Harry's husbandry records are more detailed, the following is a combination of the ZIMS records and the comments in the daily diary. There is little medical issues noted other than long standing behavioural commentaries in the period 2014, 2015 and early 2016. No concerns about Harry medically mentioned throughout January to mid-March where a couple of days he was reported as being off form but this resolved quickly and was non-descript. The new juvenile gorillas, Vana (3 year old, female) and Tebogo (3 year old, male) arrived on the 6th April 2016. No concerns regarding Harry mentioned in the daily diary nor the ZIMS records during April. On the 8th May Harry was described as being a

'bit off' and a' a little off form, he spent most of the day asleep away from the troop'. Nothing more mentioned about Harry in both the ZIMS notes and the daily diary until the following:

- 22nd May it was noted that he had dried blood on the side of his knee and he seemed very lethargic this morning.
- 23rd May he had liquid diarrhoea, sample taken and given to the vets
- 24th May Harry was reported to be a bit more himself today, the record states the vet said to give him some fluids/melon/biscuits/bananas in response to the diarrhoea
- 25th May Harry had no appetite, the vet attended and prescribed paracetamol, he had smelly diarrhoea. He drank 2 litres of fluids.
- 26th May He had awful diarrhoea, the vet was in to see him. Advised give fluids regularly, paracetamol, metronidazole and hyoscine butylbromide. Difficult to administer as oral tablets and refusing anything to eat.
- 27th May Continues with severe diarrhoea but developed vomiting today. Advice sought from the gorilla vet TAG veterinarian and advised treat for stress only (diazepam). Ate nothing and only drank about 700ml but this was vomited back up. He may need to be darted when review tomorrow morning.
- 28th May Extremely lethargic and unwell. He only took 70ml fluids and $\frac{3}{4}$ of a yoghurt. Hand injected with hyoscine butylbromide and later darted with enrofloxacin, ranitidine, midazolam and dexamethasone.
- 29th May Harry died at approximately 9am – sent for PM today.

The post-mortem report stated a number of non-descript findings: large amounts of visceral fat, marked liquid staining of the hind end, bilateral yellow conjunctival exudate, soft palate and oesophagus possibly ulcerated, gelatinous fluid within the trachea (possibly regurgitated material), the caudal lungs were consolidated, and there was approximately 60ml serous pleural effusion, the heart had 20ml pericardial effusion and epicardial vessels were prominent, heart weighed 715g, there were large amounts of pericardial fat, a recent thrombus was attached to the right atrioventricular heart valve, the rest being unremarkable. The stomach was empty but had copious green gelatinous material as was the duodenum which demonstrated oedema and reddening. There were multiple diverticula in the colon. The ventral surface of the brain demonstrated that the basilar artery was completely occluded by a 1.5mm pale yellow embolus, no gross changes were noted anywhere else in the brain or other vessels leading to the brain. All other tissues were unremarkable.

The pathologist stated the preliminary findings as: *"the occlusion of the basilar artery will have resulted in death. It's possible that this artery was partially occluded during the period of reported illness and then become completely occluded leading to sudden death. The cause of the embolus and it's composition was not clear from gross examination. Whether the embolus was related to the recent thrombus formation on the right AV valve is also unclear. Aside from some minor changes in the proximal duodenum this animal did not have any significant gastrointestinal pathology. Thus far no significant*

bacteria have been recovered from the multiple tissues sampled. No intestinal parasites were found”.

Microbiology: culture and sensitivity was performed on the conjunctiva, trachea, lung, liver and thoracic fluid, small intestine and colon. No significant pathogens were recovered from any of the tissues. Faeces was negative for parasites. No original reports were available, just the summary.

The histology was stated as: *“Multiple tissues were examined. The only abnormalities seen were in arteries in a number of organs including the brain and the heart. The medial and intimal layer of the arteries was expanded by extra tissue which resulted in significant narrowing of the vessel lumens. The lesion seen grossly in the occluded basilar artery showed similar changes as in the other arteries in other tissues.*

Comment: This animal appears to have suffered from a vascular disease similar to atherosclerosis in humans. The changes were chronic. In the preliminary report I speculated, based on the gross appearance, that the lesion in the basilar artery was an embolus. The histology shows that this was incorrect and that the lesion was an occlusive lesion due to damage to the wall of the artery at the point of the occlusion, not from an embolus travelling from elsewhere. This is an academic distinction, as the cause of death remains the same ie occlusion of the basilar artery resulting in sudden lack of blood to the brain”.

Findings of the investigation with regards to the specific case

- Harry was reported to have had an unusual start to his life and was brought to Dublin Zoo in 1995 where he arrived with a number of behavioural challenges that were well managed over the years but occasionally would reappear e.g. cupping his ear. This was managed with behavioural support as well as medical support in the early days but he came into his own when infants were born into the troop. Moving to the new gorilla habitat in 2012 provide new opportunities for the gorilla troop but created some stressors for Harry as he could not see the whole troop but this eased with time and he slowly adapted to the wonderful new facility he was provided with. He managed the situation well, especially considering the shaky background he came from originally, developing into a capable silver back. Other than periodical challenges from the red-naped mangabeys he settled in well and was comfortable in his new home.
- The clinical record describes a period of 6 days of being clinically unwell which included diarrhoea and a single vomiting episode. This was first noted on the 23rd and veterinary involvement first occurred on the 24th May with site visits starting on the 25th and daily consultation and support from external gorilla specialist advisors until the day Harry died. Not unreasonably the clinical signs were treated with appropriate drugs.
- The gross post-mortem highlights Harry’s obesity both around the viscera and the heart; possible ulceration of the oesophagus (potentially linked to the vomiting); possible inhalation of vomitus into the trachea and lungs (possible agonal); pericardial, pleural and abdominal effusions (likely related to cardiac disease or possibly homeostatic

changes with decreased ingestion of food and losses through the severe diarrhoea); lack of digesta in the gastrointestinal tract (6 day period of dull and watery diarrhoea would account for this), and a 1.5mm pale yellow occlusive lesion in the basilar artery that was the presumptive cause of death. At histology the only finding was a narrowing of multiple blood vessels, with chronic changes consistent with a presumed atherosclerosis which is not uncommon in great apes.

- The subsequent histology identified the suspected emboli actually originating from a damaged basilar artery lining rather than a clot passing from elsewhere in the body.

TABLE 3.01 Daily diary comments regarding Harry, the Western lowland gorilla January 2016 to May 2016. Yellow reference to Harry abnormal behaviour, orange period of sickness. New arrival of gorillas in bold red.

Date	Comment
01/01/2016	Harry trained AM and PM - excellent
03/01/2016	Mangabeys agitating Harry at door 6 AM, all else well
04/01/2016	Mangabeys Harry much more relaxed, left RCM out at 12.00
05/01/2016	Harry - excellent - ???? - using target now
07/01/2016	Harry on Belly
08/01/2016	Harry trained AM and PM - excellent
13/01/2016	Harry now doing open mouth, tongue, left hand, right hand, 1/2 turn (on station), full turn (on station), belly, arm to shoulder, and also get him to hold.
14/01/2016	Harry trained well PM, a bit aggressive, Belly coming along well, make him touch the target, don't put it on his belly, make him come to you.
15/01/2016	Harry doing Belly very well now
19/01/2016	Harry trained AM
20/01/2016	Harry trained well, Belly both hands tongue and arm. Was a bit interested in what was going on with the others.
21/01/2016	Harry now doing chest, will get a stethoscope from XX and start getting him used to it
22/01/2016	Harry trained am and pm doing chest perfectly, XX was up for training AM
01/02/2016	Gorillas had access 945 to 245 Lena and Harry would not go out.
02/02/2016	Harry doing both arms very well
04/02/2016	New training diary introduced - use instead of here.
05/02/2016	Harry trained AM and PM
08/02/2016	Started doing ear with Harry - he's fine with it
12/02/2016	Harry trained AM and PM
13/02/2016	Harry browsed for celery (?) and scatter feeds
19/02/2016	All good Harry trained Am, out for approximately 4 hours
25/02/2016	Harry trained PM very good
02/03/2016	Harry following Kafi AM, coming into season?
05/03/2016	Harry a bit off form today - quite tense
06/03/2016	Harry in good form today, Harry a break - they have access overnight, Harry trained AM and PM

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07/03/2016	Harry still off form AM - still ear cupping during early part of day, still has wounds on right arm, perked up PM, trained well.
08/03/2016	Harry appeared well today
09/03/2016	Harry ear cupping AM, still not himself
10/03/2016	Harry still ear cupping in the morning
12/03/2016	Harry slow to enter den 3 AM, 20-minute wait, appeared well during the rest of the day
14/03/2016	Harry appeared calm and relaxed today
15/03/2016	Harry still behaving strangely, ear cupping a lot, didn't feed with the others in the house AM, went to bed very early
17/03/2016	Harry in good from spent most of the day in the valley (did see him pulling hair out of arm during the day)
19/03/2016	Harry slept until past lunchtime!
21/03/2016	Harry still very off but did train PM OK
23/01/2016	Harry still off form
24/03/2016	All well, Harry seems to have perked up a bit
25/03/2016	Gorillas wouldn't come into dens AM, Harry blocked Kafi from going into den 1 - let back into the house
30/03/2016	RCMs kept in to give Harry a break (given access at 1645
31/03/2016	Marfari may be coming into season, acting very strangely around Harry

06/04/2016	Two gorillas arrive from Stuttgart, Vana (F) and Tebogo (M)
16/04/2016	All of the main troop except Harry were at the door watching the babies - visual introduction
17/04/2016	Harry sat and watched them. Visual intro
21/04/2016	Kafi seems fine with her row with Mayani yesterday (Mayans did run at her again today but Harry stopped it very quickly)
26/04/2016	Mesh intro new V and T with Lena and Kibuto
29/04/2016	Trained Harry and V and T PM

08/05/2016	Harry a bit off, extra slow and sleepy
20/05/2016	Small amount of red mucus found in faces (Note origin not known)
22/05/2016	Harry seemed very lethargic this morning, red mucous found on faeces (small amount, origin still not clear
23/05/2016	Liquid diarrhoea in Harrys vicinity AM, from Harry. Sample taken and given to vets. No mucous/blood on faces today. Harry drinking.
24/05/2016	Harry a bit more himself today, vet said give him some fluids/melon/biscuits/bananas
25/05/2016	Harry no appetite, unwell AM - vet came in and prescribed 1000mg paracetamol (20ml x 2 daily) - bad very smelly diarrhoea - he slept most of the day (no intro with babies as we wanted to keep everything quiet for him), 500ml mi wadi
26/05/2016	Harry had liquid coming from his colon, vet said to get any liquids into him. 300ml lucozade, 300ml milk
27/05/2016	500ml mi wadi, Harry still very sick - vomiting as well as diarrhoea. XX spoke to gorilla TAG vet and she advised just treat for stress ie diazepam x 5 tablets ie 25mg x3 daily

28/05/2016	Harry still extremely unwell - fluids 70ml (fanta), 3/4 yoghurt, meds hand injection buscopan 2ml, baytril max 10ml, zantac 2ml, midazolam 1ml, steroid also given, he was very doopey after that, dart still in pen 2 with ???
29/05/2016	Harry died at approx 9am - sent for PM today :(

Interview responses to the alleged welfare case

No. of staff interviewed:

6

- Harry's 'abnormal' behaviour prior to his severe illness (up to the 24th May) was not considered unusual and keepers had seen similar before, there were no pressing concerns at this point.
- *"Harry had not been directly introduced to the new juvenile gorillas, at the time of his death only Kafi had been physically mixed with the new gorillas".*
- Staff were shocked he died, staff present on the day did not remember Harry's body seeming particularly bad and did not look traumatic. Staff did not recall that Harry was found left lying in his own faeces and urine, nor that it appeared inhumane. It was noted that he had lost considerable weight in those last few days and his *"normal belly had gone"*.
- General feeling of frustration by staff with regard to comments made regarding Harry's death. The staff still present at Dublin Zoo and at the end of Harry's life are of the opinion that they have a clear conscience at the end of the day and that everything that could have been done for Harry was done. Opinion and statements in the public arena are very emotional and are based on perception of one individual and not the reality of the situation at the time. *"There is no need for finger pointing as nothing to point fingers at"*.
- Staff exceptionally passionate about Harry and very sad when he passed. He was a very intelligent gorilla that liked to keep himself to himself. Very strong feeling that the Dublin Zoo team did an excellent job catering for his specific behavioural and physical needs when he arrived back in 1995 up until he passed away.
- *"Ultimately Harry presented as a severe diarrhoea and vomiting case and he was proactively treated as that, even with hindsight a diagnosis of a basilar artery occlusion would be highly unlikely to be identified and nor would anyone recommend MRI or neurological assessment for a sick gorilla with gastrointestinal clinical signs, equally no one would recommend nor tolerate euthanasia of a gorilla with severe diarrhoea and vomiting. Everyone tried their best to support him until he died"*.
- *"Veterinarian was onsite at the zoo as the new orangutan habitat opened that week and they were present daily in case the rope system enabled an orangutan to drop down and escape, as such vet response time to concerns was less than 15 minutes (the time to cross the zoo) and the veterinarians did attend regularly that week, as well as garner advice from gorilla specialists to ensure Harry's needs were provided for"*.
- The day he died, he died almost immediately after being darted with his medication – this was not a causal factor in his death but simply noted that he was being treated tight until the time he died.

- The existing staff were of the opinion that “...his treatment was appropriate for the clinical signs and was agreed by everyone at the time, only afterwards did finger pointing start that enough was not done”.
- Reference made to allegations linked to subsequent deaths of gorillas made by several staff members. Not finger pointing or blame but it was alleged that some staff members were bringing in food from non-approved sources (e.g. plums) and it was alleged that wild native animals were being secretly hand-reared in the gorilla house. Whilst this was not considered related to Harry’s death, there were alleged plausible links made to the subsequent death of another gorilla that died from salmonellosis some four months later.

Interpretation by the investigation team

Despite this being an historical case and the quality of the animal records is relatively poor compared to the current standards maintained at Dublin Zoo, the allegation can reasonably be responded to with regards to the information made available. Verbal testimonies were considered credible and consistent with the contemporaneous records maintained at the time.

Senator Hoey’s reported allegation states that “**Keepers consistently raised concerns leading up to his death. It was reported daily reports that his behaviour was abnormal**”. The daily diary is the primary source of information for animal carers – it acts as a point of communication and note for important pieces of information about the animals and the management of the section. These then often form the basis of the ZIMS records which are then available to be shared globally in the networked database. Harry had a long-term history of stereotypies originating from his life prior to his arrival at Dublin Zoo and these were reported to manifest occasionally when he was out of sorts. Staff reported to the investigation team that it was not uncommon for Harry to be out of sorts, typically due to altercations with the red-naped mangabeys which at times frustrated him. In the daily diaries for 2016 (see table 3.01) there are only 6 entries, predominantly in March (5) pertaining to Harry being out of sorts and these are interspersed with comments such as “Harry in good form today”, “Harry in good from, spent most of the day in the valley”, and “All well, Harry seems to have perked up a bit”. There is no mention of concerns pertaining to Harry, nor the stress of the introductions of Vana and Tebogo, nor requests for the veterinarian to visit and not attending. When Harry became sick it was noted as starting on the 23rd May 2016. Even then this was simply considered a bout of gastroenteritis and was treated as such. The investigation team also note that there were 150 days in 2016 from the 1st of January until the time of his death on the 29th May 2016, for which the daily diary only has 56 entries that mention Harry and of these 21 (38%) were with regard to training which was going well (mostly in the first three months of the year then dropped off), 10 (18%) were with regards to Harry interacting with other gorillas in the group, 7 (12.5%) were regarding his illness, 3 (5%) were regarding Harry’s interactions with mangabeys and the others referred to his behaviour. As such the investigation team are of the opinion that this element of the allegation is not supported by the ZIMS documentation nor the daily diary, which itself is a primary source of material that is independent to subsequent alteration.

The allegation goes on to state ***"He was losing weight and his condition. Keepers repeatedly asked for a vet to examine him and eventually a vet was called and he died shortly after"***. Harry was reported to the investigation team by staff to have "lost his belly" in a remarkably fast time and his condition (demeanour) also deteriorated as would be expected in severe gastroenteritis. This primary diagnosis was being treated with specific and appropriate drug regimes supplemented by supportive care which was provided by the animal care team. The 'loss of his belly' was considered to be an alteration in his normal gut physiology and loss of content and digestion processes rather than a loss of actual weight, at post-mortem he was still very obese with 'large amounts of visceral fat'. With regard to ***"Keepers repeatedly asked for a vet to examine him and eventually a vet was called"***, the veterinarian provided advice the initial day (unclear if attended site or phone consultation) diarrhoea was noted and the vet was provided with a faecal sample of the diarrhoea for testing, from that point on daily advice and subsequently treatment was provided as well as support from the specialist gorilla TAG. As such the investigation team cannot support the allegation as stated as it was clear veterinary care was provided in a timely and proactive fashion.

The allegation goes on to say: ***"This (the loss of Harry) has had an adverse effect on the rest of the troop"***. The investigation team and the animal care staff at Dublin Zoo do not dispute this and there is good evidence to demonstrate the loss of Harry had a considerable impact on the social network of the gorilla troop as well as the staff at Dublin Zoo. However, the investigation team note that the only other option would have been euthanasia at the end and as such the outcome would have been the same for the rest of the group and the welfare impacts on the troop were unavoidable. This is not considered, by the investigation team, to be an avoidable welfare outcome for Dublin Zoo.

Finally, Senator Hoey's allegation states that ***"This is one of the hardest stories for me to hear from many staff that I spoke to as the pain and their voice over how he was treated in the run up to his death was unbearable. And I sanitised the details here as I don't think I could read all of them out. But I saw the photos of Harry at the end and he's suffered greatly"***. The investigation team is limited in its ability to respond to this point as the primary clinician at the time is no longer employed by the zoo and unavailable for interview, nor were two of the animal care team, the General Curator nor the Operations Manager available at this time as all have left the zoo in the subsequent 6 years. However, a senior member of the gorilla team, the Team Leader and the veterinary nurse whom were present at the time of Harry's death were available for interview and provided clear and concise statements with regard to the animal care provided. The investigation team are confident, based on the documentation and testimony from existing staff, that Harry was treated with dignity and respect up until the day he died, he received appropriate treatment with regard to the presenting clinical signs and he was provided with tender loving care and support as indicated in the daily diaries and associated notes. Whilst the investigation team have not seen the images referred to in the allegation, the description does not marry with the descriptions provided by the staff interviewed nor the commentary provided on the 'The Zoo' series focusing specifically on this issue. Without access to the images described, and without dismissing how the members of staff Senator Hoey refers to feel, the investigation

team cannot find evidence to support this statement. The investigation team also note that on the day Harry died there were five people present at, or shortly after his death, two of which have been interviewed as part of this review and their statements directly conflict with the scenario outlined in the allegation, of the others one was the vet, the other was the operations manager and the fifth is no longer working at the zoo but has provided numerous statements as reported in the press and on facebook which do support the allegation presented but at the time, but based on the commentary from 'The Zoo' this individual was satisfied with the outcome of the post-mortem and was reported by existing staff to not have raised any concerns prior to his death nor immediately afterwards, these only being vocalised a substantial period later. As such, the comment with regard to "...many staff that I spoke to..." is perplexing as the investigation team have spoken to many staff that were involved on the day and they commented that "*I remember seeing him and I don't remember (it being) like that description you gave (as per the allegations)*", "*.. at the end of the day we (referring to the keeper team at the time) have a clear conscience*", and "*Harry's vet care and treatment was appropriate...*". The remaining team members were extremely frustrated and upset as to the version of events presented in the media and allegations, as they do not recognise the reported version when compared to their own experiences.

Journalist 1's allegation contains more specific detail The allegation states that "***We have been told he became distressed and suffered a stroke***". The current information cannot refute nor support the statement that stressors instigated the basilar artery occlusion in the manner outlined in the allegation but the gross and histopathology clearly document a gorilla that was obese and was suffering from a systemic vascular disease that is not uncommon in great apes, namely arteriosclerosis, which ultimately lead to cardiovascular disease and pathophysiological changes that can promote a stroke to occur. There is good evidence that obesity and age in male western lowland gorillas can result in arteriosclerosis and other cardiac disease. This in effect demonstrates that Harry had co-morbidity that had been undiagnosed that led to a cascade and ultimately potentially caused the 'stroke' to occur. The occlusion was thought to have been present for some time and finally occluded and lead to his death. It is not clear if the gastroenteritis signs were related to the basilar artery occlusion (vomiting common, diarrhoea is not in humans) or whether the damage was present (highly plausible) and the gastroenteritis led to clinical dehydration which then exacerbated the basilar artery lesion leading to the full occlusion and his death. Stress may or may not have played a part in his death, this is subjective and there is little evidence to support or disprove this, it is mainly circumstantial with no demonstrable cause and affect found by the investigation team.

The allegation states that "***We have been told he was trying to settle his family in the African planes when two new gorillas were quickly introduced to him when "he was not ready and trying to settle his family in new surroundings"***". The zoo inspectors at the 18th October 2021 inspection reviewed the case and were privy to evidence that the introductions were undertaken on the advice and recommendations of the TAG vet and were considered to be incredibly calm with little stress noted in the group. Following the interviews, Harry was never physically introduced to the two new juveniles and only Kafi had been mixed with

them at the time of Harry's death. In addition, Harry had been in the habitat since 2012 and was well accustomed to the surroundings, as such the investigation team do not consider the habitat to be 'new surroundings'.

The journalist's allegation states that ***"We have been told he lay dying "in his own vomit and urine and faeces" and received little medical attention and pain relief during this time"***. Harry's medical and husbandry records clearly demonstrate that he received various treatments during the last week of his life, which included analgesia, as well as daily assessments by a veterinarian from the 24th (one day after the diarrhoea started) until the day he died. As such the latter part of the statement cannot be supported. With regard to the statement ***"We have been told he lay dying "in his own vomit and urine and faeces"*** the investigation team cannot find any evidence to support this, however it is not implausible that if a sick gorilla with diarrhoea and vomiting is unwilling to move from one area of the house to another area then the animal care team can do little about it and must manage the situation the best they can. It is noted in the last few days the animal records state that they could only get 70mls into him on the 28th May and as such it is unlikely he was able to urinate at the end and so this part of the allegation is considered less likely. Senator Hoey stated she had seen images of Harry at the end and if made available these images would support or refute this statement, however if available the image must be considered in context of both the clinical picture at the time of his death and the normal loss of bowel and urinary continence of an already diarrhoetic gorilla as they pass away and their body functions fail.

In the allegation it is stated that ***"We have Harry's post mortem report which we will detail including having no food in his stomach for 5 days"***, this is considered factually incorrect as the post-mortem actually states two different things that have been incorrectly amalgamated in the allegation, namely: the pathology reported actually states: *"History: 5-day history of not doing well, being dull. Three days ago he began to have episodes of watery diarrhoea. Vomited once. Died on the morning of the PM (29 May)"* and then seven paragraphs later *"The stomach was empty of food but contained copious amounts of greenish gelatinous fluid. The duodenum also contained a lot of green gelatinous fluid"*. The two comments in the pathology report are not linked but equally the animal had developed, six days prior to death, watery diarrhoea and was vomiting so the lack of content in the gastrointestinal tract is not surprising. Harry's ZIMS records clearly demonstrate that attempts were made to feed him food and liquids and he was either uninterested, unable to eat or vomited food or liquids back up at the end. To infer from the post-mortem report that he had no food in his stomach for 5 days appears to be the combining of two narratives to make one and the investigation team cannot find evidence to support this statement.

Finally, in the protected disclosure the allegation ended with the following line: ***"After his death as no explanations were given and no post mortem report was shown to staff"***. This is completely false as the investigation team can clearly demonstrate that the post-mortem was shown to staff (it is filmed being discussed with the team in the television series 'The Zoo') and the journalist 01 makes reference to actually having the post-mortem

report which clearly shows that it was readily available to those that wanted it. The inspection team considered the protected-disclosure allegation a second-hand account as little knowledge was demonstrated in their statement, with the Senator Hoey and journalist accounts being more detailed and as such these latter allegation are felt to be from a separate whistleblower source.

Zoo Inspection process reflective of addressing the welfare concerns

No formal complaint was raised to the NPWS Zoo Inspectorate but a request for information was received by the department on the 11th August 2021 which included the case of Harry the gorilla as outlined above. This case, along with the other allegations was thoroughly reviewed and investigated on the 18th October 2021 which was the formal inspection for Dublin zoo. The inspection was carried out by two zoo and wildlife veterinarians, one of whom holds European Specialist Status. Due to the nature of the complaints, despite no formal complaint being received nor able to confirm the valid nature of the contents, these were all thoroughly discussed with Dublin Zoo and formed the primary core of the 9 hour inspection. The inspectors stated on the report: *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*.

At the same inspection in response to question 3.4 of the inspection process Do animals receive prompt and appropriate attention when problems are noted? The inspectors responded *"Yes, The zoo clearly have an excellent working relationship with the veterinary team and have clear and traceable channels of communication"*. They went on to say in the discussion *"The relationship between the zoo operators and the relatively recently appointed veterinary team is clearly very good and this is reflected in the high standard of veterinary care noted during the inspection. The inspectors understand that the operators intend to continue to progress the veterinary department with a definite shift towards more structured preventative care and further formal qualifications for the veterinary team"*.

No conditions nor concerns were raised with regard to general welfare with only a few minor issues flagged that needed to be addressed.

It is noted that the veterinarians and management referred to in the above statement were not the same management and veterinary team present at the time of Harry's death. This is not to say that there are concerns of the teams present six years ago, simply that the people have since changed. However, reviewing the 2015 zoo inspection reports commentary was made with regard to the welfare programmes present at the time: *"The inspectors found the collection to be professionally operated, with well-considered master planning and welfare and husbandry programmes being in place"*. In the 2016 zoo

inspection report, following the inspection just over a month after Harry died, the following was stated: *"Commended on the quality of the programmes (ref animal husbandry) and consideration of prioritising animal needs balanced versus visitor experience"* and *"It is noted that whilst welfare considerations permeates the culture of the staff, it is recommended that the collection review the new Standards and produce an Animal Welfare Statement in line with section 5.2 of the ISMZP (2016)."* Welfare has been a core value of Dublin Zoo and this is referenced from the first to the most current zoo inspection reports with demonstrable activities clearly noted at inspection and when talking to staff.

Outcome of the investigation with regard to the specific case

This was an extremely challenging case. The basilar artery occlusion that ultimately led to the death of Harry was not a diagnosis that could have been made antemortem, even with a retrospective review the clinical picture was not suggestive of a basilar artery occlusion and to even pick this up on gross pathology demonstrates the capability of the pathologist in this case. In humans with the same pathology this condition is exceptionally challenging to diagnose antemortem, the investigation team are of the opinion that to attempt the same in a gorilla was next to impossible, especially as the pathology has not been reported in the gorilla literature and the clinical picture did not support neurological symptoms nor that seen in humans with basilar artery occlusion.

With regard to the clinical picture the animal care and veterinary support for Harry was proactive and clinically suitable, treating the gastrointestinal signs was the correct and responsible approach. Staff were proactive and caring in the time and efforts Harry received. No fault nor errors can be identified in the husbandry and welfare provision provided to Harry. The circumstantial events that happened to coincide with Harry's death have tenuous links to Harry's death but there is no robust evidence that attributes the central 'stroke' lesion with the arrival of the new juveniles, the harassment by the red-naped managabeys, nor even the potential presence of native wild mammals or introduced non-authorised food items into the gorilla house which may or may not have happened. The death was upsetting for everyone concerned and there are elements of guilt permeating this case for some, with individuals questioning if more could have been done. In the opinion of the investigation team, once the emotive elements have been stripped back, the Dublin Zoo staff provided Harry with a dignified and respectful end to his life, as he had during his life, fighting to the end to try and save him but failing through no fault of their own nor due to omission of alternative care pathways. Quite simply, these things happen and reflect the harder elements of working with animals that we will more often than not outlive.

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- Wann, Allam, and Sutherland (2020) Imaging atherosclerosis in great apes, *Journal of The American College of Cardiology Foundation*, pp 1-3

4.0 Sulawesi crested macaques escapes from island enclosure

Date of incident:	Multiple – see below
Species & identification:	Sulawesi crested macaque (<i>Macaca nigra</i>) Multiple Enclosure code PI 01 Macaque island
Allegation:	

Senator Annie Hoey: “There is a major breach of guidelines happening in the form of missing animals. In the motion before us today there's reference to animals freedom from fear and distress. November 2019. Two crested macaws went missing or were presumed dead... Despite staff raising the issue of them not being found, management have not looked thoroughly for these animals or raised the public's awareness in the event that a member of the public were to encounter it. Staff raised the concerns of the two missing macaws saying there were 24 but now there are only 22 in the group, the team leader quoted the curator saying, but there was always 22 insisting that the keepers cannot count to 24”.

Journalist 01: “Two Sulawesi crested macaques were reported missing at Christmas and have never been found and are believed to be dead”.

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:	Senator Annie Hoey, 14 th July 2022 Journalist 01, 11 th August 2021 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2019 22 nd August	Sulawesi crested macaque escape report
2020 2 nd September	Sulawesi crested macaque escape report
2020 4 th September	Sulawesi crested macaque escape report
2020 7 th September	Sulawesi crested macaque escape report
2020 10 th September	Sulawesi crested macaque escape report
2020 1 st October	Images of mitigation works x 3
2021 26 th February	Sulawesi crested macaque escape report
2021 26 th February	Macaque island refurbishment
2021 16 th September	Sulawesi crested macaque escape report
2022 13 th June	Sulawesi crested macaque escape report
Nov 2019 to Feb 2021	Enclosure notes
Nov 2019 to Feb 2021	Escape events
2018 to 2021	Dublin Zoo animal stock records (four in total)
2022 8 th August	Timeline of events in SCM group 2019 to August 2022

2022 8 th August	SCM births and deaths 2019 to August 2022
2022 8 th August	Taxon report SCM 2019 to August 2022
2022 8 th August	Specimen reports for 25992734, MIG12-28374799, ZLG10-00031, ZLG14-03307, ZLG15-03762, ZLG17-03885, ZLG18-04087, ZLG19-04108, ZLG19-04109, ZLG19-04147, ZLG20-04188, ZLG20-0430, and ZLG21-04308
2022 8 th August	Specimen report A16M61 with necropsy 2020
2022 8 th August	SCM necropsy reports 2019 to 2021
2022 8 th August	SCM inventory for 2019, 2020, and 2021

Summary review of the documents reviewed as part of the investigation:

Note: in Senator Hoey's statement it appears that the species referred to is crested macaws, as there is no such species as this and there were a number of Sulawesi crested macaque escapes it is presumed that this is the species being referred to and as such the investigation focuses on these issues. Later in a separate allegation a comment is made with regard to a crested cockatoo, this is also not a species and is believed to refer to the escape of a citron-crested cockatoo which is dealt with separately.

A relatively large number of escapes reports were provided from 2019 to present day with reference to the Sulawesi crested macaques (SCM). The quality and detail of these reports varied as the records evolved to become robust documents, as such the comments do vary due to the date retained. In each case the date of an escape event is recorded with the number of SCM in the island group confirmed at that time and where an escape occurred it is marked with an 'E':

- **22/08/2019 (22) E:** Zoo open, single SCM escaped 1015hrs, public escorted away SCM returned to island on own, stood down and reviewed – ACTION: new electric fence installed 23/08/19
- **23/01/2020 (23):** BIRTH
- **03/06/2020 (23) E:** no accompanying report, multiple SCM off the island after the zoo had closed.
- **04/06/2020 (23) E:** no accompanying report, single SCM off the island after the zoo had closed. 23 macaques reported.
- **13/06/2020 (23) E:** 1 SCM reported off the island yesterday evening
- **29/06/2020 (23) E:** no accompanying report, single SCM off the island twice today, works on plants cut back.
- **02/09/2020 (23) E:** Zoo open, single SCM off island, contained rapidly by staff, one way covid system changed to keep public away, SCM returned to island on own – ACTION: electric fence loose and fused, replaced, fencing changed.
- **04/09/2020 (23) E:** zoo closed, single SCM off island, SCM returned to island on own, duration 10 minutes – ACTION installed CCTV to understand how getting off and what happening out of hours (if anything), reports total of 23 SCM. Missing from the summary report.

- **07/09/2020 (23) E:** zoo open, single SCM off the island, and then quickly jumped back on, all accounted for – ACTION – electric fence still needs work.
- **10/09/2020 (23) E:** new format reports, 1720hrs, single SCM out on late lock up rounds, went straight back to the island, it did enter the water – ACTION: none reported (incident report).
- **17/09/2020 (23) E:** no accompanying report, single SCM off the island after the zoo had closed, electric fence not working.
- **25/09/2020 (23) E:** no accompanying report, single SCM swam off the island and then swam back.
- **28/09/2020 (23) E:** no accompanying report, single SCM off the island then straight back on.
- **30/09/2020 (23) E:** no accompanying report, single SCM, jumped back onto the island.
- **01/10/2020 (23):** no escape, new electric fence installed around the island in the water/island edge
- **03/10/2020 (23) E:** no accompanying report, single SCM, fence tripped out and then same macaque out again later that day.
- **06/10/2020 (23) E:** no accompanying report, single SCM, jumped back onto the island.
- **08/10/2020 (22):** DEATH
- **21/10/2020 (23):** BIRTH
- **27/11/2020 (22) E: DEATH** one macaque not accounted for, A10M32, presumed dead, only counting 22.
- **31/12/2020 (22) E:** no accompanying report, macaques off island on frozen lake, ice broken up shortly after and pushed back on to the island.

- **07/01/2021 (21) E: DEATH** lake frozen over, juvenile (A18M64) seen cross ropes and jump onto the ice where he went under the ice and body not retrieved despite efforts by staff. Staff noted to try and get SCM in overnight but would not go into the house to be locked in.
- **21/01/21 (20) E: DEATH** counted 20-21 variable counts, 20 locked in rear dens and house remained open, but next morning despite extensive searches unable to locate, suspected fallen onto the ice and drowned similar to previous one. Body not retrieved (A17M02). 20 macaques remain in the house as sub zero temperatures forecasted.
- **23/01/2021 (21):** BIRTH
- **25/01/2021(21):** no escape, facilities team ensuring ice broken to prevent escapes
- **25/02/2021(21):** all males castrated to reduce population pressures on the troop and conspecific aggression.
- **??/02/2021 (25):** 4 male SCM in quarantine reintroduced to the island SCM troop
- **26/02/2021(25) E:** zoo open/closing, 1745hrs, single SCM seen up tree in the zoo but noted by public, robust response for containment and then tree surgeon with cherry picker to dart was attempted but SCM fell out of the tree and was caught by staff and taken to vet hospital for health check. That morning there had been a mass catch up of the group. ACTIONS – review cameras, install new furniture on island to

support group management, review electric fence, add start and end of day counts to SCM policies. Good policy but incorrect wording on end of form regarding notification.

- 26/03/2021(25): no escape, new trees installed
- 06/06/2021 (24): DEATH
- **16/09/2021(24) E:** zoo open, single SCM escaped the island, animal returned to the island, total 45 minutes out. ACTION – considered an extraordinary event.
- 17/10/2021 (23): DEATH
- 03/11/2021 (22): DEATH
- **13/06/2022 (22) E:** zoo open, one SCM noted on a tree within the habitat but crossed the fence with potential risk of escape, monitored and jumped down into the enclosure. ACTIONS none.
- **10/08/2022 (22) E:** in the heat the surround to the house warped providing a ledge only a few mm across that a single SCM utilised to escape the island twice, the first time jumping straight back, the second with encouragement from the staff. ACTION: new metal surrounded to be installed that is confluent above the electric fence barrier.

The enclosure notes outline the major maintenance works carried out over the period of July 2020 to February 2021, these tally with the escape reports and add some additional works unrelated to the escapes. Well documented and proactive attempts to address the issues. Works include dredging around the islands.

A separate escape record from ZIMS summarises the escapes and the responses which tally with the individual reports but adds a large number for which no escape reports were produced (see above). The total number of documented escapes to date is listed below:

Year	Number of documented SCM escapes
2019	1
2020	18
2021	4
2022 (Aug)	3

The numbers of SCM reported in the escape reports were different to that reported in the submitted annual stock records and the reason as to why this was the case was initially not clear and required further investigation with the zoo operator:

Year	Annual stock record		Escape report
	Year start	Year end	
2018	22	26	REC ST 02/02/19
2019	26	26	23
2020	26	26	23
2021	26	26	22

This was simply explained by the fact that there were four male SCM being held in quarantine for an extended period and these were reintegrated into the group in February 2021, the counts differing by four SCM each time during this period.

During the review period a number of mortalities were noted on the annual inventory. These were assessed to ascertain if these were escape related or mortality as a result of other causes. From the 1st of January 2019 to August 2022 there were 3.4.2 (total 9 SCM) deaths. Of these infectious causes accounted for the majority (3.2.0), followed by presumed drowned in the lake (0.1.2), and then anatomical (0.1.0, although one of the infectious deaths was likely secondary to heart disease so 1.1.0 more appropriate). The lake related deaths occurred within a two month period over the winter of 2020/2021 with changes to the group dynamic and management practices initiated in January 2021, since which there have been no further lake related deaths reported.

The zoo inspection pre-inspection audits were all reviewed for the period 2018 to 2022 and in all cases the element where a zoo declares whether animals had escaped within the zoo or external to the zoo were ticked in a manner consistent with the records regarding the escaped SCM. Only one year (2020) was the box for escapes external to the zoo ticked, in this case it was a blue peafowl that free ranged the zoo and managed to escape but was retrieved. This is consistent with the submitted documentation and comments were made where relevant in the inspection reports by the inspectors with regard to escape management.

Findings of the investigation with regards to the specific case

- There have been a large number of reported SCM escapes during the period 2019 and 2022
- The allegation from Senator Hoey is not clear with regard to two SCM escaping in November 2019, as only one SCM was reported dead in that year in the records and only 1 SCM was reported to have escaped that year. However, subsequent years did see escapes and the scenario of bodies not being found did occur in 2021 where 2 animals were thought to have drowned.
- Extensive searches for the bodies in 2020/2021 are reported but in all instances the SCM were thought to have drowned and the lake was frozen making it challenging to undertake a comprehensive search. One of the three was seen to fall through the ice and even in that situation staff, despite extensive searches were unable to retrieve the body. These incidents occurred over a two month period on the 27th November 2020, 7th January 2021 and 21st January 2021.
- In reviewing the records in all other escape events the SCM rapidly returned to the island and none left the perimeter.
- It is noted that the legislation requires only notification of animals to the licensing authority if they leave the perimeter of the zoo with recommendations that if a category 1 hazardous animal escapes within the zoo then this is reported in a similar manner. As the animals never left the grounds none were reportable. However, in 2020 (dated 16th

December 2020) a new mandatory licence condition was added to all zoo licences that requires notification of any category 1 hazardous animal escapes, whether in the zoo or not, to the zoo licensing authority. This was at the suggestion of Dublin Zoo. This is reported to be complied with by Dublin Zoo on advice from the department, with verbal reporting undertaken when needed.

- Sulawesi crested macaques are classed as category 1 hazardous animals in the current ISMZP (2016).
- The investigation team were unable to demonstrate the SCM population was ever 24 within the period reviewed except for a short period from the 6th June 2021 to 17th October 2021 (4.5 months). Only one escape incident occurred during this time period and this was noted to escape and visually monitored throughout. The period where the two animals were reported to fall through the ice and drown there were 22 SCM on the islands, reducing to 20 following the loss of the individuals on the 7th and 20th January 2021.
- It is noted that the escapes in 2020 were excessive and that in some of the earlier reports the responses were a little slow initially, however it is clear that multiple modifications were initially made to the facility and this then led to major modifications and consideration of not just escape routes but also population and behavioural needs being provided for which in combination reduced the escapes considerably with 2021 being 22% and 2022 to August 2022 being 17% of the 2020 escape rates.
- The actions taken during the review period include:
 - Reinforcement and extension of the electric fence around the two islands to act as a deterrent against escapes;
 - Introduction of additional logs to increase visual and physical barriers and establish a more varied and complex physical environment;
 - Prevention of breeding in order to avoid group expansion and prevent overstocking which potentially exacerbate social conflicts; and
 - As a precaution ropes are now dropped during the cold winter months and animals only given access to one of the islands eliminating access to the connecting ropes which prevents any more animals falling into the lake during the winter (this was actioned in January 2021).
 - Installation of new metal sheeting around the house entrance to overcome the escape routes used in the last two escapes (August 2022).

Interview responses to the alleged welfare case

No. of staff interviewed:

6

- Staff reported that a decade previous SCM escapes were an almost daily occurrence and animals would simply go back to the island soon after escape.
- With change in the management team the frequency and related poor documentation was noted and steps taken to first deal with the situation – review routes of escape, take action, change processes and policy, and make the island more attractive and more suitable to meet their needs. With the changes a much better situation and see improved recording (ironically increasing escapes documented) and reduced escapes, with novel routes now being used and targeted as they occur. Working on additional

measures such as training and recall to bring animals back and facilitate count. Challenges with the two joined islands for counts as can move back and forth, drop the ropes to count and assess situation. Learning and developing procedures constantly.

- *"The lake is deep and relatively high flow – bodies rarely retrieved as move and post-mortem scavenging considered highly likely"* (sea gulls, terrapins, rodents and fish).
- CCTV cameras utilised to monitor escape routes and help document how animals are escaping, but these were reported to not be working currently.
- The point regarding the statement *"Staff raised the concerns of the two missing macaws saying there were 24 but now there are only 22 in the group, the team leader quoted the curator saying, but there was always 22 insisting that the keepers cannot count to 24"* was discussed with several of the staff in great detail following the comprehensive review of the documents. Varying numbers were given by staff with no consistency between those interviewed. One person was adamant that it had been said but then when questioned further admitted that the information was only second hand and they had not been working in that area at the time this event allegedly took place. All the staff were surprised when informed that the records demonstrated that there were never 24 animals at that time, there were actually 22 frequently counted in the population, dropping down to 20 when the two that were presumed dead left the group in January 2021.
- A number of staff members flagged that the number of escapes, whilst not ideal, is a huge improvement on historical escapes. Previous to 2019 SCM escapes *"were not really recorded"*, it is only recently that every escape of the SCM was reported and reviewed, a process that has developed into what it is today over the last 2-3 years. Prior to the relatively recent changes and improvements in the fencing and other anti-escape methodologies SCM were getting out almost daily and jumping back in when they saw a keeper. That obviously doesn't happen now!

Interpretation by the investigation team

The allegation states that ***"There is a major breach of guidelines happening in the form of missing animals"***. The investigation team acknowledge that there were a number of escapes but animals were accounted for in the majority of the incidents, many returning immediately and troop counts undertaken. The ISMZP are not guidelines but mandatory enforced standards that zoos must comply with and these are supported by mandatory zoo licence conditions on the zoo's licence which reinforce the requirements with regard to escaped animals. In the case of the SCM, Dublin Zoo was not historically following the requirements set out in the standards and this is reflected in part in the zoo inspection report but also with the addition of the mandatory zoo licence condition added at the end of 2020. The investigation team can confirm that since 2020 Dublin Zoo has improved their reporting programmes internally as well as ensuring that all escapes, both internal and external, are reported to the department within 24 hours as required and in excess of the licence conditions which only require category 1 hazardous animals to be reported when they escape internally (i.e. all escapes are reported). As such since January 2021 Dublin Zoo has been fully compliant with regards to the standards and there is no breach currently

occurring with regard to the standards, this having been addressed with the zoo with regards to the processes required in response to and the reporting of, escapes.

The allegation states that in *“reference to animals freedom from fear and distress. November 2019. Two crested macaws went missing or were presumed dead... Despite staff raising the issue of them not being found, management have not looked thoroughly for these animals or raised the public's awareness in the event that a member of the public were to encounter it”*. There is no evidence submitted of two SCM escaping in November 2019 and not being accounted for (note this date comes direct from the protected disclosure). There is evidence of two SCM ‘escaping’ in January 2021 with one being seen to fall into the ice and pass underneath, presumed drowned, and a second that month where the similar issue is considered to have occurred, with no other evidence to the contrary. There is a third animal that likely died under similar circumstances in November 2020 as well. Whilst this is far from ideal this is considered death by misadventure. Where animals such as SCM are given naturalistic enclosures there are potential risks that come with those environments but the risks are outweighed by the psychological and physical benefits that this type of environment provides. As the number of drowned SCM is a small and low-level cause of mortality over a two month period in the troop this is not considered by the investigation team to be negligence, especially as Dublin Zoo made changes that were already planned at the end of January 2021 and since then that have reduced this cause of death to zero animals. Equally, the time of year and the observation of the first submerging in this manner it is considered by the investigation team that the animal having died is a pragmatic and realistic appraisal of the situation and hence did not warrant communication to the public to be aware of the animal if seen as it can only have fallen into the icy lake. In all of these situations the staff were diligent in the scope of their assessment and their commitment to attempting to retrieve the bodies. Whilst the investigation team can confirm the statement that *“management have not looked thoroughly for these animals”* the investigation team can state with confidence that the management team delegated this responsibility to the animal care team with the keepers undertaking extensive searches of the area and the lake to no avail, as such the allegation is not upheld based on the evidence provided.

With regard to the allegation *“Staff raised the concerns of the two missing macaws saying there were 24 but now there are only 22 in the group, the team leader quoted the curator saying, but there was always 22 insisting that the keepers cannot count to 24”* the investigation team are confident in the escape report from ZIMS as being the most reliable and consistent document which has since been re-validated with a comprehensive audit of all of the births, deaths and husbandry records. The investigation team are confident that there was never a population of 24 SCM identified except during a short period from 6th June 2021 to 17th October 2021 (4.5 months) and during the assessment period where the two SCM were lost to the lake there were only 22 at the start of the year and with the loss of the two the troop went down to 20. All of the numbers pertaining to the troop have been 23 or less since January 2019 until the addition of 4 males in February 2021 and so we cannot find evidence to support the figure of 24 animals having ever been present prior to this date. Equally the investigation team have not found any evidence of falsifying the

records as this would require complex calculations of animal stock takes and cross related population records which requires technical proficiency to achieve and would require multiple levels of staff to be complicit which is highly unlikely and would achieve little as the zoo would have had to predict these allegations as far back as 2019 due to the annual stock records being submitted annually to the department. As such the investigation team are more supportive of population figures of 22 than 24 on the island at the time of the incident, and so the statement alleged to have come from the curator is reflective of the population at the time, there were not 24 when the two went missing but 22. If going back to the November 2020 animal then it would have been 23. The only evidence to support that the conversation occurred at all was second hand and the information described in the verbal testimonies was not supported by the contemporaneous records from the time the events occurred.

In the Journalist 01 request for information regarding the allegations they stated: ***“Two Sulawesi crested macaques were reported missing at Christmas and have never been found and are believed to be dead”***. As this request was made in October 2021 this is a correct statement and was investigated at the time as outlined above. As the investigation team are of the impression that Journalist 1 and Senator Hoey have the same source or at least have two sources describing the same incidents it is believed that this statement supports the findings raised above that the two SCM did not disappear in November 2019, as alleged by Senator Hoey, but did in fact disappear in January 2021.

Zoo Inspection process reflective of addressing the welfare concerns

As outlined above the escape management was not historically compliant with the ISMZP and this has been addressed over the years in the zoo inspection reports, with the zoo inspectorate supporting Dublin Zoo staff to develop and improve their escape management reporting. This is noted as being successful simply in reviewing the quality and content of the escape reports pertaining to the SCM and the actions taken as well as the records of the actions being completed. These documents evolving over the review period to being the compliant ones they are today.

In reviewing with the wider Department Dublin Zoo is extremely supportive of the ISMZP and reports not only the category 1 hazardous animal escapes but do in fact report any animals that escape within the zoo or even, in the rare event, outside of the zoo (a single peacock to date).

Specifically with regard to the SCM macaques the two significant 2020 SCM escapes were discussed during the 9th December 2020 covid zoo inspection, and the inspectors noted the changes that had been implemented (new electric fence and management changes).

The original 2021 allegation was specifically reviewed with the Dublin Zoo team where it was noted the number of changes that had been made to the enclosure. In the subsequent inspection in 2022 the mortalities and discrepancies were discussed in some detail with regard to the stock list and the number of escaped animals, in this case the three that had

drowned were reviewed alongside the rest of the population. No action was taken as controls had been put in place which were not only deemed appropriate but were demonstrated to be effective at the time of the inspection as no more escapes had happened at that time.

Outcome of the investigation with regard to the specific case

The investigation team confirmed that Dublin Zoo had historically been remiss in their response and duty of care with regard to SCM escapes but that these had been resolved through enforcement action and management changes in the zoo with initial works being implemented in 2021 and their impact being noted that same year with a huge reduction of escapes in the subsequent years. Whilst these issues persist the overall welfare and improved management of the containment of the SCM is noted with the relatively new Dublin Zoo management team demonstrating competency and professionalism trying to address a situation that had been historically ignored.

The deaths of the possible three animals over winter 2020/2021 was unfortunate and was considered death by misadventure as the animals were provided with secure and appropriate accommodation but chose to stay outside and engage with the outside environment during the winter. Social dynamics may have played a role in these animals being outside during the winter period. Dublin Zoo in response to a wider management programme immediately changed their processes and to date no such similar mortalities have occurred.

With regard to notifying the public about the risk and what to do if an animal was sighted, the investigation team were satisfied that Dublin Zoo had dynamically risk assessed the situation and that the likelihood of the animal leaving the site was minimal. To notify the public on the small chance of the animal(s) having escaped would have led to numerous false alarms that would have been counter-productive for the recapture of this species and the risk to the public was very low as they would be unable to get close to the animal without specialist equipment or dart rifles. This is a moot point though as the investigation team were unable to identify the animal(s) having actually left the site, the risk solely being theoretical. Dublin Zoo, where needed, has a procedure to inform the public where risk is real and identified when considering an escaped animal.

References

- None

5.0 'Eline', white-naped mangabey, missing from island home

Date of incident:	Escaped(?) 21 st February 2022
Species & identification:	White-naped mangabey (<i>Cercocebus lunulatus</i>), female 5 years 7 months Local ID A20M15
Allegation:	

Senator Annie Hoey: "There is a major breach of guidelines happening in the form of missing animals. In the motion before us today there's reference to animals freedom from fear and distress... In February and March of this year, a white collared mangabey went missing also presumed dead. Despite staff raising the issue of them not being found, management have not looked thoroughly for these animals or raised the public's awareness in the event that a member of the public were to encounter it".

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:	Senator Annie Hoey, 14 th July 2022 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2021 21 st November	Image of WNM on island at Dublin Zoo
2022 7 th March	ZIMS Specimen report Mangabey JFQ16-08088
2022 7 th March	WHM missing records
2022 22 nd July	Images of Mangabey Island Dublin Zoo x 2
2022 22 nd July	Statement from Dublin Zoo regarding the missing WNM
2022 30 th July	Dark Sky time machine accessed to review weather 21/02/22 at Dublin Zoo

Summary review of the documents reviewed as part of the investigation:

Dublin Zoo summarised the enclosure for the white-naped mangabeys (WNM): "A breeding group of endangered white-naped mangabeys has been kept in Dublin Zoo since 2000. The habitat, similar to most other primates (held at the zoo), is an island full of mature vegetation surrounded by a lake, which acts as physical containment. The lake has varying depth, but animals of different ages (including with infants) have occasionally been seen jumping into the lake on the island edge and getting back to it with no problem, as it is relatively shallow there (50cm)".

On the 22nd February 2022 only 6 mangabey's were seen and the island was thoroughly checked with no sign, however the ends of the islands consisted of dense foilage and could not be adequately checked. The next day Eline was still missing and the island was searched

but this was hampered by the dense foilage. It was not safe to take a boat out on the lake to look from the water as there were high winds gusting to 40-42mph. Over the next ten days the island was extensively searched, the areas around the zoo were searched and the Dublin Zoo staff extended the search to Phoenix Park with no sign of the WNM reported. The lake was also searched for the body but none was found. After 13 days with no signs or reports of a sighting it was considered that she had fallen into the lake and drowned, the body being lost.

Dublin Zoo's statement report that *"This has not happened before in 22 years of keeping this species in this location, and no animals have ever escaped the island or house. The habitat and house were inspected in order to find deficiencies which needed improving to prevent such an event happening in the future, but nothing could be identified that needed fixing. We believe that the overall benefit of the mature natural vegetation and seclusion provided to this group in their island habitat outweighs the risk of accidental drowning"*.

The missing animal was reported to the department as a precaution.

Findings of the investigation with regards to the specific case

- The missing WNM was identified at morning checks and the area searched immediately, being hampered by dense foliage on the island.
- Extensive searches continued for ten days on the island, the surrounding area and even outside the zoo.
- No reports from the public were reported to the zoo nor the department with regards to an approximately 5.5kg large primate.
- The weather was extremely windy which hampered assessments on the first few days of the escape, whilst it is not improbable that the stormy weather may have played a part in the animal drowning and the body not being found but there is no evidence to support this directly (Storm Eunice and Franklin)
- The escape was reported to the department as required.
- There is no history, in 22 years, of any other escapes of WNM from the island since they were put on there.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

- Despite numerous staff being interviewed there was little to add to that already found within the animal records.
- The general consensus was that this was a surprise and not expected, considering the lengthy history of the population being maintained on this island.
- 'Danzo', the male mangabey is very vocal when there is change or anything in the woods nearby, he never alerted staff or the rest of the troop to the presence of anything including Eline being nearby. He was reported to be very calm and no vocalising. This was an important response for the team in considering that she was dead or no longer nearby.

- The team were very confident that they would have seen Eline if she was nearby and that Danzo would have vocalised, due to the lack of sightings the loss was put down to a death rather than an escape.
- The public would have seen a mangabey if it were alive and had escaped, they are large and obvious primates yet no calls were made to the zoo.
- Due to the lack of a body it was assumed that Eline had fallen into the lake and been lost.

Interpretation by the investigation team

The investigation team are of the opinion that Dublin Zoo can evidence that they undertook an extensive search of the local area and continued this for ten days before calling off the search, with the animal presumed dead (drowned in the lake and the body lost).

The allegation made by Senator Hoey states that: ***“There is a major breach of guidelines happening in the form of missing animals”***. Similar to the arguments made in the response to allegation number 4.0 above Dublin Zoo were consistent with the requirements set out with regard to the standards in that they reported the incident, made all efforts to retrieve the animal dead or alive, and continued their search for a period of ten days with no sighting of the animal or evidence it was alive. The investigation team are of the opinion that the Dublin Zoo team fulfilled their duty of care to Eline and to the ISMZP and that no failings have been observed. In part this position is supported by 22 years of the species living on the island with no previous incidents and none since. It is also noted that the search for Eline was carried out during severe weather warnings produced by Storm Eunice and Franklin, with staff putting themselves at risk to do so.

The allegation stated that ***“In February and March of this year, a white collared mangabey went missing also presumed dead”***. This is considered factual, albeit the WNM (note white collared mangabey is an alternative common name for the species) went missing on the 21st February 2022 and was declared dead thirteen days later, on the 7th March 2022, when she was presumed dead i.e. she only went missing once and was never seen again, rather than went missing and was seen but then not relocated. This is not disputed by Dublin Zoo and is consistent with the documents provided.

The allegation pairs this case with the previous in the statement that ***“Despite staff raising the issue of them not being found, management have not looked thoroughly for these animals or raised the public's awareness in the event that a member of the public were to encounter it”***. As such the same response from the previous case applies in this instance also, namely that whilst the investigation team can support the statement that ***“management have not looked thoroughly for these animals”*** the investigation team can state with confidence that the management delegated this responsibility to the animal care team with the keepers undertaking extensive searches of the area and the lake to no avail, as such the allegation is not upheld based on the evidence provided.

It is of the opinion, like the two Sulawesi crested macaques that Eline the WNM died by misadventure, and that the suggestion that Eline drowned in the lake is plausible. However, escape, whilst unlikely as there have been no reports despite the very public location of Dublin Zoo, is equally possible but on the balance of the evidence is considered less likely and the likelihood is that this animal did die during Storm Eunice and the body is yet to be retrieved (if ever). The twenty-two year history of the species living in this habitat with no loss of animals through escape or drowning is testament to this position.

Finally the allegation alleges that this case makes ...“**reference to animals freedom from fear and distress**”, implying that Dublin Zoo failed to ensure this was the case for Eline. The likelihood is, as experienced by many zoos at the time, that many animals were distressed when Storm Eunice and Storm Franklin battered the country but this is outside of the power of Dublin Zoo to control. They provided shelter and choice for the animals and in this instance a single animal out of a group of seven was lost due to circumstances unknown. During this time Eline had access to the house and chose to remain outside during the storm. Whilst it is plausible that Eline did not have freedom from fear and distress it is also plausible, when considering the playful and intelligent nature of the species, that Eline was enjoying the drama of the weather and succumbed to a death by misadventure. Both positions are speculative with no evidence to support either, as such the allegation is not supported. The same position applies for the Sulawesi crested macaques that drowned in the winter of 2020/21.

Zoo Inspection process reflective of addressing the welfare concerns

This case occurred prior to the 2022 formal zoo inspection (16th May 2022) and was discussed at the inspection, with the team content with the actions taken and the outcome reflective of Dublin Zoo undertaking everything they were able to at that time. It was noted that the culture and improvements noted in case 4.0 above are reflective of the change in culture and management of escape procedures carried out at Dublin Zoo, which are now considered exemplary.

Outcome of the investigation with regard to the specific case

The allegation is not supported by the information provided.

References

- None

6.0 'A16B03', Citron-crested cockatoo, escape, presumed dead

Date of incident:	Escaped 22 nd May 2022
Species & identification:	Citron-crested cockatoo (<i>Cacatua citrinocristata</i>), male 7 years 1 month Local ID A16B03
Allegation:	

Senator Annie Hoey: "A crizon-crested cockatoo escaped on the 21st of the fifth 2022 from its aviary. This is a critically endangered species and since its escape there have been no efforts to locate the animal or raise the public's awareness if they were to see such a bird in the hope of being able to return it to the zoo. The zoo has failed to follow any protocols to either retrieve the animals or inform or warn the public to either retrieve the animal or to prevent anyone from sustaining an injury from one of the missing animals".

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:	Senator Annie Hoey, 14 th July 2022 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2022 22 nd May	Images of the cockatoo aviary escape route x 2
2022 ??date, May	Images of repaired cockatoo aviary x 2
2022 22 nd May	Cockatoo escape form May 2022 signed
2022 23 rd May	Cockatoo escape notification email to Department
2022 25 th May	ZIMS Specimen report PYR15-01853 Dublin Zoo
2022 23 rd July	Statement from Dublin Zoo regarding the missing WNM
2022 30 th July	Dark Sky time machine accessed to review weather 22/05/22 at Dublin Zoo

Summary review of the documents reviewed as part of the investigation:

The escape report provides the most detail of the escape event. At 11am on the 22nd May 2022 a member of the public phoned the zoo to say that one of the cockatoos was on the roof section and some of the wire clips had come away.

On assessment the weld mesh panels which were held together with gabion style clips had been pulled apart with many retained on one side of the hole in the mesh and approximately 6 missing. Note this is presumed pulled apart by the parrots themselves which is plausible and there is no other notes or evidence of any other causes e.g. malicious action, branch fall, etc, however Dublin Zoo offered that the structure could have moved

and forced the roof mesh and weakened the clips. It was also noted that improvements to checks on enclosures was needed.

The male cockatoo (escapee) was flying around with wild birds chasing him into the large teer adjacent to the enclosure. The female was put inside with the windows left open so the female would call the male into the house to be secured. The roof mesh was pulled back to facilitate the bird returning. Bird taps were placed around the habitat

The department was notified the following day, within 24 hours of the escape, and the plan outlined for the recapture of the bird. Unfortunately, it was not seen again and Dublin Zoo's statement outlines that: *"The bird was seen in the surroundings for a little while but disappeared on the following day (23rd May 2022), with no additional sightings by staff members, visitors or Phoenix Park Rangers. After a few days, the animals was declared either dead or missing"*. The ZIMS record for the bird states the date of death as the 25th May 2022.

The weld mesh roof was repaired with a variant to the clips and woven metal wire to act as a two-fold approach to maintaining the integrity of the enclosure.

Weather at this time was unremarkable.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

- The records did not document the breadth of the extensive steps undertaken by the team to support the return of the cockatoo
- There were mixed feelings between staff with regards to the clips on the roof of the mesh and the credibility of the daily enclosure checks. Some staff mentioned that a member of the public that reported the incident noted the parrot had chewed the rings and pulled them off, these were on the floor of the enclosure with some still hanging from the mesh having been pulled and stretched out. Others felt that this had not happened overnight and was a failure of basic standards. The former was the majority view held and the testimonies considered credible.
- Cockatoo reported to have pulled on the mesh and the rolled gabion clips and pulled panel apart, gaining access to the roof space and then flew to the roof top of the orangutan house where it was mobbed by corvids. Staff went to the top of the gorilla house to monitor and the cockatoo bedded down in a tree whilst it awaited the corvids to depart.

Findings of the investigation with regards to the specific case

- The roof of the aviary was made of weld mesh panels held together with gabion clip style rings, the clips failed to produce a gap with which the male cockatoo A16B03 escaped through.

- The bird was mobbed by wild birds which pushed it away from the immediate area of the cage and he never returned to the area, not being seen from the following day.
- Attempts were made to search for the bird using staff, Phoenix Park Rangers and reports from visitors but there were no sightings and after three days of no sightings the cockatoo was declared dead.
- As bird was calm staff convened and put in place steps to encourage the cockatoo back into the aviary – windows opened, hole in roof made larger, food baited in the aviary and staff waited. The roof gap was left open for 3-4 weeks and food was put in the aviary for 10 days despite not having seen the bird at all after the first day it escaped.

Interpretation by the investigation team

The failure to notice the roof was compromised is not considered good practice by the investigation team nor was it by the author of the escape report. The report stresses that aviary checks needed to be more thorough and controls were put in place to reiterate the nature and quality of daily checks to ensure enclosures are functional and fit for purpose. Staff did note that the visitor that reported the incident did see the cockatoo pulling at the wire clips and it is plausible that the bird aided its own escape, simple stretching of the mesh due to adjacent tree growth could do it but the mesh was relatively easily replaced which supports the idea of the bird causing the damage.

The response however was well considered and provided numerous options to recapture the bird. However, this appears to have been confounded by the wild birds and the plans ultimately failed simply because the bird never returned to the immediate area of the aviary. The decision to declare the bird dead or missing was reasonable based on the time period that had passed and the lack of any sightings. Being a valuable bird, it is not impossible that it was caught, stolen and sold on, albeit that is very unlikely and opportunistic.

Senator Hoey's allegation states that ***"A crizon-crested cockatoo escaped on the 21st of the fifth 2022 from its aviary. This is a critically endangered species and since its escape there have been no efforts to locate the animal or raise the public's awareness if they were to see such a bird in the hope of being able to return it to the zoo"***. The investigation team can confirm that the escape of a citron-crested cockatoo did occur on the 22nd May 2022, not the 21st May 2022 as stated. The citron-crested cockatoo is critically endangered, however the investigation team do not believe this is relevant to the welfare allegations as the welfare of the individual bird in this case is independent of the conservation value of the species. To date the evidence provided demonstrates that Dublin Zoo provides utmost care for the species within its collection, independent of conservation status as defined by the IUCN. The investigation team have found no evidence to support the statement that ***"since its escape there have been no efforts to locate the animal or raise the public's awareness if they were to see such a bird in the hope of being able to return it to the zoo"*** as numerous efforts were made using zoo staff, park rangers and reliance on visitors calling in any sightings. It is the opinion, based on their own experiences, of the investigation team that notification of the animal's possible escape to the public would have been unlikely to have an impact on the animal being returned but may have had potential unintended

consequences in that a citron-crested cockatoo is a valuable bird and it may have promoted dubious individuals to try to recapture it to end up in the illegal wildlife trade.

The final statement, ***“The zoo has failed to follow any protocols to either retrieve the animals or inform or warn the public to either retrieve the animal or to prevent anyone from sustaining an injury from one of the missing animals”*** is believed by the investigation team to be factually incorrect as there is clear demonstration that Dublin Zoo made concerted efforts to retrieve the cockatoo and they followed their own protocols which are compliant with the ISMZP (2016). The zoo did inform the department but did not the public as this species is a category 2 hazardous animal and the risk to the public was minimal unless the bird was cornered or someone attempted to catch it. This statement encompasses the Sulawesi crested macaques and the white-naped mangabey and in both cases Dublin Zoo was of the opinion that the animals had died and so to inform the public of the risks of sustaining an injury was considered low and as such the investigation team do not believe that Dublin Zoo needed to inform the public as there were no perceived risks. This seems proportionate in these specific examples stated in the allegations.

There is no evidence presented to support the statement that Dublin Zoo failed to ensure that the cockatoo’s right to *“freedom from fear and distress”* was not maintained. The statement is unable to be supported or refuted and is speculation, or conjecture at best. As such the investigation team have no evidence other than it was chased by some wild birds which was not due to the actions of Dublin Zoo.

Dublin Zoo staff are considered to have potentially failed in their duty to inspect the aviary to ensure there are no failings that could lead to escape or injury of the birds and this is something that the investigating team will recommend is reviewed with the zoo at the next inspection. However, it is noted that this specific issue has been flagged and controls put in place to address it and that a member of the public was alleged to have witnessed the bird pulling the clips off himself suggesting that the enclosure was suitable at morning checks.

Zoo Inspection process reflective of addressing the welfare concerns

The wider picture of escapes has been dealt with in the previous two cases. Specifically with regard to this case it occurred after the 2022 formal inspection which was on the 16th May (one week prior to the escape). However, this case will be assessed at the next formal inspection as is the case for any escapes that occur. Particular focus will be on the processes of enclosure assessment and daily checks as outlined in Sections 2.4, 2.9, 8.6 and 8.7 of the ISMZP (2016).

Outcome of the investigation with regard to the specific case

The allegation is in part supported in that a citron-crested cockatoo did escape in May, 2022, but the investigation team do not support the other elements of the allegation,

especially that Dublin Zoo made no efforts to search for the cockatoo nor fail to follow any protocols to retrieve the bird.

References

- ICUN Red list

7.0 General statements alleging wider welfare issues

Date of incident: Not applicable – information not provided

Species & identification: Not applicable – information not provided

Allegation:

Senator Annie Hoey: In the closing statements of Senator Hoey's Motion a number of general statements were made regarding failings in animal welfare at Dublin Zoo and where possible these will be attended to as one single issue by the investigation team. These include:

- *"What I've raised today is only a snapshot of the stories which I've just shared today about the failings and animal welfare in Dublin Zoo. I have pages and pages and pages of testimony from both current and former staff and I was on the phone until very, very late last night, hearing more stories that I don't have time to go through today. These events are not in the far past. They're also happening quite recently. I have outlined some very recent breaches".*
- *"help share a light on these serious breaches of animal welfare in Dublin Zoo"*
- *"In closing, I hear it's only appropriate to quote the whistleblower once again when they say, "I have exhausted all of my options to date and I can't in good conscience wait until my serious misgivings result in the death of a colleague, and as is already happening with the unnecessary death and mishandling of endangered animal species within Dublin Zoo"*

Origin of the allegation: Senator Annie Hoey, 14th July 2022
Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2022 14th July Motion on Animal Welfare presented to the Seanad Éireann at the Private Members' Business, Senator Annie Hoey

Summary review of the documents reviewed as part of the investigation:

See specific allegation bullet points above, no additional information is available.

Findings of the investigation with regards to the specific comments

- In response to *"What I've raised today is only a snapshot of the stories which I've just shared today about the failings and animal welfare in Dublin Zoo. I have pages and pages and pages of testimony from both current and former staff and I was on the phone until very, very late last night, hearing more stories that I don't have time to go through today. These events are not in the far past. They're also happening quite recently. I have outlined some very recent breaches".*

- In reviewing the cases above the inspection team have not identified any significant failings in animal welfare at Dublin Zoo that would warrant investigation under the Animal Health and Welfare Act (2013) nor would likely lead to successful prosecution under said Act.
 - In response to the statement regarding “a snap shot of the stories” and “pages and pages and pages of testimony” the investigation team is unable to respond directly to this point as no formal complaint has been made to the NPWS Zoo Inspectorate at the time of writing and the investigation team has been unable to access the supplementary information provided by the whistleblowers (video, images, etc), other than the protected disclosure itself, instead the investigation team have given priority to and investigated the cases reported in the Seanad Éireann, the journalist requests and any additional issues that arose in the verbal testimonies.
 - In response to the comment regarding “very recent breaches”, the investigation team have identified one recent potential breach with regard to the legislation, namely related the case of the citron-crested cockatoo where staff may have failed to check the enclosure adequately which may have led to the escape, all others listed by Senator Hoey are historical or have been addressed with procedures already put in place by the new management team at Dublin Zoo or in response to zoo licence conditions issued to the zoo. The investigation team found that Dublin Zoo was, at this time, compliant with the current zoo legislation. There were two potential other failings identified which are discussed below, but these are considered historical and action plans to address the issues were implemented soon after they occurred.
- In response to “*help share a light on these serious breaches of animal welfare in Dublin Zoo*”, the investigation team has been unable to demonstrate serious breaches of animal welfare that have not been openly discussed and addressed at zoo inspections, or were simply challenging clinical cases that ended in euthanasia of well-cared for animals and a small number of deaths by misadventure.
 - In response to the closing statement that “*In closing, I hear it's only appropriate to quote the whistleblower once again when they say, “I have exhausted all of my options to date and I can't in good conscience wait until my serious misgivings result in the death of a colleague, and as is already happening with the unnecessary death and mishandling of endangered animal species within Dublin Zoo”.*”
 - The investigation team are of the opinion that the evidence provided in the protected disclosure was a mixture of factual evidence, emotional rhetoric, and the amalgamation of two narratives, most of which appears to have been second-hand in nature, and simply provided an alternative perspective that was often in direct conflict with the contemporaneous evidence and testimonies of staff that were actually present at these events.
 - At the time of writing the summary of this investigation, no formal complaint has been made to either the NPWS Department nor the Department of Agriculture, Food and the Marine (DAFM). Requests for information by freelance journalists

were made in 2021 with regard to many of the same cases listed here and these were investigated at Dublin Zoo by the zoo inspectors at the time, despite not being formal complaints. These were found to be unfounded by the zoo inspectors at that time and this position on the whole, for the historical cases, is supported by this current investigation team.

- The whistleblower is quoted by Senator Hoey as saying *"I have exhausted all of my options to date"* and yet no one has come forward to the Department with any complaint, comment, query, concerns or other comments with regard to welfare concerns at Dublin Zoo. The investigation team highlight that the NPWS Zoo Inspectorate are the first port of call with regard to evaluation of wild animal husbandry in Irish zoos and they have a thorough record of taking welfare seriously and investigating claims. Where welfare concerns are noted action is taken, in some cases working with DAFM authorised welfare officers. An alternative would have been to directly complain to DAFM if the whistleblower(s) felt that the NPWS was not appropriate. Either way, neither of these options were utilised, rather the report was made via the Motion on Animal Welfare on July 14th.
- Addendum: the protected disclosure has a number of mixed sentiments which are inconsistent within the document itself: the original protected disclosure stated: (i) *"Because I've exhausted all options within **Dublin zoos grievance procedures**, which failed to act on my concerns I feel I have no option but to expose my experiences and what I have witnessed at Dublin Zoo"*; (ii) the protected disclosure also states that *"I want all these matters investigated as a matter of urgency. **I do not wish to remain anonymous in this investigation**"*; and then finishes with *"I have exhausted all my options to date and can't in any good conscience wait till my serious misgivings result in the death of a colleague, and as is already happening the unnecessary deaths and mishandling of endangered species within Dublin Zoo"*. The investigation team believe the comments made by the investigators prior to receiving the protected disclosure above hold true with regard to the complete picture now provided by the recently submitted documentation. To be able to review the cases and the perceived welfare concerns with the original whistleblower may alter the position of the investigation team but at this point of the investigation there is little to no evidence of failure to meet the needs of the animals other than a small number of cases and where these have occurred controls have been put in place with systems initiated to mitigate any previous concerns. The investigation team also note that there is no evidence to support the statement that there is *"...mishandling of endangered species within Dublin Zoo"* as all decision making has been in the best welfare and conservation interests of the animals and each decision has been with the support and approval of the European Endangered Species Programmes or other similar specialist conservation or welfare bodies, where they exist.

Interview responses to the alleged welfare case

No. of staff interviewed:

23

To assess and address animal welfare concepts, knowledge and understanding of an individual during a short verbal interview is challenging. The investigation team realised early on that a standard approach to presenting the problem to the interviewees was required. All, bar two of those interviewed were specifically asked the following questions:

1. In the Seanad Éireann Senator Hoey made a number of comments in her Motion that included: (i) *"about the failings (of) animal welfare in Dublin Zoo"*; (ii) *"...these serious breaches of animal welfare in Dublin Zoo"*; and (iii) *"...unnecessary deaths of endangered species"*. Can you provide examples or cases that support these statements and demonstrate failings in the provision of animal welfare at Dublin Zoo?
2. How do you respond to these statements made in the Seanad?
3. There has been significant transition in the senior management team in the last 3-4 years with changes in the Director, General Curator, and the veterinary team alongside the changes required to meet covid restrictions. Do you feel that animal welfare has improved, remained static or gotten worse following these changes in senior management or new processes and why?
4. Is there anything else you would like to add or say on this issue, if not are you satisfied that you have had an opportunity to raise concerns with regard to any animal welfare issues you may have at Dublin Zoo?

Knowledge was variable with regard to what animal welfare was considered to be – the majority of the commentary in response to these questions focused on staffing issues, failure to provide enrichment and reduction in time for training. Only a small number of staff mentioned the five freedoms and even less the five domains. Most staff dealt with large sweeping concepts that were perceived to be issues of animal welfare and a small number mentioned specific examples with regard to basic elements of shelter or husbandry.

The responses to the questions were as follows:

1. **Can you provide examples or cases that support these statements and demonstrate failings in the provision of animal welfare at Dublin Zoo?**
 - Of the 23 persons specifically asked this question only 5 provided additional cases that were not covered by the specific allegations being investigated with the individual interviewee. Of these 5 interviewees only 2 provided new examples that the investigation team were not aware of. These new examples varied from a case of a failure to provide enrichment to an animal which was resolved within two weeks of notification to management, requests for additional shelters in a number of paddocks, and provision of alternative feed-stuffs that would provide additional enrichment for a group of animals. Whilst important, especially with regard to shelter which has already been flagged in the zoo inspection reports, the investigation team noted that the 23 interviewees provided no additional information nor concerns pertaining to welfare concerns that would be classed as significant or serious breaches or failure to provide for the welfare needs of the animals held at Dublin Zoo, other than the issue of a lack

of shelters in one area. Consideration was given to whether this was a reflection on whether staff felt they could not raise issues for fear of reprisals as noted in Senator Hoey's statement or whether this was simply because there were no or minimal welfare concerns related to the animals at Dublin Zoo. Having interviewed the staff, the collective assessment by the investigation team was that the majority of staff felt they could raise issues with their team leaders or even the Director and during the interview they were quick to openly criticise elements of other areas of the operation at Dublin Zoo and so the investigation team interpreted the responses as being a credible reflection of the welfare standards held at Dublin Zoo. This is discussed in more detail below.

- In the case of the three interviewees that provided information with regard to other cases that were not covered in their specific questions allocated to them it was noted that all three of them reported their welfare concerns almost verbatim from the protected disclosure. The investigation team noted the same language was being used as found in the protected disclosure and two of the individuals were generally unable to expand or provide additional information outside of that documented in the protected disclosure. No inference was taken from this other than when explored further the two individuals admitted that the information was second-hand as they had not been present at the events and their comments were inferred from other people's perspectives.
- A large proportion (10 of the 23) staff interviewed raised concerns with regard to levels of staffing and that there was insufficient levels to provide the level of care that was possible pre-covid lockdown. Whilst they recognised that during covid there was a need to enter survival mode to protect both the business and animal welfare there was a strong feeling that as the zoo turned the corner staffing levels should be reviewed and developed across the team. This was felt to be one of the main concerns that had an impact on morale and animal welfare. However, the investigation team noted that whilst husbandry may not have been at the levels pre-covid there was still an active enrichment programme and to some degree training programme in place. Despite this the investigation team felt that this is an area that would benefit from review.
- It was noted that there was a smaller proportion of staff that the investigation team perceived to be bitter or angry as they had failed to achieve progression in the new animal care team structure being proposed, with staff feeling that they had sufficient skill sets to be promoted but had been unsuccessful to secure the roles they felt should have been their own. The investigation team listened but advised that these were human resourcing issues and were independent of the animal welfare allegations and as such were not explored further.

2. How do you respond to these statements made in the Seanad?

- The general consensus was similar across the staff interviewed. The staff were exceptionally passionate about the care and work they do at Dublin Zoo and the language was consistent across the staff at all levels with regard to the comments made in the Seanad; "frustrated", "angry", "total disbelief", "upset", "ill-informed",

"disingenuous", "insulting" and most commonly stated "I cannot support the statements made", when referencing the 14th July 2022 Motion on Animal Welfare.

- Specifically, with regard to one case a member of the animal care team eloquently captured the majority consensus across all those interviewed with regard to the allegations of failings of animal welfare at Dublin Zoo: *"These allegations are emotionally charged bulls@t, put about by some one that was not there. If that person was present in the room they would know none of it (the allegations) was true and if they understood the individual animal they would come from a different perspective. The biggest injustice is that this was not just another day, if you cannot learn from it then you need to pack your bags and leave. It was a horrible raw and painful experience...(the approach to animal welfare under the new management at Dublin Zoo) is bringing fresh perspectives, new ideas, whilst some people are not on board, due to resistance to change, the standards and care have never dropped. The new processes look to improve and explore weaknesses and frailties in the process and individual perception so these can be highlighted and addressed. Whilst there may be differences of opinion, we all agree that we care"*.
 - Whilst the consensus was that the statement regarding failings of animal welfare at Dublin Zoo were not factually correct, the majority of the staff interviewed accepted that no zoo is perfect and animal welfare is a constantly moving target where the animal care team can always improve. The opinion with regard to the level Dublin Zoo was currently at varied between staff but was generally in the positive, especially with the changes being implemented by the senior management.
- 3. There has been significant transition in the senior management team in the last 3-4 years with changes in the Director, General Curator, and the veterinary team alongside the changes required to meet covid restrictions. Do you feel that animal welfare has improved, remained static or gotten worse following these changes in senior management and why?**
- The response to this question was not as clear cut and opinions varied across the team. Of the 23 staff 19 (83%) selected animal welfare had improved with regard to the animal welfare changes and systems being deployed at the zoo; 1 person (4%) felt that animal welfare was static, neither better nor worse following the transition; and 3 (13%) clearly stated that animal welfare had deteriorated following the transition. However, the comments were varied with all three groups providing comments that were positive, static or sometimes negative with regard to the overall picture of animal welfare provision.
 - All of the respondents were aware that nothing was perfect and that improvements could be made, everyone felt they could do more. The investigation team recognised this as being a normal part of animal care rather than a specific issue with Dublin Zoo.
 - 'Staffing levels' and 'the ability to deliver the level of husbandry the individual staff members felt they needed to' was an issue for a significant number of staff. In most cases the individuals that felt welfare had gotten worse highlighted the levels of staffing being a significant contributory factor. A number of staff, that even felt welfare was improving referred to this as a significant issue for them – a total of 10 (43%) referred to

this as a ceiling or factor that they felt compromised them professionally to some degree. A number of staff did highlight though that there were opportunities for efficiencies to be made that would allow more time to cater for their animal's needs.

- The comments in support of animal welfare improvements included:
 - *"Animal welfare is delivered for the animals"*
 - *"Dublin Zoo never had a formal Animal Welfare Policy until the management changed"*
 - *"The new welfare management systems, introduced for Maeve and Niamh, are available for all to engage with and contribute to, some do, some don't but this is slowly changing. This system has now been rolled out across a number of animals and continues to develop as we move forward"*
 - *"The veterinary provision is a holistic approach, they get the daily report sheet, pull it altogether, they are proactive and reflective, focusing on prevention as well as all aspects of health from physiology to behavioural needs of the animals"*
 - *"The zoo is still in a transition phase as we come out of covid, there are obvious positive changes with more dialogue than before and intelligent conversation regarding the needs of the animals, with keepers on the ethics committee, better communication and openness but there has been a lot of change and at a great pace and may be the changes would have been embraced better if the changes were a little slower"*
 - *"There is an open dialogue, if I have an issue or concern for an animal of course I can bring this to the attention of my manager, this is a professional concern and not a personal one, I have a good working relationship with my team leader and colleagues. It is about mutual respect for colleagues and the animals in our care"*
 - *"Welfare is taken very seriously; we will often sit down as a team and see what we can do to resolve a problem"*
 - *"I, and all of the rest of the keeping staff, do our best every day and have the welfare of the animals in our absolute hearts all of the time"*
 - *"If we didn't care we wouldn't get so upset when it goes wrong"*
 - *"The day you see an animal's life cannot be improved in some small way then you should no longer be working in the zoo"*
 - *"We can always do better"*
 - *"Animal welfare documentation, record keeping and paper trails have all improved"*
 - *"In all my time here I have never seen an animal mistreated, it is always about the animals"*
 - *"Constantly learning things, things change as science and knowledge moves on, we are very positive to change and take action quickly"*
 - *"If I felt that we weren't going in the right direction I would no longer work here"*
- Comments that were more negative towards the provision of animal welfare at Dublin Zoo included:

- *"No point raising issues as get tarred but culture is changing and yes these were more historical issues, it has got a bit better. No, I don't have any outstanding issues"*
- *"No staff means no training and no enrichment"*
- *"Enrichment committee no longer exists"*
- *"Animal welfare concerns are staffing related"*
- *"There is a general tension that has turned to bitterness in some in respect to the new grading system, predominantly seen with staff that have been unsuccessful in promotion with new roles. These individuals tend to be more negative about animal welfare and focus on lack of training or enrichment and this is why overlooked. However, the animal welfare is now very progressive, you can now raise issues openly but they may not always be addressed, welfare is fine and the new Director is a good listener and will always respond to direct emails"*
- *"Animal welfare (at Dublin Zoo) is not perfect but I cannot support Senator Hoey's statements"*
- *"Communication is a major cause of failure to provide adequate welfare"*
- *"Focus on management where there is a lack of perception of own abilities and failings or shortcomings, this is true of animal care staff here"*
- *"Sometimes feel that we are not listened to or valued"*
- *"Historic issues of aesthetics over function and animal needs, but now see this is changing – to achieve this need infrastructure change but can see vision combining conservation with welfare under the new Director"*
- *"Some stuck in their old ways, need to move forwards. We are in a transition phase, basic animal welfare needs are looked after to the best of our abilities with no ill intentions, we are here for a reason"*
- *"Staff time and staffing numbers have decreased and sometimes we struggle to review a situation or do our jobs. However, the allegations about poor welfare makes my blood boil"*
- *"Animal welfare is staffing, staffing, staffing"*
- *"Feel not taken seriously"*
- *"Communication is poor and needs to be addressed to move welfare forwards"*

4. Is there anything else you would like to add or say on this issue, if not are you satisfied that you have had an opportunity to raise concerns with regard to animal welfare at Dublin Zoo?

- This follow up question was specifically asked in addition to Question 1 to ensure that the interviewee was given as much of an opportunity to speak freely and raise animal welfare issues if they so wished.
- Other than the respondents outlined in response to Question 1, this second opportunity was only taken up by one staff member. They did not provide actual examples but advised areas where we needed to look to find issues. Most of these had been picked up as part of the investigation already. The rest of the staff felt that they had nothing further to add or had no significant concerns regarding animal welfare at Dublin Zoo.

"We can always improve" being a common thread with regard to all of the keeper statements, everyone clearly passionate about the animals in their care and wanting to be able to do more.

Interpretation by the investigation team

These allegations are challenging to investigate and to respond to for two primary reasons.

The first is that animal welfare means something different to different individuals and there is no standardisation of language with respect to animal welfare, something that is recognised in the innovative and encompassing Ireland's Animal Welfare Strategy 2021-2025. When interviewing individuals the use of different values and inconsistencies in evaluations is common, in part due to variable assessment methodologies, opinion and understanding which all influence the response to the question of 'what is animal welfare?' For some it is a gut feeling, the individual assessor just knowing whether an animal's needs are met but this is not objective, rarely repeatable and varies considerably between individuals; in Irish legislation, the Animal Health and Welfare Act (2013) does not define the meaning of animal welfare but clearly states in Section 11(1) the welfare needs that need to be considered: *"A person who has a protected animal in his or her possession or under his or her control shall, having regard to the animal's nature, type, species, breed, development, adaptation, domestication, physiological and behavioural needs and environment, and in accordance with established experience and scientific knowledge, take all necessary steps to ensure that (a) the animal is kept and treated in a manner that – (i) safeguards the health and welfare of the animal, and (ii) does not threaten the health or welfare of the animal or another animal...A person who fails to comply with this section commits an offence"* in essence a combination of the Five Freedoms and Five Needs models; in Ireland's Animal Welfare Strategy 2021-2025 acknowledgement is made to both the Five Freedoms and the Five Domains models for animal welfare and goes on to outline the 'One Health, One Welfare' concept that further evolves the idea that human well-being and animal welfare are inter-connected and inter-related; the Irish Standards of Modern Zoo Practice (2016) and the Veterinary Ireland National Council Policy Document on Captive Wild Animals (2018) both reference the Five Domains model and the promotion of positive welfare experiences rather than minimising the negative ones, this being similar in part to Ireland's Animal Welfare Strategy 2021-2025. There is commonality across all these systems as well as the many other alternative models available, but none of these are formalised in Irish legislation. This is possibly to avoid future restrictions confined by the legislation as animal welfare science develops but this makes it difficult to review and compare individual responses to welfare cases as there is no standardised base line format exists that is utilised by both the interviewer and the interviewee.

The Irish Standards of Modern Zoo Practice (2016), however does define welfare as: *"(Welfare) refers to the state of an individual animal. It describes how an animal is coping with the conditions in which it lives and how the animal perceives its experiences. Meeting the physical and behavioural needs of an animal should ensure it experiences a good quality of life. Welfare is impacted by basic foundations of care (basic survival needs) such as*

environmental conditions, health care, and basic nutrition. Zoos must also consider the important behavioural outcomes that are a result of the husbandry programme, such as social interaction, mental stimulation and the availability of choice. Such opportunities can promote pleasurable experiences and therefore good animal welfare. The focus in the Standards is therefore on promoting positive animal welfare states with the zoo and aquarium community". The key elements of animal welfare in this definition are that the physical and behavioural needs of the individual animal, and as part of a population, are met and that choice in meeting these needs is provided to the animals whilst in captivity. For this investigation the team opted to utilise the definition as stated in the ISMZP (2016) and the Five Domains model as this is the Standard expected to be adhered to as part of the zoo licensing requirements. The investigation team noted that many of the interviewees had different interpretations of what welfare meant to them as individuals and only a small number of staff referenced the welfare models they employed in their own personal welfare assessments. The Five Domains model also underpins Dublin Zoo's approach to welfare and as such there is some continuity between Dublin Zoo, their staff and the expectations and opinion of the investigation team.

The second challenge is that what matters to an animal in welfare terms is their subjective experience and this is difficult to measure. Presently, the majority of welfare assessment tools are broad spectrum. To determine an animal's welfare state, we must collate the objective evidence derived from consideration of factors in the first four domains (health, nutrition, environment and behavioural interactions). This is exceptionally challenging as broad spectrum or generic templates rely fully on the assessor and current literature available to ensure the correct parameters/factors for evaluation are understood and applied. Thus, the end point of assessing animal welfare can be a grey area when considering the assessment of the mental domain and the balance of the negative and positive experiences that the animal feels. This remains a challenging area in zoo animal welfare science that continues to develop as our knowledge and tools evolve to meet our understanding. Depending on the training, the knowledge or the skills set of the individual assessor welfare assessment can vary substantially and emotional or perception bias can creep in. Good examples of such challenges can be found in De Waal, 2016, Ohl and Putman (2018) and the WAZA Animal Welfare Strategy (2015) upon which the ISMZP (2016) were based.

There are a number of scenarios that are possible when considering any allegation of animal welfare, these include but are not limited to:

- (i) There are cases where it is clear that welfare has been intentionally or unintentionally compromised and the situations are black and white: cases of abuse or maleficence or even simply neglect to fail to provide for the needs of an animal which are clearly outlined and evidence is agreed with all parties witness to the event(s). In some instances a fresh pair of eyes may highlight an area of concern that has simply been overlooked by an owner. In these cases action must be taken to address the welfare situation for that animal or remove the animal from the situation that they are held within;

- (ii) Then there are situations where welfare is perceived to be compromised depending on the view of the observer. Incidents can be upsetting or devastating to an observer for different reasons, but when objectively looking at the welfare of the individual or group of animals their welfare may have been preserved throughout and the animal treated with respect, dignity and their needs met as best as could be done in that situation or an event has occurred where it is impossible to address or change the welfare situation and outcome due to an Act of God, disease or other incident that was outside the control of the owner. This does not change the feelings of the witnesses or their valid concerns of events as they occurred, but the perception of how an animal felt or was treated may be perceived as reasonable or not based on the standpoint and cultural values of the individual witnessing the event, or the event that transpired was outside of the control of those that witnessed it, the outcome already predetermined and without influence when reviewed retrospectively;
- (iii) Equally, in certain situations, intent must be considered where animal welfare is actively compromised temporarily to allow capture, transport or veterinary treatment of the animal that ultimately preserves the welfare needs in some areas but compromises them in others e.g. the stress of catch up of a wild animal to anaesthetise it to repair a fractured limb. In these cases decisions are made to protect the overall welfare of the animal in the long term, whilst compromising it for short periods to facilitate the long term improvement. What is acceptable to one group of individuals may not be acceptable to another, as such witness testimony can vary depending on the evidence witnessed and how it was interpreted as to whether the actions were appropriate or not;
- (iv) Then there are cases where facts are embellished or simply made up to suit a narrative or the malicious intent of the person or persons making an allegation. This does not solely include individuals that are dishonest, simply that as time passes perception can become reality and an individual's recollection and narrative can become distorted which in turn may unintentionally compromise the facts as presented.

Other variants and scenarios exist and are equally viable when considering allegations as stated in this investigation.

In an attempt to overcome these challenges when reviewing the testimonies and the contemporaneous documents and attempting to decipher the credibility of the statements the investigation team took the following approach:

- The definition of animal welfare was taken as that stated in the ISMZP as outlined above;
- The Five Domains model, as described in the ISMZP was utilised as the foundation for assessing animal welfare;
- All interviewees were scored with regard to accuracy, recall, credibility, and knowledge of the events (see Appendix 02) against all of the testimony they

provided taking into consideration the information and manner in which it was presented;

- The focus with regard to provision of animal welfare was on real cases and evidence-based examples rather than general sweeping statements that could not be validated with further questioning or assessment of the animal records and other documentary evidence;
- Consideration to this response to the position outlined by Senator Hoey took account of all 23 allegations, not just the 6 allegations stated in the Motion on Animal Welfare; and
- The zoo inspection reports from 2015 to present day were reviewed with regard to the management of animal welfare and the trends noted over the last seven years by the Zoo Licence Inspectorate.

Considering the individual allegations noted in this report and in reviewing the comprehensive materials provided by Dublin Zoo and the testimonies, *potential* animal welfare failings have been noted in two cases of the twenty-three cases presented, with no additional significant animal welfare failings being brought to the attention of the investigation team during the review that had not been addressed already either by the zoo itself or through the actions of the zoo licensing process. These two *potential* cases were case 12. (the historical provision of quality fish to the sea lions and the penguins) and case 14. (the death of Niko the sea lion).

In the case of the fish feeding management there is a possibility of non-compliance with the legislation: under Section 13(1)(b) of the Animal Health and Welfare Act (2013) "*A person who has a protected animal in his or her possession or under his control...shall provide and supply to the animal a quantity of suitable and wholesome food sufficient to satisfy the reasonable requirements of the animal*". However, this issue was identified and addressed as soon as practicably possible taking into consideration fish suppliers, consistency of supply, viability of supply and variations in supply. Dublin Zoo invested considerable effort in developing training, processes, suppliers and infrastructure to address these issues and the new processes have been implemented and now the systems are considered exemplary with high quality food stuffs being maintained and offered to the piscivores. During this period where fish stocks were considered not suitable staff would collect alternative fresh fish as required from local suppliers when quality was poor leading to the sea lions not eating the food or becoming ill. The allegation was acknowledged in that there were issues that were prioritised and addressed by both the management team and the veterinarians who implemented the comprehensive audit of the procurement and HACCP processes that led to the changes now in place. The investigation team also acknowledged that the zoo inspection report in 2017 stated that the management of frozen meat (includes fish) demonstrated "*Good practice but not documented, see conditions*". As such the investigation team are of the impression that the fish management systems were reasonable and well managed historically but due to elements in and outwith the control of Dublin Zoo these did deviate from that expected and Dublin Zoo responded after a period proactively and invested in the systems and infrastructure required to mitigate this

issue in future. No issues were identified at the onsite inspection of the fish handling systems during this investigation. Full details can be found in Case 12.

In the case of Niko the sea lion there is a large amount of contemporaneous evidence that is highly suggestive that he potentially did die from hyperthermia, but there is also a number of elements of the case that do not fit this diagnosis. This is a challenging case to understand as limited data was collected at the time and most of the evidence is circumstantial or second-hand opinion that has become fact. This is reviewed in detail in Case 14. However, Dublin Zoo used the 'precautionary principle' based on the most likely differential diagnosis when reviewing the case and have modified the facilities, the management systems and the written processes to ensure that this cannot occur again with hyperthermia being considered the most likely cause of his death, albeit it was never proven. This is not an admission of guilt but was considered a practical response to possible likely causes. As to fault, there were numerous factors at that time that potentially contributed to the outcome, these included: covid restrictions prohibiting the movement of sea lions out of the collection; the need to segregate the population into three units in a house that was designed for two populations with no option of exporting animals at that time; the concerns that the male may mate the females which would lead to a fourth sub-population further exacerbating potential welfare issues; Niko's prolonged retention in the sea lion pens; lack of use of sprinkler systems whilst Niko was confined; and warm temperatures on the day that, whilst high, were not considered excessive for sea lions when reviewing current husbandry guidelines but without access to sprinkler systems had potential, over a protracted time period, to be fatal for the sea lion. Following the changes no similar deaths or issues have occurred and the surplus sea lions were moved out with stocking densities now well managed.

In general staff were unable to provide evidence to support Senator Hoey's general statements with regard to failings in animal welfare and the majority of staff were positive regarding the overall picture of animal welfare provided at Dublin Zoo. Staff advised that there were challenges, especially with regard to staffing levels, to maintaining the levels of care that they wanted to but at no time during the investigation did the investigation team witness compromised welfare of the animals in Dublin Zoo's care. The individuals that were of the position that animal welfare had deteriorated were often unable to provide details or examples of this except in a few cases which have been addressed elsewhere in this report. This is not to say that animal welfare is perfect as the staff at all levels recognise that there is a lot to do and as animal welfare science continues to develop, so must the provision of animal welfare at Dublin Zoo. The investigation team have made recommendations in this area but cannot support Senator Hoey's statements and inference that there are "*serious breaches of animal welfare in Dublin Zoo*".

Finally, the investigation team also considered the footage from the television series 'The Zoo' to be highly informative and allow actual video and conversations to be assessed from a number of the incidents reported in this investigation. The video footage made available included;

- Case 1: Kildare, the Grant's zebra – video was supportive of the documentation and the testimonies made.
- Case 3: Harry, the western lowland gorilla – two videos were provided, one of the mixing of Vana and Teebo, including introductions with Kafi, and the post-mortem review of Harry being explained to the gorilla team at that time, again these were supportive of the contemporaneous evidence provided.
- Case 8: Bossou, the chimpanzee – two videos were provided, one regarding the case management and surgeries of Bossou and one of Marlon's history and his rise to the rank of alpha male, again both support the documentary evidence and testimonies.
- Case 16: Majur, death of her infant son, which again mirrored the documentary evidence and comments made in the testimonies.

These videos were considered useful primary evidence that validated the pictures painted by the documentation and testimonies, further supporting that there were not serious breaches in animal welfare in these cases and supporting the credibility of the verbal and documentary evidence provided with regard to the other cases.

Zoo Inspection process reflective of addressing the welfare concerns

The ISMZP (2016) focus heavily on animal welfare and requires that *"all zoos must strive to achieve high welfare standards for the animals in their care through: (i) the implementation of proactive policy and programmes that monitor and improve the quality of life for the animals in the zoo's care; (ii) the provision of environments that focus on the animals' physical and behavioural needs; and (iii) the development of a positive working culture and attitude to delivering positive animal welfare states"*. The Standards go on to say that *"Welfare is a state within an animal and is understood in terms of what the animal experiences subjectively. As such, assessment and interpretation of the diverse range of behaviours across the varied taxa in zoological collections can be challenging. Zoos should ensure that they are current with science-based understanding of animal welfare, including assessments and related disciplines, relevant to the species in their collection"...* *"The basic principle of any successful animal welfare programme is to focus on providing positive welfare outcomes rather than simply minimising negative welfare experiences"*. Readers are advised to review Section 0 and 5 of the ISMZP to obtain a full understanding of the expectations of the zoo inspectorate.

Using this base line the zoo inspectorate undertakes annual inspections on site at Dublin Zoo, except during 2020 where covid restrictions required inspections to be carried out over video teleconferencing. Zoo inspections highlighted the welfare programmes over the period 2016-2022, a few selected comments included:

- 2016 – 1 condition added to the licence
 - "Of particular note was the innovative and beautifully considered elephant calf creche area which completely rethinks the health care provision for elephant

- calves with mother-calf relationships and welfare at the forefront of the programme design”
 - 2.1 “Extremely well considered habitat design with natural behaviour principle driver of environmental consideration – impressive integration of welfare in design of new elements of the collection”
 - “The inspectors found the collection to be professionally operated, with well considered master planning and welfare and husbandry programmes being in place”.
 - “It is noted that whilst welfare considerations permeate the staff culture, it is recommended that the collection review the ISMZP and produce an Animal Welfare Statement as required by Section 5.2 of the ISMZP (2016)”
- 2017 – 10 conditions added to the licence
 - “There is a strong commitment to animal welfare within the zoo, but see conditions (the animal welfare assessment plan needed to include lower vertebrates)
 - Recommendations included a welfare assessment of the group of male red-capped mangabeys and that the animal welfare component of the animal collection plan was required to identify any issues
- 2018 – 4 conditions added to the licence
 - The zoo had a dedicated zoo welfare veterinarian attend the inspection
 - 5.1 “Commended on multiple references to welfare and active welfare programmes and monitoring of results with specialist consultant”
 - 5.2 “Noted that extensive consideration has been given to any potential effects of night visits to the zoo and excellent preventative measures implemented”
- 2019 - 4 conditions added to the licence
 - “...animal welfare, visitor entertainment, public engagement, education and year on year redevelopment go hand in hand with a sound financial business enterprise”.
 - “The inspectors commend management in the planning of exhibits, to maximise animal welfare”.
 - “It is noted that an elderly tiger and female giraffe are on daily welfare watch”
 - “The inspectors commend Dr O’Sullivan and his team on the highly beneficial impact that they have achieved in respect of animal health care and welfare since their appointment. Their positive interaction with keepers and involvement with external veterinary specialists is exemplary”.
- 2020 (covid phone inspection) – 0 conditions added to the licence
 - (During covid) “No relevant changes, despite reduced staff working time, so some reduction in training and staff/animal interactions”
 - “The zoo has been severely affected by the Covid pandemic, with a reduction of more than 50% in visitor numbers and hence revenue. The zoo has responded well, reducing costs where possible and undertaking a public appeal, which has been effective. At this point there is no indication that resident animals’ welfare has been negatively affected at all”.
- 2021- 10 conditions added to the licence

- "There is no indication that resident animals' welfare has been negatively (impacted) either by closures or the return of the public"
- "As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints".
- "A range of welfare assessments were reviewed and are of a very high standard. This is to be commended".
- "In accordance with section 2.1 of the ISMZP (2016) the zoo must undertake a documented welfare and husbandry review of the painted dog enclosure to ensure that the environment provides for the species' requirements, welfare, physical and behavioural health. The review must include, but not be limited to, the ability to clean, sanitise and drain the housing, and the plan, with timelines, to address any concerns found in the welfare and husbandry review to ensure all of the painted dog's needs are met".
- 2022 – 5 conditions added to the licence
 - "Dublin Zoo is a modern facility which, in our opinion, is well run and has the welfare of the animals it cares for at the heart of each decision made by the operators".
 - "Excellent (Animal Welfare Assessment) program & demonstrated for hippo & gorilla".
 - "It is also recognised that significant developments are underway and scheduled for completion during 2022, 2023 & 2024. These will lead to upgrades of existing enclosures and new housing & shelters in a number of exhibits and we look forward to seeing the improvements at the next inspection".
 - "In accordance with section 2.7 of the ISMZP (2016), animals in outdoor enclosures must be provided with sufficient shelter for their comfort and well-being. With reference to the animals in the African Savannah exhibit the zoo operators must either provide appropriate outdoor shelters for all species, or provide written justification (to the satisfaction of the Inspectors and Department) as to why such shelters are not required in this exhibit (18 months)".

In the six years since the ISMZP were introduced there have been a small number of cases at Dublin Zoo where welfare improvements have been required by the zoo inspectors, most of which were addressed on the day of inspection or in the subsequent weeks after the inspection. Where these required capital investment, e.g. the hunting dog enclosure, these have been actioned over a more realistic timeline. During the six-year period a total of 34 conditions were issued, an average of 4.9 conditions per year. Dublin Zoo has never had a direction issued to it, these being issued in response to non-compliance with zoo licence conditions. To put this in perspective there are some zoos that have had more conditions

in one year than Dublin Zoo has had in their cumulative seven-year-period of zoo inspections.

The request for the additional animal welfare allegations made by journalist 1 in August 2021 (cases 1, 3, 4, 8, 9, 10, 11, 12, 13, 14, 15, and 17 in this report) were reviewed in detail with Dublin Zoo at the 2021 formal zoo inspection. In response to this the zoo inspectors captured the 9 hours assessment in a single paragraph: "As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints".

Outcome of the investigation with regard to the specific case

Animal welfare is an ongoing and dynamic situation, that can be very divisive in its assessment and management. In this case the specific comments made by Senator Hoey in her Motion on Animal Welfare presented to the Seanad Éireann on the 14th July 2022 appear to be unfounded based on the review of the contemporaneous evidence of the specific case allegations presented at that same Motion and for the additional 16 cases outlined by the journalist requests and the protected disclosure and the witness testimonies that failed to provide any additional evidence of serious breaches of animal welfare or non-compliance with the ISMZP. Seven formal zoo inspections were generally positive with regard to the management of the animal welfare at Dublin Zoo, the inspections being carried out by a minimum of paired inspection teams consisting of nine individual zoo inspectors over the seven-year period. Where issues were found these were addressed rapidly and professionally by Dublin Zoo. The investigation team acknowledge that the perception of individuals vary but the general consensus of the staff interviewed and the failure to identify significant other cases of compromised welfare at Dublin Zoo appear to support the position held by the inspection team and the previous zoo inspectors that whilst improvements can always be made the basic culture, philosophy and approach to animal welfare at Dublin Zoo is typically of a high standard that continues to review and audit its own programmes as the Standards intend. At worst the 23 cases presented in this report are reflective of the worst cases at Dublin Zoo from 2016 to 2022 and the investigation team were either satisfied that the welfare allegations were unfounded or that where there were possible failings that steps had been rapidly implemented to ensure that such events could not happen again.

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8.0 'Bossou', chimpanzee, digit amputations and welfare concerns

Date of incident:	17 th November 2020 to 1 st September 2021
Species & identification:	Chimpanzee (<i>Pan troglodytes</i>), male castrated, 18 years and 11 months Local ID A3M049
Allegation:	

Journalist 01 reporting on whistleblower comments: " A chimp called Bosue who had 3 of his fingers eaten by another chimp called Marlon. Before Bosue and his father Austin were introduced to Marlon, their teeth were capped and testicles removed to prevent fighting. Marlon then bit 3 of Bosue's fingers off. This has since altered the behaviour of Bosue in a negative way."

Origin of the allegation:	Journalist 01, 11 th August 2021 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2013 11 th August	Dental procedure report on Bossou and Austin
2021 15 th January	Chimpanzee group historical review
2021 3 rd February	Chimpanzee Bossou external veterinary correspondence
2021 18 th February	Anaesthesia report Bossou – first procedure
2021 18 th February	Anaesthesia records Bossou – first procedure
2021 22 nd February	Radiography report Bossou – first procedure
2021 23 rd February	Specialist chimp behaviourist group review report
2021 24 th April	Anaesthesia report Bossou – second procedure
2021 30 th April	Anaesthesia report Bossou – third procedure
2021 31 st August	Research proposal for chimp welfare indicator tool
2021 12 th December	Ethics Committee – Veterinary Report (includes Bossou)
2022 17 th February	ZIMS medical Bossou – Nov 2020 to Feb 2022 (move)

Findings of the investigation with regards to the specific case

- 'Austin' and his son 'Bossou' were castrated and underwent dental work on the 28th June 2013. The reason for castration was the result of a review of the chimpanzee populations at that time and Austin, and therefore Bossou were noted to be hybrids and could no longer form part of the breeding programme. Austin was the dominant male. Their teeth were filed and underwent root canal surgeries by an experienced zoo dentist on recommendations made at the time to Dublin Zoo by external specialists.
- 'Marlon' the new breeding male was brought into the group in 2014. He was laboratory reared and lacked certain social skills, the full group being integrated by 2015. Austin resumed the dominant role with the support of the females.
- Female chimpanzee 'Florin' died 27th September 2020 (basilar artery emboli) who was a supporter of Austin and this destabilised Austin's support network with changes in the

hierarchy occurring and typical aggression lead dominance. Marlon became the dominant male soon after.

- Marlon's history and limited social skills meant not always presenting normal interactions with other males. However, biting incidents were rare but severe when they did occur.
- Bossou was bitten and this led to digit injuries that were treated but in many cases led to amputation on welfare grounds and clinical recommendations:
 - 17th November 2020 first significant bite injuries to digits, note 2 months after the death of Florin
 - 18th February 2021 surgical amputation of right fore digit 3 & right hind digit 3
 - 22nd April 2021 surgical amputation right fore digit 4
 - 30th April 2021 surgical amputation right fore digit 2
 - 1st September 2021 surgical amputation of right fore digit 5 and left fore digit 4
 - 17th February 2022 moved to the old gorilla house
- Support over the duration of the case was provided by Edinburgh Zoo, University of Montreal, Twycross Zoo, University College Dublin, Perth Zoo and the EEP breeding programme managers for chimpanzees.
- Marlon underwent a canine dental associated abscess in May 2021 which was considered possibly related to the aggression noted. This is clearly seen in the footage from 'The Zoo'.

Interview responses to the alleged welfare case

No. of staff interviewed:

8

- *"With chimpanzees, especially during hierarchical conflicts you expect some wounding but Marlon lacked understanding of when to stop and would commit inflicting severe wounds, typically on Bossou".*
- *"Dublin Zoo historical good at managing challenging chimpanzees, over the years Dublin Zoo has taken on a number of animals that other zoos have challenged to manage. We are compromised by our own skills set. Despite our knowledge and ability sometimes whatever you try fails to work, despite having the best intentions and that is where we are now".*
- *"The delay between the initial wound on the 19th November 2020 to the surgical amputation on the 18th February 2021 was due to a variety of reasons: the wound was considered bad but soft tissue only, with bone only being visible on the 23rd December 2021. Advice was taken at this time from a number of technical specialists and amputation considered as one option, the skin healed well other than the bone exposure and aggressive pain relief was provided throughout, with the aim to have the skin heal to facilitate amputation (i.e. have skin to allow amputation and closure of the wound without infection and risk loss of whole hand), and this was combined with the logistical challenges to organise the large surgical team required for the first procedure. Management wanted the best option for Bossou which required delay to get the full surgical, radiography and anaesthesia team together".*
- Despite this justification there were some criticisms regarding the time it took to organise the initial procedure and as such steps were put in place for subsequent interventions which were managed in much shorter time frames (days rather than

months). This was in part due to the recognition of the needs of Bossou but also the behavioural management and engagement with external technical specialists had been implemented and integrated at the time of subsequent surgeries and as such the plan was clear, whereas on the first there were multiple stake holder opinions to consider as well as logistical issues around the surgical team which together delayed the initial surgical procedure.

- *"The first surgical procedure was the first chimpanzee anaesthetic undertaken by the team of this nature (both UCD and the Dublin Zoo veterinary team) and there were not only logistical issues but also major safety concerns that needed to be addressed both working with the chimpanzee and to assure the welfare of Bossou. Once a protocol was established and was tried and tested this became much easier and quicker to implement at successive procedures".*
- *"The pain relief helped but ultimately he improved considerably within a few days post the initial amputation".*
- Subsequent injuries to Bossou occurred during programme of fission-fusion management of the chimpanzee troop as recommended by external technical specialists. This also occurred during the management of Marlon's dental issue which was thought to be compounding the behavioural issues as well as proactive attempts to undertake behavioural and pharmacological management to support the troop. Ultimately, despite the support Dublin Zoo had, these measures failed to achieve cohesion in the group and left the only option being the splitting of the troop into two separate houses in February 2022.
- *"Despite amputations Bossou was extremely able at climbing and dropping from high to low ropes as if had full dexterity. Adapted extremely well".*
- Some challenges regarding the behavioural management and provision of enrichment were reported but unknown if this would have changed the outcome and subsequent injuries. Other behavioural and environmental management were being trialled with support from external bodies and some of these took time to embed or have affect.
- *"The dynamic between Marlon and Bossou was more than the expected conflict that would be expected, it was felt that Marlon would either kill Bossou or leave him in a state that required euthanasia. All of the attempts to resolve the welfare and fission-fusion of the group had minimal impact despite considerable advice and support. This ultimately led to the decision to split the troop as they currently are now. During the last 6 months or so we effectively managed two troops living in the same house which improved Bossou's welfare considerably but in turn created welfare issues for the rest of the troop – we attempted to do everything to manage them as a single troop but all of the initiatives failed and they exhausted all options available".*
- *"Currently all of the chimpanzees are safe but two groups of three is not ideal in the long-term, especially considering the age of some members. Emergency action was taken but the next step is to develop the long-term management strategy for the two troops".*
- Taken from 'The Zoo': *"It is really hard to see the level of injury again, back to square one and back to surgery again, you are looking for a way forward aside from the surgery – talking with management, working with management, working with veterinary behaviourists, trying to see if we can find a way to stop this from happening again rather*

than just fixing the wounds, we need to stop the wounds from happening and this is where we need to be pushing forward at this stage".

Interpretation by the investigation team

Management of social hierarchy changes in captive chimps can be challenging and despite the injuries noted to Bossou the evidence presented shows careful, considered integration and management of the group with Dublin Zoo supported both internally and externally with regard to the decisions made. Numerous initiatives were undertaken but these ultimately failed due to no fault of Dublin Zoo.

The investigation team are of the opinion that the amputations were undertaken with the best interests of Bossou at the fore, and that processes have been put in place to address this, which at the time of writing are considered appropriate and proportional. The investigation team note that veterinary care has been provided throughout and this is to a high standard including development of a chimpanzee-specific welfare assessment tool that can be used internally but also will be explored with other zoos (ongoing).

With regard to the statement ***"Before Bosue and his father Austin were introduced to Marlon, their teeth were capped and testicles removed to prevent fighting. Marlon then bit 3 of Bosue's fingers off"***. The investigation team note that the inference was that Austin and Bossou were castrated and underwent dental work just prior to being introduced to Marlon. Whilst the events did occur, the timeline over which they occurred was a period of seven years. Austin and Bossou were castrated in 2013 due to breeding programme recommendations following changes in scientific knowledge of chimpanzee genetics that reviewed the entire European chimpanzee population with any hybrid animals being requested to be surgically contracepted. This left the remaining chimpanzees in need of a non-hybrid male for the breeding programme, this was Marlon and he arrived in 2014. The group lived together for six years with minimal issues, the dynamic changing with the death of the female 'Florin' in 2020 which then led to the political dynamic changing and Marlon becoming the alpha male, supplanting Austin. Following this the attacks on Bossou started. As such the statement as read, or perceived, by the investigation team is considered to infer a narrative that did not occur. This was a highly complex process that Dublin Zoo had managed well, and the social discord led to the existing problems with Dublin Zoo being supported by multiple external and internal stakeholders to ensure the stability and therefore the welfare of the group, this ultimately failing and leading to the splitting of the troop into two.

The statement ***"This has since altered the behaviour of Bosue in a negative way"*** was potentially true at the time of the original allegation as this was during the review and fission fusion management programme of the chimpanzee group. There would have been tensions and stress in the group which is normal, but the reaction from Marlon was considered excessive and this would likely have impacted Bossou and was confirmed in interview. However, since then the chimpanzees have been split into the two troops, Bossou is doing exceedingly well. This occurred during the shared use of the house, not just be moving one troop in February 2022. With regard to the amputations he is more than capable of

engaging with his environment and having a similar quality of life as if he had all of his digits. This is not uncommon, and the investigation team are aware of a similar case with a western lowland gorilla female that had a whole hand amputated following a rare autoimmune disease and she integrated well, managing to breed and rear young despite missing her dominant hand. There are also numerous reported wild and captive cases of amputation in chimpanzees that led comparatively normal lives (Reynolds, 2001; Baker et al, 2000; and Ang et al, 2017). The idea of the amputation itself is abhorrent to some but for Bossou this was a welfare intervention, and his behaviour is near normal. This is clearly demonstrated in the footage from 'The Zoo' and in discussions with his keepers. The road to this point through February 2021 to February 2022 was challenging and Dublin Zoo managed the troop to meet the needs of the population with the welfare of the animals at the forefront of their decision making. The outcome being far from ideal but was well managed throughout and lessons were learnt that have evolved and developed how such incidences are responded to at Dublin Zoo moving forwards.

The decision to split the troop could be argued that it should have occurred prior to the September 2021 injuries and that these could have been avoided. However, there were a number of initiatives being implemented that could potentially have resulted in the integration of the troop and this would have been optimal for the long-term welfare of all the chimpanzees. Retrospective reviews are easy when the outcome is known but the investigation team believe that Dublin Zoo at the time were acting on the best interests of the chimpanzee troop, taking into consideration expert advice, and that whilst not ideal following the final surgical amputation the troop was effectively split, albeit in the same house, and the options considered before splitting the troop permanently.

Zoo Inspection process reflective of addressing the welfare concerns

The case was discussed in detail at the October 2021 zoo inspection and the zoo inspectors were satisfied with the case management and that there were no immediate welfare concerns that were not being managed in a considered manner by Dublin Zoo. Specifically the inspectors stated in the report: *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*.

Outcome of the investigation with regard to the specific case

The investigation team have not identified any welfare concerns that Dublin Zoo have not identified and implemented processes to manage. This has been a complex and challenging case of social breakdown in a chimpanzee troop that was exacerbated by the breeding male's lack of social skills. The investigation team believe the case did not result in the outcome that Dublin Zoo wanted but the process was well considered and took on

advice from technical specialists as well as demonstrating exemplary surgical management of the case.

References

- Ang, Shender and Ross (2017) Assessment of behaviour and space use before and after forelimb amputation in a zoo-housed chimpanzee, *Zoo Biology*, 36, pp 5-10
- Baker, Seres, Aureli and De Waal (2000) Injury risks among chimpanzees in three housing conditions, *American Journal of Primatology*, 51, pp 161-175
- Boesche (2009) *The Real Chimpanzee: Sex strategies in the forest*, Cambridge University Press, pp196
- De Waal (2007) *Chimpanzee Politics*, Johns Hopkins University Press, pp 256
- EAZA (2022) *Best Practice Guidelines Chimpanzee*, EAZA, pp 146
- Goodall (2000) *In the Shadow of Man*, Mariners Books, pp 249
- Lonsdorf, Ross, and Matsuzawa (2010) *The mind of the chimpanzee: Ecological and experimental perspectives*, University of Chicago Press, pp 464
- Maestipieri (2003) *Primate Psychology*, Harvard University Press, pp 619
- Reynolds (2001) Limb injuries resulting from snares and traps in chimpanzees of the Budongo Forest, Uganda, *Primates*, 42(2), pp 135-139
- Reynolds (2005) *The Chimpanzees of the Budongo Forest*, Oxford University Press, pp 297

9.0 'Niamh', Amur tiger, long term arthritis and lack of quality of life assessments

Date of incident:	Euthanased 8 th March 2022
Species & identification:	Amur tiger (<i>Panthera tigris altaica</i>), female 18 years and 11 months at time of death Local ID A4M026
Allegation:	

Journalist 01 reporting on whistleblower comments: "Niamh the Tiger has bad muscle tone in her back legs, she is around 18 years and underweight. She has been on medication for a number of years and her quality of life has not been assessed adequately".

One year later the following additional comment was alleged: *"I am also writing about Niamh the Tiger, who was eventually euthanized, three more zoo keepers have been in touch with me to say they raised concerns with their Team Leaders and management about Niamh's condition many times, but no action was taken, and she should have been "put to sleep sooner".*

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:	Journalist 01, 11 th August 2021 Journalist 01, 26 th July 2022 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2017 29 th September	Radiographs taken of Niamh
2019 1 st January	Working with Amur tigers DZ Training Records example
2019 28 th March	Clinpath and welfare meeting minutes
2019 16 th May	Clinpath and welfare meeting minutes
2019 5 th June	Clinpath and welfare meeting minutes
2020 7 th July	Clinpath and welfare meeting minutes
2020 3 rd September	Clinpath and welfare meeting minutes
2020 16 th December	Working with Amur tigers risk assessment
2021 1 st March	Working with Amur tigers safe working practices
2021 28 th October	Clinpath and welfare meeting minutes
2022 10 th February	Clinpath and welfare meeting minutes
2022 28 th February	Focal Welfare Assessment (30/10/21 to 28/02/22)
2022 4 th March	Euthanasia decision guide
2022 8 th March	Niamh biochemistry and CBC results
2022 8 th March	Amur tiger Niamh ZIMS medical records (2018 to 2022)
2022 9 th March	Amur tiger Niamh post-mortem report
2022 2 nd August	Amur tiger population age distribution

Summary review of the documents reviewed as part of the investigation:

Comprehensive medical, behavioural and consultation documents have been provided with regard to this case. The case of Niamh has been reviewed consistently since 2019 at the Clinpath and Welfare meetings, highlighting that she has osteoarthritis that flared up and was on long term treatment. Radiographs supplied from 2017 demonstrate right sided degenerative hip changes with bony stabilisation of the joint as well as early spondylosis at L6/L7 and possibly L7-S1 (but this is difficult to fully assess due to slight rotation of the image) – the spondylosis is not unexpected in a tiger of this age and was surprisingly mild.

In the March 2019 meeting minutes she was considered to be doing well but was losing muscle tone over the pelvic and hind leg muscles, recommended quality of life assessments, access to outer enclosure for varied exercise, and maintain with NSAIDs and additional analgesia regimes as required. June 2019 meeting identified that examination under general anaesthesia will not alter the treatment regimen and as such progress in developing monitoring programmes were outlined. July 2019 Niamh presented with right hind lameness and spinal stiffness, this was treated with gabapentin and activity monitoring sheets were developed for her. She responded well to the mix of gabapentin with the meloxicam. Early November (7th) her condition deteriorated – possible slip and exacerbation of arthritis and spondylosis or renal failure considering her age. She was eating and moving well within a few days and comprehensive observations of her behaviour were maintained. By the 11th November she was considered to be 'in good form'. Regular checks continued with ongoing minor but short-lived bouts of lameness that responded well to analgesia support provided.

The July 2020 Clinpath meeting noted that Niamh had developed a urinary tract infection but had responded well to treatment. September 2020 saw a repeat of the suspected renal pathology. Neither of these appear to have been recorded in the ZIMS medical notes, however this was in covid lockdown so may potentially be related to that.

During 2021 conservative treatment provided and monitored the muscle wastage over her hindlimbs and pelvis. Formal Focal Welfare Assessment tool was started on the 30th October 2021 (this was a new process, see Case 2.0 Maeve giraffe – Maeve's started in Nov 2021) and carried out weekly bar one missed event until the time of her euthanasia.

By February 2022 her condition had deteriorated and she was undergoing weekly welfare assessments with discussions had implying end of life strategies. Her condition took a sudden turn with muscle wastage intensifying from the 17th February but she was stable in herself. The situation progressively worsened on the 28th February as documented in her welfare assessment and this was raised with the section heads and management with reviews increased and the euthanasia decision tree actioned.

On the 4th March 2022 a 'Dublin Zoo Euthanasia Decision Guide' was completed and based on the response and in agreement with the veterinary team, keeping staff and management

it was agreed that euthanasia was in the best interests for Niamh. This was a planned elective event rather than an emergency welfare euthanasia. Niamh was euthanased on the 8th March 2022. Bloods taken at the time demonstrated end stage renal failure. The gross post-mortem highlighted congenital loss of the right teres ligament with resultant hip dysplasia and chronic degenerative joint disease; degenerative joint disease of the left stifle and the right and left elbows; and histopathology confirmed chronic renal disease was present. The pathologist also noted that Niamh had *"moderate amounts of visceral and subcutaneous fat (BCS 3/5)"*.

Interview responses to the alleged welfare case

No. of staff interviewed:

12

- *"Regular focal welfare assessments carried out (note: monthly from Oct to mid January and then mostly weekly), considerable variation in assessors except for one of the vets that was present at each assessment (total of 8 over 16 weeks). Everyone was involved and well documented. These were viewed as a great improvement and formalised welfare assessments, providing robust shared data that allowed trends to be assessed and decisions to be made. Very well documented assessments and extrapolated to other animals soon after e.g. Maeve the giraffe".*
- *"Parameters on the assessments decreased and therefore the focal welfare assessments increased in frequency. Euthanasia decision tree identified that time had come but not a matter of urgency, hence the delay between the assessment and the euthanasia itself. It was an elective procedure but that did not mean it needed to be undertaken immediately, the welfare assessment was the tool used to determine the timing – the process involved the keepers and the vet team. Also noted that the euthanasia decision was a Friday and therefore euthanasia on weekend would mean that not undergo PME for 3-4 days, practicality of learning the most from the post-mortem verses the welfare of Niamh were both justifiable decisions with her welfare being the priority. It also gave members of the team a chance to say their goodbyes and spend time with her".*
- *"Objective opinion on how doing – eating drinking, catching odd wild bird, normal behaviours until the end of her life".*
- *"No pressures from management to keep alive, assessments lead by the animal care team and decision was jointly made based on their objective decisions and the vet team".*
- *"There was a lot of emotion around this animal, considered a special animal".*
- Variation on the timing for euthanasia – majority felt that Niamh definitely should not have been euthanased earlier or that the time was right (total 9/12), a minority felt it should have been earlier but in discussion this was 1-4 weeks rather than months or years (2/12), and one had no opinion on this when discussing the case (1/12) as they had not seen her. Note: all of the current cat team were interviewed.
- For those that felt she should be euthanased earlier they had varying opinions based on the muscle atrophy (not uncommon for an aged tiger), could see changes in her hips and the spondylosis, and was losing weight. She had a short period of a urinary tract infections 2-3 in the previous 2 years but always bounced back well from them and none mentioned in the focal welfare assessments other than historical. The same persons acknowledged that the vets and the keepers filled the focal welfare assessments in

independently and the vets were not influenced by the keeper team, it was their own opinion. They also complained that issues had not been raised in the focal welfare assessments but when reviewed with the same individual their comments were in the focal welfare assessment, they had simply not seen the final versions which satisfied them somewhat.

- Comments were made by one individual that Niamh was "...sleeping in her own urine" yet this could not be validated by any other staff, nor was it mentioned in the focal welfare assessments, and nor was there any reference in the animal records nor post-mortem to this being the case. It may have been a historical comment back to when she had urinary tract infections but they predated the focal welfare assessment period i.e. prior to October 2021.
- *"Whenever any concerns with her the vets were called immediately and assessments made, sometimes see a deterioration for a few days and then be fine again. Everyone was involved in her monitoring and welfare assessments. To say not adequately assessed is 100% false. Everyone had an opportunity to discuss her situation and voice an opinion on the plan for her".*
- *"The priority was to maintain Niamh's welfare and respect, she had been here for 17 years and was an iconic animal in the recent history of the zoo. Respect in death as in life and she received that"*
- No one had raised concerns or begged for her to be euthanased to the team leaders, management nor veterinary team. In fact a common theme was for the primary care team if they felt that she should have been euthanased earlier they would have said it to their team leaders.

Findings of the investigation with regards to the specific case

- Niamh the Amur tiger had congenital deformity of the right hip (hip dysplasia) which led to degenerative joint disease of this joint as well as developing age related degenerative joint disease elsewhere (spondylosis) and exhibited chronic renal failure which is extremely common in aged domestic and wild cats.
- She was nearly 19 years old at the time of her death, in reviewing the population age distribution of the whole monitored captive population (509 animals) 5 months after the time of her death Niamh was one of only 9 females and 0 males that had reached this age i.e. she represented 1.7% of the current population reaching 19 years old or above.
- There were regular assessments of her condition and welfare in the veterinary notes provided going back to March 2019 (no earlier records were made available).
- Formal focal welfare assessments were started in October 2021, a new system developed and used for a number of quality of life assessments at that time.
- The case was well managed and her welfare was supported until the end when there was no more that could be done and euthanasia was indicated.
- No one requested nor begged for her euthanasia – all members of the section staff, vet team and management were interviewed. 75% (9/12) felt she was euthanased at the correct time, 16% (2/12) felt it should have been slightly earlier (matter of weeks), and one person (8%) had no opinion eitherway as they had not seen her.

Interpretation by the investigation team

In response to the reported allegation ***“Niamh the Tiger has bad muscle tone in her back legs, she is around 18 years and underweight. She has been on medication for a number of years and her quality of life has not been assessed adequately”*** the investigation team can support that Niamh “had bad muscle tone in her back legs” as this is effectively reported in the medical notes and the focal welfare assessments. It is a common finding in many aged tigers and can be caused by a number of ailments including renal failure and osteoarthritis, both of which were present in this case. In addition, Niamh was eighteen years four months old at the time of the journalist’s request and so would have had age related changes. However, she was not underweight as reported. The investigation team refer to the post-mortem report which demonstrates a normal body condition score and moderate amounts of visceral and subcutaneous fat. Niamh had muscle wasting on the hindquarters which impacts weight scores but is not reflective of body condition score, so the investigation team consider her normal weight for her condition and she demonstrated normal body condition score as demonstrated in the post-mortem report. Whilst there was a period of potential six months between her death and the original August 2021 allegation, there is no evidence to suggest that Niamh’s weight or BCS had increased during that time, only the muscle atrophy had progressed at the end of her life, suggesting that at the point of her euthanasia she was in worse condition than when the allegation was made but her condition was considered normal.

With regards to the statement that ***“She has been on medication for a number of years and her quality of life has not been assessed adequately”*** the inspection team do not find any evidence to support this. At the time of the allegation there was evidence of quality of life assessments being made and her condition was regularly assessed by both staff and veterinarians. This did increase in robustness with the development of the Focal Welfare Assessment tool launched in late 2021 but assessments were undertaken using tools available to Dublin Zoo at the time. As such this allegation is not substantiated by the documents that have been presented.

The more recent allegation reported that ***“...three more zoo keepers have been in touch with me to stay they raised concerns with their Team Leaders and management about Niamh's condition many times, but no action was taken, and she should have been "put to sleep sooner" ”***. The investigation team cannot support this statement as every member of the section keeper staff and supporting veterinary team have been interviewed and only two advised that she should have been euthanased earlier with one person advising that they agreed it was *“the right time but maybe a little bit earlier would have been better”* and the other stating it was *“hard to define but may be 2-4 weeks earlier”*. No one advised that they had pushed, begged or communicated their fears and request for Niamh to be euthanased at an earlier stage and that this had been ignored.

Zoo Inspection process reflective of addressing the welfare concerns

The initial case request in August 2021 was discussed in detail at the October 2021 zoo inspection and the zoo inspectors were satisfied with the case management and that there were no immediate welfare concerns that were not being managed in a considered manner by Dublin Zoo. Specifically, the inspectors stated in the report: *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*.

It is noted that the zoo inspectors specifically acknowledged Niamh in the zoo inspection report from 16th September 2019 where they stated in response to question 3.2 Do animals on display appear in good health? *"Yes, it is noted that an elderly tiger and female giraffe (Maeve, case 2.0) are on daily welfare watch"* which predates the allegation by almost 15 months and shows that she had been monitored for almost three years on a daily basis, rather than the allegation that states in 2021 *"...her quality of life has not been assessed adequately"*.

Outcome of the investigation with regard to the specific case

The case appears to have been well managed by Dublin Zoo and Niamh had well considered palliative care and euthanasia utilised when all other options had been exhausted. No welfare issues that were not being managed and were under veterinary care were found.

References

- Junginger et al (2015) Pathology in captive wild felids at German zoological gardens, PLoS ONE, 10(6), pp1-30
- Longley (2011) A review of ageing studies in captive felids, International Zoo Yearbook, 45, pp 91-98

10.0 General allegation of lack of time for enrichment

Date of incident: Not applicable

Species & identification: Not applicable

Allegation:

Journalist 01 reporting on whistleblower comments : "It is claimed the animals are bored, and lack stimulation. Due to a shortage of staff, current staff do not have adequate time for enrichment or training".

Origin of the allegation: Journalist 01, 11th August 2021
Protected disclosure, 8th August 2022

Summary review of the documents reviewed as part of the investigation:

The zoo inspection reports from 2015 to 2022 were reviewed and the zoo inspectors have always commented on the breadth of the habitat designs and enrichment programmes in a positive manner e.g.

- 2015 *"Whilst the enrichment was excellent across the park, of particular note was that of the chimpanzees which was possibly the best enrichment programme that the inspectors had ever seen in any collection"*
- 2016 *"Extremely well considered habitat design with natural behaviour principle driver of environmental consideration – impressive integration of welfare in design of new elements"*.
- 2017 *"Are the animals provided with an active and documented enrichment programme – Yes"*
- 2018 *"Commended on multiple references to welfare and active welfare programmes and monitoring of results with specialist consultant"*
- 2019 *"The inspectors commend management in the planning of exhibits, to maximise animal welfare" and "It has been a real pleasure for the inspection team to inspect this very impressive enterprise, where animal welfare, visitor entertainment, public engagement, education and year on year redevelopment go hand in hand with a sound financial business enterprise"*. In response to Q4.3 Are the animals provided with an active and documented enrichment programme? the answer was 'Yes'.
- 2020 this was a covid inspection report where the inspectors reported that Dublin Zoo had suffered a 50% reduction in visitors and hence a reduction in revenue. As part of the response costs were actively managed but the inspectors noted that *"At this point there is no indication that resident animals' welfare has been negatively affected at all"*. In response to Q4.2 Please describe any specific issues with regard to physical or behavioural health that have occurred within the animal collection, include comments regarding enrichment provision here, the inspectors noted *"No relevant changes, despite reduced staff working time, so some reduction in training*

and staff / animal interactions". The inspectors went on to note that *"Financial limitation has meant that funds must (correctly) be focused on animal welfare, security and safety"*

- 2021 *"A range of welfare assessments were reviewed and are of a very high standard. This is to be commended"* and *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*. This included this specific complaint. In response to Q4.3 Are the animals provided with an active and documented enrichment programme? the answer was 'Yes'.
- 2022 the inspectors started *"Dublin Zoo is a modern facility which, in our opinion, is well run and has the welfare of the animals it cares for at the heart of each decision made by the operators"*. In response to Q4.3 Are the animals provided with an active and documented enrichment programme? the answer was 'Yes'. In response to Q5.2 Are the animals provided with an active process of animal welfare assessment? The inspectors responded *"Yes, demonstrated for hippo and giraffe"* and in the discussion at the end of the report *"We would like to commend the veterinary team specifically for the hard work they are committing to the zoo, along with the proactive approach they are taking towards holistic veterinary care of all species"*.

'Secret Shopper' type unannounced visit to Dublin Zoo was undertaken on the 14th August 2022 with one member of the investigation team walking the grounds as a normal fee paying member of the public. During this unannounced visit there were multiple examples of enrichment provided in large numbers of enclosures during the visit and on one occasion on the 'Far Side Section' two keepers watched the Sulawesi crested macaques for 16 minutes engaging with enrichment provided to ascertain the effectiveness and group dynamic.

Interview responses to the alleged welfare case

No. of staff interviewed:

19

- See Case 7 General allegations of wider welfare issues – considerable cross over regarding staffing limitations during covid and post-covid changes. Enrichment and staff time are addressed in part in the previous case discussions.
- Other than staff time and subsequent limitations, concerns with regard to enrichment was little mentioned.
- Plenty of examples of where enrichment had been utilised to support specific cases were mentioned.
- Concerns voiced not at same levels as once was but still delivered to a high standard.

Findings of the investigation with regards to the specific case

- The allegation was reported in 2021 and did follow changes in the operational working patterns of the animal care team in 2020 in response to covid lockdown. However, during the verbal covid zoo inspection no issues were noted and there was no specific impact noted during 2020-2022 when reviewing the case histories of the other animals reported in this document.

Interpretation by the investigation team

There is considerable evidence of proactive welfare, both physical and mental, management for the animals at Dublin Zoo that are often commended in the quality and scope of their programmes. The investigation team acknowledge that Dublin Zoo was honest in that during covid changes had to be made to assure the future survival of the zoo and this likely did reduce training sessions and staff/animal interactions which would have potentially included enrichment provision. However, the investigation team believe this is reasonable in extenuating circumstances such as a pandemic. Outside of this period where site visits have occurred no issues have been noted with regard to staff training and enrichment there have always been sufficient staff and more than adequate provision demonstrated in the documentation assessed specifically with regard to this point and previous cases investigated in this review.

Outcome of the investigation with regard to the specific case

The allegation is potentially substantiated but occurred during the pandemic and as such is considered an appropriate response for the survival of the zoo but these changes did not appear to impact core welfare provision and enrichment noted was extensive despite staff feeling that they could and should do more.

References

- Zoo licence inspection reports 2015 to 2022

11.0 'Shea', Humboldt penguin, alleged bled to death from injury to foot

Date of incident:	Died 5 th January 2021
Species & identification:	Humboldt penguin (<i>Spheniscus humboldti</i>), male 20 years and 6 months Local ID A0B033
Allegation:	

Journalist 01 reporting on whistleblower comments: "A penguin who was held in an unsatisfactory pen cut his foot and despite this being reported, the penguin bled and died in poor conditions".

Origin of the allegation: Journalist 01, 11th August 2021

Documents reviewed as part of the investigation:

2019 17 th April	CVE Course Approval Contingency planning for Avian Influenza DZ
2020 23 rd December	Compulsory Housing for Poultry and Captive Birds in Ireland notes
2021 5 th January	Specimen report penguin A0B033
2021 6 th January	DAFM Regional Veterinary Laboratory post-mortem report
2022 21 st July	Animal weight comparison ZIMS penguin A0B033
2022 2 nd August	ZIMS penguin animal age population breakdown

Summary review of the documents reviewed as part of the investigation:

The Humboldt penguins were moved into the sea lion quarantine pool area as part of Avian Influenza requirements as outlined by DAFM late December 2020, verbally reported Christmas Eve. Actual move date not captured in the ZIMS specimen report but was likely earlier, probably the 21st December at the latest. This was in response to the Avian Influenza (Precautionary Confinement of Birds) Regulations 2020 which came into force on the 21st December 2020.

On the 2nd of January 2021 the Humboldt penguin 'Shea' was noted as having bled from his foot, this was again reported on the 3rd of January and on the 4th of January it was noted that Shea had lost his nail on the right foot and the foot was bleeding. Images were shown of the blood in the enclosure and the blood loss appeared mild to moderate in the images. On the 5th of January the following was added to the animal record's *"Shea's foot still bleeding. He is very lethargic and uninterested in food"*. Shea died later the same day. No mention of vets being contacted are mentioned in the animal record.

Due to being in Avian Influenza quarantine his body was sent to the Regional veterinary Laboratory for post-mortem. The primary focus was on assessing the presence of avian influenza for which he was negative. Bacteriology was performed but fungal cultures were not. No significant bacteria were reported. He was considered to be in *"good body condition and had a large (3cm diameter) creamy-yellow pus filled sac present on the ventral*

aspect of the right pleural space, which extended beneath the right lung ventrally and caudally to the diaphragm". An air sacculitis was found along with a 15% visceral gout of the kidney.

There are references made to the penguins moving into a new enclosure and discussions had regarding avian influenza assessments and modifications that would need to be done for the birds. However, the notes are limited in content and it is not clear from the information provided what the whole picture was. More information is needed.

Findings of the investigation with regards to the specific case

- Shea died from an air sacculitis, not from haemorrhage from a lost nail.
- Shea was a middle aged to older Humboldt penguin at 20 years old.
- Shea had a history of aspergillosis and the outdoor exhibit was under and close to trees.
- Shea was managed in the sea lion pen due to the large water area available as this was considered the most appropriate facility to meet DAFM Avian Influenza restrictions available at the time.
- In 2021 the vet team vaccinated birds against Avian Influenza to offset some of the welfare challenges of maintaining them in indoor/covered aviaries.

Interview responses to the alleged welfare case

No. of staff interviewed:

6

- *"The Humboldt penguins had to be moved to the sea lion quarantine pen as it was the only suitable area at the time that would meet the DAFM Avian Influenza rules".*
- Reported to be 0-5°C in the area and impossible to clean adequately, considered squalid for the birds. Images shown and demonstrated typical penguin area covered in faeces and in one some blood but mild to moderate in the image. Note Phoenix Park weather station shows temperatures in this region for the day of, and just prior to, his death with temperatures of 2.0-5.5°C, it did not reach 0°C though.
- Land area was considered small but could have been kept clean with active cleaning programme. Hygiene is self-regulating, if dirty then you ensure it is kept clean.
- Concerns that the sea lion main pool was in series with the whole system and that sea gulls defecating into the main pool could theoretically contaminate the penguin pool, no evidence to this having occurred noted.

Interpretation by the investigation team

The investigation team can confirm in part that the following statement has elements of truth in it: ***"A penguin who was held in an unsatisfactory pen cut his foot and despite this being reported, the penguin bled and died in poor conditions"***: the sea lion quarantine pen did have a small beach area which is not ideal for the penguins but they did have a relatively deep pool and this area met their basic needs but was challenging to manage for the staff. This was a response to National Avian Influenza legislation as the birds could not be kept in their existing enclosure as it was not covered and did not meet the legislative controls.

The statement says *“(Shea) cut his foot and despite this being reported, the penguin bled and died in poor conditions”* which the investigation team cannot support. He did lose his nail, cause unknown, but the blood loss was minimal but continuous over a few days. There was no mention of anaemia or haemorrhage at post-mortem, the main finding and cause of death was the air sacculitis. Shea had a history of this disease and it is possible that this had never been cleared and he succumbed to it in the new facility. Only one bird died in 2021 (Shea) and none in 2020 which is suggestive that the conditions were not so squalid to have compromised the other penguins held there (a total of 16 birds at the time Shea died). The air sacculitis may have been exacerbated by being in the sea lion pen but as the birds were only moved in there a few weeks prior it is considered unlikely that the disease would have developed at a rate to cause death in such a short time period and without other birds being affected.

There were no demonstrable records of the animal care team calling or requesting a veterinarian to attend, the wound being considered minor at the time. It is noted in the protected disclosure that the cut was reported on the daily report sheets but not that a vet was requested or that it was of a severity that required attention, *“his condition deteriorated rapidly and he died on the 5th of January 2021”*.

The birds soon after the death of Shea were moved to the dedicated quarantine facility in the veterinary hospital.

Zoo Inspection process reflective of addressing the welfare concerns

The case was discussed in detail at the October 2021 zoo inspection and the zoo inspectors were satisfied with the case management and that there were no immediate welfare concerns that were not being managed in a considered manner by Dublin Zoo. Specifically, the inspectors stated in the report: *“As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints”*.

The zoo inspectors noted at the October 2021 inspection that the Dublin Zoo team believed it was aspergillosis and no more birds were reported to have died that year from aspergillosis. However, the substrate was bark and this was replaced with sand to further reduce the risk of aspergillosis as a precautionary measure.

Outcome of the investigation with regard to the specific case

The investigation team note that the sea lion pool area was used for Avian Influenza quarantine as it was deemed more suitable for medium to long term management of the

penguins due to the size of the pool and the filtration system in place. This was in response to national legislation in the face of numerous avian influenza outbreaks in Ireland.

Shea died of an air sacculitis, likely caused by the ubiquitous fungus aspergillosis which he had a history of. The bleeding nail does not appear to have been reported to the vets and it was simply noted by the animal care team at the time in the animal's records / daily report sheet.

As such the investigation team do not recognise the narrative outlined by the journalist's request and cannot support the allegations made. The protected disclosure does not add anything additional to this case that has not been captured in the testimonies.

References

- Irish Government (2020) Avian Influenza (Precautionary Confinement of Birds) Regulations 2020, SI No. 663/2020

12.0 Sea lions and penguins undernourished and poor-quality food

Date of incident:	General statement
Species & identification:	California sea lion (<i>Zalophus californianus</i>) Humboldt penguin (<i>Spheniscus humboldti</i>)
Allegation:	

Journalist 01 reporting on whistleblower comments: "The sea-lions and penguins are undernourished, the food they are receiving is bruised and not adequate for consumption"

Protected disclosure excerpts: "Late 2019 to January 2020 there were serious concerns with sealion diets and fish quality resulting in sea lions losing weight and being unwell (rest remained in protected disclosure but addressed in the wider points from journalist 01's statement)"

Origin of the allegation:	Journalist 01, 11 th August 2021 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2013 ?? September	Dublin Zoo Reptile House Section work manual (includes sea lions)
2019 Multiple dates	Sealion Daily Record Sheets
2020 1 st January	Fish handling procedure DZ
2020 1 st January	HACCP for raw fish, rodents and chicks
2020 7 th February	Sea lion post-mortem UCD
2020 26 th February	SFA Histamine ABVT Herring 01
2020 26 th February	SFA Peroxide Herring
2020 26 th February	SFA microbiology Herring 01
2020 26 th February	SFA microbiology Herring 02
2020 26 th February	SFA physical chemistry analysis herring
2020 26 th February	SFA Histamine ABVT Herring 02
2020 27 th February	CVE Fish Quality Workshop training course Dublin Zoo
2020 15 th October	TU Dublin fish quality experiments 01
2020 15 th October	TU Dublin fish quality experiments 02
2020 15 th October	TU Dublin fish quality experiments 03
2020 15 th October	TU Dublin fish quality experiments 04
2021 3 rd February	Cassie food chart (4 months)
2021 3 rd February	Flo food chart (4 months)
2021 3 rd February	Seanna food chart (4 months)
2021 1 st October	SFA ABVT Analysis herring
2021 1 st October	SFA Hist Analysis herring
2021 3 rd October	SFA microbiology Analysis sprat
2021 4 th October	SFA ABVT Analysis sprat
2021 4 th October	SFA ABVT Analysis herring

NPWS ZOO INSPECTORATE DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION

2021 3 rd November	SFA Physical chemistry sprat
2021 4 th November	SFA ABVT Analysis sprat
2022 1 st January	Sea lion weights
2022 20 th January	SFA physical chemistry analysis herring
2022 3 rd February	Certificate of analysis microbiological testing fish products
2022 9 th February	Certificate of analysis nutritional value herring
2022 9 th February	Certificate of analysis nutritional value sprats
2022 14 th February	SFA ABVT analysis herring
2022 14 th February	SFA ABVT analysis sprat
2022 14 th February	SFA microbiology Analysis herring
2022 14 th February	SFA microbiology Analysis sprat
2022 14 th February	SFA physical chemistry sprats
2022 16 th February	Certificate of analysis histamine sprats
2022 16 th February	Certificate of analysis histamine herring
2022 5 th May	CVE Zoonosis biosecurity and food safety workshops
2022 20 th July	Sea lion and penguin diets
2022 27 th July	Sienna historic weights
2022 16 th August	Sienna weight comparison to global population 2019 to 2022
2022 9 th September	Cassie sea lion ZIMS animal weight comparison
2022 9 th September	Cassie sea lion animal weights
2022 9 th September	Chad sea lion ZIMS animal weight comparison
2022 9 th September	Chad sea lion animal weights
2022 9 th September	Florence sea lion ZIMS animal weight comparison
2022 9 th September	Florence sea lion animal weights
2022 9 th September	Kobe sea lion ZIMS animal weight comparison
2022 9 th September	Kobe sea lion animal weights
2022 9 th September	Seanna medical history
2022 9 th September	Seanna medical history
See also case 11 and case 14 documentation (sea lion and penguin cases)	

Summary review of the documents reviewed as part of the investigation:

The fish quality issues were reported to be a considerable problem in the period late 2019 and January 2020, the protected disclosure stating: ***"Late 2019 and January 2020 there were serious concerns with sealion diets and fish quality resulting in sealions losing weight and being unwell"***. The journalist request was received in August 2021 and reported similar concerns but did not specify a time scale. As such the investigation team reviewed the period from late 2019 to current day.

A number of documents that are simply dated by year were produced in 2020 in response to issues in fish feeding practices including Dublin Zoo's primary management protocols 'Fish Handling Procedure' and the 'HACCP for raw fish, rodents and day-old chick management at Dublin Zoo'. The investigation team reviewed them and found them to be simple yet comprehensive and address the common pathways for quality fish management and risk assessment of the critical points to maintaining a safe food chain. These processes remain in place at the time of this investigation and a site visit to the fish stores was

undertaken and confirmed that the protocols and policies were in place and could be evidenced with well-maintained records that go back several years. "*Fish only fit for human consumption are to be fed*", this has been in place since at least 2020.

Examples of fish nutritional assessment included documentation outlining microbiology, physical chemistry, histamine, Total Volatile Bases (ABVT), and nutritional value of the herring and sprats brought in as piscivore food are undertaken regularly, with examples provided from February 2020 to September 2022 which demonstrated that the fish intended for the sea lions and penguins were well within the nutritional and food safety standards set for human consumption. At the same time these processes were implemented a Fish Quality Work Shop was undertaken on the 27th February 2020. This was designed and developed for Dublin Zoo staff that trained the veterinarians, animal care staff and other support staff on the assessment and management of fish to assure that fish stocks coming in were appropriate, maintained and provided to the sea lions and penguins in an appropriate form.

Feeding diet sheets were provided and volumes appear as expected and are modulated in response to factors across the demonstrated period. Comments were made in animal records where food was increased in volume, as and when needed, and reduced at other times.

The investigation team made the assumption that the period of the allegation for poor feeding and under nourished animals started late 2019 (based on dates from the protected disclosure) and included the period with the death of 'Niko' the California sea lion (May 2020) as well as 'Shea' the Humboldt penguin (Jan 2021) whom form the basis of other allegations dealt with elsewhere in this report. Later, having reviewed the data the review period was extended out to early 2022 to cover all of the active potential clinical cases and to assess current practices at the time of the investigation.

With regard to the animals referred to by name in the allegations as well as the existing sea lion population the weights were regularly measured and this documentation was assessed, going as far back as 2009 to review trends and changes and how the time periods of poor fish quality may have impacted the animals, in essence the animals being the marker for their own 'normal' weights as well as comparing them against the global population weights. Starting with the post-mortem data: in the case of 'Niko' his post-mortem of the 2nd June 2020 states "*The body condition was good, the abdominal blubber was 3cm thick, body weight 212kg*", with the weight range for the global ZIMS population stated as 125-240kg. In the case of Shea the post-mortem states "*Good body condition*" and his weight chart demonstrates approximately 4.4kg (accurate weight not available in data presented, read from graph supplied) with a global ZIMS population weight for the same age as 4.2-5.2kg. In both cases the pathologists reported good body condition and the animals weights are within the global ZIMS range for the same species of the same age. As for the rest of the sea lions their weights are mapped out against the life stage and global population weight for captive California sea lions, in all cases they are within the normal

ranges expected (see Figure 12.05). A detailed audit of the named individual sea lion Seanna was also undertaken and this is outlined below.

Following on from the original audits in early 2020 through to 2021 the programmes for fish management were overhauled and Dublin Zoo invested in new facilities and developed a continuing programme of review of suppliers, investment in fish handling equipment for storage and preservation, and ongoing evaluation with new equipment being brought in in the near future to add to that already in place from 2020 and the period up to now.

Comment was made that the sea lions in the protected disclosure: ***"Late 2019 to January 2020 there were serious concerns. with sealion diets and fish quality resulting in sea lions losing weight and being unwell"***. The investigation team found only two references to diarrhoea in the named individual in the last quarter of 2019, with the majority being in the period September 2020 to March 2021 and a few outliers outside of this period. The investigation team only noted a single eye issue that was resolved quickly in Seanna and this was unrelated to fish quality concerns (not uncommon in sea lions). As such, whilst the focus started in 2019 as per the protected disclosure dates, the investigation team were unable to clearly identify clinical health issues until late 2020 – early 2021. See below for the individual sea lion case example, flagged in the protected disclosure. -

SEANNA CALIFORNIA SEA LION EXAMPLE CASE

The protected disclosure went on to add an individual case example of Seanna the California sea lion that was reported as: ***"One of the female sealions named Seanna had a stillborn pup on the 7th February 2020 which was found on the beach area of the sealion pool. Seanna was underweight when she had the pup....After Seanna miscarried keepers were advised to raise the quantity of food that was given to all 3 sealions as there were 2 other pregnant sealions and all 3 females were nursing pups"***.

The post-mortem was provided for Seanna's pup identified a foetus weight of 1.4kg and crown-rump length of 35cm (compare this to new born California sea lion pups being in the region of 75cm long and 6kg in weight). The pathologist reported a diagnosis of omphalitis (inflammation of the umbilical cord) and that *"The cause of death/abortion was not clear in this case. Bacterial colonies were found within the umbilical cord with mild associated inflammation. No abnormalities were found in the fetus itself and the inflammation in the umbilical cord may have corresponded with a placentitis, but this is just speculative. Unfortunately, the placenta was not available for examination...the recovery of E.coli from the lungs is interpreted to be secondary contamination"*. Microbiology was carried out on numerous other tissues and all were sterile with no growth occurring on the other tissues. The pathologist flagged that there were *"many potential causes of abortions and stillbirths, both infectious and on-infectious and many of these may not be discoverable at post-mortem exam of the fetus alone. Also remember that maternal factors may also contribute to abortions and still-births, and the dams should also be examined for any signs of illness"*.

Sienna's weights trend to an increase over the period 2009 (4 years old) to present day (17 years old) with a variable increase and decrease that typically appears to be seasonal with weight loss in the winter and peaks in the summer (see Figures 12.01 to 12.04). This was

consistent for the period 2019-2020 as it had been for the preceding and subsequent years for Seanna, 2009 - 2022. A female California sea lion is mature at around three years and reach maximal weights at around 8 -10 years with a range of 80-100kg weight when compared against the global ZIM population. Seanna is in the normal weight range for the species, both at her lowest seasonal weight and a little in excess for her highest weights in some years. The investigation team also utilised the wild data from NOAA (2016) and found Seanna to be within the normal range provided for wild California sea lions of a similar age. Her weight did decrease from May 2019 to the lowest point in February 2020 which was just after the loss of the pup. However, this weight loss is typical for her with increased weight in the summer and loss in the winter – this has occurred during the periods where there were no fish quality concerns and were similar when there were fish quality concerns. This can be seen in that the annual average variation from maximal weight and minimum weight was 20.8kg (range 16.5-38kg), with the mean maximal weight being 100.2kg (range 84.5-123.5kg) and the minimum being 79.4kg (range 64-90.5kg) for the period 2009 to July 2022. Ironically during the period of noted concern where she is alleged to be underweight when she was in pup Seanna was actually at the highest annual minimum weight that she had ever been over the period 2009 - 2022, the weights being within the reported range for the ZIMS global population and the wild California populations captured in the NOAA (2016) technical document.

The investigation team also note that the food provision was increased by the animal care team as captured in the animal husbandry notes on the 31st July 2019 by 500g, 21st August 2019 by 500g and by 500g on the 3rd September 2019, with comments made on the 31st July that she looks a little thin (she weighed 98kg on the 23rd August 2019, the nearest weight measurement taken). These increases of food coincided with the early gestation (embryonic diapause) and the pregnancy proper once it commenced.

The inspection team noted that the weighing of the sea lions appears to have stopped in the second half of 2019 and early 2020 with only one weight being taken during the period from the 28th May 2019 (112kg) to the 24th February 2020 (86kg - note this is 17 days after the sea lion pup was aborted). The single measurement during this period was taken on the 23rd of August 2019 (98kg). The inspection team are unable to account why this period saw no weights being taken with the second half of the year which overall had the second lowest number of weights recorded per year for Seanna during the period 2009 to 2022, with only 12 weights being recorded (range of 7-43, mean 23.1 weight measurements taken per year). The investigation team identified that the sea lion scales were broken on the 6th June 2019 with weighing restarting on the 23rd August 2019, however there were still no more weights taken from this date until 6 months later on the 21st February 2020. This being the period of her gestation and subsequent loss of the sea lion pup. In 2021 she was overweight (at her maximum 128kg) and she needed to be dieted back to normal weights where she is now. See Figures 12.01 to 12.04. The inspection team also note that the Standard Operating Procedures in place at this time required weekly weighing of the sea lions to be undertaken (Dublin Zoo Reptile House Section, 2013), however the sea lion keeper team at this time failed to weight her despite weights of other animals being recorded.

With regard to 'being unwell' there were sporadic and occasional bouts of gastrointestinal disease primarily between quarter 2 2020 through to quarter 3 2021, not late 2019 to 2020 as stated in the protected disclosure. There were occasional intermittent periods of diarrhoea and regurgitation from 2018 to current day but these were sporadic and did not fit any pattern nor concerns related to fish quality that were noted, although historically these may have been down to histamine or organoleptic concerns in the fish as well as other causes unlinked to fish quality.

Zoo inspection reports have never commented on any concerns with regard to the fish handling, for example in the 2017 zoo inspection report the inspectors state that the management of frozen meat (includes fish) demonstrated *"Good practice but not documented, see conditions"*.

In summary the primary actions taken by Dublin Zoo in response to the initial concerns with regard to fish quality were:

- Feb 2020 – change of fish supplier, using specialist supplier for zoological collections, first batch arrived March 2020
- Feb 2020 – Workshop for the veterinary team and keepers on fish quality
- Feb 2020 – Analyses for fish requested and supplied from the new supplier, ongoing – see supplementary documents listed above
- Nov 2020 – Student projects looking at fish quality and microbiological and other loads within the fish
- Dec 2020 – recognition of not simple microbiological issue but also other factors such as histamine, full replacement of known issues in freezer storage, blaster freezer installed 23rd December 2020 (hire) which was later replaced with a dedicated permanent solution

Findings of the investigation with regards to the specific case

- Dublin Zoo has a comprehensive fish handling policy as well as a HACCP review to assure food safety for the sea lions and penguins.
- The process involves regular nutritional quality and safety assessments of the fish, for which records have been supplied and discussed with staff and the veterinary team.
- No evidence has been submitted of animals being undernourished. The investigation team have seen two post-mortem reports from this time for a sea lion and a penguin both of whom were reported to be in good body condition at post-mortem examination and the weights of the sea lions, as far back as 2009, are within the normal weight range for the species.
- The zoo inspection reports did not raise any concerns in this area, quite the opposite in that fish management was considered to follow good practice.
- There were fish quality issues noted during the period described in the protected disclosure with fish quality concerns noted late 2019 to 2020 and steps were implemented to rectify this which was a lengthy and detailed process, hampered by covid. This utilised external expertise and technical specialists with reviews taken of suppliers, infrastructure and staff knowledge which were addressed and continue to

evolve as the needs of the sections change and the challenges of supply and quality vary. This was considered to now be a competent, well managed and well documented programme.

- The current sea lion staff and Team Leader were knowledgeable and demonstrated that the written processes were being implemented and that additional quality control checks were being added. The fish randomly inspected being of good quality and fit for human consumption.
- The case of Seanna was unfortunate and as stated in the post-mortem there are many causes of abortion in sea lions, a causal link could not be demonstrated between the fish quality and the omphalitis, indeed the bacteria isolated from the umbilicus likely being post-mortem normal flora contamination and was not consistent with the microbiology reports from the fish testing that occurred as reported at the time by the veterinarians. Indeed the periods of diarrhoea and vomiting occurred just after the abortion and Seanna produced a healthy pup during the gastrointestinal upset periods.
- There was no evidence that Seanna the sea lion was underweight when reviewing the raw data – either for herself, comparing previous year's data, or against wild and global California sea lion data. It is disappointing that if this was a concern that weights were not taken at this time to evidence if she reduced in weight further than that reported, the reason for this being unknown. However, the trends are indicative of a gradual decline and no evidence was available to show that it had gone lower than those reported. The investigation team note though that whilst at a normal weight for a sea lion she was at a low point in her fluctuating weight at the abortion and was considerably larger for the second healthy pup that went to full term.
- The primary periods of illness pertaining to gastrointestinal upset in the sea lions occurred between quarter 2 2020 through to quarter 3 2021, not late 2019 to 2020 as stated in the protected disclosure. There were occasional intermittent periods of diarrhoea and regurgitation from 2018 to current day but these were sporadic and did not fit any pattern nor concerns related to fish quality that were noted.
- Fish quality issues that were noted were considered to result to supply and maintenance issues that led to degradation and histamine toxicity rather than primary microbiological issues on the whole, with improvements noted once supply and improvements in storage equipment and processes were introduced.
- Record keeping was historically variable, especially during the period 2019 to 2021 with paper copies of sea lion daily record sheet, daily diaries, and ZIMS records with considerable variation between the source material (some data only found on one source, but also some copied across diligently). Current records assessed on section now to a high standard and data more consistent and more easily retrievable.

Interview responses to the alleged welfare case

No. of staff interviewed:

9

- "There were a number of issues noted with regard to the fish management in 2019/2020 and into 2021 – there were issues with the process, there were challenges with

maintaining temperatures in some of the fridges with oscillating changes occurring especially when the doors were opened to take stock in and out, the defrost process was not ideal, and several other factors. The management reviewed the whole system in response to concerns – an audit of the processes and systems as they existed; training of staff with the ‘Assessment of fish quality as part diets for pinnipeds (sea lions) and penguins’ workshop which took place at the Technological University Dublin with lecturers in Allergen Management and Control and Microbiology pertaining to food safety; bringing in external specialists (remotely due to covid) to advise on specialist nutritional aspects of pinniped nutrition, identification that not just a quality issue but also one of histamine content and related challenges, and a review of facility need to allow development of the fish handling facilities from arrival to storage to thawing and feeding. This is an ongoing journey that builds on the solid foundations that were initiated in 2020 with the fish handling processes and the HACCP reviews”.

- “New supplier was brought in and quality did decrease around this time (2019/2020), quality was poor and sea lions would turn nose up at it but then would have to go and get new stock from local harbour suppliers which was expensive and not a long-term solution”.
- “It was reported to the veterinary team that there were intermittent gastrointestinal disturbances that were noted with diarrhoea and vomiting being occasionally seen (2020 -2021). This was put down to being dietary in origin which was initially wrongly thought to be solely down to microbiological causes resulting from fish quality and management practices but was later identified as being related to primarily being down to histamine content in the fish (scombroid poisoning). The whole management programme was stripped back to basics starting with HACCP, clarification of the needs of the piscivores nutritionally and the outcomes needed to ensure appropriate feeding practice were implemented to support the sea lion and penguin welfare”.
- “The HACCP was the initial driver and rapidly identified issues in the quality of supplies coming in and the processes of maintaining the quality of the fish stock once on site. Freezer issues were initially identified as being a real issue and this was addressed with capacity, capability and the need for a new freezer. If anything they over specified initially with blast freezers which as the team have identified they did not need such a high specification. This was not a quick process as batch buying of fish meant that stocks needed to be used up and there were limiting factors of obtaining stock with covid restrictions and in certain areas Brexit challenges. These first two areas both significantly helped the situation. Added to this were changes to the handling and thawing process – now use a dedicated defrost fridge to ensure quality is maintained and do not see degradation. This is then supported with a final visual check. Management have been very supportive in the development of the process but also in investing, during covid in ensuring that the critical control points were being appropriately managed and fish supplied was appropriate both in nutritional and assured maintenance of quality control once on site. The system is regularly reviewed, the last being the 15th August 2022 and spot checks demonstrated that the fish were being maintained as expected and the grade was exceptionally high. Now resolved, we do not see the issues we had back in 2019/2021”.
- The fish is human grade and is maintained using systems that are to the same specification for preserving and managing fit for human consumption stocks.

- *"There are also a number of ongoing partnerships with Technical University Dublin with regard to student projects that look at, review and critique the fish handling and food safety and hygiene management practices which continue to demonstrate best practice or where needed, evolve the programme to ensure best practice is being delivered".*
- *Dublin Zoo buys in 3–5-month batches and so appropriate infrastructure and management is critical for the welfare of both the sea lions and the penguins.*
- *"With regard to weights of sea lions the systems were not well established in that area and this has improved considerably with a complete change of staff in that specific team. Keeper concerns of underweight animals were only backed up with their own visual assessment, which was quite inconsistent...comfortable to say that at no point during my time any of those sea lions has been underweight based on body condition score assessment and other my experience. However, the sea lion management was very inconsistent, with food consumption not being recorded and this led to weight oscillations and that an animal's lack of interest in food was attributed to bad fish quality and weight losses depending on seasonality when they were just showing a seasonal weight variation and changes in interest in food... not denying that there were some issues with fish quality which caused occasional digestive problems for a few days but those were exceptional and saying animals were underweight as a result of that is a misrepresentation of reality".*
- *Specifically with regard to Seanna, "...the cause of death was not clear for the aborted sea lion pup. Omphalitis was identified but without the placenta the significance was unknown. There were no ongoing disturbances at the time (vomiting and diarrhoea), these were more sporadic than continual. The weights of the sea lions were good and there was no evidence of wasting. No tentative link between the diet and the loss, and no supporting microbiology of the fish having a causal link with the abortion".*
- *"Feeding processes for the sea lions are dynamic and require regular review of the weights and adjust feeding regimes accordingly. There are documented charts on the wall for each animal and food intake varied both in volume but also the species fed as these have differing nutritional content. Requires active management and the sea lions and the feeding regime, which is what Dublin Zoo does".*
- *"Ultimately sorting the fish, sorted the histamine issues which sorted the gastrointestinal disturbances which we haven't seen in some time".*
- *"During this period, everyone was doing everything they could"*
- *"Concerns were raised with regards to feeding Seanna due to her metabolic needs, especially during lactation and the subsequent body weight loss that would occur, in discussion it was acknowledge that food intake was increased for lactation for the other cows. There were quantity and quality issues with the fish" (Note – staff member referring to the 2019-2020 period, which is the period she was not known to have been pregnant, this was only realised some 4 months after she aborted).*
- *"Some challenges with staff being appointed as sea lion keepers and not others, led to some bitterness, challenging as politics mixed in significantly with the management of the animals. Now all resolved and no issues as far as aware".*
- *"The only complaint made directly to me (the Director) regarding animal welfare was with regard to fish quality being fed to the sea lions and penguins in late 2020".*

Interpretation by the investigation team

The investigation team are of the opinion that there are three issues to this allegation:

- (i) The journalist refers to both sea lions and penguins being undernourished but there are no statements to this effect in the protected disclosure and as such the investigation team have focused on the sea lion issues but accept there is cross over between the two, with shared food management addressing the sea lions addresses the penguins simultaneously.
- (ii) Fish quality and related sickness in the sea lions causing welfare issues through poor nutrition and nutrition related disease
- (iii) The death / abortion of the sea lion pup approximately mid gestation to Seanna the California sea lion and her husbandry at this time

These will be dealt with in turn

1. California sea lion alleged poor nutrition and subsequent malnutrition

The investigation team believe that there was a period of questionable fish quality from around 2018/2019 that deteriorated to poor quality in 2019/2020 due to a combination of supplied fish and inadequate fish handling facilities that led to intermittent drops in fish quality. However, the evidence is not one of a continuous issue but one of intermittent incidents. This is discussed in detail in point 2 below. The investigation team are also of the opinion that this fish quality is highly likely to have led to the occasional periods of gastrointestinal disturbance which were present in 2019 but were at the height during mid to late 2020 into 2021.

However, whilst the weights demonstrate seasonal fluctuation they remained within the normal range for the species and for the individual animal year on year with no specific changes noted in 2019/2020, especially in the case of Seanna, that demonstrated undernourishment. Indeed, at their peak some of the weights were considered on the heavy side.

The discrepancy between the statement and the actual weights is considered to have been down to inconsistent application of body condition scoring without support from actual weighing, especially during the period late 2019 – early 2020 where the weights were missing from the ZIMS records along with other elements of poor record keeping at that time. Sufficient weights were recorded to demonstrate trends which did not, in the opinion of the investigation team, demonstrate malnutrition or animals that were considered underweight for their sex and age group. The actual data for the periods 2018 to 2022 are demonstrated in figures 12.2 to 12.4. As such this elements of the allegations is considered not to be reflective of the actual situation.

2. Fish quality and sea lion illness

The protected disclosure specifically mentioned periods of illness in late 2019 to January 2020 which were reorted to be related to the sea lion diets and poor fish quality. The investigation team recognise that Dublin Zoo were aware of the issues, this is well documented in the records and they instigated a programme of review initially with regards to the limited gastrointestinal signs which included standard assessment of faecal matter for parasitology and other tests which started in early 2019. Diarrhoea was then noted in September 2020 and was the start of the increased but still intermittent cases over 6-7 months (a total of 17 incidents). Initial thoughts were it was a new fish source (calamari) or this is representative of suspected histamine toxicity and they are taking some time to recover. Fish monitoring programme that had been developed over the first 2/3 of 2020 came into action and biochemical assessments were being made of the batches of fish coming through. Diarrhoea soon settled and some issues with fish quality using the monitoring system at this time. Since then, no issues reported with regard to weight or gastrointestinal signs. Dublin Zoo freely admit that there were issues with suppliers, fish quality and other factors that resulted in intermittently compromised fish quality which in a small number of incidences did result in gastrointestinal clinical signs from the sea lions. However, these were responded to and the fish programme was stripped back to basics and reviewed from a HACCP perspective and worked through as part of a wider gastrointestinal disease work up i.e. infectious as well as nutritional aspects were considered, alongside other casual factors of diarrhoea and vomiting. This is an ongoing and constantly evolving programme that utilises fish fit for human consumption that is sometimes compromised by poor batches or other, but controls are now in place that prevent such batches from being fed, which in turn is supported by robust fish analysis at the local laboratories and suppliers as needed. As such the allegation is supported with regard to the diets likely being linked to the clinical signs noted but the dates referred to are not accurate and the comment with regard to the sea lions being underweight for their age and sexes during this time was not considered to be reflective of the evidence provided.

3. Abortion of Seanna's pup being related to her diet at the time

Seanna was at a low weight at the point she lost her calf in February 2020 but the allegation specifically refers to a period of unwell from late 2019 to January 2020 and there was no evidence to support this, with a period of unwell being in late 2020 – early 2021, which ironically is when Seanna gave birth to her healthy pup. Microbiological and other testing of the fish carried out in February 2020 found no significant related bacterial link between the fish and the aborted sea lion pup. It is possible that at 88kg Seanna was at a lower weight, note this was considered normal for the age, and it is plausible that this could potentially be linked to the loss of the pup. However, there is no evidence to suggest this is the cause and at this weight she would have been expected to be able to carry the pup to term. There are many other causal factors possible for abortion and the pathology report diagnosed omphalitis, inflammation of the umbilical cord. It is noted that the animal care team in the preceding 6 months prior to the loss of her calf increased Seanna's food by a

total of 1.5kg daily in response to visual cues of her becoming thin but they failed to weigh her during this period, the longest gap in her weight history, which could have allowed staff to intervene and increase her food input if it was needed and if they had weighed her which appeared to be standard practice for the proceeding 10 years, except for 2010 which was the only year where there were less weight measurements taken. This was also the outlined standard operating procedure in the protocols for the section from September 2013. As such the investigation team are of the opinion that there is no robust evidence to demonstrate a direct link between the loss of the pup and the diet but it is plausible, especially as staff on section noted she was thin and increased her food content but failed in their duty to weigh her to assess if the arbitrary increases in food were sufficient or not. However, staff appeared to be unaware she was pregnant until the aborted foetus appeared, even then they failed to identify the mother at the time, this being rectified in June 2020 when the originally identified dam gave birth herself which would have been impossible if she was the mother of the pup. As such Seanna was not in optimal condition and nor had her diet been increased sufficiently during the gestation period and this could be considered a failing to meet her welfare needs and that of the pup. It is noted that the primary staff on section at the time are no longer working on the section and the current team have much more robust systems in place with regard to the sea lion husbandry.

In summary and as alluded to in Case 7 the investigation team are of the opinion that a potential change in suppliers and other related factors of infrastructure around 2019 – 2020 led to failings in the fish management processes at Dublin Zoo. This is highly likely to have led to gastrointestinal disturbances in the sea lions in particularly, more likely linked to histamine levels rather than microbiological concerns and these were noted by the veterinary team and steps taken to address this. This occurred at the start of the covid pandemic and on the back of Brexit which added to the challenges being faced. The investigation team acknowledge that a comprehensive review and audit of all practices was undertaken and steps were implemented to change the practices and monitor the impact of changes in process, infrastructure and knowledge of staff which started to resolve the issues in 2020/2021, and these continue to develop and improve as time goes on, with the Dublin Zoo team continuing to evolve the programme in response to external support and technical specialist advice. Currently the systems employed demonstrate best practice, adherence to the written procedures, and a final fish product that is considered fit for human consumption. Whilst the investigation team could not assess the older systems in place, the previous zoo inspectors did and historically these were deemed suitable with changes in stock believing to exacerbate the challenges in the infrastructure which were historically acceptable and not raised as issues in the allegations but were identified as being part of the problem in the internal reviews.

Zoo Inspection process reflective of addressing the welfare concerns

Fish stocks are typically assessed at zoo inspections, looking at source, storage, handling and other factors. Section 1 of the ISMZF (2016) clearly states the requirements as outlined for the provision and handling of food items, including meat, Appendix 9 Section 4.13 requires that *'Written protocols must be produced that demonstrate the implementation of best current practice in the thawing of frozen fish prior to its use for food to ensure food*

safety and nutrition is optimal". The meat, including fish supplies are always assessed as part of the inspection process: this is a specific question on the zoo inspection report: question 1.7 Have the documented methods for the management of frozen meat been implemented which was introduced in 2016, the year the ISMZP were introduced.

In the 2017 Dublin Zoo inspection report the following condition was applied: *"As per section 1.4f of the ISMZP(2016) the zoo must produce a written meat management policy demonstrating the principles of HACCP have been considered and steps implemented with regard to the management and preparation of raw meat within the zoo to minimise any risks of cross contamination between equipment, utensils and surfaces. This must include consideration of best practice in source, storage of frozen meat, stock rotation, appropriate defrosting of frozen meat products, handling of meat and appropriate PPE, and risk of contamination of utensils, hand wash and door handles in the meat preparation areas and adjacent buildings (6m). Note: operator is directed to 'Handling Frozen / Thawed Meat and Prey Items Fed to Captive Exotic Animals: A Manual of Standard Operating Procedures (2001) USDA' and FSAI Ireland website for more information. Within 1 month"*. This was complied with and continued to be confirmed to have been met at subsequent inspections, other than the limited 2020 inspection due to covid. No concerns were raised by the zoo inspectorate on any of the inspection reports since 2018, and 2017 was solely to ensure compliance with the legislation and not in response to concerns of implementation. The compliance documents have developed since then and were reviewed as part of the investigation above.

Outcome of the investigation with regard to the specific case

The three components to this case are clearly outlined above. The investigation team are of the opinion that there were fish quality issues that were related to fish supplies and infrastructure supporting the maintenance of the fish products prior to feeding which led to issues in food safety and potential histamine toxicity and other factors which in turn led to the gastrointestinal disorders noted. These gastrointestinal signs were sporadic and intermittent with the worst period being late 2020 to early 2021. However, the sea lions were not considered underweight when compared to the global population data ranges. These clinical issues had been noted as early as 2019 and steps were taken to address them, mostly during covid lockdown, followed by purchase of improved freezers and other equipment to support the new processes. Dublin Zoo was aware and did take informed and evidence-based expert opinions to ensure that the issue was properly resolved. As such whilst the allegation was in part supported, the issue was noted and addressed in a timely fashion and appears to have been resolved in a justifiable and practicable manner during lockdown. As such this appears to be a historical issue that was managed in a professional manner and is under constant review by Dublin Zoo but is considered resolved by the zoo inspectorate. This is not considered a significant breach of animal welfare.

Specifically with regard to Seanna and the aborted pup there are issues with regard to her management during her first gestation that resulted in the abortion. Staff failed to notice she was pregnant, staff failed to weigh her during early and mid-pregnancy despite her

being trained to do so, the staff failed to monitor her weight loss adequately despite believing her to be thin as recorded in her notes (note, as it was unknown she was pregnant this was assumed to be normal weight loss), they failed to provide adequate nutrition to support her reach a more suitable weight for pregnancy, and they did not recognise she was the mother for four months after she aborted. As there was little to no other medical issues (the vomiting and diarrhoea not fully occurring for some 10 months later) at the time the inspection team recognise that the statement *"I believed Seanna's diet was a contributing factor in the pup's death"* is plausible and that Seanna's care in the six months prior to the loss of her calf was found to be wanting in some areas, but the inspection team also recognise that the low weight of the dam and potential fish quality issues that were starting to appear at this time may be completely unrelated to the abortion as there are many other factors that could have caused it. The staff at the time this occurred also maintained poor records with no documentary evidence of intake, only volumes of food provided. This investigation would typically make recommendations for improvements but in this case the failings are historical and have been addressed with current working practices and the current animal care team, where standards are exceptional.

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Seanna, California sea lion weight changes and gastrointestinal clinical disease overview, 2009 - 2022 with a focus on 2016 to current day

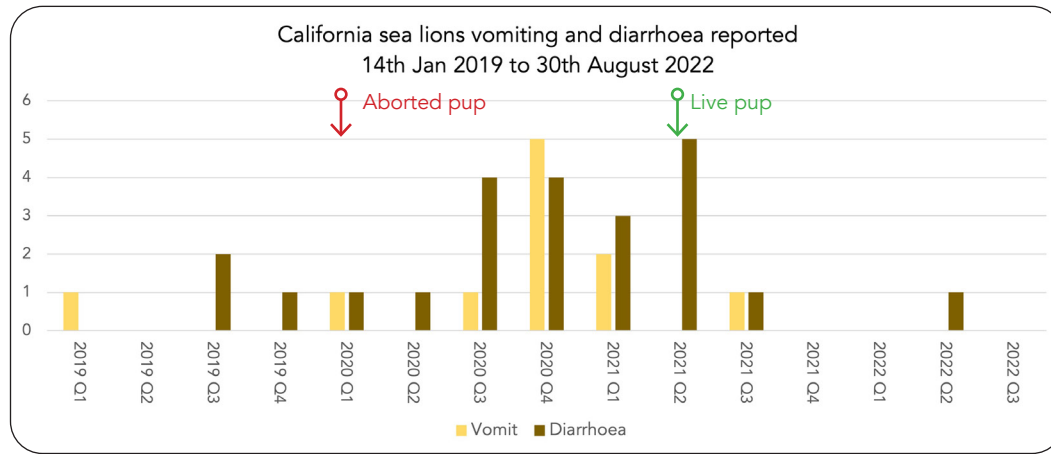


Figure 12.1: Bar chart demonstrating the number of vomiting/regurgitation and diarrhoea events noted in Seanna's records (but these were combined with others too and are considered to potentially reflect the group upset rather than just Seanna). The protected disclosure referenced the sea lions being unwell in late 2019 to early 2020, however the majority of the clinical issues, at least in this case were mid to late 2020 into early 2021. There was a single reported incidence of diarrhoea and vomiting eight days after the abortion (15th February 2020).

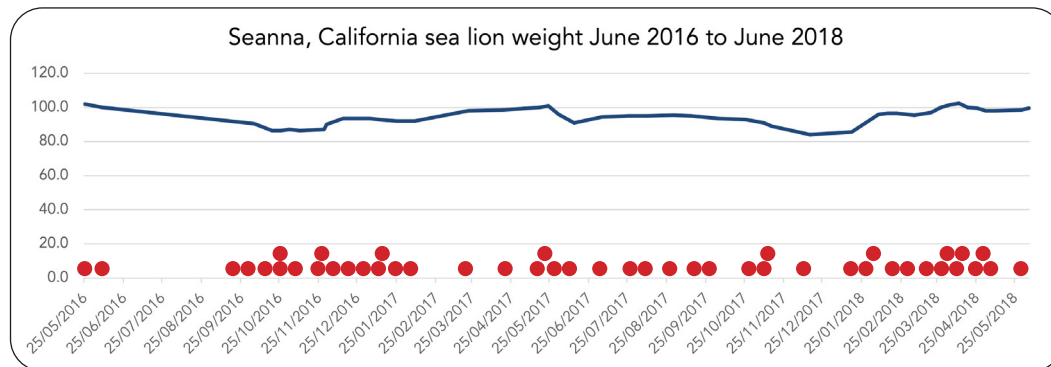


Figure 12.2: Seanna's weight from June 2016 to June 2018, a total of 50 weight measurements (red dots) were undertaken, the frequency varying but approximately every two weeks. The peak weight being 103.5kg and the lowest being 84kg.

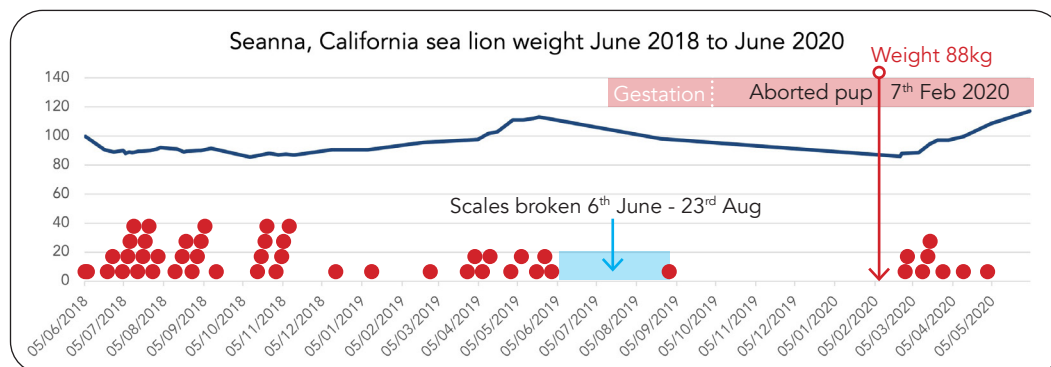


Figure 12.3: Seanna's weight from June 2018 to June 2020, a total of 50 weight measurements also (red dots) taken. Note the weight at the time of the abortion (includes the pup) and the approximate gestation taking into account embryonic diapause (dotted line). The weigh scales broke in June but were repaired by end of August, note no weights were taken despite keeper concerns of being a bit thin (other than 98kg on 23/08/19). Peak weight 113kg, lowest 85.5kg for this period.

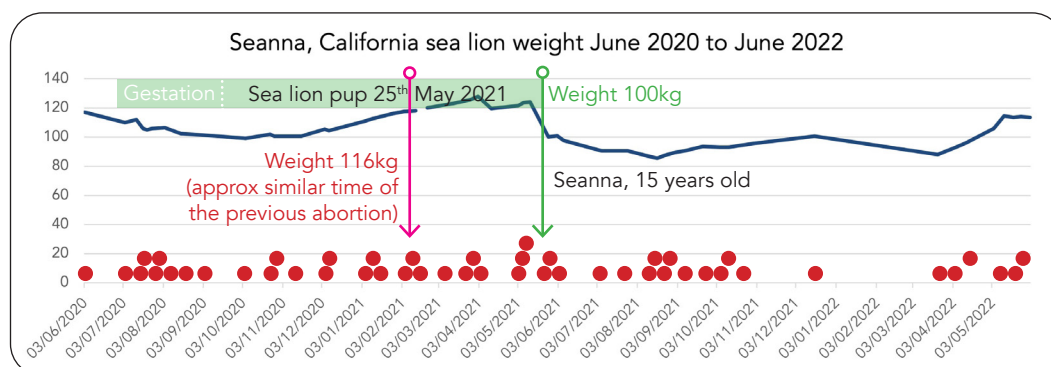


Figure 12.4: Seanna's weight from June 2020 to June 2022, a total of 53 weight measurements recorded (red dots), frequency much more evenly spread with reduction of frequency over winter 2022. Weight at the approximate time of gestation was 116kg compared to after the abortion where she was 88kg on the 7th February 2020. Ironically the period of gastrointestinal upset for Seanna occurred through the early gestation and through to just after the birth of the pup which had no ill effects.

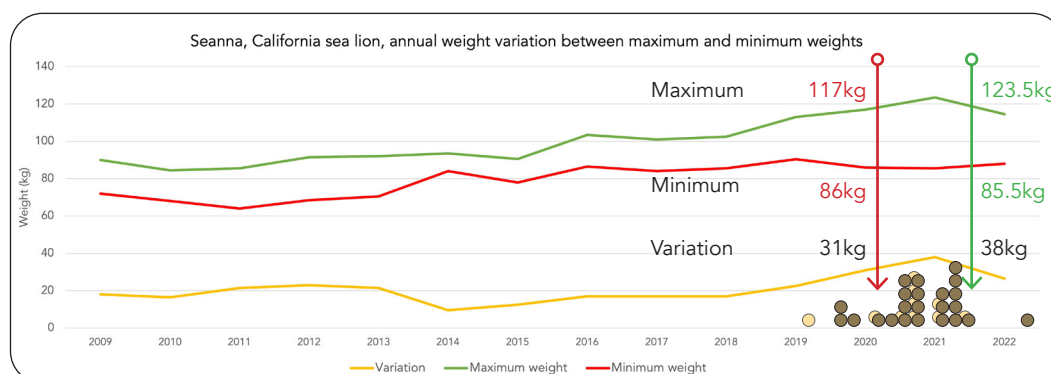


Figure 12.5: Seanna's weight variation across the period 2009 to 2022. Seanna exhibits typical weight fluctuations of a sea lion that is fed a constant amount independent of the season, with gain in the summer and loss in the winter. The weight loss variation was similar at the time of the abortion (red arrow) as at the birth of the healthy pup (green). The difference was the actual weight at the time of abortion, as demonstrated in figure 12.3 above. Note the diarrhoea (brown circles) and vomiting (yellow circles) primarily occurred post the abortion.

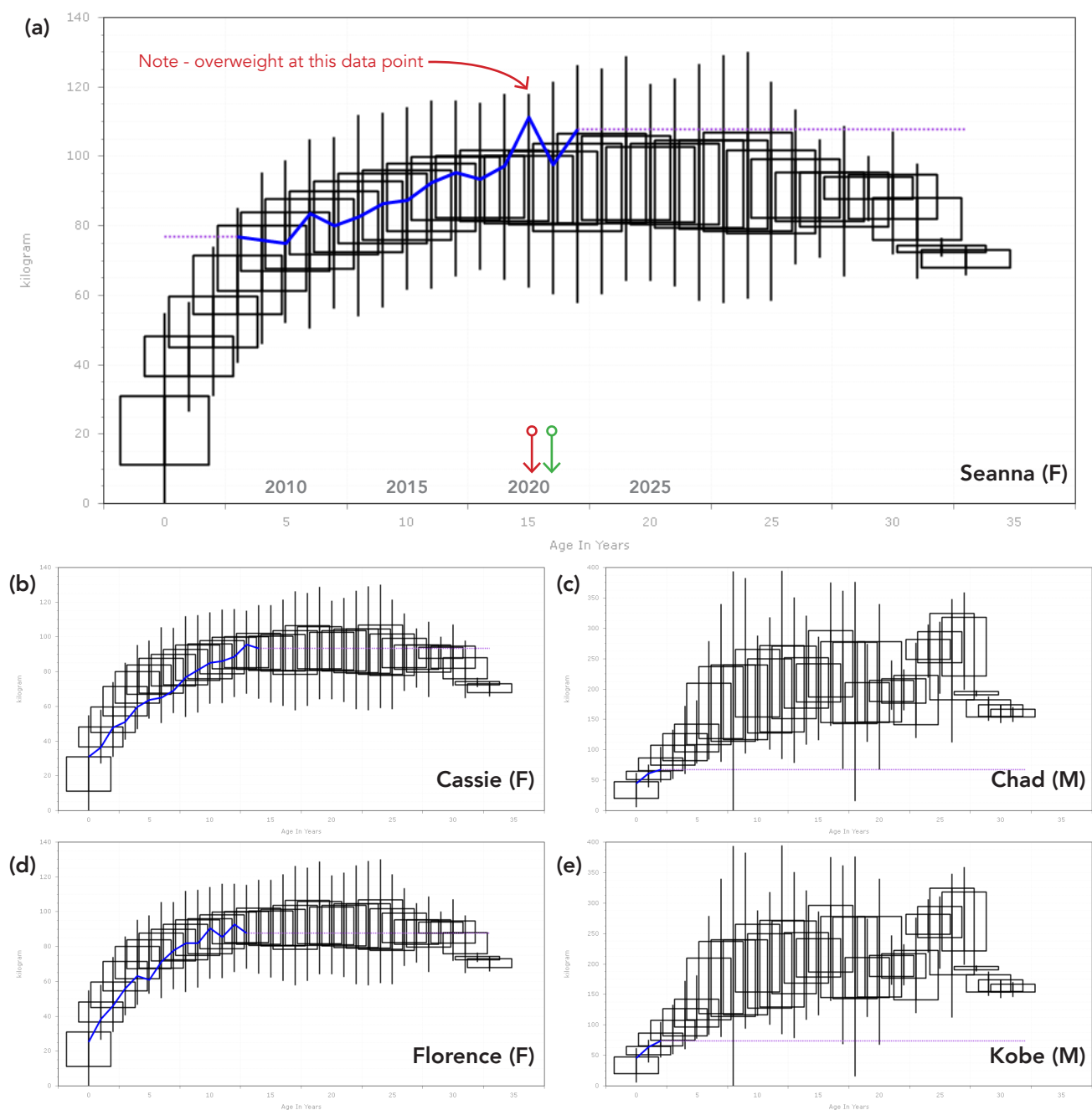


Figure 12.6: Weight charts mapped for each of the current California sea lion's weights (blue line) against the range of the global population of the same age and sex. Top to bottom: (a) Seanna, date of birth 6th June 2005; (b) Cassie, date of birth 8th June 2008; (c) Chad, date of birth 7th June 2020; (d) Florence, date of birth 13th June 2009; and (e) Kobe, date of birth 14th June 2020. Blue line measured weights, dotted predicted weight (extension of last weight). Note all weights are within the range of the global ZIMS database for the California sea lion. Source: Dublin Zoo. Species360 Zoological Information Management Systems, Version 2.25.5, Updated: 30 Aug. 2022. Accessed: 8th Sept. 2022. <https://zims.species360.org> with permission.

13.0 Dublin Zoo refuses to euthanase animals to record deaths as natural

Date of incident: General statement

Species & identification: Not applicable

Allegation:

Journalist 01 reporting on whistleblower comments: "We have been told that the zoo refuse to euthanise some animals in order to register their deaths as natural"

Origin of the allegation: Journalist 01, 11th August 2021

Summary review of the documents reviewed as part of the investigation:

The original statement and context of the allegation were not supplied. However, the investigation team found many of the other alleged welfare cases were euthanased in the documents submitted. Dublin Zoo has a Euthanasia Decision Guide which was utilised to good effect in the case of Niamh the Amur tiger and other cases outlined in this investigation.

The investigation team note that there is no benefit from a legal compliance perspective on whether animals die a natural death or are euthanased as this is not recorded on the stock lists or any other publicly available records as part of zoo licensing.

Using second hand sources Dublin Zoo appears to be very open about euthanasia. Examples include; 'The Zoo' television series show animals being euthanased and the related decision making process e.g. Kildare the Grant's zebra; national newspaper articles openly discuss euthanasia of animals at Dublin Zoo e.g. 'Dublin Zoo forced to put down 28 animals in three years', Luke Byrne, 2014, Independent.ie; and the zoo hosts discussions regarding zoo ethics including euthanasia on their own website e.g. Conservation: Zoo Ethics, Leo Oosterweghel, 24th February 2014.

Findings of the investigation with regards to the specific case

- The investigation team cannot see a perceived benefit from Dublin Zoo refusing to euthanase animals to register their deaths as natural.
- Dublin Zoo have a number of tools available to support the decision to euthanase an animal.
- There are a number of publicly available articles or documentaries demonstrating Dublin Zoo euthanasing animals.
- Dublin Zoo has an Opinion Piece from the former director stating that "animal welfare should always outweigh commercial and scientific interest, as it does at Dublin Zoo. A zoo should lead by example and show kindness and empathy to wildlife".
- The investigation team have not been supplied with any documents that support the allegation.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

- *"Euthanasia was never banned nor a tool not used, it is considered a tool to allow good welfare. Leo (Oosterweghel) was against culling of healthy animals, which is different".*
- *"No pressures to keep any animal alive, good processes in place to allow discussions with keepers, vets, and curators, sometimes with the information from the focal welfare assessments".*
- *"Animal welfare a priority and the current and previous Director would never allow an animal to suffer".*
- *"Never been stopped to euthanase an animal where it is required. A very clear process: (i) view or see an issue and monitor it unless action needed immediately, (ii) Clinpath meetings and other methods to discuss the case if elective, (iii) focal welfare assessments to target and ensure constant documented review, (iv) euthanasia decision document involving all staff to ensure everyone's opinion is considered, then once it is agreed the correct outcome or action then the animal is euthanased. Obviously in emergency situations where an animal needs euthanasia it is carried out immediately e.g. Maeve the giraffe".*

Interpretation by the investigation team

There is no evidence supplied or available in a search of media resources that support the allegation, if anything the philosophy of Dublin Zoo is pro-welfare and publicly demonstrates the use of euthanasia as a tool but a tool of last resort to protect the welfare of the animals within the collection.

Zoo Inspection process reflective of addressing the welfare concerns

The case was discussed in detail at the October 2021 zoo inspection and the zoo inspectors were satisfied with the case management and that there were no immediate welfare concerns that were not being managed in a considered manner by Dublin Zoo. Specifically the inspectors stated in the report: *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints".*

Outcome of the investigation with regard to the specific case

No evidence found by the inspection team to support the allegation.

References

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14.0 'Niko', California sea lion, overheated and died

Date of incident:	Died 30 th May 2020
Species & identification:	California sea lion (<i>Zalophus californianus</i>), male 7 years and 11 months Local ID A15M42
Allegation:	

Journalist 01 reporting on whistleblower comments: "A sealion Nico overheated after being separated from the females while in heat and died as a result".

Protected disclosure:... "He was left with no access to water on one of the hottest days of the year at 26 degrees" (other contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable).

Origin of the allegation:	Journalist 01, 11 th August 2021 Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2020 29 th May	Met Éireann historical weather report Phoenix Park station
2020 30 th May	ZIMS husbandry record Niko
2020 30 th May	Met Éireann historical weather report Phoenix Park station
2020 2 nd June	Post-mortem report Niko
2020 7 th July	Clinpath and Welfare Review Meeting (review Niko PME)
2022 17 th July to 8 th Aug	Met Éireann historical weather report Phoenix Park station
2022 3 rd August	California sea lion global weight comparison, ZIMS

Summary review of the documents reviewed as part of the investigation:

Niko's ZIMS general history indicates he was reported to be looking thin in 2019 during May but notes indicate active monitoring and increases and decreases in food dependent on his requirement. His actual weight during this period only dropped by 1% and then over the next 12 months he increased his body weight by 160% moving from 127.5kg at the end of April 2019 to 212kg by May 2020 at the time of his death. Even at his lowest weight he was still in the normal range for the species reported for the global population on ZIMS.

No medical or other concerns were raised in the preceding 12 months prior to his death. He ate the day before and no concerns were noted on the day he died (Saturday 30th May 2020). He was moved from the isolation pool to his pen at 1000hrs. No food was taken during the day (note – this was not unusual for Niko and the other sea lions), and he was observed to be quite vocal and active in his pen until 1300hrs. He was found dead at 1500hrs. Once found the notes state he was taken to cold storage to await PME.

The post mortem took place on the 2nd June 2020, he was stored in the chiller on site at Dublin Zoo and taken to UCD on the 1st June 2020. The post-mortem states: *"The carcase preservation was fair. The body condition was good, the abdominal blubber was 3 cm thick, body weight 212 kg. There were low amounts of serosanguines fluid in the abdominal, peritoneal and pericardial cavity. Kidneys, lungs and liver were markedly congested. There was pink froth in trachea and bronchi. The heart and caudal vena cava contained pale fatty blood clots (chicken clot, separation prior to death). The stomach contained few semi-chewed leaves and little grey mucous. There were widespread numerous linear shallow ulcerations in the gastric mucosa. The intestine was empty apart from little bile stained mucous. The spleen was contracted. The urinary bladder was empty and there were multifocal widespread mucosal ecchymosis present. The brain did not fluoresce under UV light. Preliminary comments; The gross post mortem examination did not reveal a cause of sudden death in this animal. The main finding was the moderate to marked ulcerative gastritis. The gastrointestinal tract was empty suggesting that the sealion had not eaten recently. There were further mucosal erosions in the urinary bladder"*.

The follow up histology (microscopic post-mortem) revealed little that gave an indication of the cause of death: *"Kidney; marked congestion, no significant findings Urinary bladder; The transitional epithelium is sloughed. Multifocal few small aggregates of lymphocytes and plasma cells are present in the superficial layer of the submucosa. Liver; Diffusely hepatocytes contain microvesiculated cytoplasm and the nucleus is often eccentric. Stomach; There is marked autolysis of the mucosa and submucosa with multifocal infiltration of long rod-shaped bacteria likely post mortem invaders. Lung; Marked congestion with extravasation of erythrocytes into the alveolar spaces is seen. Moderate oedema is evident. The bronchiolar epithelial lining cells have sloughed. Heart, adrenal gland, thyroid, spleen, brain; no significant changes. Final comment; Histopathology examination revealed marked congestion of the lungs and oedema that likely occurred agonally. There was further diffuse microvesicular change in hepatocytes which may represent fat accumulation. The cause of this is unclear, but it may be caused by prolonged inappetence and weight loss and would not be linked to sudden death. Changes in the urinary bladder were very mild and non-specific. Heat stroke has been reported to cause haemorrhage in the cardiac muscle, infarcts and widespread Diffuse Intravascular Coagulation (DIC) with intravascular thrombosis and haemorrhage. None of these changes were observed in the sealion. Unfortunately, the cause of death remains unclear"*.

The pathologist was unable to identify a cause of death in this animal, but did note that the gastrointestinal tract was empty suggesting that "he had not eaten recently". Histopathology added little to the diagnosis, a specific note was made with regard to the findings not being consistent with heat stroke pathological signs noted in other species. The kidneys were markedly congested as was the lung, which in addition had extravasation of erythrocytes into the alveolar spaces with moderate oedema. The liver was considered incidental and probably normal for the animal. The heart, brain, spleen, thyroid and adrenal gland had no significant changes.

Despite there being no firm diagnosis found at post-mortem, Dublin Zoo, as one of the many possible differential diagnoses, considered hyperthermia may have played a part and

as such, applied 'precautionary principles' and the sea lion handling protocols were reviewed and mobile sprinkler systems introduced to the sea lion holding area (note hose pipe with sprinkler head was available at the time of the death).

Reviewing the weather on the day of Niko's death (source: Met Éireann, hourly data) the temperature during the reported period that Niko was shut in his pen was between 20.7 to 21.6°C. The inspection team noted that the temperatures on the day Niko died were consistent with the temperatures that wild California sea lions experience. However, the relevance of this is unknown as the sea lions at Dublin Zoo were adapted to the local climate and so comparison to the wild situation may not be appropriate due to the average temperatures being colder on average in Ireland. It was also noted that there was not a thermometer locally in the Sea Lion Cove area and that, as per the protected disclosure, the temperature or record of the alleged temperature of 26°C in the facility cannot be evidenced in the records or other documentation on section.

The Standard Operating Procedures at the time were reported to be the 'Dublin Zoo Reptile House Section: Work Manual and Procedure of Requirements, September 2013, Section 3, Sealion habitat management procedure' pp 7, 14 and 15. These were very limited in detail and expectation of staff. No mention is made of the penning operation of the section in the protocols provided. Subsequent edits were made and an overhaul of all safety and operational procedures was undertaken with the arrival of the new General Curator. The new 'Sea Lion Cove Working Instructions, July 2021' specifically include commentary with regard to penning which states *"If the sea lion is penned for more than 10 minutes or if the weather is warm (above 20 °C) the sea lion should be frequently hosed down with cool water."*

The Standard Operating Procedures utilised at the time of death required staff to undertake morning checks of the sea lions from 0830 to 1030 which included checks on the animals and preparing the sea lion foods. Then there was a morning training session at approximately 1145 and sea lions were not to be penned unless a second person was present. Training continued up until 1300hrs. Then there was a 1415 sea lion presentation followed by water testing and water quality management.

It is noted in the EAZA and EAAM (2018) Best Practices Guidelines for Otariidea and Phocidae states that *"The temperature range provided in the captive environment should take into account that of the animal's natural habitat of origin. In general, extremes of both heat and cold should be prevented, although, generally most species are more able to tolerate cold than heat. Ambient temperatures of about 26°C are the thermal maximum of most well blubbered pinnipeds. Hyperthermia can be avoided by providing access to shade and some means of wetting the animals, whether by pool, hose, or spray mist when ambient temperatures rise above 26°C"*.

Findings of the investigation with regards to the specific case

- Medical history was unremarkable for the period reviewed, mild fluctuations in feeding regime are not uncommon and the weight gain over the review period was considered normal and the weight at the time of death was well within the normal range for the species. As noted in the post-mortem report, there were no clinical signs of illness noted prior to his death and he was in good body condition.
- The notes on the day Niko died were concise and informative, however it is not clear on the management procedures employed during this time. It was felt the notes were reflective of the situation but they did not marry with the standard operating procedures after 1300hrs which was the last time he was noted to be alive in the records – staff should have returned for the 1415 sea lion show but Niko was not found until closer to 1500hrs.
- It is noted that the maximum environmental temperature threshold of 26°C was not met based on locally available data (see below for more detail in the discussion on this important point) and that the temperatures reported at that time of day were well below the maximum tolerance reported for the species and found in the wild state. However, other environmental (e.g. radiant heat from concrete floors), behavioural (e.g. agitated and active in the pen), or facility design (e.g. ventilation and access to water) are not known and could potentially contribute to a diagnosis of hyperthermia. There is insufficient detail in the submitted notes nor staff available from the time of the incident to clarify these points.
- It is noted that the temperature at which California sea lions are no longer able to physically modulate their own temperature (20.5°C, Odell 1974) was exceeded in Phoenix Park. At this temperature they must return to cooler water or urinate on themselves to effect cooling.
- The post-mortem was unremarkable other than superficial gastritis being present. The typical signs of heat stroke expected in other species were not present at gross nor histopathological examination.
- There was a delay between death of the animal and the post-mortem being carried out with Niko's death occurring on the Saturday and the post-mortem carried out on the Tuesday, this was normal practice where deaths fell on the weekend due to the arrangements with UCD Pathology.
- Despite not having a firm diagnosis the husbandry programme was reviewed and sprayers installed in the holding pen areas in response to the 'precautionary principle' and potential likelihood of hyperthermia as one differential diagnosis possibility.

Interview responses to the alleged welfare case

No. of staff interviewed:

13

- *"Niko was not a big male, not a typical animal that would have been considered to overheat".*
- *"Two primary members of staff at the time, one has left the section and one has left employee with the zoo (unrelated to this incident). Both had experience but were not considered specialist sea lion trainers. Resolved since by bringing in a trained sea lion trainer, currently on section".*
- General Curator and Team Leader at the time were both off, phoned and former came in and the later assisted remotely.

- *"At the time, due to lockdown and Brexit transport challenges we (Dublin Zoo) had three populations: (i) the females and new pups; (ii) the yearling pups; and (iii) Niko. Due to the large number of sea lions the zoo could not afford to have a fourth subpopulation, the house only having space for two populations running concurrently – as such the plan from management was to separate Niko to prevent the females getting pregnant again and they were in oestrus at this time, Niko was very keen. Females and pups were in the main pool, the yearlings in the quarantine sea lion pen and Niko in the sea lion pen".*
- *"It was not usual practice to pen the sea lions for 5 hours, typical 15-20 minutes. If separation for breeding reason then he did not need to be in the pen, could have had access to the corridor area. Equally a hose pipe and spray head/sprinkler was less than 2 metres away from the pen. At time of the incident it was not clear when he was locked in, when he was last checked or time of death. No one asked the question as the primary keeper on the day felt exceptionally guilty and everyone helped sort the situation out but no debrief ever occurred as far as I am aware'.*
- *"Section team leader was not in on the day of the incident, Acting Team Leader from another section provided support to manage the incident once he was found".*
- *Staff member stated "...it was 26°C and the hottest day of the year" (investigation team advised it was not and no evidence of this available – not recorded in diaries or other notes. At peak the only source records it was potentially 21.6°C during the time Niko was locked in). Staff member capitulated and confirmed was not present.*
- *"Management had discussed separation the week before but keeper team wanted to leave until the following week (early June) to do it. Management informed the keeper to separate on the day" (investigation team note that neither managers that this was reported to have come from were in on that day and there is no record of this information having been passed on nor captured in the diary nor animal records). Separate conversation with a second testimony states that "...the decision to pen was with the primary keeper on the day, not from the Team Leader. The discussions at that time were theoretical and nothing had been actioned. Led to considerable issues between the sea lion team at the time and the primary keeper on the day later requested to move off section as they could no longer work together, a real mess".*
- *"It was considered a keeper error by several staff which then turned into a 'blame game' between two individuals which then evolved to being the fault of management. Perception became reality. On the day of Niko's death, the primary keeper was very quiet and in shock, they just said "Shit, Niko died"".*
- *"There were a lot of issues with management of the sea lions at this time and some individuals put their own importance before that of their teammates, in some instances their perception was not reality. Best person is now in charge of that section and she has the knowledge and experience and turned it around, no complaints and no issues, best it has ever been now" (note – reference to time of the investigation).*
- *"There was no medical history of concern noted. The post-mortem was specifically requested to consider heat stroke as a diagnosis, this was the working theory at the time. The post-mortem did not support this diagnosis, when compared to other species. Worked on the principle that cannot prove or disprove but work to the 'precautionary principle' – not looking to blame but be respectful and ensure that all efforts made to*

prevent a similar event happening again in the future. Protocols were changed and subsequently changed again. Not prepared to speculate as to the cause of the death".

- Three staff interviewed of the 12 were present on the day of the incident and helped to carry Niko's body out. Two felt the body was warm to the touch but noted that the body was laid in full sun in a hot area, the third did not note it was hot or not. A fourth person advised that the keeper had informed them that Niko's body was toasty warm, however the investigation team asked the question poorly and potentially led the witness into the statement. Those that said was warm advised not excessively so, hence the investigation team doubt the credibility of the fourth statement, although the overall consensus was he was warm to the touch. It was also noted that he had rigor mortis and was challenging to get out of the pen.
- No rectal temperatures were taken of the body at the time it was found nor subsequently.
- Speculation from the majority of staff was that Niko had died of hyperthermia.
- *"Combination of errors that occurred: keeper error on the day, forgot to put the hose/sprinkler on at the time, exceptionally hot in the zoo on the day, hottest part of the zoo and unfortunately Niko passed away".*
- *"Not looking for blame, if decision by management was made to separate then that is one issue but the issue for Niko in the pen was space and presence of females close by, with sprinkler he should have been able to manage to stay cool or if he had been given access out of the pen earlier then he could have used one of the pools and would have been alright, both of these are down to the individual keeper management on the day and not a management operational issue. Confident that now operational systems in place to prevent this and lessons have been learned following this error".*
- The duration of time Niko was actually in the pen was variable between those present on the day but staff consensus was that ZIMS records were written by primary keeper on the day and therefore the most reliable.
- Niko's behaviour on the day could not be documented by the investigation team as the only persons present were not part of the staff nor able to be interviewed.

Interpretation by the investigation team

Niko appeared to be fit and healthy immediately prior to his death. The weather on the day was not particularly hot for the species but the ambient temperature did exceed the temperatures at which a sea lion cannot manage their own temperature using physical means (see later discussion). Niko was penned for the first time for a period that was approximately 5 hours, whereas this would have typically been 15-20 minutes maximum. A sprinkler/hose system was available adjacent to the pen that Niko died in but this was not used and he had no water available to him during this period. Niko was active and very vocal on penning, with no concerns noted with regard to behaviour or demeanour, if anything the females being close by were reported to be in oestrus and he was keen to get to them, leading him to be active initially in the pen. He is reported to have been alive at 1300 hours but was quiet. He was found at 1500hrs dead, in rigor mortis and consensus was that he was noticeably warm to the touch but not excessively so, but he had been sat in the full sun at the time his body was moved.

The post-mortem had fairly non-descript signs that were not definitive for heat stroke when compared to other studied species but had some similarities and some differences, there was no specific diagnosis offered, the cause of death was unknown. The investigation team notes that Palmiere and Mangin (2013) state that (in humans) *"The postmortem diagnosis of heat-related deaths presents certain difficulties. Firstly, preterminal or terminal body temperatures are often not available. Additionally, macroscopic and microscopic findings are nonspecific or inconclusive and depend on survival duration after exposure. The diagnosis of hyperthermia is therefore essentially based on scene investigation, the circumstances of death, and the reasonable exclusion of other causes of death"*.

The diagnosis of heat stroke or hyperthermia is commonly assumed to be the cause of death in the case of Niko but this is speculative based on the evidence but equally a highly plausible differential diagnosis. As such Dublin Zoo reviewed the issues and took steps with policy change and adaptations to the facility to ensure that the risk of hyperthermia was mitigated as a 'precautionary measure'. No other 'precautionary measures' or differential diagnoses were mentioned in the documentation nor discussions.

Zoo Inspection process reflective of addressing the welfare concerns

In the 2020 covid pre-inspection audit documents the annual stock record had included the death of a California sea lion. Reviewing the stock record is a standard part of the zoo inspection and any patterns, large numbers of mortalities or even just random selection of mortalities are always questioned and reviewed with the operator. At the verbal 2020 covid zoo inspection Niko was flagged and queried but the case was considered to have been managed satisfactory and was due to keeper error with steps taken to prevent this happening again.

In August 2021 this specific case was flagged as part of a number of requests by Journalist 01 which were undertaken following an investigation into a whistleblower's accusations. In discussion between the manager of the zoo inspection team and the zoo inspectors at the 2021 formal inspection during a pre-inspection briefing this case had been communicated as having been discussed with the vets at the previous zoo inspection which was presumed by the 2021 zoo inspectors to mean that it had been dealt with rather than this simply being a miscommunication in that it had been discussed at the 2020 inspection (covid-verbal inspection) but not assessed on site as part of a formal visit which was now expected. This has only come to light in response to the review for this investigation report. This case raised the issue that the response in the 2021 zoo inspection report's preamble, specifically; *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*. The investigation team have reviewed this concern with the zoo inspectors at the 2021 inspection and it was only

the death of Niko allegation that was not dealt with in person as they had understood that it had been resolved at the previous inspection. As such the statement is true but not all of the cases flagged by Journalist 01 were reviewed, as this single case had been missed as part of the on-site 2021 inspection. As such this investigation team recommended an on-site evaluation of both the facility, the operating procedures and the events of the day with the staff still present and employed by Dublin Zoo. This on site inspection was carried out on the 17th August 2022.

In addition, the inspection team recommend that the process for dealing with complaints, grievances and allegations of this nature will be reviewed to ensure any such miscommunication cannot occur again. The inspection team do not believe that this error in communication has compromised the other responses to the allegations responded to in this report as the content and comments from the zoo inspectors recall the evidence as supplied in the documented material.

Outcome of the investigation with regard to the specific case

The allegation from the whistleblower via Journalist 01 states that ***"A sealion Niko overheated after being separated from the females while in heat and died as a result"***. The evidence that Niko died from overheating is not substantiated as the only possible cause of death from the evidence presented in the records nor from site evaluation. What is known and agreed is that Niko was left on his own in a sea lion pen from 1000hrs and was checked over a period until 1300hrs where he was noted as being quiet and then staff left the area and he was subsequently found dead at 1500hrs when they returned to the area. It is not known what happened during the last two hours of his life as no members of staff were present nor checked on him. The maximum air temperature was reported at the Phoenix Park weather monitoring station as 21.6°C (1100hrs) which is below the recommended maximal thermal threshold for the species (26°C) before physical thermal interventions are expected to be instigated (EAZA, 2018), and there was a breeze during the day with wind speeds of 9-11mph. This was not considered hot nor extreme weather for a California sea lion but was above the temperature where a California sea lion is unable to regulate their own body temperature by physical means and they require access to water to cool down (Odell, 1974).

On initial finding of the body the carcass was not evaluated by a veterinarian nor was a rectal temperature taken of the body to get a base line post mortem temperature despite hyperthermia being later considered a differential diagnosis (these are not unreasonable actions, simply lost opportunities). Niko's body was placed in a chiller, which was standard procedure. The post-mortem did not elucidate a specific cause of death. The post-mortem report states hyperthermia was considered a potential causal factor to be assessed, however there was no gross nor histological evidence to robustly support such a diagnosis when compared to other domestic carnivore species. As such the cause of death was unknown and any differential diagnoses were based on speculation using the information available. Dublin Zoo, with no diagnosis from the post-mortem, critically appraised the husbandry, welfare and facilities taking into account the potential differential diagnoses and

possible causal factors and, where required, have made changes, as far as reasonably practicable, to improve and to mitigate such an event does not occur again.

CONSIDERATION OF HYPERTHERMIA AS A POSSIBLE CAUSE OF DEATH

With regard to differential diagnoses as to the cause of sudden death the investigation team recognised that hyperthermia is a reasonable consideration in this case alongside others such as poisoning, electrocution, infectious disease, epilepsy and others. In considering hyperthermia generally, California sea lions are prone to hyperthermia, for instance during transportation (Geraci, 2008; Van Bonn, 2015; USDA 2019 and others) as well as in exhibits where weather exceeds the animal's thermal threshold and mitigation procedures are not implemented or fail to achieve the desired effect (EAZA, 2018; Surdin, 2006). In the Surdin, 2006 case the two sea lions died within one hour of being put into a shaded pool located in an ambient temperature reported as 31.7°C. This temperature was considered typical for that time of year for that facility in the USA, the sea lions being in water and standard protocols followed as per the daily routine. In this reported case it was considered a possibility that the sea lions were more active than normal and succumbed due to additional heat generation from the exertion combined with the high ambient temperatures, and the usual mitigation processes being insufficient. At post-mortem both sea lions had above normal liver temperatures and signs of thermal shock in other internal organs. Taking the Surdin case as a comparison it is plausible that Niko was more active than usual, he was certainly reported as being more vocal in the ZIMS record but he had quietened down by 1300hrs and no untoward or unusual behaviours noted. However, the investigation team do note that there is a considerable difference between an air temperature of 21.6°C in the case of Niko and 31.7 °C in the Surdin case, a temperature which is massively in excess of the maximum thermal threshold of most well blubbered pinnipeds (EAZA, 2018). Looking at the mechanics of thermal regulation in California sea lions and its impact on this case the investigation team has considered the thermal properties of blubber (Favilla, 2022); the maximal heat dissipation capacity and hyperthermia risk in the ecology of endotherms (Speakman, 2010); the biomechanics and energetics in aquatic mammals and how they may be applied in this case (Fish, 2000), and recent advances in thermal physiology of marine mammals and how this gives us a better understanding of thermal management in pinnipeds (Favilla, 2020). Unfortunately, the research has a tendency to focus on how pinnipeds manage their body temperature in water, a medium that conducts heat roughly 25 times faster than air, rather than management strategies when out of the water. The relevance of much of this data with regards to the case is questionable, with the evidence neither supporting nor contradicting the position for Niko with regard to hyperthermia being the causal factor or a co-factor in his death. However, the investigation team equally cannot ignore that Niko had a thick layer of blubber which is effective in keeping heat internalised when in water and in cases where exposed to excessive heat or solar radiation then the blubber can be equally effective in retaining excessive heat and preventing dissipation in the event of continuing exposure to increased heat or solar radiation (Odell, 1974, Whittow et al, 1972).

NORMAL THERMOREGULATION IN CALIFORNIA SEA LIONS

California sea lion behavioural research papers provide information that the investigation team considered may be relevant to answering the question of whether hyperthermia was a risk in this case. For instance, wild California sea lions, when exposed to direct sunlight, would lay still until dry and then increase their activity to seek shade or moisture, even digging shallow burrows in sand where they would lay on their backs, wave their flippers and urinate on themselves to keep the ventral abdomen and thorax moist which promoted evaporative heat loss (Whittow, 1972). The research paper did not report an increase in respiratory rates, but open-mouthed breathing was noted, this being interpreted with the sea lions being heat stressed, panting not being a relevant mechanism for heat dispersal in this species. The experimental aspect of this paper carried out assessments of temperature in a climatic controlled chamber, with the air temperature between 10-18°C showing that the sea lions maintained a normal range of rectal temperatures, but when the temperature was raised to 30-36°C the sea lions reached a thermal equilibrium with the environment and their body temperature continued to increase in direct correlation to the duration in the chamber (i.e. the longer the period in the chamber the higher the body temperature was), the experiment terminated when they reached a rectal body temperature of 40°C (see Figure 14.03(b)). This demonstrates that California sea lions can easily exceed the ambient temperatures when they are unable to remove heat from the system, in this case their body. It was noted that skin temperature, even at air temperatures of 10°C increased as activity increased, but not to levels that were considered a risk to the animal. This experimental data appears to be consistent with the case reported by Surdin above and suggests why in that case the animals died.

Panting was not reported in the California sea lions in the Whittow paper, which is unusual compared to other pinnipeds e.g. harbour seals or northern fur seals, instead it is hypothesised that greater tidal volumes (volume of breaths) are promoted, which increases evaporative heat loss. Whittow ends with *“sea lions are not very well equipped physiologically to deal with a hot environment”*. The Whittow paper is a useful point of reference that indicates it is not simply exposure to high temperatures or solar radiation but also the duration of that exposure. Extrapolating this to the Niko case if temperatures were excessive and beyond his ability to manage physically, further compounded by a lack of water and an inability to manage body temperature behaviourally, the excessive duration in the pen could potentially have led to accruing heat until a thermal level was reached that was considered incompatible with life.

Odell (1974) states that *“(The California sea lion) breeds in temperate and tropical areas on the west coast of North America where air temperatures are high and solar radiation intense. Sea lions move toward the sea and enter the splash zone when the sun comes out and the environmental temperature increases. By moving to a wetter and cooler substrate, or by wetting their bodies, the sea lions can lose heat by evaporation and conduction”*. In his paper the sea lions moved toward the sea once the black bulb temperature began to exceed 20-22°C. Behavioural changes with flipper movement were started to be noted at black bulb temperatures of 19-20°C, a behaviour used to dissipate heat loss when needed. The paper concluded that behaviour appears to be an important control for thermoregulation in the California sea lion. The investigation team are also quick to note

that this is a single research paper and whilst the thermal ranges are useful they may not be indicative of all populations, simply the one population being assessed. However, the investigation team were unable to find any other sources looking at this area and more recent papers continue to reference only this paper on this topic. Ridgway et al interpreted this data and others and suggested a black bulb temperature of 20.5°C as the thermal cut off for California sea lions (Ridgway and Harrison, 1981), note that black bulb temperatures can be significantly higher than ambient temperatures measured at the same time and location (Figure 14.03(a)).

The investigation team selected 20.5 °C ambient temperature as the cut off as this seemed reasonable based on the Odell (1974) data, but also below that stated for generic pinnipeds in the best practice guidelines published by EAZA (2018). The investigation team accept that this is likely still high and in the right situation even this temperature may lead to hyperthermia in the California sea lion (in Odell's paper the 20.5 °C black bulb temperature was recorded at ambient temperatures of 13-15 °C. These behavioural adaptations in response to thermoregulation are also described by Peterson and Bartholomew (1967), interestingly they speculate that the increased activity seen with California sea lions at night may be to mitigate over-heating that can occur during the day. They constantly refer to 'wetting behaviour' and finally state that *"The conflicting demands for heat retention in water and heat dissipation in air are particularly acute for Zalophus because their warm-temperate and tropical distribution imposes a severe heat load on them when they are on shore. They have a low thermal conductance because of their large size and thick layer of subcutaneous fat. Consequently, they face problems of overheating when they are active on land, especially when in direct sunlight. They meet this probably in part by keeping wetted, thus taking advantage of evaporative cooling, and partly by staying on a wet substrate to which they readily lose heat by conduction. It seems likely that the thermoregulatory necessity for staying wet has been an important selective factor favouring partly aquatic territories"*.

NIKO CRITICAL APPRAISAL OF A DIAGNOSIS OF HYPERTHERMIA IN THIS CASE

In the case of Niko, for the moment assuming he did have an elevated body temperature (not taken nor confirmed), the investigation team consider that not having access to water whilst he was penned would have limited his ability to draw on all of the behavioural tools available to him to thermoregulate his own body temperature i.e. he was unable to utilise the water to cool him down, relying only on flipper waving and urinating on himself to promote evaporative heat loss as wild sea lions are reported to do. If unable to dissipate sufficient heat then it is plausible his body, with the solar radiation, could have acted as a thermal sink and his core temperature slowly increase to terminal body temperatures. His being left for five hours potentially leading to this thermal increase occurring until he finally succumbed. The investigation team recognise this as a plausible explanation as a differential diagnosis to the cause of his death. This was potentially exacerbated if he was hyperactive trying to get back to females in oestrus in the adjacent pool, the increased exertion and stress potentially adding to the thermal burden. However, the inspection team also recognise that human nature likes to have an answer and will often fail to consider all

the evidence and limit themselves to selective proof that fits a chosen scenario to ensure there is resolution, rather than accept we simply do not have a robust answer as to why Niko died. This is true even with an independent retrospective review pulling together all of the circumstantial evidence available in Niko's case.

The investigation team notes that there is a wealth of contradictory evidence against a robust diagnosis of hyperthermia based on the evidence collected at the time of Niko's death and a lack of critical evidence that is considered important on retrospective review but was not considered nor collected from the case on the day, this includes: (i) the maximum ambient temperature was 21.6°C, which is well below the recommended thermal threshold for the taxa and is bordering on the well tolerated temperatures for the species (Whittow, 1972; EAZA, 2018); (ii) there was a mild breeze on the day Niko died and the area was partially shaded and well ventilated, although subsequent verbal reports his body was in direct sun at the time his body was removed; (iii) there was no rectal-temperature taken on or soon after discovery of the death of the animal, however general consensus was that he was warm to the touch when his body was handled to remove it; and (iv) there was no gross or histological findings suggestive of hyperthermia (nor any other pathology found pertaining to a cause of death). As such the diagnosis is classed as 'open', meaning that no robust evidence-based diagnosis has been possible in this case.

An 'open' diagnosis is not unusual in pathology and there are cases where animals are found dead and the cause of death is never identified, despite thorough investigations. When specifically considering pinnipeds, the investigation team identified similar examples which included: Shaughnessy and Goldsworthy (2016) whom reported lighting strike as a possible cause of sudden death in Australian sea lions but were unable to confirm this due to technical challenges of the getting the carcasses safely back to a forensic laboratory; or Lenting et al (2019) where a population of New Zealand sea lions was monitored for a period of 17 years and 136 dead bodies were found, with 24 discarded due to decomposition or technical challenges of access, and 23 (28%) classed as 'open' either due to only gross post-mortems carried out with no gross pathology noted or (in the case of 4) no causes of death were found despite thorough assessments of tissues at both a gross and a histological level.

Whilst the scenario outlined above for hyperthermia is plausible, it is fully not supported by certain elements when considering the whole picture. Other differential diagnoses can be considered that could have resulted in the sudden death of Niko, these would equally fit certain elements of the clinical and behavioural picture reported but also have certain components that do not, despite being considered equally as plausible. These include, for example: electrocution (but no evidence of electrical safety issues); infectious disease (no husbandry nor gross or histological findings supportive e.g. toxoplasmosis, leptospirosis, etc); cerebral infarction (brain examined and no comment made, presumed consistent with normal findings); terminal epileptic event (reported in sea lions, no historical evidence of this but cannot rule out as unlikely to have supporting gross or histological findings as in this case); poisoning (no gross or histological signs and no exposure known, but no toxicology carried out, no precedent set with malicious or infectious cases seen in other species in zoological collections), life support and water management plant failure (other

sea lions fine and Niko not in water at the time, water quality records did not identify any issues) and many other possible and plausible potential causes (see reference lists for this section which demonstrate causes of mortality in pinnipeds which were reviewed as part of this investigation).

The investigation team refer to Palmiere and Mangin (2013), in that *“the challenges of the post-mortem diagnosis of heat-related deaths presents certain difficulties and that diagnosis of hyperthermia is therefore essentially based on scene investigation, the circumstances of death, and the reasonable exclusions of other causes of death”*. Using these criteria, the investigation team, drawing on statements, documentation and site assessment, concluded that hyperthermia was a viable potential differential diagnosis for the cause of death of Niko and certain situational circumstances support this potential diagnosis, whilst others did not, namely;

Circumstantial evidence regarding a potential diagnosis of hyperthermia as a cause of death for the California sea lion 'Niko'	
Supporting evidence	Conflicting or lack of evidence
<ul style="list-style-type: none"> By being in the pen Niko was limited in his ability to draw on all of his behavioural repertoire to modulate his own body temperature, namely he was excluded from emersion in water at the time of his death Niko was out of the water for five hours in his pen, normal policy was 15-20 minutes Niko had a reasonable thick layer of blubber (3cm) Consensus was that Niko's body was warm to the touch when handled post-mortem Niko had no clinical signs of illness prior to the event and had eaten the previous evening There was no gross or histological post-mortem evidence supportive of any other cause of death (noted not all reviewed) Congestion of tissues and haemorrhage into alveoli are consistent with hyperthermia in other species (note that dog pathophysiology is different to that of sea lions – e.g. panting not a model in sea lions) Rigor mortis was already present and must have occurred within 2 hours or 	<ul style="list-style-type: none"> There was no rectal nor core body temperature taken at or close to the time of death nor actual proof that Niko was hyperthermic, it is only considered a possibility The ambient temperature on the day of Niko's death was not considered high for the species, if they had access to water and normal behavioural modification factors There was a breeze of 9-11mph with him in a partially shaded well ventilated pen When he was last checked he was quiet and calm, not overexerting himself There was no toxicological nor further testing undertaken The Phoenix Park ambient temperature on the day he died was below the reported thermal maximum (26°C) for blubbered animals (EAZA, 2018) Transportation carriage temperatures for marine mammals are required as being between 7.2 to 23.9°C (USDA, 2019) and marine mammals must not be subjected to surrounding air temperatures that exceed 23.9°C (temperatures taken in the immediate vicinity).

<p>less, (often quicker in hyperthermia cases)</p> <ul style="list-style-type: none"> • Medical and husbandry records were limited in content at the time of Niko's death but showed no historical issues • The maximum ambient temperature (21.6°C) was above that reported when California sea lions start to modulate their behaviour to promote cooling activities (typically 19-20 °C) • Solar radiation measures more appropriate for monitoring behavioural responses to manage thermoregulation i.e. ambient not as important as black bulb temperatures which were not measured here • Transportation temperatures are advised to be 10 to 20°C (Geraci, 2005) which had been exceeded in this case • Transportation guidelines recommend not to leave unattended for more than 2-4 hours at a time, especially when considering hyperthermia (Geraci, 2005; EAZA 2018) • Stereotypic behaviour, such as pacing, will compound risk of hyperthermia (Geraci, 2005), Niko being more active initially • Experimental assessment of temperatures local to the sea lion pens carried out in August 2022 as part of this investigation are suggestive that ambient temperature had the potential to be as high as 26.1°C (see below). Which exceeds the temperature where intervention is required as stated by EAZA (2018). 	
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EXPERIMENTAL ASSESSMENT OF LOCAL TEMPERATURES AT SEA LION COVE

In an attempt to clarify the situation with regards to the hyperthermia debate the investigation team installed two data loggers in the sea lion pens: one in the pen Niko was thought to have died in and one in a rarely used sea lion pen. The first was installed at a height of 1.5m so it was out of the way if the pen were utilised and it was thought to be reflective of head height temperatures, the second was placed under the sea lion pen matting to capture an estimate of the conductive temperature affects in the sea lion pens, see Figure 14. 4 and 14.5. Data was collected for just under a month and a 10 day period

was chosen for detailed analysis comparing the recorded maximum temperature from the Phoenix Park weather monitoring station (PPWMS), the sea lion pen ambient temperature and the sea lion under mat temperature. The aim being to compare and contrast statements made about the sea lion facility and it being 'the hottest part of the zoo', or 'the temperature was 26 °C, it was the hottest day of the year', none of these statements had corroborative evidence. The data is presented in Figure 14.5. The inspection team accept that this is a 10 day snap shot of temperature variation between three points which have multiple compounding variables that may influence the variations and temperatures on the day and that the sample size is small. However, due to a lack of any robust evidence from May 2020 it was felt that this was a reasonable method to provide correlation between the Phoenix Park weather station and the sea lion facility, despite the station being 3km distant.

The data, as shown in Figure 14.5 shows good correlation between the changes in temperature and that there was consistency in part. The sea lion ambient temperature lagged behind the PPWMS parameters by 4-50 minutes fairly consistently – this was thought to be due to two factors:

- (i) the sea lion pens are in a depression and are shaded by trees and buildings first thing in the morning so temperature changes are based solely on ambient changes rather than a combination of ambient and solar radiation, as the sun rises above the cover the gap narrows between the PPWMS and the local sea lion pen temperatures, which soon exceed the PPWMS temperatures; and
- (ii) as the concrete pens warm up they provide an additional source of heat that maintains a residual heat locally and slows the rate of decline at a similar rate to that of gain during the day.

This appears reasonable to the investigation team but the team does note that none of them are engineers nor thermal scientists and it is likely there is a level of complexity that has not been captured in this simplified explanation.

The other area of note was the increase in ambient temperature at the sea lion pens in excess of that recorded at PPWMS – the maximal temperature variation was on average 2.81°C (range 0.51 – 4.53 °C) higher in the sea lion pens than those recorded at PPWMS. This was considered significant as the reported PPWMS temperatures were a maximal 21.6°C during the period Niko was secured in the pen, but now had the potential to be as high as 26.1°C, see Figure 14.6, in a worst-case scenario based on the small amount of data available. Whilst this is still speculative it does provide good evidence that continues to support the diagnosis of hyperthermia being the casual factor in Niko's death. It is noted that this maximal, worst-case scenario temperature only occurred for one hour and the remaining temperatures were likely to have been in the range of 25.2 to 25.6 °C which is still considered potentially excessive. If this scenario is reflective of the events of the day and hyperthermia was the cause of death then this would have hastened hyperthermia related mortality, with the quiet period when checked at 1300hrs may have represented the beginning of him being compromised.

The method use by the inspection team to compare weather parameters in August 2022 to May 2020 should rightly so garner some criticism and the extrapolated assumptions of viable comparison can easily be challenged. However, this was a question of necessity and the only route to enable some comparison due to the lack of data obtained at the time which was further compounded by the poor record keeping. A fuller comparison of black bulb and ambient temperatures would be beneficial in this area to quantify whether these initial findings are reflective of the real situation and procedures put in place to address them (or confirm those in place already are sufficient). However, the investigation team did obtain some satisfaction in comparing heating degree days (HDD) of an HDD of 20.5°C: the week Niko died and the first seven days of the August 2022 assessment period were 41.3 and 33.2 HDD respectively which, whilst not directly comparable, was not that different either, despite the changes that have occurred in the intervening two years. The interpretation being that environmental parameters between May 2020 and August 2022 were somewhat comparable.

In summary no temperature was taken from Niko's body, either actual or approximate measurement, and so hyperthermia cannot be stated as knowing to have occurred, only considered as a likely potential option; the ambient temperature at PPWMS at the time was not indicative for hyperthermia being a risk for the species, albeit behavioural natural history in at least one case does suggest that California sea lions will start to alter behaviour to cool down over 19 to 20°C and that solar radiation is a much better marker for monitoring behavioural changes (i.e. being in direct sun light); and the circumstances of the death cannot solely be attributed to a diagnosis of hyperthermia as all other reasonable causes of death cannot be fully excluded. As such, whilst hyperthermia is considered a relevant and highly likely differential diagnosis it cannot be considered at the exclusions of other differential diagnoses.

CONSIDERATION OF THE ACTIONS TAKEN BY DUBLIN ZOO

When assessing a welfare allegation of this nature the diagnosis or cause of death itself is only a part of the picture. Considering the action of the owner of the animal is also a key component of the assessment of any welfare allegation and includes: whether the owner provided an environment that meets for the animal's needs in the first place; whether an animal was knowingly or ignorantly put in a potentially life threatening situation by the owner or their authorised representatives; and what was the owner's initial response on finding the animal and their subsequent responses to ensure such an event cannot happen again, whether the cause is known or not. In this case the following points were considered by the investigation team:

Were the environmental needs for the animal provided at the time of the incident? The investigation team are satisfied that the Sea lion Cove has been in use since 2015 with some challenges on water clarity that occurred soon after opening (rather than poor water quality management) which was soon resolved and that there had been no reported issues with regard to facility management and design in the preceding five years prior to Niko's death with regard to the facility design and sea lion welfare. However, the infrastructure did have some initially reported installation concerns regarding water clarity that were worked

around and water quality was well managed despite these limitations, and the facility had the potential to meet the needs as currently described for California sea lions.

Was Niko knowingly or ignorantly put in a potentially life-threatening situation? The investigation team are of the opinion that Niko was put in the pen without the knowledge that there was a risk to him, but not to supply water was considered a grave error by the keeper and in this single action they failed to provide for the needs of the animal, especially knowing that Niko was to be left on his own for an extended period. This is put down to human error and not a malicious act on the part of the keeper. The combination of the length of period of penning and the lack of a sprinkler/hose spray system are considered to have failed to meet Niko's needs, and could reasonably be considered plausible causal factors that led to his death, when taking into account all of the other elements of this case. The investigation team are of the opinion, whether the keepers or management were aware of his situation, that if Niko had access to a sprinkler system he would have had options to manage his temperature during this period whether it was the cause of his death or not, and that taking into consideration experimental designs on temperature accruals in California sea lions the removal of this ability to thermoregulate effectively left him compromised and that compromise increased as time progressed. The known facts of the case – Niko was locked in a pen for an unusually extended period, without access to water, on what was considered a warm weekend. The investigation team are agreed on these point and that this was a failure to provide for Niko's needs. In conclusion the sea lion pens did have access to water sprayers or other sources on the day that would have facilitated the sea lions to have choice and manage their own thermoregulation through their own behavioural choice whilst they were penned but these were not deployed. This was further exacerbated by a lack of action taken when Niko was noted to be quiet when the keeper left him at 1300hrs and that no further checks were taken before he was found dead some two hours later.

However, in contrast to this the facility did provide for the needs of the sea lions, albeit they were not used appropriately, and the use of the facility was considered consistent with the requirements as set out in the EAZA (2018) Best Practices Guidelines for Otariidea and Phocidae. The Best Practice Guidelines state action must be taken when the ambient temperature is in excess of 26°C, which was not reached on the day, instead black bulb temperatures are likely to be of more use and black bulb temperatures of 26°C can be reached when ambient temperatures are much lower (Odell, 1974). The inspection team, interpreting transportation guidelines along a similar manner as for those penned for any duration, noted that the longest duration between being checked on the day Niko died was 2 hours, as per the recommendations in many transportation guidelines. The inspection team are of the opinion that the normal routine was followed other than that of the duration of Niko being penned, however this was not considered by the staff to have been a risk for Niko based on the experience of the keepers, his health status, his behaviour on departure from the section and the weather conditions at the time. As a result, the inspection team are of the opinion that the staff did not knowingly leave Niko in a situation that could potentially have resulted in his death, even if it is assumed that hyperthermia was the cause.

How did the Dublin Zoo management and keeper team respond to Niko's death? The team were reported to have been visibly upset by the incident and there was considerable self-blame by the keepers. The staff, working with management, reviewed the case with the veterinarians and responded to the lack of a firm diagnosis from the post-mortem report by undertaking precautionary changes to both the sea lion handling protocols to minimise retention time and provide a mobile sprinkler in the sea lion holding area. The rest of the sea lions were monitored and to date no other similar issues have occurred. This was openly discussed in detail at the formal 2020 zoo licence inspection with the inspection team.

SUMMARY

In summary, as stated in the original allegation *"A sealion Niko overheated after being separated from the females while in heat and died as a result"*, hyperthermia is a highly plausible differential diagnosis for Niko's cause of death but it has not been ruled out to the extent of all other causes. Temperatures are demonstrated to have been higher and for longer earlier in the same week with no reported detrimental impact on Niko, during this period he had access to the main pool. Whilst Niko was penned for considerably longer than normal the keepers do not appear to have been aware of the risk to him, especially if he was in direct sunlight. The animal care team, in the opinion of the investigation team, did fail in their duty of care to Niko in that he was not provided with a sprinkler or similar system and whether this was the cause of his death or not, the animal was not given the choice and opportunities to manage his own thermoregulation and this in itself was a failure to meet the animal's welfare needs. Dublin Zoo took action to attempt to ascertain the cause of his death and have taken steps, based on the available information, to ensure this unfortunate accident does not happen again. As such, the investigation team support the allegation and that Niko's welfare was compromised on the 30th May 2020, whether this was related to his death or not.

The investigation team also note that if hyperthermia was the cause of death, this was an accident, caused by human error, potentially brought about by an ongoing situation regarding the management of the animals at that time, or not, but was not malicious or expected. Dublin Zoo responded appropriately and changed protocols and procedures in response to ensure this failing could not happen again and this is reflected in the keeper training and working practices for the section.

Large elements of this case are speculative and based on second hand accounts, based on information that was not available simply because Niko's death was not witnessed by anyone and as such no one knows what actually happened. The investigation team also note that due to covid restrictions and added challenges due to Brexit the transfer of the sea lion pups out of the collection were delayed (this has now been rectified and the animals have since moved to Europe). The decision to segregate Niko was reasonable to prevent a fourth sub-population being produced during a period of uncertainty due to covid lockdowns which would have led to predictable welfare issues for the whole population of sea lions at Dublin Zoo. As such the decision to discuss the segregation of Niko was reasonable, even if the outcome was as described. Segregating Niko was not the cause of his death – the investigation team are of the opinion that failure to recognise his need for

water, possibly changes in his behaviour when checked at 1300hrs, in combination with a poor understanding of thermoregulation in sea lions and the impact of being locked in a pen in direct sunlight was the equivalent of locking a dog in a car with the windows up. These were considered more important collective causal factors in this case which compromised his welfare, and possibly led to his death. Continuing the 'dogs die in hot cars' analogy indicates that timely intervention can have positive outcomes, but this did not occur in this case. As stated in the testimonies this case reflects a combination of errors: keeper error on the day, failure to put the hose/sprinkler on at the time, exceptionally hot in the zoo on the day, in the hottest part of the zoo and unfortunately Niko passed away as a result, whether as a direct result or some other cause that has not been recognised or considered. Niko's welfare was compromised but this was due to exceptional circumstances and processes have been put in place to ensure it cannot happen again.

The zoo investigation team were disappointed that it had taken over two years to install the dedicated sprinkler system in the sea lion pens, but also recognise that this incident occurred during covid and there were other financial priorities pressing the wider organisation. The zoo investigation team were also disappointed that there was no reference thermometer located close to the sea lion pens despite the new protocols having systems in place to take mitigation action with the sprinklers when temperatures were in excess of 20°C, the Dublin Zoo team agreeing this would be a very good idea to install.

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Air temperature Phoenix Park weather monitoring station 29th to 30th May 2020

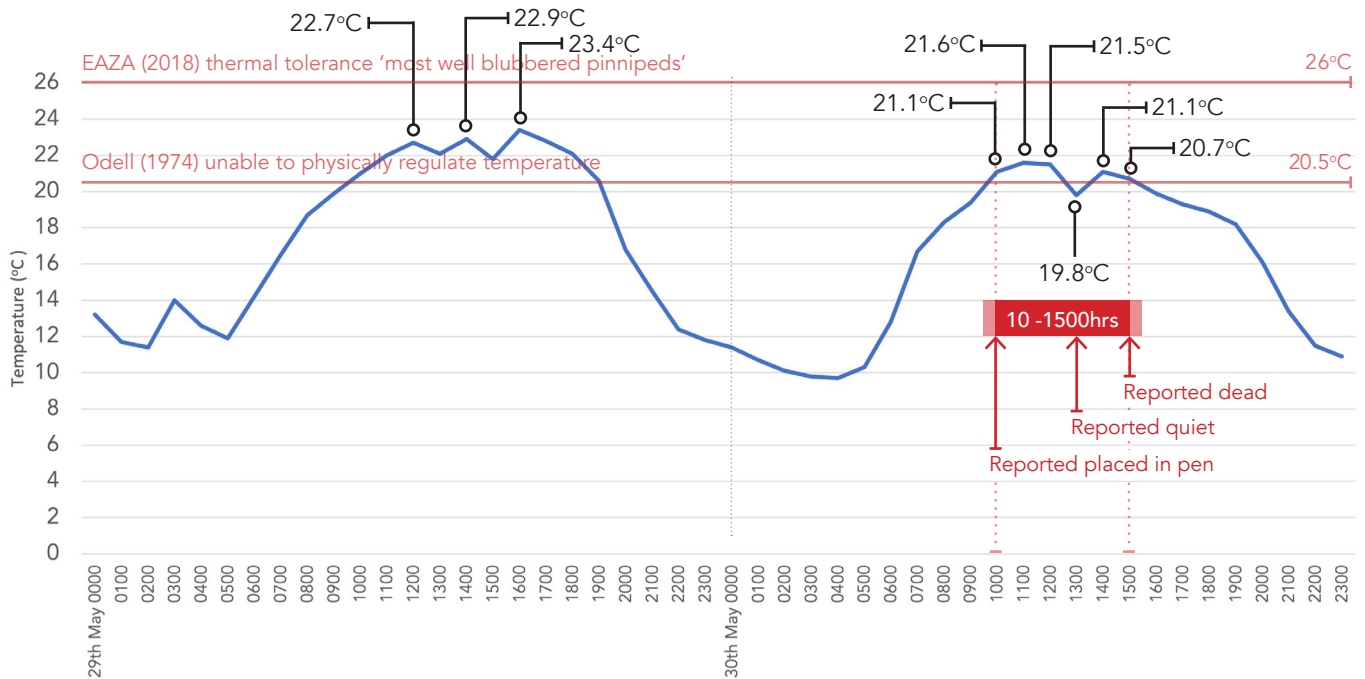


Figure 14.01: The Met Éireann weather monitoring station in Phoenix Park is located 3km to the north and 14m higher than the sea lion pool at Dublin Zoo and provides 10 minute-interval weather data, including air temperature as shown here. Data from the 29th and 30th May are shown with temperatures in excess of that on the day that Niko died. The duration Niko was held in his pen varies in the written and oral records with ZIMS stating he was moved to the pen at 1000hrs and found dead at 1500hrs, however some verbal testimonies have him entering at 0930hrs and being found between 1430 to 1530 (suspected solid red bar, possible additional time red opaque). (Temperature data source: Copyright Met Éireann, www.met.ie. This data is published under a Creative Commons Attribution 4.0 International (CC BY 4.0). <https://creativecommons.org/licenses/by/4.0/>. Met Éireann does not accept any liability whatsoever for any error or omission in the data, their availability, or for any loss or damage arising from their use. This material has been modified from the original).



Figure 14.02: Sea Lion Cove sea lion pen facilities, Dublin Zoo: (a) sea lion pen, image taken September 2015, 10.38hrs, overcast day - shade present and effective. The pen Niko died in was not clear from the testimonies but majority consensus was Niko died in the pen adjacent to the sea lion quarantine pen (the green building); (b) sea lion pen, same aspect as (a) but taken from northern end of the pens, image taken August 2022, 17.07hrs, overcast with breaks in clouds - sunlight clearly directly entering the pens; and (c) sea lion pens, recently installed internal sprinkler system built into the pen roof with no need for hose and sprinkler set up that can be seen in image (a) (red arrow), which was previously available at the time of Niko's death, image taken August 2022, 17.08hrs, overcast with breaks in clouds. Images copyright NPWS Zoo Inspectorate.

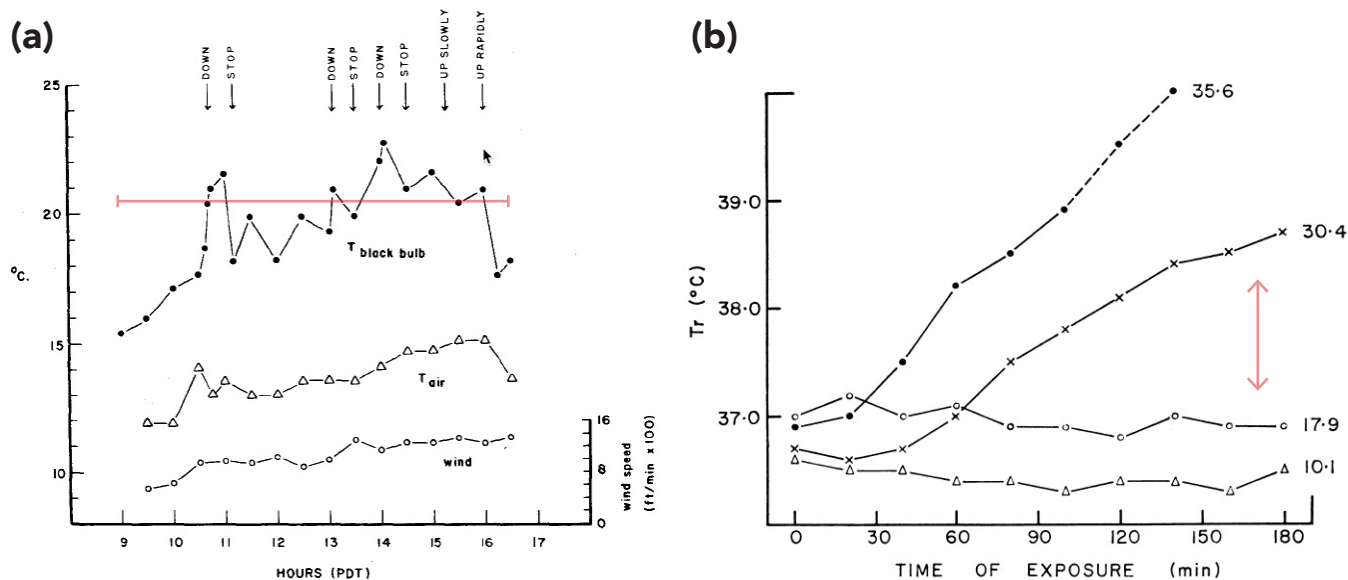


Figure 14.03: (a) Movements of California sea lions in relation to black bulb temperature ($T_{\text{black bulb}}$), air temperature (T_{air}), and wind speed (wind), San Nicolas Island, May 22, 1971. Terminology: down = animals moving towards the sea; up = animals moving inland; stop = all movement ceases. Source: Reprinted from *Behavioural Biology*, 10, Odell, *Behavioural Thermoregulation in the California Sea Lion*, 231-237, Copyright (1974), with permission from Elsevier.

(b) Rectal temperatures (T_r) of three California sea lions during exposure to the air temperatures indicated to the right of the figure. Each point represents the mean value for the three animals, with the exception of the points connected by a broken line, which include data for two animals only. Source: Figure used with permission of The University of Chicago Press, from *Temperature Regulation in the California Sea Lion* (*Zalophus californianus*), Whittow, Matsuura and Lin, In *Physiological Zoology*, Vol.45, No.1, 1972, permission conveyed through Copyright Clearance Centre, Inc.

These figures are from the primary sources demonstrating the physical limitations and behavioural requirements that California sea lions have with regard to their own thermoregulation. Figure (a) demonstrates that at black bulb temperatures in excess of approximately 20.5°C (orange line) California sea lions move to behavioural modification to manage their body temperature, typically returning to the water. Note that black bulb temperatures are considerably in excess of ambient temperatures, which may be (or not) pertinent in the case of Niko. Figure (b) is experimental data where sea lions were placed in a controlled temperature environment - note the direct correlation between the ambient temperature and the slow increase in body temperature at 30.4°C and the much steeper and quicker incline when ambient temperature is at 35.6°C . In the case of Niko the ambient temperature was between 19.8 and 21.6°C , with the potential addition of solar radiation, and as such the predicted graph of body temperature is likely to lie between the 17.9°C and the 30.4°C graphs (arrow) - whether the range of 19.8 - 21.6°C and additional solar radiation was sufficient to pass the critical thermal point where the body temperature slowly increased is impossible to know but the graphs 10.1 and 17.9°C are below the critical temperature of 20.5°C (figure (a)) where the sea lions can manage their own body temperature, whereas Niko was over this line. However, note that even if the rate of rise of Niko's body temperature was present but slow the period that Niko was penned was 300 minutes and this figure is only for 180 minutes, giving the body ample time to reach terminal body temperatures. This is speculative at best as it can never be proven in Niko's case, but the investigation team consider the diagnosis of heat stroke highly plausible.



Figure 14.04: (a) During the site inspection data loggers were installed in the sea lion pens. (b) The first was used to record ambient temperature in the pen Niko was found dead in, this was located approximately 1.5m from the floor (orange arrow) and simply attached to the mesh with a cable tie (yellow arrow). (c) The second was placed on the floor of a

second pen that was rarely used, at the other end of the sea lion pen block. This was placed on the floor under the rubber matting substrate for the duration of the assessment. Data logging started on the morning of the 15th August at midnight and continued until the 13th September 2022, both were programmed to start at the same time and record temperatures at 5 minute intervals. The data for analysis was limited to the period 22nd to the 31st August 2022 to eliminate any initial stabilisation data errors and to reduce the manual input of the 17,208 data points to allow direct comparison against the available 10 minute Met Éireann data set. As such only 2,880 data points were used. See discussion for details.

Variation in ambient temperature at the Dublin Zoo sea lion pens verses data from the Phoenix Park weather monitoring station 22nd to 31st August 2022

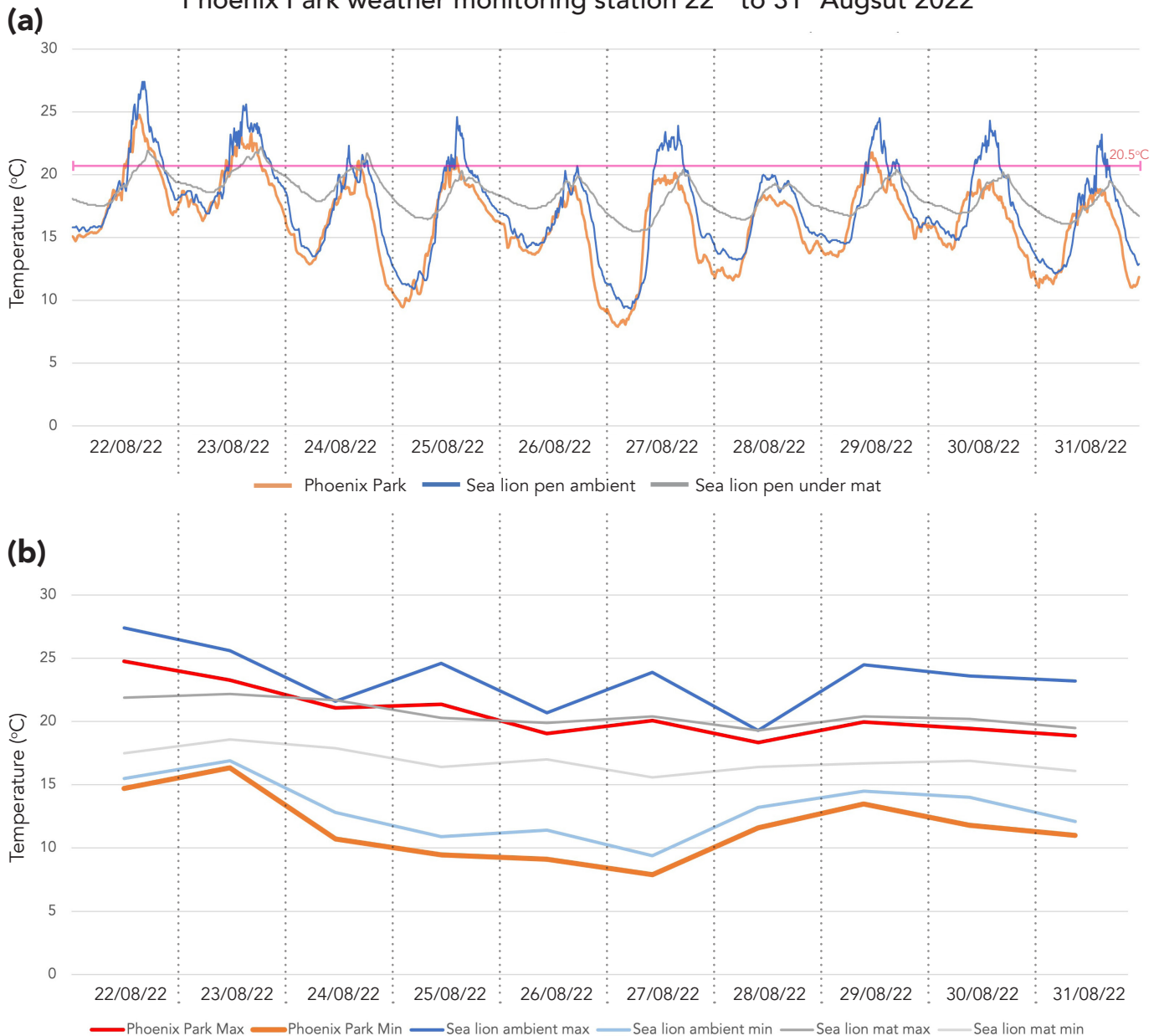


Figure 14.05: (a) Every ten minutes temperatures were recorded from the Phoenix Park Weather Monitoring Station (orange) and compared against temperature data loggers located at 1.5m high within the sea lion pen (sea lion ambient, blue) and a second under the sea lion pen matting (sea lion matting, grey). Sea lion pen ambient temperatures lag slightly behind that of the Phoenix Park ambient temperatures, reaching parity around mid-day and often proceeding to exceed the Phoenix Park temperatures on average by 2.8°C when comparing maximal daily temperatures. The under matting temperatures in the pens retained a relatively consistent temperature which lags behind the sea lion pen ambient. This was considered to be a result of the temperature recorded being reflective of conduction through the concrete and matting rather than atmospheric or direct solar radiation. The Odell (1974) temperature line is included here for reference.

(b) Comparison of the maximum and minimum temperatures from each 24 hour section for the same period as in Figure 14.4(a). There was a consistent increase in sea lion pen ambient temperature verses Phoenix Park temperatures. Although the variation in temperatures varied from day to day inconsistently. This was considered due to the differences in environment (concrete residual heat) and solar radiation on the pen producing additive temperatures. The under matting sea lion temperature was much more consistent across the period, this was considered to be due to the temperature relying primarily on conduction from the effects of both ambient and direct solar radiation which is much slower to adjust to the external temperature changes (both through loss and gain).

With regard to Niko's case the data loggers were utilised to assess variation between the data from the Met Éireann Phoenix Park monitoring station and the actual logged temperatures recorded in situ in the sea lion pens. The comparison was all that was practicable at this stage of the investigation when assessing the May 2020 temperatures data that was available. The data provided is accurate but the impact on variation on the day of Niko's death is speculative based on this small sample size, taken 27 months later and out of season, but the inspection team felt it was the best option to garner evidence reflective of any variation that may or may not be present. There are several variables in any such comparison and the inspection team recognise the weakness in this model but also recognise that it is plausible that the temperatures on the day Niko died had potential to be even higher at the sea lion pens than those recorded at the Phoenix Park Monitoring Station. See discussion for justification. (Temperature data source: Copyright Met Éireann, www.met.ie. This data is published under a Creative Commons Attribution 4.0 International (CC BY 4.0). <https://creativecommons.org/licenses/by/4.0/>. Met Éireann does not accept any liability whatsoever for any error or omission in the data, their availability, or for any loss or damage arising from their use. This material has been modified from the original. Data logger used for sea lion pen temperatures were two calibrated and consistency confirmed Lascar electronics, EL-USB-1-PRO).

Potential variation in ambient temperature at the Dublin Zoo sea lion pens verses data from the Phoenix Park weather monitoring station 29th to 30th May 2020

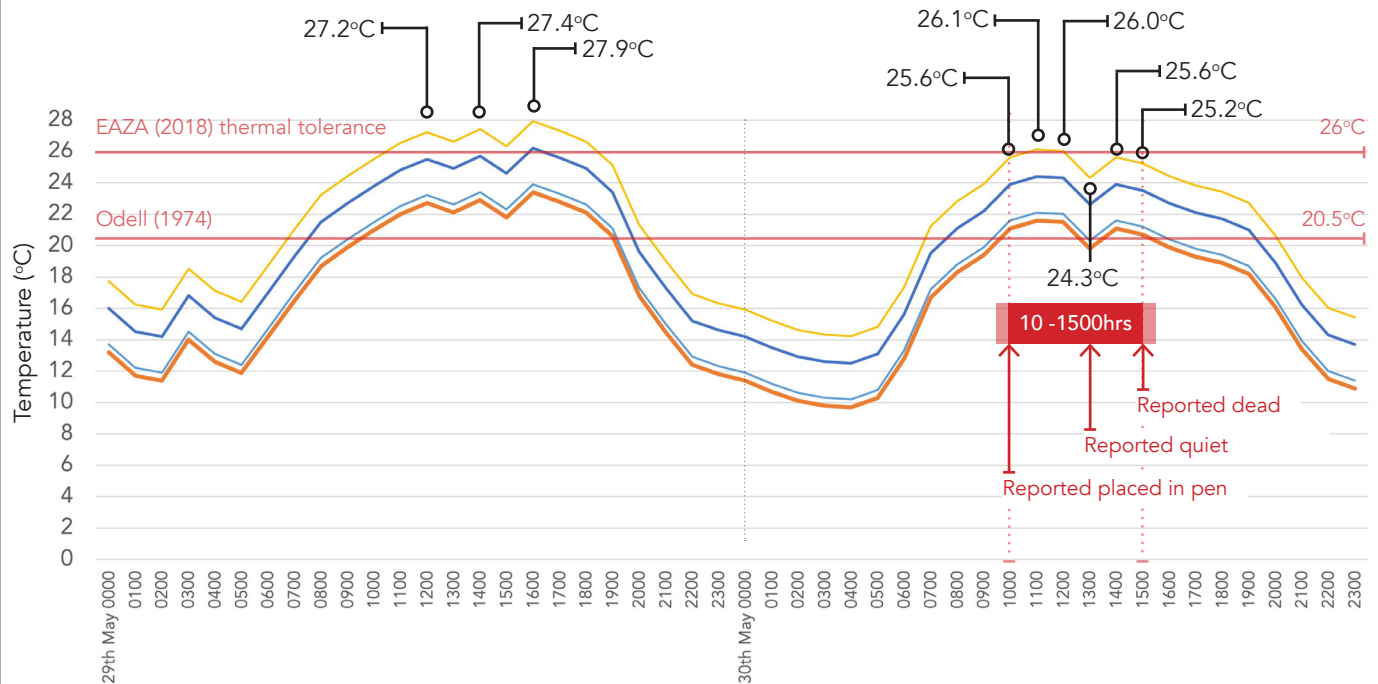


Figure 14.06: Using the Met Éireann Phoenix Park weather monitoring station (PPWMS) data from Figure 14.1 speculative, predictive assumptions can be made with regard to the ambient temperatures experienced in the sea lion pen that was reported to have housed Niko at the time of his death. Taking the maximal temperatures for each day in the experimental period of August 22nd to 31st (see figure 14.5) the **maximal (yellow line)**, **mean (dark blue line)** and **minimal (light blue line)** variation between the temperatures measured at the **PPWMS (orange line)** verses the ambient temperature within the sea lion pen were calculated to give an estimate of range variation between the two to further attempt to qualify the possible sea lion pen temperatures on the day Niko died.

As already demonstrated in Figure 14.01 the ambient temperature was sufficient to require Niko to have access to water to manage his own temperature based solely on the PPWMS data. However when taking into consideration the experimental data from August 2022 there is, in a worst case scenario, the potential for there to have been temperatures that exceeded even the thermal tolerance stated by EAZA (2018) in the sea lion pen where he was housed. It is noted that the 29th May 2020 the temperatures reached much higher temperatures but Niko had access to water on that day and therefore presumably had ample opportunity to thermoregulate behaviourally.

(Temperature data source: Copyright Met Éireann, www.met.ie. This data is published under a Creative Commons Attribution 4.0 International (CC BY 4.0). <https://creativecommons.org/licenses/by/4.0/>. Met Éireann does not accept any liability whatsoever for any error or omission in the data, their availability, or for any loss or damage arising from their use. This material has been modified from the original. Data logger used for sea lion pen temperatures were two calibrated and consistency confirmed Lascar electronics, EL-USB-1-PRO).

15.0 Scimitar-horned oryx, mismothered and left to die of starvation

Date of incident:	Natural, only two scimitar-horned oryx (SHO) died at Dublin Zoo in the last five years:- (i) SHO A19M56, DOD 14 th January 2020 (ii) SHO A11M56, DOD 19 th July 2018
Species & identification:	(i) Scimitar-horned oryx (<i>Oryx dammah</i>), male 17 days old Local ID A19M56 (ii) Scimitar-horned oryx (<i>Oryx dammah</i>), male 8 years and 2 months Local ID A11M56
Allegation:	

Journalist 01 reporting on whistleblower comments: "An oryx gave birth to a calf a number of years ago, and the mother was unable to look after it. Staff offered to hand rear the baby or euthanise it, but this request was ignored and the calf died after 2-3 days from starvation after being left to die".

Origin of the allegation: Journalist 01, 11th August 2021

Documents reviewed as part of the investigation:

2012 3 rd September	Post-mortem report A125M56
2014 6 th August	Post-mortem report A14M51
2016 20 th March	Post-mortem report A16M29
2018 19 th July	ZIMS Specimen report SHOryx A11M56
2020 14 th January	ZIMS Specimen report SHOryx A19M56
2020 14 th January	Post-mortem report A19M56
2022 20 th July	Activity report – all SHOryx deaths 01/01/2017 to 20/07/2022
2022 15 th August	Dublin Zoo Historic taxon report Eastern SHO

Summary review of the documents reviewed as part of the investigation:

The total number of scimitar-horned oryx that died under the age of 6 months old in the last 5 years was requested, Dublin Zoo provided a complete inventory of all of the deaths and this was cross-referenced against the annual stock records which tallied. It is presumed that the SHO referred to in the allegation is A19M56 as A11M56 is considered too old. The cause of death of A11M56 was not apparent but had died of natural causes related to a veterinary procedure. The investigation team do not believe A11M56 is relevant to this allegation.

The SHO calf A19M56 was born to A17M66 (JoJo, sire) and A16M75 (Farha, dam) on the 28th December 2019, he was found on the morning checks. He was already cleaned and dry and looked bright and alert. When checked after lunch he was lying down and keeping head low, he had not been seen to feed or move but was in a different position as to when

seen in the morning. The following day (29th December) he was seen to suckle from the dam and was doing well. He was described as doing well on the 30th and 31st December, although the other mother (there were two calves) was seen feeding A19M56.

On the 5th January 2020 A19M56 was seen to suckle but passed pale milky faeces that was not formed, this was eaten by the dam so no sample could be collected. The following day both of the two SHO calves were caught up, given intravenous and oral fluids and a snap test was performed that indicated both were positive for cryptosporidium and rotavirus. On the 7th January additional fluids were given and the calf was reported as "seems OK". Oral fluid therapy, antibiotics and halofuginone lactate (Halocur) were given and the other calf started to improve and the male had no major improvements reported on the 10th January 2020. Treatment continued for the male on the 11th and little improvement, the female now doing well and treatment stopped. On the 12th he was given more fluids and was reported as doing much better than yesterday and putting up a fight at catch up. On the 13th January he was given intravenous fluids, subcutaneous fluids, analgesia and antibiotics. He was not seen to suckle on the 12th January and had diarrhoea. The morning of the 14th January 2020 he was found dead at the morning checks.

The post-mortem occurred on the 14th January 2020 and the calf weighed 12.3kg, there was marked staining of the tail and hindlimbs with dried, yellowish faeces (diarrhoea). There was suspected pneumonia, small volume of ascites, thickened small intestines with mucosal ulceration and necrosis, haemorrhages and fibrin material mixed with ingesta. Mesenteric and ileocaecal lymph nodes were markedly enlarged. The liver demonstrated a necrotising hepatitis. The diagnosis was a severe necrohaemorrhagic enteritis, likely infectious in nature with results to follow. Culture was unremarkable with *E.coli* and *Streptococcus* / *Enterococcus* cultured from the liver and lymph node. Histology confirmed a moderate multi-focal coalescing bronchointerstitial pneumonia, moderate multifocal necrotising hepatitis, severe diffuse transmural necrotising enteritis and serositis, marked multifocal-coalescing necrotising lymphadenitis and a marked multifocal lymphoplasmacytic nephritis. The cause of the intestinal change was not identified but was consistent with severe, progressive cryptosporidiosis which was thought to have led to a bacteraemia and subsequent septicaemia with the changes in the lungs, liver, kidney and lymph nodes all likely secondary to the bacteraemia and septicaemia.

Following case 20 the full taxon report was available for the SHO from January 1980 to August 2022. The average age of SHO mortalities was 9 years and 7 months (range 1 day to 17 years and 7 months), with only four calves reported to have died during this forty-two year period. These were in 2012 (3 days old), 2014 (1 day old), 2016 (2 days old) and 2020 (17 days old, the case noted above). In all cases the post-mortem reports demonstrated that the calves had ingested milk and that there were large milk clots in the abomasum in all three of the additional calves. All three of these additional animals were reported to be doing well and feeding well. The causes of death were as follows: (2012) fungal bronchiolitis / bronchopneumonia; (2014) euthanased as poor condition, had congenital cardiac lesions (patent ductus arteriosus and patent foramen ovale); (2016) open diagnosis but was doing well initially, had diarrhoea noted at PME; and the (2017) case above.

Findings of the investigation with regards to the specific case

- The calf weight of 12.3kg, whilst minimal fat was found at post-mortem and the calf had had chronic diarrhoea, was not inconsistent with other reported weights of a hand-reared female SHO calf of the same age (14 days 11.7kg, 21 days 14.1kg) (Mayor, 1984)
- Mixed rotavirus and cryptosporidiosis is a very common mixed enteropathogenic infection, the rotavirus causing lesions in the anterior small intestine and mild lesions in the mid intestine, and cryptosporidium infecting and damaging the lower small intestine and the large intestine, the combination resulting in diarrhoea that may not be present if only one of the enteropathogens had infected the SHO.
- Treatment s based on drug administration and fluid therapy support until the calf gets better as in the case of the female SHO or death, as in the case of the male. Antibiotics are given to prevent secondary infections as indicated. The cryptosporidium can be treated.
- Cryptosporidiosis is considered zoonotic.
- The post-mortem supported the antemortem diagnosis, and despite treatment the male died. The investigation team note that the female calf was given the same treatment but managed to survive demonstrating the variable, individual responses animals can have to the same disease despite being the same age and housed in the same situation.
- No notes were made with regard to the need to hand rear or euthanase, indeed the SHO was reported 36-48 hours before it died to doing much better than the day before.
- There were only 4 calves reported to have died during the period 1980 to 2022 and none had evidence of having starved to death, all had full post-mortems carried out (details above) and each of the four animals had large milk clots in their abomasum (one of the fore stomachs).

Interview responses to the alleged welfare case

No. of staff interviewed:

4

- Small number of people interviewed as no documentary evidence of any issues having occurred.
- In the last five years it was confirmed by the team leader that only two had died, the ones noted above. However, prior to that, some time ago, there had been two calves that died that were thought to be related to agents in the wood chip flooring. This was removed and is no longer used- the SHO having moved to sand floors now. Possible this is what was being referred to but even then they were not viable for hand rear and there was no issues with the dam. The scenario stated is not reflective of any situation the team leader is aware of. (Note: this case was one calf and references the 2012 mortality)
- A second interviewee confirmed the story of the 2 calves that died, it was thought to be mould in the wood chip that caused the deaths. No discussions about hand rear in this case, would not have worked anyway due to the substrate being linked to their deaths. They did not starve to death, that's not true. Wood chip removed and hardcore 804 put down, then terram lining then Ballylusk dust compacted to form a great substrate that

really helps with their feet. Not seen any issues since. (Note: this case was one calf and references the 2012 mortality)

Interpretation by the investigation team

In considering the allegation *"An oryx gave birth to a calf a number of years ago, and the mother was unable to look after it. Staff offered to hand rear the baby or euthanise it, but this request was ignored and the calf died after 2-3 days from starvation after being left to die"*. This appears to be unfounded when considering the period from 1980 to the allegation stated in 2021. The only calves that died in the last forty-two years are the case above which was suffering from a moderate to severe progressive necrotising enteritis caused by a mixed rotavirus and cryptosporidium infection, the calf that died due to suspected mould related toxicity in bark floors, the congenital heart defect calf, and the open diagnosis that had diarrhoea (potentially also a rotavirus case). In all of the cases of calf death the dam was still suckling the calf until the point the calf died, with sufficient milk noted in their stomachs. These do not support the clinical description in the allegation and none of the calves were left to starve to death by Dublin Zoo. There is no evidence provided to suggest any animals had starved nor been left for the period outlined in the allegation.

Zoo Inspection process reflective of addressing the welfare concerns

The case was discussed in detail at the October 2021 zoo inspection and the zoo inspectors were satisfied with the case management and that there were no immediate welfare concerns that were not being managed in a considered manner by Dublin Zoo. Specifically, the inspectors stated in the report: *"As part of the inspection a number of whistle-blower allegations of poor welfare and staff management were discussed. The inspectors went through all allegations one at a time. The Inspectors were satisfied that the zoo operators had investigated these claims thoroughly and were able to provide evidence to support their assertion that such allegations were either unfounded or where historic, had been addressed and dated to a period prior to the current management regime. The inspectors do not believe that any further action is required in relation to any of these complaints"*.

Outcome of the investigation with regard to the specific case

The allegation is not supported by a review of the case files of all of the scimitar-horned oryx that died in the period January 1980 to August 2022. The allegation is not upheld nor even any cases found that vaguely resemble the case described.

References

- Andrews, Blowey, Boyd and Eddy (2004) Bovine Medicine: Diseases and Husbandry of Cattle, Blackwell Publishing, pp 1218
- Animal Health Ireland (2021) Management of the Scouring Calf, pp 12
- Gilbert and Woodfine (2004) The biology, husbandry and conservation of scimitar - horned oryx, Marwell Preservation Trust, pp 94

- Mayor (1984) Hand-feeding an orphaned scimitar-horned oryx calf after its integration with the herd, International Zoo Yearbook, Vol 23, pp 243-248

16.0 Orangutan and subsequent gibbon infants killed by orangutan

Date of incident:	(i) Orangutan 10 th February 2022 (ii) Siamang 25 th February 2022
Species & identification:	(i) Northwest Bornean orangutan (<i>Pongo p. pygmaeus</i>) Male, 11 days old Local ID A22M01 (ii) Siamang (<i>Symphalangus syndactylus</i>) Male, 1 year and 6 months Local ID A20M12

Allegation:

Journalist 01 reporting on whistleblower(s) comments: "I have been told Majur, the orangutan was struggling with her son after it was born. It was taken off her and put back with her, she struggled with feeding it and she "smashed its skull" and it died after five days. Mum was then "off form" and put out with the Orangutans and Gibbons and despite concerns raised by staff that she was "grieving" and "off form", a row ensued when Majur tried to take the baby gibbon.

I understand this event, which included "screaming" was witnessed by a member of the public. During the row, the baby Gibbons was seriously injured and died. This story which happened this year, is in the whistle blower's protected disclosure. They claim an Orangutan was "in a very emotional and vulnerable state" after losing her baby. Despite staff raising concerns the orangutan was let out with the gibbons and due to rosters and decisions made by the team leader, curator and management there was no time allowed for staff to observe their interactions.

The whistle-blower claims a post-mortem of the baby Gibbon would show "immense damage to the body of the animal due to injuries sustained from the female orangutan".

Separately, another zookeeper has claimed the female orangutan "bashed the baby's skull in" (her own baby, a boy) in her distress.

Protected disclosure: contents not disclosed due to nature they were received in. Where elements of the protected disclosure differ from the allegations already made then these will be addressed in the response below, where practicable.

Origin of the allegation:	Journalist 01, 26 th July 2022 (c/o Dublin Zoo) Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

No date	Case history Mujur the Orangutan and her infant & gibbon
2022 7 th February	General anaesthetic report Mujur
2022 10 th February	ZIMS Specimen report male infant orangutan A22M01

2022 10 th February	ZIMS Medical history A22M01
2022 14 th February	Post-mortem report for A22M01
2022 25 th February	ZIMS Specimen report male siamang A20M12
2022 25 th February	ZIMS Medical history A20M12
2022 1 st March	Post-mortem report A20M12
2022 8 th August	Dublin Zoo orangutan taxon report
2022 8 th August	Dublin Zoo siamang taxon report
2022 8 th August	Teaching specimen skull morphology reviews
2022 8 th August	ZIMS Specimen report orangutan Leoni
2022 8 th August	ZIMS Specimen report orangutan Majur
2022 16 th August	ZIMS Orangutan group notes
2022 17 th August	Photograph of text message re the siamang incident
No date	The orangutan infant death footage from 'The Zoo'

Summary review of the documents reviewed as part of the investigation:

Orangutan

The orangutan death was broadcast on the television series 'The Zoo' for which there is good coverage of the incident.

On the 30th January 2022 an infant male Northwest Bornean orangutan was born, ID A22M01. His mother was A5M023 (Mujur) and his father 84M003 (Sibu). The birth was uneventful and the infant was noted to be suckling within the first 24 hours, Mujur being a attentive mother. The first few days appeared normal but on the 7th February (8 days old) Mujur's behaviour changed and she was holding the infant in abnormal positions, was handling the infant in a robust manner and was not paying the expected due care and attention expected and generally seen with an infant. There were concerns with regard to the infant, not just from the handling but it also appeared to be losing weight and its condition was not as would have been expected. A discussion led to agreement that intervention was needed to assess the infant and mother which required an anaesthetic. Premedication was given and the infant suckled during induction.

The infant when examined was found have a low body fat, was dehydrated and had cold extremities but all other parameters were normal. The orangutan took high quality infant formula from a bottle and the infant was taken to an incubator and monitored all through the night with 2 hourly feeds. Body temperature was maintained at stable levels.

This was considered a major intervention and Dublin Zoo engaged with a number of technical experts in addition to their own welfare review processes. The case was discussed with the EEP for orangutans, a human paediatrician, other experts in European zoos and great ape rehabilitation non-governmental organisations. Dublin Zoo's preference was to reintroduce the infant back to Mujur as quickly as possible. The EEP was very clear in the instruction not to hand rear the male, and advice from several external parties was that despite the efforts and speedy return that the outcome had a poor prognosis for successful reintroduction to the mother once they had lost the bond, which was noted prior to the anaesthetic health check.

On the 8th February (9 days old), the following day after the infant was removed, he was reintroduced to his mother in a carefully orchestrated manner. Mujur initially took to the male and showed very encouraging signs for the rest of the day. Unfortunately, 36 hours after the reintroduction Mujur showed signs of rejecting the infant again on the 9th February (10 days old). She was holding the infant on her head, by one leg and she placed it on a bench, ignoring it for periods of time. It became obvious that it was not suckling properly and appeared to be losing weight again. The 'rejecting' behaviour continued for three to four hours. Mujur was monitored all day and other staff asked to leave the area to reduce the stress on her, she seemed relaxed and had not put the baby down. The infant was seen to feed later that day, mum ate some food.

On the 10th (11 days old) though the infant continued to lose condition and Mujur was not demonstrating expected or useful mothering behaviour. In response to this change the veterinary team, keepers and curator had a meeting to consider all the options available to them with regards to the infant and to achieve a successful outcome with the orangutan infant being successfully fed and cared for by Mujur. The five domains were applied and each considered with detailed notes for all of the pros and cons of the options available. The status at 1800hrs on the 10th February when considering the five domains was that the outcome for each aspect was very poor. As part of this assessment advice was taken from experts in the field with one stating from their considerable 30 years of experience they had never been successful in re-establishing the maternal-infant bond after 'mismothering' in orangutans. The options were evaluated and the difficult decision was made and agreed by all parties that without any viable options and to avoid unnecessary short or long term suffering that euthanasia of the infant was the best and only option for the baby. This was carried out immediately with an oral premedication given to Majur, at which time the baby was noted to be weak, by the time Mujur was anaesthetised the infant had died. Mujur's recovery was uneventful.

The infant's body was submitted on the 11th February and post-mortem was carried out on the 12th February. The infant orangutan was 16.8kg and had poor BCS (2/5) with little visceral nor subcutaneous fat. There was a large fracture of the cranium. The stomach and intestines had scant ingesta and the colon and rectum had moderate amounts of faecal material. Other tissues are described. The diagnosis was multifocal to confluent fractures with extensive subdural haemorrhage, primarily with the right cerebral hemisphere. The appearance of the fracture is suggestive of a high impact blunt trauma and was consistent with Majur having killed the baby.

Siamang

The siamang (gibbon referred to in the allegation) A20M12 was born on the 3rd August 2020, with the dam Cayaha (Local ID A14M44) doing well and rearing the infant as expected. In January 2022 the animal care team started to separate the siamangs to get the baby used to being separated. This was uneventful and no signs of stress nor other behavioural issues were noted, the juvenile becoming more confident and independent. On the 25th February 2022 the staff reported that the orangutan "*Leonie had the infant*

siamang in her arms PM, he was limp looking and is now dead. Staff will work on trying to get him away from her”, the baby siamang was retrieved from Leonie the following day and submitted for post-mortem.

The post-mortem confirmed that the siamang had been in good condition but had a rib fracture with pleural haemorrhagic effusion and suspected pneumothorax, the abdomen had a ruptured liver and subsequent haemorrhage. There were two puncture wounds 43mm apart into the thoracic cavity associated with a fractured rib. This was considered to be due to a bite injury, likely from another primate, rather than a fall.

Findings of the investigation with regards to the specific case

- The case described with regard to the orangutan Mujur and her infant born on the 30th January 2022 is a sad case report of loss of the maternal bond and so called mismothering, with attempted interventions to support and save the infant and mixed responses that led ultimately to the loss of condition, failure to suckle and the subsequent death of the infant from a skull fracture.
- The intervention on the 7th February (8 days old infant) was considered necessary to assess and support the infant and this judgement call was considered to be the correct one by the investigation team when considering the results of clinical exam, the other option of not intervening would have likely led to the death of the infant through starvation.
- The reintroduction of the orangutan was taken on advice with support from technical specialists. Despite being challenging it initially went well but then the maternal behavioural changes were seen again and the decision to intervene was made with the infant dying before it was able to be retrieved.
- Specialist support was sought and given, with general external consensus being that the prognosis was guarded from the start. Support was provided by a number of known and capable technical experts.
- A welfare audit was undertaken by the whole team, utilising the five domains as the core of the decision making, with the difficult decision of euthanasia being agreed to prevent suffering in the short to medium term. However, the infant was noted to have died as they gave the pre-medication to Mujur as part of the second anaesthetic on the night of the 10th February (11days old infant).
- Post-mortem shows the orangutan did receive nutrition but this was insufficient and he was of a poor body condition score. He died from a cranial fracture and associated brain trauma.
- The infant siamang (A20M12) born 3rd August 2020 was found quiet and away from its parents and later was found dead being carried by Leonie the orangutan on the 25th February 2022, being retrieved on the 26th February 2022. Post-mortem found two penetrating wounds 43mm apart that resulted in a fractured rib and subsequent pneumothorax, and a ruptured liver, both with associated haemorrhage. This was considered consistent with a bite wound from another primate.

Interview responses to the alleged welfare case

No. of staff interviewed:

9

The investigation team note that this was a very recent, traumatic experience that challenged the management, the keeping staff and the veterinary team. All of the active participants of the orangutan case were interviewed and it was still very fresh and upsetting for everyone – this was a case that was not the fault of anyone and was a distressing case of mismothering and a subsequent death of the siamang adding to the sad events. The Zoo episode where the orangutan infant was born captures the hope and subsequent loss to the team as well as the very difficult decisions that had to be made in this case. This is reflected in the testimonies.

- A very detailed submission was provided from the veterinary team which outlined the case and supported the other testimonies and case notes as being accurate.
- *"Whole team from management to vets to keepers all present to discuss at all stages – different options discussed and it was the right decision to intervene. Even the discussion for the second intervention was discussed with everyone having a say and feeding in information from external specialists, it was a group decision and everyone had a voice. Sometimes not nice decisions have to be made, listen to the evidence and make an informed decision. Infant and Mujur welfare were always the priority and our own emotions had to be taken out of the decision, had to be factual".*
- *"Very frustrating -all the work and effort scrutinised and criticised with no basis, the whistleblower was not present and has only second hand information that does not reflect the management of Mujur and the loss of her infant".*
- *"Its an awful thing to say but Mujur had lost any bond with the infant even at the first intervention, she tried to swap him for a prune, she had no emotional tie to the infant, it was a novelty not her offspring. Heartbreaking to see, we were helpless. She would pull the baby and it would scream, initially took to the infant well but soon lost interest. She was never distressed when it came to the baby".*
- *"The comments made in the allegation are emotionally charged bull shit by some one that wasn't there, if a person was there in that room, discussing every option they would know and understand the care, respect and dignity that went into managing both the mum and her infant".*
- *"Mujur was kept in for a few days to ensure she was OK, but she is a very social animal and wanted to be back with the other orangutans. Keepers were present all of the time and she was monitored continuously. Whole team monitor all of them, simply not true to say she was not monitored".*
- *"We monitored Mujur, keeping her in initially but she preferred to be with the others and so we let her integrate with the others on the 11th and back in with the group on the 12th February. By the 14th Mujur was back to her normal routine as if nothing had happened. No evidence of any changes, normal behaviour noted which reinforced for us how little interest she had in the infant – she was not in a 'vulnerable state' as reported".*
- Second hand reports, from staff not on section, were that the team did not have enough time to monitor Mujur and this led to the death of the Siamang. When challenged as to

what evidence or justification for this perspective there was very little to evidence this. The wording was the same as that from the protected disclosure and had little substance. Comments remain interpretative and vague to ensure anonymity of the staff.

- *"There were no indications of abnormal behaviour, it was business as usual for Mujur, the siamang was playing with Leonie as usual a couple of days before – we have pictures of that".*
- *"Siamang comments were based on a public account that occurred sometime afterwards, the incidence was not seen. It was one of the females involved but not clear if Leonie or Mujur".*
- *"A staff member was heading for lunch and a member of the public called them over, they had witnessed the siamang death and recounted the incident. The member of the public stated that they had approached the siamang side of the exhibit and one of the orangutans had the baby in their possession, she could not tell who it was and not confident to identify the orangutan. She did not mention Mujur. The siamangs were shouting at the orangutan and the baby was still alive at this point, the orangutan then came down and the other orangutans got involved. All trying to gain possession of the baby, a lot of screaming but siamangs not directly involved. It ended with the baby siamang being thrown to the ground and went silent. Could not say if it was dead or alive at this point".*
- Keepers came down for afternoon feed later on to find Leonie with the baby siamang which they got back the following day.
- SMS text sent to colleague that stated *"...she (member of the public) said Majur took it (baby siamang) and was trying to cradle it and what not, the gibbons were going mad"*. When asked the author admitted thought it was but had jumped to conclusions and had extrapolated her own version of the events as told, none of the orangutans had been identified, it was assumed what had occurred. This was sent on the 23rd March 2022 at 18.29hrs, almost a month after the event on the 25th February 2022.
- CCTV not working in this area and so no film was captured of the incident. Just the public account.

Interpretation by the investigation team

Background considerations – mixed exhibit:

Mixed-species zoo exhibits are common, the concept designed to promote enhanced captive environments through encouragement of natural behaviour patterns, increased activity levels and improved animal welfare and wellness when considering both mental and physical fitness (Shepherdson, 2003).

Mixed orangutan-siamang exhibits are not unusual with many other zoos having similar exhibits mixing either orangutans with siamang or other gibbon species e.g. San Diego Zoo, Adelaide Zoo, Oregon Zoo, Fresno Zoo, Cincinnati Zoo, Miami Zoo, Metro Richmond, Omaha, Zoological Garden of Gelsenkirchen and others. Other species in mixed-exhibits with orangutans include tapir, otters and other primates (Brandstaetter, 2006).

Coe (2004), talking about rotational exhibits, recognised the trade off in having more complex-mixed exhibits in that they bring extraordinary opportunities for increasing

appropriate and natural animal activities and interactions with the environment, other species and with others of their own species. These activities not only have the potential to increase animal physical fitness but also aim for improved overall well-being for the animals within that habitat. These benefits can come at a price with the risk of human error and of animal injury increasing within the complexity of the space and the increased opportunities for animal interactions between the species. However, for those willing to consider and mitigate the risks then the result can be more satisfactory for the animals and the animal care teams where the animals in their care have unprecedented opportunities and choice in their captive lives.

In some cases, mixed primate exhibits do not deliver the direct interactions and perceived improved benefits that come with them as would be expected when different species utilise different habitat areas but even then the shared space provides indirect appropriate cognitive challenges that would otherwise be lacking in a single species exhibit and this still has the potential to improve the welfare of the individuals (Daoudi et al, 2017).

Kaandorp (2012) recognises the challenges of veterinary management of the species within a mixed exhibit and highlights that the most common veterinary issue noted is trauma with any mixed-species exhibit. However, he does recognise the main advantage of mixed species exhibit is the behavioural enrichment benefits for the species within. Pearson (2010) notes a failed attempt to create a mixed-species exhibit with orangutans and siamang which saw species directed aggression between both species, but was ultimately abandoned due to the siamang led aggression directed towards the orangutans. Pearson's behavioural study at a second zoo was uneventful but 4 months after the research programme was concluded one of the siamangs broke its radius and ulna, this was considered to be as a result of a bite from an orangutan but was not witnessed. They had been in the mixed exhibit for over a year at the time of the incident with no problems noted and no instigating causes were identified.

Specific allegation assessment:

The referred comment states that ***"I have been told Majur, the orangutan was struggling with her son after it was born. It was taken off her and put back with her, she struggled with feeding it"***, this is a simplified version of the complexity of the failure of maternal-infant bond that occurred between the orangutan Mujur and her infant but is considered reflective of the situation that occurred.

The referred comment goes on to state that ***"...she "smashed its skull" and it died after five days"*** and later, from a second keeper ***"Separately, another zookeeper has claimed the female orangutan "bashed the baby's skull in" (her own baby, a boy) in her distress"***. The investigation team believe that the statement is a confused version of the events and is very subjective. The behaviour of Mujur as reported was rough and in cases abandonment was noted but she did kill the infant, the action being important not the manner – the death was due to a cranial fracture. Prior to anaesthesia she had left the infant on high platforms and had abandoned it like a discarded toy rather than a distressed mother, the infant had

become a novelty not an offspring. This position was consistent with the staff that were actually present during this case. It was very difficult to witness, especially after the staff had been involved in the initial surrogacy of the infant.

The reported time also does not reflect the timeframe of the whole clinical case. The infant was pulled from Mujur for supportive feeding and assessment on the 7th February (8 days old) and was fine but cold and given supplemental food. He was returned on the 8th February and Mujur's behaviour was neglectful on the 9th February but the infant was still alive and it was not until the 10th February that the infant deteriorated and was subsequently killed by his mother, the animal died immediately after the skull fracture which was an injury not compatible with life.

The comments are emotive and she 'smashed its skull' and 'bashed the baby's skull in, in her distress' in the opinion of the inspection team are considered to indicate intention by the mother, which is possible but equally the injury to the infant was considered unintentional as she had little interest in the infant at that time. She did not actively seek to injure or kill the infant. As such these emotive terms are not supported. These statements appear to support those of the testimonies, i.e. they are made up based on a little second hand knowledge by someone that wasn't there. The investigation team, having heard the testimonies from those directly involved with eye-witness accounts, are of the opinion that the allegation with regard to the orangutan is a constructed narrative based on second hand comments of the actual events, which are easily available to compare with the footage on 'The Zoo'. Why this is being linked to *'bad management by the team leader, curator and management'* in one version of the allegations the investigation team are not aware but the records, testimonies, media and other evidence provided all demonstrate that the team leader, curator, management and the keeping team were collectively involved throughout this process and all worked in the best interests of Mujur and her infant son. No fault can be found in the actions taken in this difficult case and the allegation is not found to be supported in this aspect.

The second part of the commentary focuses on the Mujur's after care, presumed following the loss of her infant, ***"Mum was then "off form" and put out with the Orangutans and Gibbons and despite concerns raised by staff that she was "grieving" and "off form", a row ensued when Majur tried to take the baby gibbon. I understand this event, which included "screaming" was witnessed by a member of the public. During the row, the baby Gibbons was seriously injured and died"***. The supplied ZIMS records indicate that another female orangutan was carrying the juvenile siamang around and not Mujur as reported. The incident was not witnessed by staff, nor is there CCTV in the exhibit. Leonie, the orangutan carrying the juvenile siamang, retained the body for almost 24 hours, releasing it the day after it died. No other orangutans were noted to interact with the juvenile siamang's body during this time. As such the statement, as it refers to Mujur, cannot be substantiated and is not considered reflective of the actual events. With regard to the public this was reported almost three weeks after the incident and the initial text message focused on Mujur which was communicated to other staff on the section, but during the investigation this was identified as being an assumption and the member of the public had not been able nor was

willing to identify the orangutan involved. The assumption was that Mujur was the instigator, and whilst this is possible there is no direct evidence to this being the case.

The referred comment states that (the whistleblower) “...**claim an Orangutan was "in a very emotional and vulnerable state" after losing her baby. Despite staff raising concerns the orangutan was let out with the gibbons and due to rosters and decisions made by the team leader, curator and management there was no time allowed for staff to observe their interactions**”. The siamang incident (25th February 2022) took place 15 days after the death of the infant orangutan (10th February 2022). Mujur was proactively monitored both during the infant management as well as afterwards. The issue with Mujur was one of mismothering and a lack of interest in the infant. She had no bond and no interest in the infant male and was even reported to try and trade the baby for a prune, leaving the infant calling, pulling on its limbs like a toy and other actions that were not indicative of a maternal bond nor interest in the baby. She was distressed the day after the baby orangutan was killed but this was thought to be due to her need for companionship with the other orangutans and not the loss of the baby, once returned she was back to normal some 48 hours after the loss of the infant. She was actively monitored and returned to normal after a few days, business as usual with no evidence of any abnormal behaviours. The consensus was that the death of the siamang was an unrelated event, one of “*horrible coincidence at best*”. As such the investigation team do not believe Mujur was “in a very emotional and vulnerable state”, the investigation team have only supposition that Mujur did kill the siamang, and have found no links to poor management nor an inability of staff to monitor Mujur after she was reintegrated into the group. As such this aspect of the allegation is not supported by the evidence presented.

Journalist 01 also states that “**The whistle-blower claims a post-mortem of the baby Gibbon would show "immense damage to the body of the animal due to injuries sustained from the female orangutan"**”. The post-mortem shows a single fractured rib, a punctured lung, and two penetrating injuries to the thorax, along with a ruptured liver. The investigation team do consider this ‘immense damage’ and that it was sufficient to lead to the death of the siamang and it is likely this was a bite wound from one of the orangutans. The investigation team believe, as Dublin Zoo does, that the siamang was killed by one of the orangutans. This was not in dispute.

In summary this was a very sad case that had a very disappointing outcome but was not a reflection of any failings in the team from the management to the team leaders to the animal care team to the veterinary provision. This was a robust, well considered programme that reflects the sometimes-difficult decisions and management techniques that are needed in a modern zoo and that despite all the support and technical knowledge and ability when working with animals the outcome is not always the one expected nor wanted. The allegation is a crude representation of a complex and challenging case where the Dublin Zoo team reflected their professionalism, passion and competency in dealing with this situation and as such the allegation is found to be true but a poor reflection that focuses on a perceived narrative rather than the facts of the case.

Zoo Inspection process reflective of addressing the welfare concerns

This formal annual zoo licence inspection was carried out three months after this case occurred. Typically, due to the way the inspection operates the inspectors review the full annual stock list and enquiry about any areas of note that includes mortalities, however the inventory is the year prior to the inspection and not the current year. As such this case was not specifically raised with Dublin Zoo and would have been picked up at the next inspection, if it were not for this special inspection.

Outcome of the investigation with regard to the specific case

There is no specific allegation made, simply embellished statements that reflect in part the events that occurred. At all times the intervention between orangutan mother and infant was under the direction of the veterinary, keeper and management team supported by the EEP breeding programme and other technical advisors. Whilst the outcome was far from ideal this was simply a case of failure of maternal-infant bond and mismothering. The outcome as expected, albeit the manner of the outcome was not. Whilst there were elements where the mother and infant welfare was compromised, this was not through the fault of actions nor inaction by the Dublin Zoo team.

The siamang death does not appear to be directly linked to the orangutan death, simply that it occurred in the same month and is reflective of similar injuries noted in other collections. No cause and effect were identified, but even then, decisions made were in the best interests of the orangutan buffoonery as well as the siamangs.

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17.0 Ozone leaking from Sea lion Cove

Date of incident:	February 2022
Species & identification:	Not applicable Sea Lion Cove plant room
Allegation:	

Journalist 02 submitted the original whistleblower comments from the protected disclosure: *"Ozone is a gas that is used in the sealion filtration room. It is used to clean bacteria within the foam fractionators. The system has no controls or measurements for the ozone system which has overdosed the pool which causes fumes to build up in the filtration room and build up in the pool turning the pool turquoise blue. This is dangerous for animals to be living in and also dangerous for staff and the public as the filtration room is opposite to a restaurant which tends to have build-up of public outside and the sealion pool is a large bodied of water that is open to the public. The sealion pool has also had chlorine added to clean the algae in the pool this may have an effect on the ozone already in the pool. The ozone has been triggered numerous times and is recorded on a sim card and on the HDMI on the panel. The alarm has been ignored by management and they simply open the doors to vent the room leading to all of the fumes to leak out to the public area. This has previously caused staff and a contractor to become sick and one person required and ambulance"*.

Origin of the allegation:	Journalist 02, 25 th July 2022 c/o Dublin Zoo (as reported) Protected disclosure, 8 th August 2022
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Documents reviewed as part of the investigation:

2022 28 th July	Sea lion habitat – water quality – ozone detection and controls
No date	Pacific Coast Operation & Maintenance Manual

Summary review of the documents reviewed as part of the investigation:

This allegation has been investigated by Dublin Zoo's Health and Safety Consultant as part of ongoing safety audits across the site. There have been two incidents recently with one in December 2021, where a member of staff reported feeling light headed after entering the filtration room and the individual was assessed by an ambulance crew and sent home, and a second incidence where a specialist technical contractor was working on the water treatment detection equipment when he felt light headed and moved into the fresh air outside, first aid personnel assisted and the contractor continued to work after a period outside. As a matter of due diligence this potential release of gas was treated as a 'dangerous occurrence' and duly reported to the Health and Safety Authority. Reviews were undertaken and one of the ozone detection communication cables were noted to be running alongside a main power cable and through electro-magnetic interference, false alarms were sounded. This has been rectified and resolved this issue. There was no evidence of ozone leaks being present in both instances.

Running in parallel with the technical examination areas of mitigation for foreseeable malfunction were risk assessed and steps taken to implement strategic safety measures and design a ventilation system that would ensure all areas of the plantroom received generous amounts of normal atmospheric air. Process and facility changes were installed which took some time and have been operational for one month at the time of writing. These modifications include: fans to promote ventilation; a slight negative pressure in the plant room, ozone alarms linked to roller shutters so that they automatically open; and other facility changes to ensure safe working practices.

Staff are required to wear personnel ozone detectors set at a minimum of 0.05ppm, the mandatory safe level being 0.1ppm based on a time weighted average of 8-hours.

A full and comprehensive report was provided to the satisfaction of the investigation team and returned to Dublin Zoo.

A site inspection was undertaken and no major concerns were noted. The safety systems were deployed and working with staff wearing ozone monitors and Standard Operating Procedures in place. The oxidation-reduction potential (ORP) was not excessive, if anything it was low and as such there were no health and safety concerns for both the sea lions and the staff working in the area.

Findings of the investigation with regards to the specific case

- At least one possible incident reported to the HAS as a possible 'dangerous occurrence' related to the Sea Lion Cove plant room's ozone generators.
- In response Dublin Zoo has reviewed their risk assessments and mitigation processes with regard to the plant room, specifically focusing on ozone management, using an extremely competent external provider and added mitigation features to the facility as well as changing process and policy.
- Historical processes were not commented upon in the submitted documentation and could not be assessed.

Interview responses to the alleged welfare case

No. of staff interviewed:

4

- *"The filtration systems for Sea Lion Cove did, and continues to have some challenges in the design with multiple different systems overseen by multiple companies across several countries. Currently trying to consolidate it but working well and no issues. UK contractors were a real issue with covid and Brexit".*
- *"Ozone has never worked historically, the biological load was tremendous. Reclaim system was a major issue – back washed and then minimised loss of water by pushing the backwash back into the system which just put the waste back in – now having reviewed it, it is run as an open system and huge improvement in the water quality".*

- *“Management of the sea lions and penguins has required review and changes in the water quality management, keeper competency, fish quality processes and a complete overhaul of the procedures – working well but continually developing and improving”.*

Interpretation by the investigation team

Whilst historical processes were not commented upon in the submitted documentation the inspection team recognise that Dublin Zoo have reviewed and actioned any opportunities with regard to safe working practices for staff, and subsequently the risk to public and animals is considered minimum.

Zoo Inspection process reflective of addressing the welfare concerns

Not applicable historically, noted in this report only with regard to specific safe working practices around ozone.

Outcome of the investigation with regard to the specific case

There were no concerns noted with the operation, safety systems and safe working practices for the sea lion plant room, especially with regard to ozone management. Whilst the allegations may have been historical, the current process and systems has been assessed by HAS, independent health and safety consultants and the investigation team with no concerns noted at this time. As such the allegation is unfounded at the time of writing.

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18.0 'Tundra', Amur tiger post-operative complication leading to poor quality of life

Date of incident:	Alive, event 29 th January 2020
Species & identification:	Amur tiger (<i>Panthera tigris altaica</i>) 7 years 3 months (DOB 17 th May 2015) Local ID A17M25
Allegation:	

Protected disclosure: full contents not disclosed due to nature they were received in. In this case only the protected disclosure contains the allegation and as such the key elements have been taken to outline the welfare allegation: "Tundra, Amur tiger, underwent a procedure in early 2021 which led to complications due to management's lack of planning and consulting keepers on her history...she suffered a number of long term side effects from this procedure... I believe that Tundra's quality of life has suffered due to complications from what have been a routine procedure...since Tundra's procedure no observations or quality of life assessments have been implemented or maintained".

Origin of the allegation: Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2020 29 th January	Tundra case history (original incident)
2021 11 th February	General anaesthetic report for contraception
2022 – 2020 summary	Clinpath and welfare meeting summaries
2022 5 th August	ZIMS Specimen report Tundra
2022 6 th August	General anaesthetic report for dental (stuck bamboo)
2022 11 th August	General anaesthetic report for dental (fractured canines)
2022 15 th August	ZIMS Medical history 30 th January 2020 to 15 th August 2022
2022 16 th August	Tundra case review

Summary review of the documents reviewed as part of the investigation:

On the 29th January 2020 the Amur tiger, Tundra, a nearly 5 year old female, underwent a routine general anaesthetic utilising medetomidine (1mg/ml) 0.07mg/kg and ketamine (100mg/ml) 3mg/kg, weight approximately 130kg with initial induction with dart followed by top up to obtain sufficient depth to safely approach (total dose was 8.5ml medetomidine 1mg/ml and 5.5ml ketamine 100mg/ml). The procedure duration is not captured in the submitted records but appears to be less than 1 hour from dart to antagonist being given (top up was 1030hrs, antagonist was 1100hrs. She was sat up at 12.30. No bloods were taken as Tundra remained light under anaesthesia despite the top ups and so a physical examination and implant of the contraceptive only was undertaken.

The recovery was initially unremarkable but at 1436hrs Tundra appeared to become unresponsive and deeply sedated. At 1440hrs she was sitting back up again and then at 15.21 she appeared to become re-sedated. This continued into the night and advice was sought from other collections where the induction dose was confirmed to be considered

normal but that sometimes the drugs may not have been cleared adequately and continued to recirculate leading to re-sedation, with some of the vets contacted reporting they had seen similar issues. Hypoglycaemia was considered a possibility and a honey mixture was provided orally. For this period she was laterally recumbent with occasional tail twitches and leg movement. Advice from UCD was that some felids are sensitive to medetomidine and so additional atipamezole antagonist was recommended and given.

This response to the anaesthetic was considered exceptional the following day as she was still recumbent and bloods were able to be taken, with rhabdomyolysis and myopathy diagnosed (whether the causal factor initially or a response to the excessive period of recovery not reported and unlikely to ever be known). Supportive therapy started as per routine protocols – intravenous fluid therapy, supportive feeding and tender loving care. Improvement was slow and steady, being able to walk but generalised weakness and improving response to voice noted by the 10th February 2020.

The assessment on the 16th February reported: *“Tundra continues to improve in small increments and is eating reasonably well. The next stage of recovery presents 4 challenges:*

1. She seems to be totally blind with little evidence of corneal dilation or constriction. This may be either as a result of central nervous system disturbance or metabolic aggregates or inflammatory complexes accumulating in her posterior lens and retina.
2. She has ongoing increased respiratory effort. Her respiration rate today was 74 per min and keepers note that this continues even during resting in the evening. Again there is the suggestion that there is some residual lung pathology as a result of her recent illness.
3. Tundra is not using her right fore leg and paw in a normal manner. Keepers report that she weight bears even when it's in flexion mode. This is likely as a result of local nerve damage or a neurological issue.
4. She has considerable staining of her whiskers and hair on the side of both cheeks. It is likely that she is not grooming herself properly after eating, particularly after the slurried feed. The keepers are attempting to clean this area after feeding. There is a small risk of a localised skin inflammation and infection in these areas.”

The following day she was eating well and passing faeces, appears to have turned the corner and moving into the medium-term management of her case. Noted recommendation to start daily assessment sheets. Regular case assessment continues and incremental improvements made over the following months. Gradual improvement in vision, has some long-distance vision and can see shapes and shadows, she has proprioceptive deficits, especially the front paws with no pronation. Her improvement allowed her to be introduced back in with the male Amur tiger with no issues.

On the 11th February 2021 a repeat general anaesthetic was undertaken to repeat the contraceptive implant as advised by the EEP. The anaesthetic was tailored to Tundra's needs and response at the previous anaesthetic: medetomidine 0.044mg/kg and ketamine

3.2mg/kg, recumbent in 10 minutes, provided with supplemental oxygen as respiratory rate dropped. Contraception implants placed, bloods taken for biochemistry, haematology and feline viral assessment and given antagonist atipamezole at 32 minutes post darting. She was lifting her head 6 minutes later and walking 2 hours later with no other issues noted with the recovery. Total dose of medetomidine 1mg/ml 5.72ml and ketamine 100mg/ml 4.16ml, which is approximately 2/3 medetomidine and ¾ the ketamine doses given a year previously (note this is to indicate the variation made in the dosing, not that there was an issue with the original dosages). The biochemistry results were considered relatively normal with only one parameter marginally raised (creatinine kinase, which is consistent with darting). No issues noted in recovery or post recovery. The rest of 2021 was unremarkable with sporadic minor issues noted in her health care which included diet reviews. In September 2021 she had a large swelling on her head, thought possibly to be a bite wound or bumped off door frame, otherwise in good health. This reduced over the following week and did not appear to cause any issues.

On the 6th of January her medical record noted that her behaviour had been unusual for the last three weeks (first noted 20th December 2021). Sometimes reserved and other times outwardly offensive and even aggressive towards Max the other Amur tiger. Staff attempted to review the causal factors on camera footage to try and understand what was causing it. This escalated on the 11th January with aggressive behaviour directed at Max with rolling and snarling noted, where she bit her own tongue. Another episode was seen on the 14th January where she was extremely aggressive, hissing at nothing, not responding to vocal queues from staff, and rolling behaviour seen with no obvious triggers noted. Cameras installed for further observations. The next episode was on the 18th January and the vet was present with it being captured on film. A primary differential diagnosis of epilepsy, secondary to the complications of the January 2020 anaesthetic were considered the most likely cause of the behavioural signs noted. Technical advice taken from neurologists and consider start on anti-seizure medication but reduction in frequency held off (normal practice). Specialist neurological assessment considered vestibular epilepsy as most likely but differentials included temporal-parietal lesions or neoplasia. The condition being exacerbated by her blindness as unable to see to resolve the ataxia from the vestibular changes. The next reported incident was the 3rd March – neurologist advised that sporadic or occasional episodes are not cause for concern if it doesn't affect Tundra's ability to display normal behaviours, anything more than this then treatment may be needed. On the 25th March she was moved to her new enclosure and adapted well.

The next epileptic episode noted was on the 27th April 2022. This was the most significant episode to date and as such she was started on anti-seizure medication (phenobarbital). Cameras requested for assessment. No episodes noted but on the 18th July noted that Tundra was doing well but slightly sedate for a couple of hours after the phenobarbital. As such the dose was reduced (typical blood sampling for serum levels not performed at this time due to need of a general anaesthetic). On the 3rd August noted that she had fractured both her right canines. 4th August a seizure episode was noted, oral phenobarbital reverted back to original dose. On the 5th she had wedged a piece of bamboo between her teeth and the vets were unwilling to wait for the dental procedure planned for the 11th. On the 6th anaesthetised medetomidine 0.044mg/kg and ketamine 3.2mg/kg with 200mg

phenobarbital orally prior to anaesthesia. Bamboo removed, bloods taken for biochemistry, haematology and serum phenobarbital levels and radiographs of the canines ahead of the subsequent planned surgery. Pain relief and antibiotics also provided. Procedure complete 38 minutes post darting. Recovered without incident.

11th August 2022 general anaesthetic for dental procedure. The right canines had complicated fractures with necrotic pulp, right mandibular canine underwent root canal. Right maxillary had slab fracture removed with plan to leave and treat in 6-8 weeks. Improvement noted in Tundra within 24 hours. Reduced dose of phenobarbital to half due to post anaesthetic effects.

Ongoing case – history ends.

Tundra's case was discussed in 10 of the Clinpath and welfare meeting and since January 2020 there have been 106 separate mentions in her medical record which reflects almost weekly health checks for the period assessed.

Findings of the investigation with regards to the specific case

- 29th January 2020 Tundra anaesthetised with a recognised anaesthetic regime for contraception implant and health check. Recovery was excessive and prolonged, considered due to an unusual response to the anaesthetic agents which resulted in severe rhabdomyolysis and prolonged recovery which took weeks of proactive initial care followed by months of support. She was left with partial blindness and some neurological deficits which she copes well with.
- 11th February 2021 Tundra underwent another anaesthetic for contraceptive implantation. The anaesthetic was modified to her specific case and recovery was uneventful.
- 20th December 2021 she was noted to have some behavioural changes which progressively got worse and were later diagnosed as epilepsy, possibly vestibular-epilepsy but other differentials possible. Speculated linked to the complications of 29th January 2020 which is reasonable but equally possible unlinked.
- 25th March conscious transport to new habitat.
- Neurological concerns monitored with support of specialist veterinary neurologists, treatment not initiated until April 2022 as sporadic and minimal impact initially. Responded well with few incidents since started on treatment.
- 6th August general anaesthesia to remove stuck piece of bamboo from mouth and to take dental radiographs for fractured right canines. Recovery uneventful.
- 11th August general anaesthesia to undertake root canal on the right mandibular canine with the right maxillary canine planned later in 2022.
- Ongoing case, well managed despite complexity of the case and co-morbidities.

Interview responses to the alleged welfare case

No. of staff interviewed:

8

- *"Tundra had no medical history to raise concerns or knowledge that she may react in the manner she did, there was nothing in her history of concern at all".*
- *"The cause of the initial rhabdomyolysis is unknown – possible prolonged recovery but could be primary issue related to the complications seen. Cat team did great job and were able to get 6 litres of intravenous fluid therapy into her and managed her through this challenging post-anaesthesia complication".*
- *"Initial care went on for 2-3 days with aggressive therapy including IVFT. Whole team involved".*
- *"There has been a gradual improvement but she is visually impaired and has proprioceptive deficits on her front paws".*
- *"In December 2021 she changed behaviour, not herself and no longer the interactive cat she used to be. Developed the seizure-like behaviour which has been assessed with specialist neurologist consultant and responding well to anti-seizure medication. Some challenges due to limitations on serum phenobarbital testing being unavailable (requires anaesthetic) but modulating well based on clinical response to the regime".*
- *Root canal surgery carried out in August with follow up dental planned later this year.*
- *"Completely disagree with the statement that "management have failed to provide adequate care and observation opportunities for staff to assess Tundra after her operation", she is a well checked animal with the veterinary team working closely with the cat team in her ongoing management. She is regularly reviewed and this is reflected in her medical notes and the Clinpath meeting minutes".*
- *"No medical history indicative of adverse reaction, nothing mentioned at all except "she was a monster when it came to food!" "*
- *"No known historical knowledge, no reason to believe there would have been an issue with the January 2020 anaesthetic".*
- *"Single comment made on arrival by the transporters that she was groggy in the box, no comment from the sending zoo's keepers, the vets nor the medical history. Insufficient to suggest would have an issue with an anaesthetic, especially with what happened".*
- *"No pressures to have animals on display by 1000hrs, especially with Tundra, she has spent most of her time since 2020 off show to the public to support her care and rehabilitation".*
- *"There were obvious apprehensions about the second anaesthetic (Feb 2021) but the vet team did a great job, there were a lot of discussions and a phenomenal amount of planning and risk management. Same for the dental this year. You couldn't have asked for more and the outcome was great. Its disappointing to be scrutinised for these actions, especially as the allegation implies that something wrong was done or we had failed to meet her needs. That's simply not true".*
- *"Tundra is not neglected nor ignored, active programme of monitoring and understanding what triggers the seizures".*
- *"Cameras put up for monitoring in 2022 – some frustrations that none on site in the early days of the behaviour and took three months to install. Primarily in the den not in the habitat".*

- Videos shared from staff and vets regarding behaviour, seizure-behaviour and post-ictal behaviours.
- *"Everyone is involved with Tundra's health care – anyone can say what they want and what they believe can improve her care. Some may not have the experience or knowledge but they can only get that by being involved which we encourage. Everyone's opinions are taken on board".*
- *"With regard to provision for her needs there is an active programme of support including dedicated husbandry and environment management for her needs, non-slip matts, bark substrate, enrichment, scent and others suitable for her visual issues, and others".*
- *"Tundra is not on show so no issues there and there is an active regular monitoring programme carried out for her that underpin the seizure medication and trigger management for her epilepsy. She has her own 'special needs cat' programme which includes elements of animal welfare audits and quality of life assessments".*

Interpretation by the investigation team

This is a challenging case with a routine general anaesthetic having complications which may have been linked directly to the anaesthetic or reflect underlying subclinical disease that was exacerbated by the anaesthetic of the 29th January 2020. This has led to long term implications for the Amur tiger Tundra and these have been managed with care and consideration for her welfare needs both at the veterinary and the animal husbandry level.

In considering the allegation the investigation team found that the statement ***"Tundra, Amur tiger, underwent a procedure in early 2021 which led to complications due to management's lack of planning and consulting keepers on her history..."*** reflects a poor understanding of this case and a lack of knowledge of the details. The incident with the complications occurred in January 2020, the anaesthetic in February 2021 had no complications and was uneventful. The comment regarding the complications occurred ***"due to management's lack of planning and consulting keepers on her history"*** is unfounded as there was considerable planning for any tiger general anaesthetic and there was no relevant history with regard to this case in the medical records, known to the veterinary team nor the animal care team. Indeed, the complications were so unusual the investigation team are of the opinion that the event could not have been foreseen, especially as Tundra's medical history had been so uneventful. One possible throw away statement when she was imported was mentioned by one staff member but again the event was not uncommon when moving large cats anaesthetised and so would not reasonably have been considered a red flag for this procedure. Nor was it captured in the notes, it being solely a throw away anecdotal comment. The diligence in subsequent anaesthetics, as well as the original procedure in January 2020, is to the testament of the veterinary and animal care team who have now anaesthetised Tundra a number of times knowing she has neurological issues and historical anaesthetic complications but they have not shied away from their responsibility to address ongoing welfare issues such as dental pathology. Whilst it is possible that the whistleblower making the allegation has additional information regarding this animal's history which would have meant that the procedure would knowingly

have led to the complications that arose the investigation team believes this is not the case for two reasons: (i) no one else on the cat team was aware of any issues nor were the veterinarians and nor was any comment captured in the medical history of the animal, and (ii) if the individual knowingly had such information that could have prevented this complication from occurring then not to have disclosed this is paramount to having caused the complications in the first place, however this person(s) obviously had concerns regarding Tundra's welfare and so it is considered highly unlikely that they would have intentionally held on to this information nor failed to disclose it prior to the first or subsequent anaesthetics. This second point is supported by the person(s) making the allegation having little to no actual knowledge of the events surrounding this case in the actual allegation and incorrectly reporting many of the details, so were unlikely to be aware of any specific knowledge regarding Tundra's history.

The allegation is true that *"...she suffered a number of long term side effects from this procedure..."* and in part that *"I believe that Tundra's quality of life has suffered due to complications from what have been a routine procedure..."*, however the complications were simply that and whilst the preference would have been not to have had such complications occur these were not intended and would not have been avoidable as the procedure followed standard induction protocols, based on regimes provided by ZSL London Zoo. Since they did occur the team at Dublin Zoo strove to support Tundra to recover and whilst she was left with permanent compromised vision and some neurological signs that later developed into seizure-like episodes these have all been well managed and her quality of life is well assessed and her environment managed specifically for her needs.

The allegation goes on to say that *"...since Tundra's procedure no observations or quality of life assessments have been implemented or maintained."* This statement is untrue as there is comprehensive records of assessments, medical checks, anaesthetics, consultation and management level discussions regarding her long-term welfare management. This is clearly available in the animal's history, the Clinpath and welfare meeting minutes and in the multiple videos of her behaviour which were shared by all of the staff on section and the veterinarians. In addition animal welfare audits and quality of life assessments are regularly assessed. Evidence of this was seen by the investigation team.

This is a highly emotive case where a simple procedure has long-term impacts on the welfare of Tundra but these impacts are known and well managed by the dedicated team caring for her. Tundra appears to have a good quality of life and this continues to improve with the management of the seizures currently being actively managed. Unfortunately, in cases like this other than MRI or euthanasia and post-mortem it is unlikely that a robust diagnosis will be made, but until then her care is second to none and her welfare is the priority for all of the cat team the investigation team spoke to.

The investigation team are of the belief that the person(s) making these allegations has little relevant knowledge about Tundra nor the details of her case and what has been done and is simply reacting to second hand information to make their own narrative. No evidence was made available to the investigation team to alter this view, even following discussions with staff. This position may be changed if additional information were brought forward but

at this present time and following interview of the entire cat keeper team they feel it is unlikely to change.

Zoo Inspection process reflective of addressing the welfare concerns

This specific case has come up in passing but not as a specific welfare concern nor allegation. It had been reflected upon in passing when reviewing historical Clinpath and welfare meeting minutes. No concerns were raised by the inspection team with regard to this case and many of the dental elements of the case occurred since the last inspection. However, these would be unlikely to raise concerns within the inspection team.

Outcome of the investigation with regard to the specific case

The investigation team were of the opinion that the allegations were unfounded and no evidence was supplied during the investigation to support the allegation other than that Tundra did suffer from complications from an anaesthetic procedure in January 2020 (not 2021 as stated in the allegation) and the Dublin Zoo staff having been providing exemplary care since then to manage her welfare needs and this continues to day. As blind or partially sighted animals, especially cats, can live a relatively normal life the investigation team felt that there was no evidence to indicate euthanasia at this moment in time and her case was well managed.

References

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19.0 Red pandas stressed due to proximity of large carnivores

Date of incident:	Exhibit opened 1 st April 2022
Species & identification:	Red Panda (<i>Allurus fulgens</i>) Multiple: A15M70, A20M10, A22M09, and A22M10,
Allegation:	

Protected disclosure: full contents not disclosed due to nature they were received in. In this case only the protected disclosure contains the allegation and as such the key elements have been taken to outline the welfare allegation: "The new panda habitat is against the BIAZA guidelines which states that the animal should not be kept within 50m of a carnivore. According to page 18 of the Eaza best practices..."

Origin of the allegation: Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2021 25 th March	Habitat layout plan architect drawing
2022 15 th March	ZIM Specimen Report Chaha
2022 15 th March	ZIM Specimen Report Jasmina
2022 15 th March	ZIM Specimen Report Jinpa
2022 15 th March	ZIM Specimen Report Oishi

Summary review of the documents reviewed as part of the investigation:

In reviewing the architect plan the red panda exhibit at its closest is approximately 8-10m distant from the closest point of the snow leopards enclosure to the south and approximately 10-12m from the tiger exhibit to the north. The wolf exhibit is further south, approximately 55m distance and the California sea lions are approximately 40m to the east.

The animal husbandry records were provided for the four red panda. Other than some challenges with taking the panda cake they appear to be eating well the bamboo and, where available, all demonstrate good weight gains since January 2022 with no evidence of changes or loss of weight following the move and opening of the exhibit to the public earlier this year.

Reports were made in the notes with regard to training and behaviour and no adverse comments were made.

Findings of the investigation with regards to the specific case

- The red panda habitat is within 50m of several carnivore enclosures as stated in the allegation.
- There have been no some issues with ingestion of panda cake but the red panda have copious amounts of bamboo which is eaten readily.
- The behaviour of the red pandas has not been commented on other than that they are working well with target training practices.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

- One member of staff stated during the testimonies that the 50m issue and closeness to the large carnivore exhibits was a major welfare concern and had been raised with management but they had been laughed at when they suggested discussing it at the ethics committee (which did not exist at the time). They gave up after three attempts to flag it.
- The habitat was designed in conjunction with the previous management and there was little input from the animal care team into the concept design, input came later on operational features.
- *"The red panda are not eating because of the snow leopards".*
- Walk around exhibit and discussion – *"...normal faeces, eating well, primarily bamboo and some issues with the panda cake but trying different things – bringing pear out, changing formulation and shape of mix – sometimes take it well but rest of time don't but ample bamboo ingested so believe it is a palatability issue rather than an issue of not eating".*
- *"They do not seem bothered by the adjacent carnivores and not seen any behavioural changes from the old site to the new or with the new pandas – suspect the introductions have been main focus of the animals and not the surrounding animals".*
- *"The husbandry guidelines were brought to our attention but experience from previous zoos had red panda very close to adjacent sun bears, lions, and other large carnivores and there were no issues, very calm and bred well – successful breeding is a good marker of reasonable husbandry in red panda as the link to stressors and mismothering is where the issue with regard to proximity of large carnivores comes from, however in our experience it is not evidence-based and is just opinion where we can demonstrate cases where not an issue. We have seen no issues at all with our red pandas and the snow leopards".*
- *"No complaints on eating they have a lot of bamboo and as such eat less panda cake which is not as palatable, more likely to eat the cake in collection where there is insufficient bamboo and no other choice. No concerns on nutrition presently".*

Interpretation by the investigation team

The allegation states that the new 'Himalayan Hills' red panda ***"...habitat is against the BIAZA guidelines which states that the animal should not be kept within 50m of a carnivore"***. The investigation team were unable to find nor were aware of any BIAZA red panda guidelines in existence and believe the whistleblower(s) is referring to the EAZA Best Practice Guidelines for Red pandas instead. Both the EAZA (2015) Best Practice Guidelines and the AZA (2012) Red Panda Care Manual quote the reference to ensuring that a red panda habitat is at least 50 m away from a large carnivore exhibit:

- AZA (2012): *Enclosures should not be located near aggressive animals, which can disturb the red pandas: a distance of at least 50 m (164 ft) between a red panda exhibit and that of a large carnivore is recommended.*

- EAZA (2015): *Enclosures should not be located near aggressive animals, which can disturb the red pandas: a distance of at least 50 m between a red panda exhibit and that of a large carnivore is recommended.*

This is not a new recommendation and likely comes from the original 1989 Husbandry and Management Guidelines. However, these could not be located and the earliest source for similar data was the Central Zoo Authority Training Workshop Conservation Management of Red Panda published in 1995, which states:

- Enclosures should not be located near predators (leopards, tigers, etc). A distance of at least 150 ft is recommended between a panda and a carnivore exhibit.

It is noted that the wording 'large carnivore' was added later, presumably as the original wording failed to take into account that a red panda is a carnivore itself.

Glatston (2011), the original author of this recommendation is editor for the textbook the 'Red Panda: Biology and Conservation of the First Panda' in which the same recommendation is repeated by another author, going as far to say:

- The IHMG suggest a minimum distance of 50 m between red panda enclosures and those of large carnivores or other aggressive species, and that these enclosures should not be located next to one another.
- It is assumed that in such a set up red pandas in such enclosures, as in enclosures without sufficient opportunity for escape from visitors, must operate under a chronic, at least subliminal, level of stress.

As such the allegation that the new red panda exhibit does not meet the recommendations found in the current or longer-term husbandry guidelines is upheld. However, it is noted that in the survey looking at red panda husbandry carried out by Eriksson et al (2010) of European and North American zoos identified that 19/68 (28%) of zoos that responded had at least one neighbouring enclosure containing a large carnivore with about half of these being large cats (10/68). In addition, the previous experience of management at Dublin Zoo when working with red panda adjacent to large carnivores there has been little impact and they have gone on to breed.

The inspection team also noted that the new enclosure had significant improvements in other areas of welfare for the red panda's compared to the previous Dublin Zoo enclosure. The net welfare improvement for the red panda's being notable despite this failing in one specific area of the best practice guidelines. This appears to have been omitted from the allegation which focuses on one of many issues that have been rectified from the previous enclosure, albeit the allegation is an important factor in its own right.

Zoo Inspection process reflective of addressing the welfare concerns

This enclosure was viewed in passing as the inspectors walked the site, no comments were made regarding any concerns during the inspection. The indoor housing was noted to be good and that there were plenty of nest boxes.

Outcome of the investigation with regard to the specific case

Whilst the red panda enclosure is a massive improvement on the previous one at Dublin Zoo and provides a large number of the red panda needs there are a few areas where it is not as per the best practice guidelines. The investigation team accept that the best practice guidelines are a recommendation and in all of the examples encountered the wording is that the red pandas '*should* be 50 away from large carnivores' and not '*must*'. The investigation team are of the opinion that consideration to this important consideration was taken into account when designing the habitat and the location of the red panda exhibit based not only on the EAZA recommendations but also the experience of the management team and others that was in direct conflict with the standards. As such the allegation is upheld (it is in conflict with the EAZA recommendations) with the caveat that the welfare provision is vastly improved in a number of other areas when compared to the previous enclosure and there has been a net welfare gain for the animals that were previously held in the zoo. The inspection team also recognise that the 50m rule is theoretical and that the investigators have been unable to find robust evidence that being within 50m of large carnivores is a proven issue for a red panda, as such this is reflected in the recommendations at the end of this report to ascertain whether there is biochemical evidence of stress in the red pandas in the manner they are being housed currently verses red pandas housed in zoos where they are not in close proximity to other large carnivores.

References

- AZA Small Carnivore TG (2012) Red Panda Care Manual, Association of Zoos and Aquariums, Silver Spring, MD, pp 90
- Central Zoo Authority (1995) Training Workshop Conservation Management of Red Panda, PN Himalayan Zoological Park, pp95
- Delaski et al (2015) Retrospective analysis of mortality in the North American Captive Red Panda Population 1992-2012, Journal of Zoo and Wildlife Medicine, 46(4), pp 779-788
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- Glatston (2011) Red Panda: Biology and Conservation of the First Panda, Academic Press, pp 474
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- Spiezio et al (2022) Behaviour of zoo-housed red pandas: A case study testing the Behavioural Variety Index, Journal of Zoological and Botanical Gardens, 3, pp 223-237
- Tanaka and Ogura (2017) Current husbandry situation of red pandas in Japan, Zoo Biology, 37, pp 107-114

20.0 Inbreeding at Dublin Zoo

Date of incident:	Ongoing – no specific incident
Species & identification:	Scimitar-horned oryx (<i>Oryx dammah</i>) Eastern bongo (<i>Tragelaphus eurycerus isaaci</i>)
Allegation:	

Protected disclosure: full contents not disclosed due to nature they were received in. In this case only the protected disclosure contains the allegation and as such the key elements have been taken to outline the welfare allegation: "There have been a number of cases of inbreeding of different species such as the Scimitar horned Oryx. The Dublin Zoo herd is made up of 11 animals, of the group 9 are inbred. This may be the case with other species at the zoo...the female bongo are kept with her male calf and his half-sister. He has the potential to impregnate both females if he hasn't already done so. Inbreeding is against all zoo ethics"

Origin of the allegation: Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2020 1 st September	Bongo group lineage chart
2022 1 st May	Animal Collection Plan
2022 15 th August	Dublin Zoo Historic taxon report Eastern bongo
2022 15 th August	Dublin Zoo Historic taxon report Eastern SHO
2022 no date	SHO group lineage chart

Summary review of the documents reviewed as part of the investigation:

Scimitar horned oryx (SHO): the investigation team requested the taxon report for the SHO for the period 1980 to August 2022. This provides a list of all of the SHO that have passed through Dublin Zoo either as imports, births, deaths or exports. The taxon report demonstrated that the total number of SHO that had been at Dublin Zoo during this time were 22 animals, of which 11 were males and 11 were females. The taxon report provides a summary of basic details for each animal including parentage. Each was assessed and mapped, building a family tree for the animals at Dublin Zoo. Of the 22 animals 11 were dead at the time of the review leaving 11 animals alive, 5 males and 6 females, of the 5 males all were recorded as being castrated which correlates with the animal collection plan.

The family trees were traced back to parentage to assess inter-relatedness. Out of the 22 animals (both dead and alive), two animals had evidence of likely inbreeding.

In the first instance, the taxon report noted a male (A18M57) who was the offspring of a father daughter breeding, the dam being the daughter of A18M57's father. Looking at the age of the dam she would have been approximately 17-18 months old when she was covered by her father resulting in the birth of the male calf A18M57.

In the case of the second potential inbreeding case it was not clear from the taxon report who the father was nor the mother which is unusual, especially in the case of the mother as the calf would have been seen suckling. This animal, A20M11, male castrated, born 31st July 2020 was either a mother-son offspring, a brother-sister offspring, or convolutedly a half-brother-auntie offspring. With regard to A18M57, one of the possible sires of the calf in question he would have been 14-15 months old at the time he fathered the calf which is considered unusual as they become sexually mature at 18-24 months of age. This incidence was considered an accident prior to the expected time that the male would have been removed or castrated prior to him becoming sexually mature some months later.

All of the other mating's assessed during this 32-year period demonstrated no evidence of inbreeding and appeared, based on the data provided, to represent well managed breeding controls to preserve genetic diversity as intended. In addition, the scimitar horned oryx is part of a European breeding programme managed through EAZA and as such breeding recommendations and controls are recommended at a European population management level and as such appropriate population control would be expected to be in place as was the case here. In the case of A20M11, A18M57 and all of the males they have all been castrated and so inbreeding with the current population is impossible and has been managed accordingly.

One male, now deceased was the father of seven of the current living animals to three dams. The other two were from separate fathers but both the original males offspring. Only two of the eleven are considered inbred.

Mountain bongo: there are currently two males and two female bongos held at Dublin Zoo. None of the animals are inbred currently but the young male born in 2020 (A20M09) has potential to breed with his mother (A12M01) or his half-sister (A15M32). However, the male is due to leave to another European zoo and the transfer is being finalised presently. This would leave the two females which are not related to the male. The animals being kept separate in the interim. Again this is a managed programme and whilst potential for inbreeding is present this is normal with managed programmes having plans in place to move animals on prior to them becoming an inbreeding issue or zoos keeping them separately until they are moved. Alternative possibilities are in place for separation as may be required if the move falls through.

Other species: there were no other reports of potential inbreeding made aware to the investigation team. Breeding is mostly managed through the EAZA coordinated programmes. The Animal Collection Plan (May 2022) was reviewed and no issues were found.

Findings of the investigation with regards to the specific case

- The scimitar horned oryx herd had 2 animals out of 22 since 1980 that were considered to represent inbreeding. In both cases the dam or the sire were just coming sexually

mature and in both instances they were earlier than expected, these being errors rather than planned events.

- The bongo have potential to inbreed in the near future but there is no evidence to support this has occurred and a home has been found for the young male before he becomes sexually mature.
- No other species were notified to the investigation team of concerns regarding inbreeding.
- Lineages were assessed to the highest level possible with the data, going back as far as great-grand parentage where possible. Anything above that level was outside of the Dublin Zoo management team and relied on the EAZA breeding programme manager who would also have advised on the existing breeding recommendations.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

Scimitar-horned oryx:

- *"Not true about inbreeding, all males are castrated and so cannot breed, this is a non-breeding group".*
- *"Decision made as some displacement activity started, 11 animals with 11 food bowls".*

Bongo:

- *"Two females and two males, one a calf, potential to breed with own mother. Will be moved on but when? Too young at the moment but needs to be moved soon".*
- *"Not true bongo mother can breed with male calf, separated now. Can separate in winter (we couldn't before but can now due to change in facilities). The young male is going to France, move him on. All in agreement with the EEP".*

Interpretation by the investigation team

The investigation team have identified in the **scimitar-horned oryx** two animals that could be considered to be inbred, one father-daughter offspring and one that was not clear but appeared to be considered a half-brother-auntie offspring. In both cases the offspring produced were males and in both cases the animals have been castrated and were not able to breed. The investigation team acknowledge in a herd situation such births are not unusual and in both instances the animals that mated were both below or just at the expected sexual maturity age. Either way, if this was a planned breeding or an accidental mating this has had no impact on the managed European breeding programme nor the welfare of the remaining group and as such no issues are found with regard to this case. As with any managed programme the EEP coordinator is aware and will have been involved in any of the decisions made. The investigation team also go on to note that there was no evidence of inbreeding in any of the other animals from the data presented which goes back to 1980 for all of the scimitar-horned oryx found at Dublin Zoo. There has been a single congenital finding in a single scimitar horned oryx (A14M51) which had congenital cardiac disease but this offspring had no evidence of inbreeding in its lineage and as such any subsequent commentary that this may have been caused by inbreeding would be a

falsehood and the mother never produced any more offspring. It is also noted that Dublin Zoo provided financial support to the Tunisia reintroduction and habitat management programmes as part of the wild conservation of this species.

The allegations states ***“There have been a number of cases of inbreeding of different species such as the Scimitar horned Oryx. The Dublin Zoo herd is made up of 11 animals, of the group 9 are inbred”***. Having assessed the records going back to 1980 there is no evidence of this level of inbreeding. At most, depending on the whistleblower’s definition of inbreeding, there are two animals out of the eleven and even then this in one case is not considered a major concern with regard to the wider programme. Whilst the scimitar-horned oryx currently at Dublin Zoo are mainly from a single male father he has died and all of the offspring have been castrated so as to prevent inbreeding from occurring, so in fact Dublin Zoo have been extremely proactive in preventing inbreeding and work with the EEP to ensure long term genetic diversity.

With regards to the **bongo** breeding management there were no issues identified by the investigation team. The allegation states: ***“...the female bongo are kept with her male calf and his half-sister. He has the potential to impregnate both females if he hasn’t already done so. Inbreeding is against all zoo ethics”***. The investigation team recognise that the male calf, born in July 2020, was maintained with his mother prior to becoming sexually mature at 2 years of age (although there are some reports of this being earlier in captive animals) but that this was considered normal developmental practice and to pull the animal earlier would have had detrimental welfare effects for long term socialisation and behavioural management. The calf is separated from the females at the investigation site visit and is soon to be transferred to another zoo. The breeding programme being managed through the EEP. As such there is no foundation to this allegation. The remaining females are both unrelated to the remaining male and so any subsequent calves will have no concerns from inbreeding.

“Inbreeding is against all zoo ethics” is a fairly simplistic statement to make as it may be the only option available in conservation programmes where there is a small number of related animals available before a species becomes extinct. This can be managed by the correct programme and whilst all attempts are made to promote the retention of genetic diversity in the breeding programme, in certain circumstances inbreeding is acceptable and sometimes essential to prevent extinction.

The allegation also states ***“This may be the case with other species at the zoo...”***, the investigation team were not provided with any details with regard to inbreeding at Dublin Zoo in other species and based on the comments made regarding the scimitar-horned oryx and the bongo the investigation team believe the whistleblower(s) to have a poor understanding of the historical lineages of the animals involved and the active management of the breeding programmes that are being acted upon in conjunction with the breeding programme managers at EAZA. As such the investigators are satisfied that breeding of conservation sensitive and other species at Dublin Zoo is being carried out in a professional manner, and where appropriate this is in conjunction with EAZA breeding programme managers. The investigation team have not reviewed each and every breeding programme

to confirm this is the case, they simply asked the question of staff being interviewed as to their awareness of any issues and the answer has always been "none". As such the investigation team believe this allegation is unfounded.

Zoo Inspection process reflective of addressing the welfare concerns

The zoo inspection process opportunistically reviews parentage or lineage when births occur or respond to complaints made where breeding concerns were noted, but typically the ability to review the breeding programmes and lineage for every species is outside of the scope of the inspection process, would require inspectors to be micromanaging the zoo, and is also limited by the time and other resources available that would be required to assess the long term plans for each species. Instead the zoo inspectors will more often take a broad view approach and drill down to specifics on an individual basis where issues may require it. This is in line with the expectations of the Irish Standards of Modern Zoo Practice (ISMZP).

Population management in the ISMZP primarily focuses on avoiding over-population as this is a key factor in overwhelming resources available for animals and compromising welfare. Breeding between different species is also prohibited. The ISMZP require that all breeding programmes are integrated with the Animal Collection Plan and that welfare is represented as a consideration in the breeding programme, if breeding is to occur, and that breeding recommendations from managed programmes are also captured in the Animal Collection Plan. These considerations are reflected throughout the ISMZP in both the welfare, conservation and animal collection planning elements.

As zoo inspectors have access to, and review, the animal collection plan any such issues would be expected to be flagged in this document then the zoo inspectors should pick up these up. In the specific case of Dublin Zoo, the Animal Collection Plan (May 2022) states: *"Scimitar-horned oryx – non-breeding group – Breeding activity has been stopped due to full capacity; males have been surgically castrated, keep managing in multispecies areas"*; and for Mountain bongo – *"Breeding group – Manage as a group; separate male by night as per EEP recomm. Additional housing being built, Surplus young male goes to zoo X"*. Both these examples are as expected in an Animal Collection Plan and as such no further investigation would have been warranted, which as it turns out was the correct action to have taken in both these examples.

Outcome of the investigation with regard to the specific case

The allegation is not upheld as there is no evidence to support the allegation of inbreeding in the scimitar-horned oryx nor the bongo, any further issues of inbreeding at Dublin Zoo was considered speculation and a throw away comment that was equally unjustified.

References

- Gilbert (2022) International studbook for the scimitar-horned oryx *Oryx dammah*, 17th Ed., Marwell Wildlife, pp1067

21.0 One hundred percent mortality of baby Goeldi's monkeys in the last two years

Date of incident:	Died 27 th December 2019 to 17 th May 2022 Alive, born 21 st November 2020 (A20M17)
Species & identification:	Goeldi's monkey (<i>Callimico goeldii</i>) Stillborn Local ID A19M57, A20M07, A21M08, A21M23, and A22M25
Allegation:	

Protected disclosure: full contents not disclosed due to nature they were received in. In this case only the protected disclosure contains the allegation and as such the key elements have been taken to outline the welfare allegation: "...ongoing issue with the Goeldi's monkey breeding programme. Keepers have raised concerns about babies dying prematurely. There has been 100% mortality rate of goeldi's monkeys babies over the past 2 years...On (?) 2 female Goeldi monkey died due to complications with her pregnancy. This could have been avoided if team leaders and management listened to staffs concerns about the diet...(diet) contained a large amount of protein and sugar. This would have a detrimental effect on the animal's health and well being".

Origin of the allegation: Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2017 No date	Goeldi's diet 2017
2018 23 rd May	Post-mortem report Goeldi monkey A12M58
2018 23 rd May	ZIMS specimen report for A12M58
2019 No date	Goeldi's diet 2019
2019 26 th February	ZIMS specimen report for A15M23
2019 3 rd March	ZIMS specimen report for A15M78
2019 6 th June	ZIMS specimen report for A19M26
2019 11 th June	ZIMS specimen report for A17M46
2019 18 th December	Historical diet review 2019 to 2015
2020 15 th August	Goeldi's diet diet analysis zootrition
2020 11 th June	Post-mortem report Goeldi monkey A21M07
2020 22 nd July	Note on post-mortem report Goeldi monkey A20M07
2021 3 rd June	Note on retrieved body A21M08
2021 7 th July	Note on post-mortem A19M57
2021 28 th November	Note on post-mortem A21M23
2022 No date	Goeldi's diet 2022 zootrition record
2022 13 th January	A16M37 health check notes under anaesthesia 'Buffy'
2022 17 th May	Post-mortem report for 'Buffy'
2022 17 th May	Note on post-mortem report for 'Buffy'
2022 17 th May	ZIMS Specimen report 'Buffy'
2022 18 th May	Additional note on post-mortem report for 'Buffy'
2022 7 th June	Review by EEP Coordinator for Goeldi's monkey

2022 15th August

Complete daily analysis of diet and diet sheets x 23 docs

2022 17th July

ZIMS Specimen report A20M17

Summary review of the documents reviewed as part of the investigation:

There are two elements to this allegation: the concerns regarding neonatal mortality associated with the Goeldi's monkey births and the influence of diet in causing the deaths.

The investigation team, rather than reviewing the last two years, extended the review period out to eight years (2015 to August 2022) to ensure that all elements of the case were assessed and to understand trends prior to the last two year period and to assess the impact of the diet change, if there was one, during this period. Second the investigation team assessed the dietary documentation and the changes and reviews that may have occurred during this time period.

Inca (A12M58) was a female that died in 2018 of typhlitis (not uncommon in the species) and prior to her death gave birth to four youngsters over the period 2015 to 2017 that all survived, two in 2015, one in 2016 and one in 2017. The two in 2015 and the one in 2017 were exported to other zoos, the third named 'Buffy' (A16M37) was retained and became the breeding female at Dublin Zoo. A new male was brought into the collection, 'Nose' (A19M26). Between 'Buffy' and 'Nose' six youngsters were born between 2019 and 2022. Of these five died, four were stillborn and one was a dystocia which claimed the life of the mother following uterine rupture despite the timely intervention by the veterinary team.

The EEP Coordinator for the Goeldi's monkey, also based at Dublin Zoo, reviewed the situation after Buffy died mid May 2022 and submitted a report via email on the 7th June 2022. In this the EEP Coordinator stated a number of salient points in this case:

- *"Infectious causes had been ruled out"*
- *"Nutritionally, their diet looks great and their requirements are being met fully.There is also less protein in the St Laurent pellets than in their previous commercial Mazuri cake, so again too much protein does not appear to be a factor"*
- *"I have compared the weights of these animals and it is apparent that there is quite a size difference between Nose and Buffy....Goeldi's range in weight from 400-550g (Note by the investigation team: Mittermeir et al (2013) reference male wild as 366g and female wild as 355g with captive animals weighing 450-600g). Buffy has always been on the lighter side (weighed 425g at post mortem) whereas Nose is on the heavy side – his most recent weight was 614g"*
- *"I have learnt a lot from this sequence of events. Weight of individual animals is not something we look at when making recommendations between animals, but it is something I will be much more aware of going forward"*
- *"I know in Dublin we have an excellent training regime with regards to weighing our animals, which not always apparent with other holders"*
- *"I also believe that three breeding attempts is fair and I will be quicker to step in and make recommendations to stop breeding or contracept animals if it goes over that number"*

The diets were reviewed and altered in 2017, 2019, 2020, and 2022 – this does not appear to have had any impact on the outcome and the diet in the last case was considered more than adequate and had been reviewed by the veterinarians as well as section staff.

Findings of the investigation with regards to the specific case

- Mortality rates had been low with the offspring born to the dam A12M58 from the period 2015 to 2017, with 100% success rate.
- One of these offspring A16M37 ('Buffy') was paired with a new male A19M26 ('Nose') and they produced 6 offspring between 2019 and 2022, only one of which survived, the others being still born.
- The weights of the still born infants was either not report or in the two that were they were 66g and 73g, expected reported weights of new borns being approximately 45-66g in weight.
- On case review it was felt that the relatively small female 'Buffy' at 425g was producing large newborns which were dying during dystocia at birth, this was especially so considering the male weighed 614g i.e. the cause of the still borns was foetal oversize.
- This was not apparent as the state of many of the retrieved newborns were in a poor state and weights were not possible except in the two animals above.
- Having reviewed the case steps have been taken to change the advice to the EEP holders and take into consideration size of dam and sire when pairing individuals, this is not typical for other species but is now considered an important consideration in any breeding recommendations for Goeldi's monkeys and this may even have implications for other callitrichids.
- Diet did not appear to be a causal factor in the stillbirths, especially the last birth as this had been actively managed due to concerns it may have been an issue with regards to foetal oversize and as such was actively managed with no change to the outcome.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

- *"The diets were fine but were tinkered with to reduce protein in case this was a factor in the foetal oversize, but even with that in the last case with the caesarean the outcome was the same and the still born foetus was very large".*
- *"There was a gap in communications, I never got to see all the post-mortems so could not act upon it" (the information).*
- *"With any female it is typical to give them three chances to learn what to do and how to rear, not uncommon to lose the first 2-3 births through inexperience across all the zoos".*
- *"The diets were regularly reviewed with input from XX (specialist nutritionist), Edinburgh Zoo and with the team on the best practice guidelines for EAZA. Too much protein was thought to produce bigger babies but actually no evidence that this is true, according to the EEP veterinary advisor. Protein was not the issue here, in fact the diet had very little compared to other collections".*

- *"There were some poor communications in this case but this was resolved this year with the email discussion".*

Interpretation by the investigation team

The allegation states: ***"...ongoing issue with the Goeldi's monkey breeding programme. Keepers have raised concerns about babies dying prematurely. There has been 100% mortality rate of goeldi's monkeys babies over the past 2 years"***. The investigation team recognise that there has been a mortality pattern in the pairings of the Goeldi's monkeys 'Buffy' and 'Nose' which represents 5/6 new-borns being born stillborn from the 27/12/2019 to the 17/05/2022. These were attributed to foetal oversize leading to dystocia and subsequent stillborn neonates. Pedantically, in the last two years from the death of the last animal there was actually an 80% mortality rate in the past 2 years, not 100% as stated as the female A20M17 born on the 21/11/2020 is still alive and weighs in at a massive 561g! However, this does not take away from the poor success rate which is not uncommon in this species. Typically mismothering and inexperience is considered an important factor with Goeldi's monkeys and three births are the maximum number expected before a Goeldi's monkey understands what they need to do, in this case A20M17 (the still living female) was the third birth and the next two died which raised red flags and the veterinary team worked 'Buffy' up ahead of her last pregnancy to try and understand the reasons behind the deaths of the neonates. These tests identified 'Buffy' had normal anatomy and little wrong other than some minor spinal issues which were not linked to the foetal oversize. The last two deaths were not available for weights and so foetal oversize was not possible to identify until the last foetus was passed and assessed at post-mortem alongside the dam. The inspection team believe it to be unrealistic for anyone to have identified this issue at the time and the first three were typical births for a Goeldi's the fourth and fifth were identified as a pattern and investigated but the picture was incomplete until the sixth death. A retrospective view sees the pattern clearly now but it required the chronic long term review of this pattern to identify it, this is an unusual case and even the breeding programme coordinator had not recognised the importance of sire and dam sizes on breeding programme recommendations. As such, with regards to the allegation staff had raised issues once the fourth and fifth deaths occurred, the management and veterinarians worked the cases up and undertook due diligence and did not identify any issues in 'Buffy's health, nor any congenital reasons for the deaths, nor any issues with regard to the diets which had been devised and supported by recognised experts in their field. As such the inspectors note this is a sad case but was not avoidable with the information available at the time, only in retrospect can the diagnosis be made – it is also noted that the whistleblower has misinterpreted the diagnosis from the information they had available to them, this not being direct nor indirect diet related mortalities.

The allegation specifically states ***"On (?) 2 female Goeldi monkey died due to complications with her pregnancy. This could have been avoided if team leaders and management listened to staffs concerns about the diet...(diet) contained a large amount of protein and sugar. This would have a detrimental effect on the animal's health and well being"***. The investigation team do not believe this statement is supported – (i) the diet has been proven not to have been a factor in these cases, (ii) the diets were well formulated by

expert nutritionists and were consistent with that fed at other collections as advised by the EEP coordinator, and (iii) the protein was considered to may be have an impact on the foetal size but this was reduced and had no affect and the veterinary advisor clarified that the link to protein and foetal oversize in callitrichids (marmosets and tamarins) is a myth. As such this opinion is outdated and misinformed with regard to its relevance but also with regard to the causal factors in this case which was simply a large male was mating a large female and producing massively oversized infants that the mother was unable to give birth to.

Zoo Inspection process reflective of addressing the welfare concerns

The death of 'Buffy' occurred the day after the formal zoo inspection and as such had not been reviewed until now as part of this investigation.

Outcome of the investigation with regard to the specific case

The case is a sad one but has been a learning lesson that has moved forwards recommendations for the long-term success of the breeding programme. The investigation team have no evidence from staff that they were ignored regarding dietary changes as evidenced from the multiple diet reviews and work ups carried out on the Goeldi's monkey population. This appears to be a case of foetal oversize which has now been recognised and has changed how the breeding programme manages breeding recommendations. There were areas where communication could have been better but the investigation team are of the opinion that even if this had been in place the lack of robust evidence of the cause only became available with the sixth death and as such the outcome would likely have been the same. As such this was not considered an avoidable series of events and any allegation suggesting otherwise is based on hindsight. It is also noted that the allegation assumes the causes were dietary related and whilst this was considered by the Dublin Zoo team as a potential issue it was proven not to be and modifications made to the diets had no impact on the outcome for the animal in this case. Evidence-based assessment led to the final diagnosis, and this has had profound positive welfare implications across the population, rather than speculation regarding the diets which, in this case, had no impact at all.

References

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- Mittermeier et al (2012) Handbook of The Mammals of the World, Lynx Edicions, pp 951
- Nuss and Warneke (2010) Life span, Reproductive Output, and Reproductive Opportunity in Captive Goeldi's monkeys (*Callimico goeldii*), Zoo Biology, 29, pp 1-15
- Porter (2001) Dietary differences among sympatric Callitrichinae in Northern Bolivia, International Journal of Primatology, 22(6), 961-992

- Porter et al (2009) Exudates as a fallback food for *Callimico goeldii*, American Journal of Primatology, 71, pp 120-129
- Ross et al (2010) Maternal care and infant development in *Callimico goeldii* and *Callithrix jacchus*, Primates, 51, pp 315-325
- Ruivo and Stevenson (2017) EAZA Best Practice Guidelines: Callitrichidae, Version 3.1, EAZA, pp 269
- Ruivo, Stevenson and Rylands (2022) EAZA Best Practice Guidelines: Callitrichidae, Version 3.2, EAZA, pp 316

22.0 'Tafara', African wild dog death from conspecific injury

Date of incident:	Died 29 th April 2022
Species & identification:	African wild dog (<i>Lycaon pictus</i>), male 7 years and 11 months Local ID A15M42
Allegation:	

Protected disclosure: full contents not disclosed due to nature they were received in. In this case only the protected disclosure contains the allegation and as such the key elements have been taken to outline the welfare allegation: "...on the 21/04/2022 a female hunting dog suffered severe injuries. Despite staff raising concerns about the animal on the 21/04/2022 a vet did not examine the animal until the 25/04/2022... the animal died 2 days later on the 27/04/2022 due to management's failure to get the animal veterinary attention for 4 days". Other issues pertaining to the management of the pack.

Origin of the allegation: Protected disclosure, 8th August 2022

Documents reviewed as part of the investigation:

2022 29 th April	African hunting dog Tafara post-mortem
2022 29 th April	African hunting dog ZIMS Medical history Tafara
2022 29 th April	ZIMS Specimen report Tafara
2022 24 th July	ZIMS Specimen report Mazamba
2022 24 th July	ZIMS Specimen report Flip
2022 24 th July	ZIMS Specimen report Flop

Summary review of the documents reviewed as part of the investigation:

'Tafara' was a male African hunting or wild dog (AWD), born on the 5th November 2012.

On the 19th April 2022 he was being bullied by 'Mazamba' (male) and 'Flop' (female-contracepted) which was not unusual when 'Flop' was in season. 'Tafara' was using the second house with the others in the main den, it was noted that 'Tafara' was missing some fur from his back end.

On the 20th the veterinarian assessed him visually and prescribed pain relief. It was noted there were a lot of flies around the wound. Treated as a superficial wound which is typical of AWD fights. On the 21st he wasn't interested in food and 'Flip' (female – contracepted) was staying by him. A lot of flies noted in the record. Not taking meds nor food. Still no improvement on the 22nd when the vets checked him, plan to monitor him intensely over the next few days and then reassess plan.

On the 23rd he was reassessed by the vets and due to the poor response to initial therapy the decision was made to dart him with analgesia and long acting antibiotics (one injection

lasting approximately 10-14 days), he looked more comfortable soon after and interacting with the other AWD. However, had not eaten when checked last thing and was seen to be shivering. At this stage the vets plan to investigate him further under anaesthesia if no improvement following conservative treatment.

On the 24th not very bright, reported to the vets and the following morning a general anaesthetic was undertaken. The extent of his wounds only became apparent once his fur had been clipped: he had a major puncture wound to the right abdominal wall with extensive damage to the underlying fat and musculature, but there was no penetration to the abdominal cavity following extensive flushing of the wound. Swabs were taken for bacteriology. It was considered that the hole was actually an abscess that had burst that morning. Two other puncture wounds were found on the right thigh, and one on the left hind. He was dehydrated and given intravenous fluids and bloods were taken showing a white blood cell picture indicative of infection. The prognosis was guarded and the plan was to review the cultures from the swabs, continue pain relief, antibiotics (already on board) and supportive care.

On the 26th he was uneasy on his feet and no interest in feeding. Did eat later in the day and vet reported checked him in the husbandry notes (but not in the medical).

On the 27th wounds looking drier, movement is slow and stiff, plan to recheck tomorrow under general anaesthesia as condition not where expected, guarded prognosis still and possible euthanasia tomorrow based on findings.

On the 28th April 'Tafara' was anaesthetised for the second time that week. He had eaten some food and was having positive interactions with the other AWD. The abdominal wound had dried and had a small abscess in the dead space which was drained and flushed. He had developed a little urine scald on the ventrum which had a small area of fly strike present as a result. All the wounds were cleaned and flushed, the urine scald cleaned, topical antibiotic spray applied, topical fly repellent applied, and Stockholm tar applied. He was given a number of pain relief medications, anti-nausea medication, antibiotics and intravenous fluids. He recovered well and ate well later the same day.

On the 29th April he was found dead in the morning.

A full post-mortem was carried out on the same day, he was in good condition, with sufficient visceral fat reserves and minimal autolysis. A large abscess had formed overnight with liquid puss in the subcutaneous tissues and muscles of the left flank. The gross post-mortem indicated sepsis which was confirmed at histopathology.

Findings of the investigation with regards to the specific case

- 'Tafara' was attacked by his conspecifics on the 19th April 2022, which was noted by staff as an area of hair loss and was subsequently assessed by the vet team on the next day where analgesia was prescribed.

- Initially thought to be a typical superficial wound, but expected pattern did not appear with 'Tafara' deteriorating over the next few days.
- From the initial wound being noted on the 19th to the 28th being the last day before he was found dead the vets visited and assessed 'Tafara' a total of 6 times over 9 days, with two of those days having general anaesthetics and drainage of severe bite wounds which only became apparent once checked under anaesthesia on day five after he deteriorated.
- Abscesses were noted and cleaned but developed rapidly on a generalised background of sepsis (systemic infection), the causal agent not identified in the medical records supplied.
- "Tafara' was an adult male AWD.

Interview responses to the alleged welfare case

No. of staff interviewed:

5

- "No maggots in wounds".
- "Not true not vet did not examine the animal until the 25th, that was the first general anaesthetic – vet assessed the animal on the 20th, 22nd and 23rd and once noted not responding to treatment as planned then needed to intervene and assess fully under anaesthesia".
- "Not female, 'Tafara' was a male – just shows that whoever making these statements only has half truths and makes the rest up. No idea what they are talking about. Makes my blood boil, pretending they care and they cannot even identify his sex correctly".
- "No concerns raised previously, we had some issues with the house and management but that is being resolved with the new build. Even then not a major issue".

Interpretation by the investigation team

The specific elements of the allegation regarding the welfare of 'Tafara' stated **"...on the 21/04/2022 a female hunting dog suffered severe injuries. Despite staff raising concerns about the animal on the 21/04/2022 a vet did not examine the animal until the 25/04/2022... the animal died 2 days later on the 27/04/2022 due to management's failure to get the animal veterinary attention for 4 days"**. The investigation team do not recognise this narrative of the events as described in the animal records, the medical records nor the post-mortem. Firstly "Tafara' was a male, not a female African hunting dog (AWD). Second, the animal was attacked on the 19th April and assessed by a veterinarian on the 20th whom prescribed a reasonable treatment of pain relief in response to what appeared to be superficial wounds, typical of a AWB fight. Thirdly by the 25th April 'Tafara' had been examined by veterinarians three times with the fourth examination being undertaken under general anaesthesia, this is reasonable and justified. The 'animal' 'Tafara' received an additional assessment on the 27th and an additional anaesthetic on the 28th April, a day after he had allegedly died, and fourthly he was found dead on the 29th April not the 27th April 2022. Most of the 'facts' of the allegation are wrong, from the sex of the animal, the number of clinical examinations carried out by the vets, the frequency and nature of those assessments and the date of 'Tafara's' death.

In addition, in the original allegation the whistleblower states that “ ***When the animal was examined by the vet the wound were extensive and had maggots in some sounds***” . There were no maggots reported in the wounds, only a small number on secondary urine scald dermatitis on the skin which were not directly related to the wounds which were cleaned and flushed. Again this is second hand reference lacking any first hand knowledge of the events as occurred. This allegation lacks any credibility to the facts other than an AWD was attacked and ultimately died, despite the proactive interventions of the veterinary team and animal care staff.

The investigation team note, to give context of the conspecific aggression between AWD this is not considered unusual. In the wild AWD mortality is primarily predation (33%), then disease (26%), then human-AWD conflict (20%) and finally other AWD killing each other (19%) (Woodroffe et al, 2007). Obviously in a captive situation such as Dublin Zoo predation, disease and human-wildlife conflict are not mortality factors that are considered high risk and as such AWD-AWD aggression related deaths becomes an important mortality consideration when looking at AWD husbandry.

Zoo Inspection process reflective of addressing the welfare concerns

The African wild dog died just under three weeks prior to the formal inspection, as such the annual inventory would not have picked this up until the subsequent inspection. This would only have been flagged by the vet team or the zoo operators during the inspection and whilst a sad case it is not atypical and is unlikely to have raised concerns as described in the medical and husbandry records or by the staff reporting the case, other than it is a sad and unfortunate event.

Outcome of the investigation with regard to the specific case

The allegation is not supported by the contemporaneous accounts or written documentation, indeed the majority of the detail of the allegation is completely incorrect and as such is unfounded and lacks any credibility.

References

- Woodroffe et al (2007) Rates and causes of mortality in Endangered African wild dogs *Lycaon pictus*: lessons for management and monitoring, *Oryx*, Vol 41, 2, 215- 223
- Yordy and Mossotti (2016) Kinship, Maternal Effects, and Management Juvenile Mortality and Survival in Captive African Painted Dogs, *Lycaon pictus*, *Zoo Biology*, 35, pp 367-377

23.0 'Trouble', ostrich copulation fractured pelvis left untreated

Date of incident:	Incident between 2017 to 2018
Species & identification:	Ostrich (<i>Struthio camelus</i>), female 7 years and 3 months Local ID A13B08
Allegation:	

Journalist 01 reporting on whistleblower(s) comments: "Between 2017 and 2018, an Ostrich mated with a large male who was too heavy for her and broke her pelvis. She was left untreated for approximately 8 months. She was found dead in her pen. Why was she left for so long with a broken pelvis, and what investigations took place into this animal's death and what were the zoo's findings?"

Origin of the allegation: Journalist 01, 17th August 2022 (c/o Dublin Zoo)

Documents reviewed as part of the investigation:

2017 23rd November ZIMS Animal Record 17/04/12
Radiographs taken

Summary review of the documents reviewed as part of the investigation:

Ostrich group history but spread across the individual animals assessed from 17th April 2012 to 23rd November 2017, the day this reported ostrich was found dead. There is a lot of history as it reflects the whole herd but the salient points to this case include:

- Microchipped in left thigh
- Transported in 2013 to Dublin Zoo
- Introduced into the Africa habitat July 2013
- Scimitar horned oryx aggressively chasing the young birds November 2013 but settled down relatively quickly
- On and off lameness issues over the years but otherwise little else. Mostly treated with analgesia.
- Blood in the ostrich pen 19th January 201 but due to a pulled blood feather which soon resolved.
- One ostrich coughed up green fluid on the 17th February 2017, vet assessed (no more notes on this case).
- One ostrich leg clicking when walking reported 23rd August 2017. Repeatedly checked by vet and given pain relief and antibiotics. Continued to monitor response to analgesia which worked well initially but not improving as expected, general anaesthesia assessment and radiographs undertaken on the 14th September 2017 – identified old fractured pelvis that had healed and new fracture which was also healing well. Named 'Trouble' and microchipped 4995-A13B08. Plan was cage rest for 6 weeks with supportive care.

- By the 6th October 'Trouble' appears to have swollen joints, hand injecting analgesia to support. Supportive care with hand feeding slurry and water given as reluctant to move. Eventually let out on to the yards and consideration discussed re repeat radiographs to assess the healing of the pelvis.
- On the 2nd November 'Trouble' was noted to not be doing well, her breathing was laboured and she was not feeding and lying down all day. She also had green mucous coming from her mouth. She was given an antibiotic injection and pain relief with a planned CT scan booked for the following Monday (6th). She was found dead in her pen the next morning and taken to UCD for post-mortem.

The post-mortem report indicated a diffuse fungal pneumonia and air sacculitis, which was cultured as *Aspergillus fumigatus*. The cause of death was severe systemic mycosis due to aspergillosis. In addition, there was marked degenerative joint disease of the hocks and an incidental finding of arteriosclerosis. No mention was made with respect to the fractured pelvis.

Findings of the investigation with regards to the specific case

- 'Trouble' the ostrich noted to have clicking gait on the 23rd August 2017.
- She was checked by the vet on the 24th August 2017 and started on pain relief.
- She was not responding as well as would be hopped so under a full health check under anaesthesia on the 14th September where identified new and old healing pelvic fractures, cause unknown. Plan was cage rest and supportive therapy for six weeks.
- By October 'Trouble' not responding as hoped and had developed swollen joints, later confirmed as inflammatory joint disease, continued to rest and treat with pain relief with supportive feeding. By the end of October plan to repeat radiographs and even a CT scan to assess the extent and issues of the pelvis and hind limbs.
- Early November deteriorated just prior to second work up and found dead on 3rd November 2017, cause of death severe aspergillosis and degenerative joint disease. Oddly, the post-mortem report did not mention the pelvic fracture.

Interview responses to the alleged welfare case

No. of staff interviewed:

2

- Limited due to the historic nature of the case
- *"No recollection of a male mating a female leading to the fracture of the pelvis, thought was a historical issue that was unknown and reoccurred or possibly another animal such as a zebra causing the injury. There were no specific known events at the time, only speculation that was never proven".*

Interpretation by the investigation team

The allegation asks the question ***"Between 2017 and 2018, an Ostrich mated with a large male who was too heavy for her and broke her pelvis. She was left untreated for approximately 8 months. She was found dead in her pen."*** The investigation team cannot find any evidence in the verbal nor documented records of any male mating a female and

fracturing her back. This seems highly unlikely, especially as the female was circa 100kg. 'Trouble' was identified as having the fractured pelvis on the 14th September 2017, with clinical signs likely attributed to this first noted on the 23rd August 2017 with treatment started on the 24th August 2017 which continued until she died. She was found dead in her pen having died from aspergillosis, a relatively common disease of captive birds. As such the allegation is mostly unfounded other than she died in her pen, which was unrelated to a fractured pelvis.

Follow up questions asked: ***"Why was she left for so long with a broken pelvis, and what investigations took place into this animal's death and what were the zoo's findings?"*** 'Trouble' was treated immediately, prior to the diagnosis of a fractured pelvis with pain relief and once identified she was treated appropriately with cage rest for six weeks. During this time she succumbed to aspergillosis and died. A post-mortem was carried out with details confirming the cause of death was aspergillosis both at gross and histological post-mortem.

Zoo Inspection process reflective of addressing the welfare concerns

No specific notes or recollection of this case were made in the 2018 report.

Outcome of the investigation with regard to the specific case

The investigation team can confirm that there was an ostrich that had a fractured pelvis (synsacrum) that was likely an old undiagnosed injury and then a second fracture occurred over the old one, the cause is unknown but is thought highly unlikely to be related to the male ostrich mating the 100kg female. During her veterinary care and cage rest she developed aspergillosis and succumbed to this ubiquitous disease. No fault was found with regard to the case and 'Trouble' received appropriate veterinary care for the duration of her treatment up until the time of her death.

References

- Khan and Olumide (2005) Head Injury Caused by an Ostrich: A Rare Entity, Pediatric Neurosurgery, 42, pp 308-310
- Peel et al (2022) Management of intertarsal septic arthritis in an ostrich, Veterinary Medicine and Science, 8, pp 125-129
- Raghav et al (2020) Management of Knuckling in an Ostrich Using a Custom-Made Orthotic Shoe, Journal of Avian Medicine and Surgery, 34(4), pp381-389
- Smith et al (2006) Muscle architecture and functional anatomy of the pelvic limb of the ostrich, Journal of Anatomy, 209, pp 765-779
- Samour (2016) Avian Medicine, Elsevier, pp 699
- Speer (2016) Current Therpay In Avian Medicine and Surgery, Elsevier, pp 908
- Usurelu et al (2015) Abdominal trauma by ostrich, Annals Of Medicine and Surgery, 4, pp 41-43

END

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION
APPENDIX 04

WELFARE ALLEGATIONS – INDIVIDUAL SUMMARY CASE ASSESSMENTS

DATE:	14 th JULY 2022 – 29 th SEPTEMBER 2022	
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The following is a brief summary of the details of each allegation and the findings by the investigation team.

NPWS ZOO INSPECTORATE DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION

NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
01	Kildare, Grant's zebra, female 23 years and 5 months Euthanased 3 rd December 2020 Note: Aired on The Zoo	<ul style="list-style-type: none"> Euthanased after complications during a tooth extraction Severely paralysed post anaesthesia Was to be hung overnight in a harness, despite severely paralysed Staff distraught 	<ul style="list-style-type: none"> Welfare challenged but under veterinary care in attempt to support and treat Kildare Kildare given every chance as would have been expected Unfounded 	<ul style="list-style-type: none"> Kildare did not have capture myopathy The treatment Kildare received was recognised as best practice and she improved on the second morning, but deteriorated later in the day where all attempts had failed and she was euthanased Joint decision-making process between staff present
02	Maeve, Baringo giraffe, female 23 years and 11 months Euthanased 28 th June 2022	<ul style="list-style-type: none"> Maeve was on quality of life assessment due to long standing orthopaedic issues Maeve was not being consistently assessed to determine her quality of life Staff had to watch her lay and slowly die while kicking out to try and gain her footing Video taken by staff asked to delete was to cover up wrong doing Clearly an unwell animal 	<ul style="list-style-type: none"> Welfare was actively monitored and Maeve was in good condition considering her ailments up until the day before she fell and was unable to stand, where she was then euthanased– post mortem confirmed suspected degenerative joint disease Unfounded 	<ul style="list-style-type: none"> Maeve was on active focal welfare assessments to ensure regular assessment was undertaken of her condition and that her needs were met, these were monthly and last one was six days before she died <i>'Not consistently nor regularly assessed as to quality of life'</i> not true Maeve kicked out a maximum of three times prior to her being euthanased, see image in her case review, very calm prior to her euthanasia Maeve did not die slowly, she was euthanased One person took video and this was asked to be deleted, in one attempt this same person disturbed Maeve and led to one of the three kicking episodes Maeve had some muscle atrophy but was low end normal body condition score and had ample fat at post mortem.

NPWS ZOO INSPECTORATE DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION

NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
03	<p>Harry, Wstrn. lowland gorilla, male 29 years and 8 months Died 29th May 2016</p> <p>Note: Aired on The Zoo</p>	<ul style="list-style-type: none"> It was reported in daily reports that his behaviour was abnormal He was losing weight and condition Keepers asked for a vet to come and eventually one did and he died shortly after Photos of Harry at the end show he suffered greatly After his death no explanations were given and no post-mortem report was shown to staff 	<ul style="list-style-type: none"> Harry's husbandry record mention no issues through January to March, new gorillas in and nothing other than Harry was a bit off mentioned on the 8th May and then nothing in the digital records nor the daily diary until the 22nd May where he seemed lethargic and then developed diarrhoea with a sample given to the vets on the 23rd. He was actively supported as a gastrointestinal disease case, this became progressively worse and he died early on the 29th May Harry died from a basilar artery occlusion, likely due to long standing anatomical issues Allegation factually incorrect recollection on the most part Unfounded 	<ul style="list-style-type: none"> Received competent and comprehensive veterinary care in that last week, responding to the presenting clinical signs Harry lost his belly in response to the severe diarrhoea he experienced, this was not weight loss as he was obese at post-mortem, it was loss of fermenting gas for digestion Vets were present every day from the 24th May until he died, but had been in consultation when it was a simple diarrhoea case from first day noted The remaining staff are of the impression that Harry had proactive and competent care, recollection of the allegator does not fit the events noted by several staff present at the time The post-mortem was discussed in detail with the gorilla team, this can be seen in The Zoo, which shows the basilar artery occlusion
04	<p>Sulawesi crested macaques (SCM) Multiple Escapes (Jan 2021 primary case)</p>	<ul style="list-style-type: none"> Two SCM went missing or were presumed dead in November 2019 Management have not looked thoroughly for these animals nor informed the public Management say staff do not know the number of animals present, state 24 but now 22 	<ul style="list-style-type: none"> Dublin Zoo was not historically compliant and SCM escapes were an almost daily occurrence historically, steps have been taken to reverse this since 2019 which has seen a huge reduction but still some escapes occur Now well managed Unfounded, historical 	<ul style="list-style-type: none"> Only one SCM escaped in 2019 and only one SCM died in 2019 Two did escape January 2021, with one being seen to fall and be lost under the ice, the same was thought of the second Extensive searches for the animals were undertaken

NPWS ZOO INSPECTORATE DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION

NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
				<ul style="list-style-type: none"> There were never 24 SCM when the two went missing, there were actually only 22 SCM
05	Eline, mangabey (WCM), female 5 years and 7 months Escape 21 st / 22 nd February 2022	<ul style="list-style-type: none"> In February and March this year a WCM went missing, presumed dead Despite staff raising the issue of the animals not being found the management have not looked thoroughly for these animals 	<ul style="list-style-type: none"> Escape occurred on the 22nd February 2022, during Storm Eunice and Franklin which initially hampered extensive searches Searches carried out until 3rd March where presumed dead, a total of 10 days searching Dublin zoo, where practicable, discharged their duties to attempt to retrieve Eline Unfounded, historical 	<ul style="list-style-type: none"> Eline went missing overnight on the 22nd February, the time of Storm Eunice and Franklin 10 days of searches, no behaviour from male WCM indicative female present (normally very vocal) No history in 22 years of an escape occurring previously
06	A16B03, citron-crested cockatoo, male 7 years 1 month Escape 22 nd May 2022	<ul style="list-style-type: none"> Failed to follow any protocols since its escape 	<ul style="list-style-type: none"> A16B03 pulled mesh clips off roof panel and escaped, mobbed by corvids and not seen again despite extensive searches for three days and then trapping for 3-4 weeks in local area Declared dead after no sightings Unfounded, historical 	<ul style="list-style-type: none"> Extensive searches carried out by all staff for three days but the cockatoo pushed off by local corvids Baited area and left roof open for 3-4 weeks, followed protocols and informed NPWS Steps taken to ensure cannot happen again – adapted roof structures Dublin Zoo followed their protocols and were compliant with the ISMZP
07	General statements alleging wider welfare issues	<ul style="list-style-type: none"> “...only a snapshot of the stories which I’ve just shared today about the failings and animal welfare in Dublin Zoo” “...serious breaches of animal welfare in Dublin Zoo” 	<ul style="list-style-type: none"> Only one issue in addition to the existing 23 allegations following interviews with staff (shelters) Generally, a positive culture towards welfare 	<ul style="list-style-type: none"> The individual cases mentioned in the allegations (no others mentioned other than shelters) are challenging cases in most instances that have been well managed in most instances, with Dublin Zoo taking proactive steps to assure

NPWS ZOO INSPECTORATE DUBLIN ZOO WELFARE ALLEGATIONS INVESTIGATION

NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
		<ul style="list-style-type: none"> “...the unnecessary death and mishandling of endangered animal species within Dublin Zoo” 	<ul style="list-style-type: none"> Considerable gripes due to post covid staffing levels primary complaint Unfounded 	<p>welfare, dignity and respect for the animals in their care</p> <ul style="list-style-type: none"> Two main cases areas of concern, cases 12 and 14, now resolved.
08	<p>Bossou, chimpanzee, male 18 years and 11 months (alive) Conflict Nov 2020 to Sept 2021</p> <p>Note: Aired on The Zoo</p>	<ul style="list-style-type: none"> Breakdown in chimp hierarchy led to Bossou having fingers bitten, requiring amputation Bossou behaviour impacted in a negative manner 	<ul style="list-style-type: none"> The investigation team can confirm that there was a hierarchical change and as a result of a complex, dynamic situation Bossou was targeted by the new alpha male and was injured requiring several digital amputations This was a complex but well managed situation by both the vet team and management, external technical advisors were utilised to provide support Unfortunately, this has led to the split of the troop into two Both well managed and Bossou appears content in current situation Poor understanding in allegation Unfounded 	<ul style="list-style-type: none"> Chimpanzee management as a fission-fusion methodology is challenging at the best of times but has the added addition of poorly socialised chimpanzees at Dublin Zoo with the alpha male originally being raised in a lab setting. Changes in the group structure led to the male Marlon becoming dominant, this has led to targeted attacks on Bossou and all efforts were made to support the hierarchy and ensure a positive welfare outcome could be achieved. Despite this the plan failed and has led to the troop splitting. Both units are content, and no concerns noted at this current time. Long-term plan needs careful consideration
09	<p>Niamh, Amur tiger, female 18 years and 11 months Euthanased 8th March 2022</p>	<ul style="list-style-type: none"> 2021 Niamh has bad muscle tone in her legs, underweight 18 years old – not had quality of life assessment 2022 Post euthanasia, three more keepers have contacted journalist that no action taken in response to concerns regarding her welfare and she should have been euthanased earlier. 	<ul style="list-style-type: none"> Comprehensive medical records with frequent reviews at clin path meeting from Jan 2019 and focal welfare assessments (Niamh first animal for this process) from Oct 2021 until her euthanasia in March 2022 All of the cat team and other staff were interviewed and 9/12 felt she was euthanased at the right time, 	<ul style="list-style-type: none"> Niamh had chronic renal failure, spondylosis and had hip dysplasia with congenital loss of the right teres ligament, the former being a very common cause of death in felids, both domestic and wild in captivity The case was appropriately managed and her welfare considered throughout There was no evidence of staff begging for euthanasia and all staff comments

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NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
			<p>2/12 felt should have been earlier (weeks), and 1/12 had no opinion eitherway</p> <ul style="list-style-type: none"> • Unfounded 	<p>were reflected in the focal welfare assessments (despite some staff believing this was not the case)</p> <ul style="list-style-type: none"> • Priority was Niamh's welfare
10	General allegation of lack of time for enrichment	<ul style="list-style-type: none"> • Claimed that animals are bored and lack stimulation, staff do not have sufficient time for enrichment or training 	<ul style="list-style-type: none"> • During the pandemic, when the allegation was made this was in part substantiated but at this current time enrichment provision was considered adequate but not at the same levels as pre-covid • Considered historical • Unfounded 	<ul style="list-style-type: none"> • At the time of the allegation (2021) the zoo was coming out of covid financial controls and there had been reductions and efficiencies made • During site visits, one undercover, there was considerable enrichment on display and staff witnessed watching their animals engage with the items given • General staffing level complaints made by staff when comparing to pre-covid levels, but these are a management issue that does not visibly appear to be impacting welfare despite perceptions that it does
11	Shea, Humboldt penguin, male 20 years and 6 months Died 5 th January 2021	<ul style="list-style-type: none"> • A penguin who was held in an unsatisfactory pen cut his foot and despite being reported bled and died in poor conditions 	<ul style="list-style-type: none"> • Penguins were moved into a facility designed for the sea lions in response to avian influenza DAFM requirements (under cover, separated from wild birds) • Shea died of suspected aspergillosis, a disease he had potentially had historically, the cut to the foot did happen but was considered incidental and unrelated to his death 	<ul style="list-style-type: none"> • Shea was moved to a pen system that had a pool as had to be maintained indoors due to avian influenza (AI) control measures in place at that time • No other birds succumbed to aspergillosis nor other elements in the same pen system, suspected long term issue with Shea himself • Aspergillosis highly suspected from description but not confirmed at post-

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NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
			<ul style="list-style-type: none"> Unfounded 	<p>mortem which was undertaken to assess AI by DAFM</p> <ul style="list-style-type: none"> Cut foot relevance, no link to his death
12	Sea lions undernourished and poor-quality food Late 2019 to January 2020 Abortion 7 th February 2020	<ul style="list-style-type: none"> 1. Journalist 2021; Sea lions and penguins are undernourished and food is not adequate for consumption 2. Protected disclosure: Late 2019 to January 2020 there were concerns regarding sea lion diets and fish quality leading to sea lions losing weight and being unwell. Seanna still born pup 7th Feb 2022, underweight when had pup... believe diet was a contributing factor in the pup's death. 	<ul style="list-style-type: none"> There were issues with the fish quality which Dublin Zoo recognised and launched a proactive programme of training, process review, new suppliers, new equipment and other factors to improve this so that now provide fish suitable for human consumption Process change started early 2020, ongoing evaluation and controls in place including staff change on section Supported, historical Seanna abortion no evidence linked to diet. She was at a low weight at the time the pup was aborted, staff had failed to weigh her (others were weighed during this time), failed to recognise she was pregnant, and failed to identify that she was the mother that had aborted until June 2020 – numerous errors in management in this case and failure to follow the limited protocols in place. 	<ul style="list-style-type: none"> Food issues were identified and collective endeavour to resolve during covid lock down Where food was poor quality staff were sent to the local fish markets to obtain fresh food at considerable cost, not a long-term solution Fish bought in batches due to nature of provision (frozen 2-3 month batch) and so changes took time to process Identified most issues histamine related, not microbiological – extensive food safety testing of all batches in place now Well managed and continues to evolve, currently exemplary Sickness in the sea lions occurred predominantly quarter 3 2020 to quarter 1 2021 which is not consistent with the allegation, a total of 34 sickness or diarrhoea incidents over 24 months, with only 1 noted in whole of 2022 – causal links not identified and may be unrelated, abortion occurred prior to main time of gastrointestinal upset and Seanna actually gave birth to healthy pup at height of the sickness and

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NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
			<ul style="list-style-type: none"> Pup post-mortem speculated infection of the placenta Staffing change and complete overhaul of processes now demonstrate exemplary standards and no further concerns Supported, historical 	<p>diarrhoea so relevance is not clear in this case, but now resolved</p> <ul style="list-style-type: none"> Numerous failings in husbandry provision during 2019 to 2020, now resolved with change of staff
13	General allegation regarding refusal to euthanase animals	<ul style="list-style-type: none"> Dublin Zoo refuses to euthanase some animals in order to register their deaths as natural 	<ul style="list-style-type: none"> No evidence to support this statement Dublin Zoo has and continues to promote a philosophy that is pro-welfare and publicly demonstrates the use of euthanasia as a tool, but as a tool of last resort to protect the welfare of the animals within the collection Unfounded 	<ul style="list-style-type: none"> No evidence do not euthanase animals, it is a tool that is well considered and used where required Example: four of the 15 alleged welfare cases were euthanased, the rest died of natural causes The Zoo television series demonstrates a number of other cases, openly discussed in a public forum Note: that the zoo licensing does not differentiate between 'euthanased' or 'died naturally', there is no benefit from having this position promoting natural deaths as no one formally audits this decision
14	Niko, California sea lion, male 7 years and 11 months Died 30th May 2020	<ul style="list-style-type: none"> Sea lion left with no access to water on one of the hottest days of the year at 26 degrees. Niko died within hours of being isolated in his pen. 	<ul style="list-style-type: none"> Niko had no confirmed cause of death despite post-mortem but circumstantial evidence highly suggestive of hyperthermia Number of failings noted on the day and in combination it is plausible to result in a situation that promoted hyperthermia Number of processes in place means it will not happen again, 	<ul style="list-style-type: none"> Situational aspects: three populations within a facility designed for two, predominantly covid and Brexit prevention of moving animals on Environmental aspects: warm day, facility in particularly hot area of the zoo but well under the published temperature ranges for pinnipeds Keeper management: separated in pen with no water or sprinkler despite being

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NO.	SPECIES	ALLEGATION	FINDING	JUSTIFICATION
			<p>staff on section at the time are no longer working the sea lion section</p> <ul style="list-style-type: none"> Excessive period locked in with no water – failed to meet welfare, needs, supported on these grounds Supported, historical 	<p>available, was left in pen for approximately 5 hours, minimal checks, found dead. Considered keeper error.</p> <ul style="list-style-type: none"> Dublin Zoo took precautionary measures as agreed hyperthermia most likely cause See case review for details – complex case, partial assumptions made
15	<p>??, Scimitar-horned oryx (SHO), ??</p> <p>?? Animal not identified</p> <p>Died 'a number of years ago'</p>	<ul style="list-style-type: none"> An oryx gave birth to a calf a number of years ago, mother was unable to look after it. Staff were ignored when they asked to hand raise or euthanase it. Calf died after 2-3 days from starvation after being left to die 	<ul style="list-style-type: none"> Investigation team reviewed all SHO births going back to 1980, only 4 calves reported to have died in the last 42 years All accounted for, all had full stomachs with milk and no evidence of mismothering Unable to provide any evidence of such a case having occurred Unfounded 	<ul style="list-style-type: none"> Reviewed 42 years worth of data and identified only 4 calves that died: fungal bronchopneumonia, congenital heart lesion non-compatible with life, open case of diarrhoea (cause unknown), and a single calf that died of a mixed rotavirus-cryptosporidiosis case The age of calves at time of death were 3d, 1d, 2d and the last one which was being support fed and treated by the vets was 17 days old. None fit the picture of having starved to death after 2-3 days All underwent post-mortem: all had food in their stomachs, starvation was not the cause of death in any of them, mismothering was also not identified
16	<p>A22M01, Bornean orangutan, male 11 days old</p> <p>Died 10th February 2022</p> <p>Note: Aired on The Zoo</p> <p>A20M12, Siamang, male 1 year and 6 months</p>	<ul style="list-style-type: none"> Major, orangutan female struggling with her son who was taken off and then put back with her but she smashed its skull and he died after five days. Major was then put back with the other orangutans and gibbons and despite staff concerns, she took a 	<ul style="list-style-type: none"> Major did kill her male infant instantaneously when it was 11 days old, this is well described and shown on The Zoo. An unidentified orangutan was seen by the public to interact with a siamang and in the process this was killed when a struggle 	<ul style="list-style-type: none"> Whilst the deaths of the orangutan and the siamang infants is not disputed the narrative outlined in the allegations is not a credible account of the events that occurred, indeed they are second hand or speculative at best Staff were constantly watching Major whilst she had the infant orangutan and

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	Died 25 th February 2022	<p>baby gibbon which was subsequently injured and died. There was no time for staff to monitor Majur and management ignored staff requests not to mix them.</p>	<p>occurred between the orangutans, some 2 weeks after Majur was let out with the rest of the group</p> <ul style="list-style-type: none"> The two incidents are as likely to be coincidental as they are linked. Unfounded 	<p>for a considerable time after its death, plenty of time was provided to monitor the situation and the statement regarding no time is a fabrication</p> <ul style="list-style-type: none"> The incident was a challenging event that was well managed and supported by multiple technical specialists, the outcome was unsatisfactory for all.
17	Ozone leaking from Sea lion Cove Historical issue – no dates	<ul style="list-style-type: none"> Ozone generated from the filtration system was poorly managed and led to a risk to staff, public and the sea lions. One member of staff and a contractor became sick and one required an ambulance. 	<ul style="list-style-type: none"> There have been numerous issues with the filtration system including the ozone at Sea lion Cove There were two incidents – in both the person felt lightheaded when working in the filtration room, which passed when moved to outside air, not formally linked to ozone or the filtration in either case Unfounded, possibly historical 	<ul style="list-style-type: none"> Investigated by Dublin Zoo's Health and Safety Consultant and as a matter of due diligence reported to the HAS as a possible dangerous occurrence Reviews were undertaken, no evidence of ozone leaks on assessment but did notice alarm cabling alongside a main power cable which was triggering false ozone alarms due to interference – moved cable and resolved New systems in place, all staff wear ozone alarms and air extraction changed along with automatic venting if ozone reaches very low thresholds Not an issue, no evidence ever was one
18	Tundra, Amur tiger, female 7 years 3 months Jan 2020 to present (alive)	<ul style="list-style-type: none"> Tundra underwent an procedure in early 2021 which led to complications due to management's lack of planning and consulting keepers on her history, ... she suffered a number of long-term side effects...Tundra's quality of life has suffered due to complications from 	<ul style="list-style-type: none"> Routine anaesthetic on 29th January 2020, not 2021 as alleged, led to the complications, these were unexpected, unavoidable, and highly unusual Has led to long-term complications including partial blindness and possibly linked to recent epileptic 	<ul style="list-style-type: none"> Comprehensive records of assessments, medical checks, anaesthetics, consultant and management level discussions regarding her welfare Regular animal welfare audits and focal welfare assessments carried out, well documented Initial cause of the complications in January 2020 unknown but well

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		the routine procedure, since then Tundra has had no observations or quality of life assessments have been implemented or maintained	<p>like episodes which started in the last 12 months</p> <ul style="list-style-type: none"> • Very well managed • Unfounded 	<p>considered programme and Tundra's welfare is paramount in the care provided for her</p> <ul style="list-style-type: none"> • Allegation ill informed, based on second hand information and created a narrative not reflective of the events as they occurred
19	General comment red panda habitat too close to large carnivores Current	<ul style="list-style-type: none"> • The new red panda habitat is against the BAZA guidelines which states that the animal should not be kept within 50m of a carnivore. 	<ul style="list-style-type: none"> • The red panda is within 50m of snow leopard, tiger, wolves and California sea lions as suggested in the EAZA best practice guidelines • There are no BIAZA red panda guidelines • Supported (but questionable welfare issue) • However, this recommendation was considered by management and the current facility was permitted based on experience of management team in other collections – see full case review for details 	<ul style="list-style-type: none"> • The recommendation with regard to 50m distance had been around since the late 1980s to the early 1990s – note it is large carnivores as red pandas are also carnivores, as written in allegation would mean cannot keep red pandas together • It is a recommendation and speculative at best but has good reasoning behind it • Approximately 1/3 zoos globally have red pandas close to large carnivores, in some it has a negative impact, for others it does not appear to be an issue – down to the individual • Whether a welfare issue or not is dependent on the individual red pandas at Dublin Zoo, this is reflected in the recommendations in this report
20	General comment with regard to inbreeding at Dublin Zoo Focus on Scimitar-horned oryx (SHO) and bongo	<ul style="list-style-type: none"> • There have been a number of cases of inbreeding of different species such as the scimitar-horned oryx. The Dublin Zoo herd is made up of 11 animals, of the group 9 are inbred. This may be the case with other species at the 	<ul style="list-style-type: none"> • SHO: reviewed records back to 1980, two animals considered inbred but no impact to the breeding programme as all males castrated and non-breeding group. Part of EEP. 	<ul style="list-style-type: none"> • Reviewed all the SHO at Dublin Zoo and two accidents led to the two animals that could be considered inbred if using a 'harsh interpretation' – in both cases sexually mature prior to expected age • Of the 11 animals 9 are NOT inbred, only 2 are potentially considered inbred

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		zoo...(similar statement made about the bongo)	<ul style="list-style-type: none"> Bongo: potential for inbreeding if left, but separated and young male to move to another zoo before sexually mature, no concerns noted No evidence or reports of inbreeding in other species Unfounded 	<ul style="list-style-type: none"> All male SHO castrated and non-breeding herd currently – no risk for future inbreeding Bongo well managed, no concerns No reports nor evidence provided when asking staff with regards to inbreeding
21	Mortality rates of Goeldi's monkeys Still births February 2019 to May 2022	<ul style="list-style-type: none"> Issues with Goeldi's monkey breeding programme, there has been 100% mortality of the Goeldi's monkeys over the past two years. Keepers have raised concerns. Could have been avoided if team leaders and management listened to staff concerns about the diet. 	<ul style="list-style-type: none"> Mortality rate of the Goeldi's monkeys over the last two years was 80% but this is still considered high Investigated by the vets and the EEP breeding programme manager, considered foetal oversize issue between the breeding pair (all mortalities due to this pair) Dam died with last foetus, diagnosis made at this point Changes to breeding programme recommendations made to prevent this happening at an EAZA level Unfounded 	<ul style="list-style-type: none"> Inspection team reviewed the mortality patterns as far back as 2015 to 2022 to ensure capture picture of historical processes and the high mortality rate recently Previous breeding female produced four offspring, all lived to adult age Current, recently deceased breeding female produced 6 offspring from 2019 to 2022, only one survived. Typical for three attempts at rearing a youngster for this species as mortality relatively high, however these were stillbirths – foetal oversize diagnosed (see case discussion for details) No evidence of diet nor nutritional issue – reviewed and produced by experts, supposition on the part of the allegation
22	Tafara, African wild dog, male 7 years and 11 months Died 29 th April 2022	<ul style="list-style-type: none"> On the 21/04/22 a female hunting dog suffered severe injuries. Despite staff raising concerns about the animal on the 21/04/22 a vet did not examine the animal 	<ul style="list-style-type: none"> Tafara was attacked and treated, treatment was appropriate for wounds as seen but the full extent was not apparent until examination 	<ul style="list-style-type: none"> African wild dog injured was a male, not a female as reported in the allegation The initial attack was on the 19th, not the 21st as alleged

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		until the 25/04/22...the animal died 2 days later on the 27/04/22 due to the management's failure to get the animal veterinary attention for 4 days.	<p>under anaesthesia took place – this is not unusual</p> <ul style="list-style-type: none"> • Appropriate aggressive surgical and medical management was provided but he succumbed to sepsis despite aggressive antibiotics for 7 days • Poorly informed allegation • Unfounded 	<ul style="list-style-type: none"> • He died on the 29th April, not the 27th as alleged • A vet examined Tafara on the 20th, and he was assessed by vets 6 times during the 9 days with two of these being under anaesthesia (the first anaesthetic was the 25th) • There were no maggots in the wounds reported, as alleged in the allegation
23	Trouble, ostrich, female 7 years and 3 months Died 3 rd November 2017	<ul style="list-style-type: none"> • Between 2017 and 2018 an ostrich mated with a large male who was too heavy for her and broke her pelvis. She was left untreated for approximately 8 months, she was found dead in her pen. 	<ul style="list-style-type: none"> • Trouble was identified as the presumed ostrich with a fractured pelvis the cause was unknown • Cage rest and pain relief was the appropriate treatment regime following identification of the fractured pelvis and this was started September 23rd 2017 • Unfounded 	<ul style="list-style-type: none"> • Clinical signs of lameness started on the 23rd August 2017, she received treatment on the 24th August 2017 including pain relief until she died. • She did not respond as expected and so a full examination under anaesthesia was undertaken on the 14th September when she was radiographed and the fractured pelvis (synsacrum) noted • Trouble died from aspergillosis on the 3rd November • She died 6 weeks after the diagnosis of the fractured pelvis was made • There was no evidence nor recollection from staff of the fracture being caused by a heavy male ostrich mating her

END ALLEGATION CASE REVIEW

NPWS ZOO INSPECTORATE SPECIAL ZOO INSPECTION APPENDIX 05

INVESTIGATION TEAM RECOMMENDATIONS AND CONDITIONS

DATE:	4 th OCTOBER 2022
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The following are recommendations and conditions made by the investigation team in response to the findings of the investigation. Recommendations are comments to improve in certain areas but are not considered mandatory, whereas conditions are a mandatory requirement which Dublin Zoo must undertake following the appeal period of 28 days allowed by the legislation.

RECOMMENDATIONS

1. It is recommended that consideration be given to having a training programme, including a written protocol, for the use of the Anderson sling to facilitate its use and deployment if ever needed again in the future. Whilst there were no issues in the way it was used, and nor would it have changed the outcome of the case with Kildare, the time it took to understand its construction delayed it being deployed effectively.
2. It is recommended that the veterinary team utilise anaesthetic record charts that map the physiological parameters during anaesthesia as well as record timing of events as they occur. Whilst there were no issues with regard to the anaesthetics and the subsequent reports outlining what occurred, there was a lack of a real time record of the events which would be of benefit for any retrospective reviews, especially where complications occurred. It is noted that where UCD assist with anaesthetics these are readily available.
3. It is strongly recommended that an emergency euthanasia protocol and procedure is produced that is ethically reviewed, agreed by all parties and is legally compliant. This should outline the steps to be taken to euthanase an animal where all other options have been exhausted, the prognosis is considered grave and is to be used in situations where the veterinary team is unable to attend in a short time frame, the aim being to minimise any potential suffering between the time an animal is found and euthanased. The investigation team recognise that there may be legal or internal reasons why this may not be possible or compatible with current programmes at the zoo.

4. Whilst there were no welfare concerns noted with regard to enrichment nor training during the investigation site visit there was a general perception from staff that staffing levels provided a ceiling to deliver programmes as they were prior to covid. The zoo is recommended to review the staffing numbers, levels of absenteeism, apportioned time allocated to husbandry programmes and other resources against the expectation of the delivery and objectives for the animal care teams at Dublin Zoo, communicating these to the staff where differences are identified between the vision prior to covid and post covid lockdown.
5. It is recommended that the pathology cases of 'Harry', the Western lowland gorilla, and 'Florin', the chimpanzee, are both reported in the scientific literature as basilar artery occlusions are poorly recognised and could easily be missed in subsequent great ape sudden deaths.
6. Whilst still relatively new and constantly evolving, it is recommended that Dublin Zoo consolidate their learning from the geriatric case management across the taxa within the zoo and produce a standardised process of evaluation and focal welfare assessment that can then be shared with other zoos.
7. It is recommended that the enrichment committee is restarted, if not already done so.
8. It is recommended that Dublin Zoo review their long-term avian influenza management policies for the birds on site as this becomes an almost annual event at present and facility modifications may be prudent in the long-term.
9. It is recommended that the California sea lion husbandry and operational policies (2015) are updated to include the additional and well considered operational practices that occur across the site. This should include a process of review and assessment by the Team Leader to ensure policies are being implemented as required.
10. It is recommended consideration be given to utilising a wet bulb globe temperature and black bulb temperature monitor to provide a possibly more relevant assessment of temperature, air movement and radiant heat for the California sea lions in Sea lion Cove. See also Condition 6.
11. It is recommended that staff are provided with training or a process where they accurately record the information provided by members of the public where they pertain to incidents that they may have witnessed. This should include obtaining contact details for follow up by managers where necessary.
12. It is recommended that the consideration for an MRI and possible CSF analysis is assessed for Tundra, the Amur tiger, to provide additional information that may be of use in the diagnosis of her neurological conditions. The advantages and disadvantages for such a procedure should be reviewed, preferably in conjunction with the specialist veterinary

neurologist, to assure her welfare needs are met and whether there is a benefit or not in carrying out the procedure.

13. It is recommended that a portable or easily installed CCTV system is held within the zoo that can be deployed across the site where needed in a timely fashion to support veterinary case monitoring or for other animal husbandry uses.
14. It is recommended that the red pandas stress physiology is monitored using biochemical methods suitable to the species and compared against similar methods for red pandas in another collection where they are not within 50m of a large carnivore, this may require a joint project with another zoo. Behavioural monitoring is not considered sufficient on its own.
15. Whilst there are some very good welfare monitoring programmes being developed at Dublin Zoo it is highly recommended that animal care staff are trained to understand, utilise, and implement a consistent approach to animal welfare science and assessment. The aim being to ensure a consistent approach to welfare review and understanding, preferably in line with the Five Domains model as outlined in the ISMZP. Currently there are a number of different systems utilised by staff with variable levels of practical understanding.
16. It is strongly recommended that all documents, policies, and procedures are clearly marked with the date of creation and the author to demonstrate how current the documents are.
17. In accordance with Section 3.34 of the ISMZP (2016) the zoo licence holder is recommended to produce and implement a written policy regarding the admission and rehabilitation of native wildlife or wild animals of unknown origin into Dublin Zoo. This should include, but not be limited to: (i) demonstration of clear segregation of collection animals from wildlife to ensure welfare and to prevent the spread of disease into or out of the collection; (ii) a system of disease risk assessment and approval for admission by the collection veterinarians prior to arrival; and (iii) a process for identification of suitable, segregated accommodation for the wild animal, which cannot include keeping native species in the same shared space as collection animals unless part of a formal conservation programme under veterinary direction. The zoo licence holder is reminded of the requirements to maintain a separate annual stock record of all native or rescued wildlife as per Section 9.7.
18. In accordance with Section 1.6 of the ISMZP (2016) the zoo licence holder should ensure a written policy is produced and implemented to ensure fruit and vegetables destined for the great apes and primates are from authorised sources and that staff are not to bring in additional items of food unless with the approval of their team leaders or the veterinarians. Where such items are brought in a record should be kept of the source and the dates supplied to the animals.

END RECOMMENDATIONS

CONDITIONS

1. In accordance with Section 8.39 of the ISMZP (2016) the zoo licence holder must ensure that a formal process is produced to ensure that the excellent escape reports are followed up in a documented manner to demonstrate that where actions have been identified that these have been carried out or completed, who undertook those actions and the date when they were completed. Senior management must periodically review any such documentation to ensure works have been actioned and completed in an appropriate time frame proportional to the action needed. The zoo licence holder must ensure this policy has been completed and implemented within three months from the date on which this condition takes effect.
2. In accordance with Section 4.11 of the ISMZP (2016) the zoo licence holder must ensure that a documented medium- and long-term management strategy for the two chimpanzee troops is produced and reviewed, at a minimum, annually. This must include plans for the potential impact and management with the death of the elderly chimpanzee Betty, the group structure and hierarchy management of the breeding troop, and facility and infrastructure plans for the long-term management of the chimpanzees at Dublin Zoo. This is expected to be an evolving, annually reviewed document and have input from the primary chimpanzee animal care team as well as management. The zoo licence holder must ensure this first version of the strategy has been completed within six months from the date on which this condition takes effect.
3. In accordance with Section 1.2 of the ISMZP (2016) the zoo licence holder must ensure that the California sea lions are weighed weekly as per the operating protocols and where this is not possible due to equipment issues, staffing or welfare considerations for the individual sea lion, then the justification must be recorded in the weight monitoring records. The Team Leader must review the weights and their management on a monthly basis to ensure appropriate weighing regimes are being maintained or support is provided where needed to ensure weights are actively monitored. Weights, once taken must be included on ZIMS, and where found to be outside the expected range for an individual then steps must be taken to address the individual animal's weight. The zoo licence holder must ensure this process has been implemented within three months from the date on which this condition takes effect. Note: the investigation team have no specific welfare concerns with current management practices, which were considered to be to a high standard, other than the poor historical record but note some weights were missing on ZIMS in 2022.
4. In accordance with Section 2.1 and 2.6 of the ISMZP (2016) the zoo licence holder must ensure that a clearly visible thermometer is installed in the outdoor pen area of the California sea lion facility, this must be placed so as to provide accurate temperatures in

the sea lion pens to facilitate mitigation actions when temperatures are excessive as outlined in the operating procedure for this area. The zoo licence holder must ensure this change has been completed within three months from the date on which this condition takes effect.

END CONDITIONS

END REPORT