

QUARTERLY PUBLICATION OF THE EUROPEAN ASSOCIATION OF ZOOS AND AQUARIA

ZOOQUARIA

WINTER 2020

ISSUE 110



HORNBILL HEROES

OUR AMBITIOUS
PLANS TO SAVE THESE
EXTRAORDINARY BIRDS



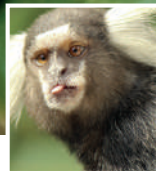
IN SEARCH OF BONOBO

PLANCKENDAEL'S AMAZING NEW ENCLOSURE

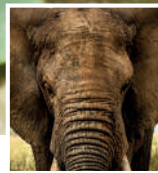
CHEWING IT OVER

THE CARNIVOROUS HABIT THAT IS COSTING THE EARTH

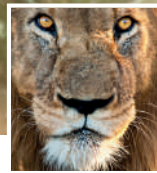




Primates



Herbivores



Carnivores



Birds



Fish-Eaters

Scientific concepts for

We feel responsible for those we are familiar with. Therefore Granovit Zoofeed partners with zoos to implement scientific nutrition concepts that keep animals strong and healthy.

Participate in science based feeding technology and share our passion for responsible zoo animal nutrition.

www.granovit.ch

Contact our distribution partners:

France: SERLAB www.serlab.fr | Scandinavia: BROGAARDEN® www.brogaarden.eu

For other markets: Granovit Zoofeed www.granovit.ch | T. +41 61 816 16 16 | info@granovit.ch



4 From the Director's chair

Despite the havoc wreaked by Covid-19, our Director finds reasons to be cheerful about 2020 and the new year ahead

5 Noticeboard

Updates on Brexit and Covid-19 and other news from EAZA

6 Births & hatchings

Vultures, hyena and frogs are the latest arrivals at EAZA Member zoos

8 New horizons

How EAZA's Annual Conference went online for the first time – and increased its global audience

10 Into the future

The 75th WAZA Annual Conference joined the trend for going online, with huge success

11 Bonobo paradise

A new exhibit in Belgium is a success for bonobos, visitors and conservation researchers alike

12 Elephant expertise

A new set of Best Practice Guidelines brings together many years of effort and experience to provide even better care for EAZA's elephants

14 On the frontline

A new RCP and LTMP for gibbons show that there is a crucial role to play for all EAZA Members

16 A new plan for hornbills

The new RCP for hornbills has ambitious plans to save these fascinating birds

18 Project equid

The newly published RCP for EAZA's equids has identified the measures needed to protect 12 different taxa

20 Sea change

Is this the beginning of a new chapter in ocean conservation?

22 Creative response

An inspiring collection of case studies shows the many creative ways in which EAZA Members can contribute to conservation

24 Eating our words

Why we urgently need to talk about meat consumption and its role in conservation

26 Taking a stand against Bsal

Strategies to defend the Caudata species against an emerging pathogen

Zooquaria

EDITORIAL BOARD:

Executive Director Myfanwy Griffith (Myfanwy.Griffith@eaza.net)

Managing Editor David Williams-Mitchell (David.Williams-Mitchell@eaza.net)

Editor Joanna Swinnerton

Editorial Staff William van Lint, Lauren Florisson

Designer Louise Tait

Zooquaria is the quarterly magazine of the European Association of Zoos and Aquaria (EAZA).



EAZA Executive Office, PO Box 20164, 1000 HD Amsterdam, the Netherlands.

Email: info@eaza.net ISSN 2210-3392.

For information on print subscriptions to Zooquaria visit:

<http://www.eaza.net/about-us/communications>

The views expressed in this magazine are not necessarily those of EAZA.

The paper used for printing is FSC quality (sustainable). Organic inks are used.

Plates for printing are free of chemicals. All waste is disposed of in an environmentally friendly manner. Printed by Euro Mail BV.



FROM THE DIRECTOR'S CHAIR

As we came to the end of 2020 and I sat down to write this piece, I wondered if there was anything 'new' to write about. The Covid-19 pandemic has dominated the year and is likely to be an ongoing topic of conversation well into 2021. At various points throughout the year it seemed that every time we raised our heads to look to the future, a new development, restriction and even second lockdown appeared to beat us back. We are all well aware of these things and so, thought I, this could end up being my shortest ever 'From the Director's Chair'! Nevertheless, when I turned to my agenda and looked back over the past few months, I realised that it was full of lots of reasons to lift our heads up again and focus on a positive future. I share some of them now and thank all for their involvement in keeping us going forward together.

One of the many things that has raised my spirits has been the engagement and discussions shared at many conferences. While the networking and social opportunities might have been different this year, the content remained as strong as ever. The article on pages 8–9 provides highlights of our first ever virtual Annual Conference and I could not be prouder of the excellent range of presentations that shared progress across all aspects of our community activities. EAZA and its Members have proven to be innovative, adaptable and resilient to the challenges that 2020 has thrown at us all, whether this be changing our RCP processes, educating people online or addressing conservation challenges. Many Members of EAZA presented at and joined the WAZA Annual Conference, further demonstrating our involvement in collaborative activities at a global level. Along with others, I was also fortunate to be able to join the IUCN Conservation Planning Specialist Group (CPSG) Annual Conference. This was an extra special meeting because it celebrated 40 years of CPSG. An excellent opening presentation was given, which summarised the vast amount of work and forward progress CPSG has achieved over the years, in no small part supported by zoos and aquariums around the world. We all know that achieving and evidencing conservation planning and action takes time. It was therefore inspiring to see longitudinal research presented that demonstrates success for many species. We also looked to the future and discussed ways in which new technologies will help with developments in group management and moving through the Assess-Plan-Act cycle to ensure that every species that needs a plan has a plan. I can highly recommend the 'CPSG Species Conservation Planning Principles and Steps' document, available from the CPSG website, to anyone who is involved in the development and implementation of effective species conservation plans.

Further evidence that commitments to conservation have not been stopped by the pandemic was demonstrated by IUCN members voting online on more than 100 motions.

Such motions are the mechanism by which IUCN members guide the policy and programme of IUCN and influence third parties. As the only international conservation forum that brings governments, civil society and indigenous peoples' organisations to the same table, the IUCN motions process carries a powerful mandate. Once approved, the motions become Resolutions and Recommendations and act as a most effective means of influencing conservation policy at the species, site, national and global levels. We were delighted that the two EAZA-led motions – 057: Law enforcement regarding commercial trade in tigers and tiger parts, and 120: Action against Asian songbird trafficking – were approved with a vast majority of online votes. We also celebrate the approval of several other motions submitted and/or co-sponsored by EAZA and our Members and are thrilled to see *in situ* and *ex situ* measures becoming part of an integrated conservation strategy.

Moving from the IUCN strategy to that of EAZA, much of the last few months has been spent finalising our own Strategy for 2021–2025. This Strategy will embody our new Vision: Progressive zoos and aquariums saving species together with you. It will provide a clear focus for demonstrating our conservation credentials and partnership working, all of which is essential if we want transformational change to happen to address biodiversity loss. We will be sharing further details of the Strategy and its objectives with Members and in future issues of *Zooquaria*. While we may need to adapt some of the activities to changing circumstances, what I am sure of is that our Vision still holds true and that by working together we will achieve it.



Myfanwy Griffith
Executive Director, EAZA

NOTICEBOARD

BREXIT UNCERTAINTY CONTINUES

At the time of publishing, the outcome of negotiations between the European Union and the UK was still not known. Whether or not a deal is agreed, the EAZA Executive Office (EEO) anticipates a measure of disruption to animal transports over the short to mid-term, with longer term issues still uncertain.

The guidance from EAZA and BIAZA on the potential for disruption, including a lack of border control posts on both sides to allow for importation checks, is available on the Member Area website. It is important to note that border checks on the EU side, of animal imports to the EU from the UK as well as vice versa, will start immediately on 1 January 2021. Border checks on the UK side, of animals entering the UK from the EU, will start on 1 July, although checks at destinations will start on 1 January. Despite short-term issues, we believe that the UK and EU will need to find a solution that allows for the transfer of animals, including zoo animals, as soon as possible. While additional measures may well be imposed, Members have significant experience of non-EU transfers, and the EEO will work to gather knowledge and establish best practice for EU-UK transfers as soon as possible.

COVID-19 UPDATE

As we end 2020, Members will be aware of the approach of mass vaccination against Covid-19. We do not yet know how quickly this can be achieved and what effect it will have on lockdowns, quarantines and social distancing. The situation at the time of publishing is available on the EAZA Member Area website, and compares the different measures still in place in certain areas.

As Members will also be aware, lions at Barcelona Zoo were found to be infected by Covid-19 in November and have since fully recovered. Guidance from the EAZA Veterinary Committee and EAZWV on transmission of the disease between humans and animals is also available on the EAZA Member Area. In the period before the full roll-out of the vaccine, we advise Members to continue to minimise the risk of infection to visitors, staff and animals in their care. Updates will be

shared regularly by the EEO via Member mails. If you have questions about the veterinary advice, please contact Danny de Man. Communications support is also available from David Williams-Mitchell.

IN MEMORIAM

It is with great sadness that we must announce the loss of two members of our community.

Tobias Rahde, bird curator at Berlin Zoo, has died following an accident. Tobias joined Berlin Zoo in 2003, and became a curator there in 2010. He was responsible for the zoo's impressive bird collection. Tobias set new standards at Berlin Zoo and his commitment to species conservation was certainly an example to others. Within EAZA, Tobias was chairing the Gruiformes TAG, was Coordinator of the White cockatoo EEP, and as International Studbook keeper for the Vietnam pheasant was actively involved in the work done by the Galliformes TAG to save this species.

The EAZA Executive Office would like to extend their sympathies to Tobias' family and to all the staff at Berlin Zoo.

Bohumil Král, Director of Prague Zoo from 1990 to 1997, has passed away at the age of 79. Dr Král was a herpetologist by training and was instrumental in the formation of the Herpetological department of the Czechoslovak Academy of Sciences' Zoological Society. Before joining Brno Zoo in 1987 as head of the Zoology Department, he travelled extensively as a researcher, especially in Siberia.

In 1989 Dr Král moved to Prague Zoo where he became Director in 1990. Under his leadership, the zoo deepened its expertise in herpetology and introduced a number of new species. He also led Prague's accession to EAZA in 1992, and to WAZA around the same time. As President of UCS Zoo, he was a leading figure in the wider integration of Czech and Slovak zoos into the international zoo community.

EAZA CORPORATE MEMBERS

AB Aqua Medic GmbH
Aqua-Sander
Arie Blok Animal Nutrition
Beresford SAS
Billings Productions, Inc
Bio/Zoo Information
BLV-Licht
Brogaarden ApS
Bureau d'étude AKONGO
Bureau d'études Bioparc
Carl Stahl Architecture
China Light Festival
Close To Bone
Crossborder Animal Services B.V.
Dino Don
Dorset Identification B.V..
EKIPA
Fachjan Project Plants
Fox Consulting
Gantner Ticketing
Granovit
HMJ Design
IFA Skyfast
Immotion
Jakob Rope Systems
KaGo & Hammerschmidt GmbH
Kiezebrink International
Longfish Leisure BV
Marine Nutrition
Mazuri
Nautilus-UK
Nieuwkoop Europe
Pangea Rocks A/S
Ralf Imagen y Comunicacion S.L.
Rasbach Architekten
Ravensden Plc
Ray Hole Architects
Saint Laurent S.A.
Sanero Kunstfelsen Srl
Seafoodia
Wisbroek
zoOceanarium Group
Zoological Adviser
Zoologists
Zoopolis Lamartine Construction SAS
Zooprofs

After leaving Prague in 1997, Dr Král returned to Brno Zoo, where he spent the remainder of his career. A towering figure in the Czech and Slovak zoo community, Bohumil Král will be sorely missed by his colleagues and family. EAZA extends its condolences to all who knew and worked with him.

Erratum: In *Zooquaria* issue 109, our cover story 'Enter the Dragon' was listed as being by Gerardo Garcia of Chester Zoo. The piece was in fact authored by Achmad Ariefandy, Deni Purwandana, Claudio Ciofi, Muhammad Azmi, Tim Jessop and Puspita Insan of the Komodo Survival Program. We apologise to the authors and our readers for the error.

NEW ARRIVALS

FIRST PARENTAL REARING OF RED-HEADED VULTURE AT PARCO NATURA VIVA



THE RED-HEADED VULTURE (*Sarcogyps calvus*) was once widespread in India and Southeast Asia, but is today Critically Endangered due to an extremely rapid decline in range and population. Feeding on carcasses of livestock treated with the veterinary drug Diclofenac is presumed to be one of the major causes of this massive decline, and conservation breeding efforts are urgently needed for this bird. Parco Natura Viva in Italy put enormous effort and energy into achieving this goal and, in early 2013, achieved a significant breakthrough.

An egg was laid on 16 February 2013 and put into an incubator nine days later, and a second egg was laid a few weeks later on 29 March and put into the incubator after 17 days. The staff of Parco Natura Viva discovered that the eggs required a longer incubation period – an average of 55 days – than had previously been reported in the literature, and the chicks were born in March and April and hand-reared. More chicks were born in the years that followed, but all of the chicks were artificially incubated and hand-reared until the winter of 2020, at which point

it was not possible to hand-rear the chick due to the Covid-19 emergency. The staff of Parco Natura Viva left the egg with the parents and on the 56th day of incubation a chick was born. The parents were not very experienced and some odd behaviours were observed at the beginning of the parental care of the chick. However, using a trial-and-error strategy, the parents have been taking care of the chick and it has been growing well. This is the first time such an exciting event has taken place in a zoo, and it gives us hope for the future of this critically endangered species.

CHESTER ZOO WELCOMES MEXICAN LEAF FROGS

IN A FIRST FOR A EUROPEAN ZOO, 100 Mexican leaf frogs (*Agalychnis dacnicolor*) hatched at Chester Zoo, UK, at the beginning of October 2020. The reproductive behaviour of the species has not been well understood until now, and herpetology staff needed to recreate exactly the very hot dry conditions of the Mexican forests where the frogs come from. Breeding occurs during the seasonal rains, and the frogs attach clutches of up to 200 eggs to sticks and plants hanging above the ponds that form during the period. Because these ponds dry up very quickly, the tadpoles become froglets in only five weeks, meaning that the management process run by the zoo had to be very intensive, changing the conditions to suit these reproductive requirements.



STRIPED HYENA CUBS ARRIVE AT LA HAUTE TOUCHE

ON THE NIGHT OF 25 JUNE 2020, two cubs were born to a four-year-old female striped hyena (*Hyaena hyaena*) at the Zoological Reserve of La Haute Touche in France. The birth was particularly important as it doubled the number of births in the EAZA network in the preceding year, out of only 14 births in zoos worldwide for this species.

The cubs emerged from the den after a few days to the delight of visitors and under the strict supervision of their mother. The cubs have contributed to the EEP goal of helping the public to better understand the amazing social life of the species, which is often persecuted in range states for cultural and historical reasons.



New horizons

THE FIRST EAZA ONLINE ANNUAL CONFERENCE WAS AN EXPERIMENT IN MEETING IN A VIRTUAL SPACE, BUT NOT ONLY WAS IT EXTREMELY SUCCESSFUL, IT ALSO DREW A LARGER AUDIENCE THAN EVER BEFORE

David Williams-Mitchell, EAZA Director of Communications and Membership

Organisations of all kinds have been adopting new techniques for staying in touch with colleagues and operational partners during the Covid-19 pandemic, and we have all become adept at, if not exactly comfortable with, meeting colleagues remotely. At EAZA, those meetings have ensured the continuation of work across committees, Taxon Advisory Groups (TAGs) and EAZA Ex situ Programmes (EEPs), but the need for a larger-scale event highlighted a greater truth framed by the pandemic: that we are a community, and our success depends on a shared culture and being able to swap notes, give advice or hear from an authority on a subject. It was with this in mind that the EAZA Executive Committee and the Executive Office made plans to put on the first ever online Annual Conference, from 29 September to 2 October.

The planning team recognised early on that it would not be practical to present the familiar programme of the conference online. We decided on a programme of plenaries and themed sessions that would provide a mixture of subjects and degrees of specialisation; and because we felt strongly that the online platform provided an opportunity to share our work and experiences with the wider world, a number of the plenary sessions were open to all and streamed live over social media.

On the first morning, EAZA Chair Thomas Kauffels opened the conference with a speech reflecting on the challenges of 2020 and the kaleidoscope of zoo and aquarium activities that were continuing despite the hardships and which were being highlighted in the conference programme. He also stressed the ongoing need for Members to work together within EAZA's democratically formulated regulatory structure – without which we would lose cohesion in our work and with it the great outputs of our institutions. Myfanwy Griffith, EAZA's Executive Director, gave an update on the last 12 months of the Association's collaborative work across the four focal areas of the Strategy, and



introduced the keynote speaker of the conference, Virginijus Sinkevičius, European Commissioner for the Environment. In a video address, Mr Sinkevičius outlined the importance of an environmentally led recovery from the Covid-19 crisis, and within it the vital roles of zoos and aquariums, both as conservationists and as centres for environmental engagement with the public, roles that are included in the EU Biodiversity Strategy for 2030 and associated documents.

A second plenary looked more specifically at the Covid-19 pandemic and its effects on EAZA Members and their operations. Dr Chris Walzer of the Wildlife Conservation Society (WCS) presented an analysis of the pandemic, its likely course, and the threat of other viral outbreaks, all from his office in New York (special

thanks to Chris for his 5am start!). Simon Tonge, CEO of the Wild Planet Trust, shared his experience of the painful decision to close one of the Trust's facilities, a difficult eventuality to face, but one that may need to be considered by all Members in such uncertain times. On a brighter note, Volker Homes of the Association of Zoological Gardens (VdZ), and Joerg Junhold, CEO of Leipzig Zoo, presented the results of market research that showed overwhelming public support for zoos and aquariums in German-speaking countries – support that will undoubtedly serve to sustain Members through these challenging times. Lastly, EAZA Conservation Education Committee Chair Antonietta Costa of Lisbon Zoo provided a picture of the inventiveness shown by educators across our network during the pandemic –



inspirational work that will continue to broaden the educational influence of our Members over the long term.

With the new EEP structure well into its implementation phase, a zoological session on Tuesday afternoon reviewed some of the challenges and opportunities that have come up during Regional Collection Planning (RCP) meetings, and how these were overcome, featuring talks by Ben Tapley, Luca Morino, Johnpaul Houston, Kirsi Pynnönen-Oudman, Noam Werner and Allan Muir. In the second session of the afternoon, Koen Brouwer, Joost Lammers, Anton Weissenbacher, Brian Zimmerman and Brice Lefaux demonstrated examples of synergies between EEPs and *in situ* populations of animals, including African hornbills, freshwater fish and gibbons, in line with the IUCN One Plan approach.

Wednesday started with a plenary on the conservation of European species and a keynote address from Radboud University's Maurice La Haye on common hamster conservation in the Netherlands, with other talks by Dijana Beneta, Ivan Budinski, Antony Kohler and Elmar Fienieg. This was followed by a zoological session looking at EEPs with direct conservation roles, including Vietnam pheasant (*Lophura edwardsi*), Persian leopard (*Panthera pardus saxicolor*), red panda (*Ailurus fulgens*) and others, and presentations by Jan Dams, Janno Weerman, José Dias Ferreira, Luis Neves, Klaus Wunnemann and Markéta Jariabková.

The plenary led by the EAZA Animal Welfare Working Group on Wednesday afternoon took over from where their excellent online animal welfare webinars left off – presenting a thorough look at animal welfare assessments and how to integrate them into the practice of a zoo or aquarium. Presentations by Holly Farmer, Xavier Manteca Vilanova, Claudia Tay, Heather Bacon, Thomas Bionda, Sally Sherwen and Caterina Spiezo carried the process of instigating assessments from its philosophical underpinnings to its expression into day-to-day animal care. Animal welfare rightly receives considerable attention both internally and externally, and such a scientifically robust and well-considered approach shows that the issue is in good, professionally independent hands.

A final zoological session brought Wednesday's proceedings to a close with a variety of updates from TAGs

responsible for taxa as diverse as jellyfish and sun bears (*Helarctos malayanus*). Hugo Batista, Mark Bushell, Volker Grün and Lydia Kolter presented, showing how the RCP process has led to changes in structures or species in EAZA collections.

Thursday's opening plenary was a collaboration between the Conservation and Conservation Education Committees and looked at the application of zoo- and aquarium-derived educational practice to *in situ* conservation projects. Talks by Eddie Bach, Hannah Brooks, Simon Bruslund, Matt Hunt, Constanze Mager, Molly Malloy, Ian Singleton and Michael Tipaai looked at the issue from institutional and *in situ* perspectives, showing the level of understanding that is developing in this discipline between the two.

The following plenary, organised by the Research Committee, showed the state of play of scientific research in EAZA collections, with a focus on population management success and nutrition, and underpinned again by the importance of welfare. Marcus Clauss, Philippe Helsen, Geert Janssens and Sally Binding presented. This was followed by a second Conservation plenary, this time focusing on the framework currently under discussion and development by the United Nations Convention on Biological Diversity. This framework and its associated targets will define the global strategy for the preservation and recovery of biodiversity until 2050, and so the implications for other strategies, including the EU Biodiversity Strategy for 2030, are immense. Keynote speaker Jon Paul Rodríguez of IUCN Species Survival Commission (SSC) and Micheal O'Briain of the European Commission introduced the global strategic imperatives for stakeholders, including European governments and EAZA Members, and Kristin Leus (IUCN Conservation Planning

Specialist Group) drew attention to the links between EEPs and the wider *ex situ* conservation framework, while Craig Hoover from the Association of Zoos and Aquariums (AZA) argued the case for the involvement of zoos and aquariums at the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), to help fight wildlife crime as a support to global biodiversity conservation.

The day's last session looked at educational aspects of specific EEPs and included talks by Stephan Worm, Nic Dunn, Nina Trontti, Marco Penello and Zsuzsa Petró, underlining the need to include education in the RCP process.

Friday's first session looked at the future of population management 30 years from now, examining technological advances and potential challenges on the road ahead. Dave Powell, Hannah Jenkins, Imke Lueders and Cock van Oosterhout contributed. Best Practice Guidelines are becoming available for increasing numbers of species in the care of EAZA institutions, and these invaluable documents provided the basis for the second session. Maria Teresa Abelló, Anaïs Tritto, Jim Mackie and Andrea Dempsey talked through species-specific issues affecting great ape welfare, songbird husbandry, animal training and links to the RCP process.

The closing plenary saw a summary from Thomas Kauffels and the presentation of a Lifetime Achievement Award and Honorary EAZA Membership to Miklós Persányi, the long-time Director of Budapest Zoo and former Hungarian Minister of the Environment. In anticipation of a return to in-person meetings, Helsinki Zoo introduced the EAZA Annual Conference that they will host in 2021.

Analysis has shown that the audience was bigger and wider for this conference than in previous years, and that the format was well received. There may be an increased online presence in future to allow people to join who otherwise might not, and we believe this opportunity should be grasped. Despite the crisis, EAZA goes from strength to strength, and we look forward to seeing more of the fruits of that work when we meet face to face. We hope to see you in Helsinki!

EAZA extends its thanks to Leipzig Zoo, our original hosts for the conference, for their hard work and dedication in the planning process.



WAZA

Virtual Annual Conference 2020

Into the future

THE 75TH WAZA ANNUAL CONFERENCE TOOK PLACE IN A VIRTUAL SPACE TO ENSURE THAT THIS GLOBAL COMMUNITY OF EXPERTS COULD STILL MEET AND SHARE THEIR IDEAS AND KNOWLEDGE

Gavrielle Kirk-Cohen, WAZA Director of Communications

Like all events in 2020, the World Association of Zoos and Aquariums (WAZA) 75th Annual Conference went virtual and was held from 12-15 October. More than 700 people from 48 countries and regions around the world registered for the conference, and while it was disappointing not to be able to meet in person, we were delighted to be able to welcome so many people and new faces to the virtual conference.

Over the four days of the conference, we heard from keynote speakers Sahil Merchant, James Gomme, Elizabeth Maruma Mrema and Ivonne Higuero.

Sahil Merchant, a partner at McKinsey & Company, was the opening keynote speaker on 12 October. He gave an inspiring presentation on leading in a complex world and challenged people not just to 'do more', but to do things differently.

James Gomme, Director of Sustainable Development Goals from the World Business Council for Sustainable Development, discussed the importance of zoos and aquariums contributing to Sustainable Development Goals (SDGs); and Elizabeth Maruma Mrema, Executive Secretary of the Convention on Biological Diversity (CBD), praised not only the valuable role of zoos and aquariums in conservation and conservation education, but also how they have contributed to the goals of the CBD and can help support the post-2020 global biodiversity framework.

On the final day, Ivonne Higuero, Secretary-General of the Convention on International Trade in Endangered Species of Wild Fauna and Flora

(CITES) discussed the importance of the collaboration between zoos and aquariums with CITES and how they can further engage with CITES and its committees. Higuero called on WAZA member zoos and aquariums to be even more involved in providing their scientific expertise for CITES activities.

Presentations and panel discussions over the conference covered a diverse array of topics. A global panel on Covid-19 saw panellists share their different approaches to overcoming and handling the crises presented by the pandemic in their respective countries. A panel on 'The Paths Towards Reducing Carbon Emissions in Zoos and Aquariums' examined decarbonisation, deforestation and reforestation, looking at examples from the Wildlife Conservation Society (WCS), Helsinki Zoo and Taronga Zoo. We heard the latest updates on Reverse the Red, a social movement to reverse the negative trends in species extinction, calling for strategic action and collaborative partnerships. Corina Newsome from Georgia Audubon gave a thought-provoking presentation on disrupting homogeneity and how zoos and aquariums can promote and achieve inclusion and equality.

Updates were shared on WAZA activities over the past 12 months, including progress towards the WAZA 2023 Animal Welfare Goal, the recently launched WAZA Animal-Visitor Interaction Guidelines, Expedia's Animal Welfare Policy and WAZA's work with the International Air Transport Association (IATA). We also

heard about the progress of the WAZA sustainability commitments with the Forest Stewardship Council (FSC) and the Roundtable on Sustainable Palm Oil (RSPO), as well as more about the WAZA Short Guide on Single-Use Plastic.

WAZA launched two new strategies at the conference, the first of which was Protecting Our Planet, the WAZA Sustainability Strategy 2020–2030 – a guide for WAZA members to help achieve sustainability outcomes crucial to progressive conservation organisations, using a framework of addressing areas of the Sustainable Development Goals.

The second strategy was Social Change for Conservation: The World Zoo and Aquarium Conservation Education Strategy, in collaboration with the International Zoo Educators Association (IZE). It is the first unified global strategy on conservation education and aims to guide zoos and aquariums to achieve educational and social outcomes crucial to their organisational mission. A big thank you is owed to everyone involved in bringing these documents to life. Both strategies are available to download on the WAZA website: waza.org.

Throughout the week, WAZA presented its three annual awards. The top honour of the year, the Heini Hediger Award, was presented to Professor Dr Jörg Junhold, Director of Zoo Leipzig, in recognition of his outstanding service and commitment to the zoo community.

The Detroit Zoological Society was presented with the WAZA Environmental Sustainability Award for its sustained efforts to reduce its ecological impact through its successful programme, including clear and achievable goals on waste reduction and avoidance.

Finally, the WAZA Conservation Award was awarded to Georgia Aquarium for its robust and holistic approach to whale shark conservation, balancing scientific learning, habitat protection, education, capacity building and advocacy to improve the outcomes for this charismatic species since 2004.

The conference came to an end on 15 October with the Annual General Meeting and an invitation to the 76th WAZA Annual Conference on 10–14 October 2021, hosted by Moscow Zoo.



Bonobo paradise

A NEW EXHIBIT AT PLANCKENDAEL ZOO NOT ONLY PROVIDES A SUPERB NEW HOME FOR ITS RESIDENT BONOBOES AND AN INSPIRING EXPERIENCE FOR ITS HUMAN VISITORS, BUT ALSO INCREASES THE ZOO'S RESEARCH CAPABILITIES, WHICH WILL CONTRIBUTE TO THE CONSERVATION OF THE SPECIES

David Williams-Mitchell, EAZA Director of Communications and Membership

Bonobos have been a fixture at Planckendael Zoo in Belgium for nearly 30 years, and the zoo has been a centre for the study of these fascinating primates for all of this time. Now, however, the zoo has completed a significant expansion of the facility, making the space five times larger than before.

One of the major goals of the new enclosure is to increase the research capability at Planckendael, and to give visitors an authentic taste of what field research looks and feels like. From the research point of view, the new enclosure is a paradise for scientists studying the behaviour, physiology, culture and psychology of bonobos. We believe that this facility is probably the best in the world for this work, in part because of the size of the group, which, since the birth of a male in early November, now numbers 19 individuals, with a 20th on the way. The group includes 12 females and seven males in the habitual matriarchal social structure.

The updated and expanded enclosure allows for the non-invasive collection of biological samples, as well as long-term ethological and other studies of the group. This is vital

for our knowledge of the species and how it lives in the wild, as tracking and identifying animals in the deep Congolese forest is challenging in the extreme, and analysis of DNA, behaviour and other elements is essential to the long-term conservation of the species.

For visitors, the research theme is also central to the experience. Visitors join a team of scientists travelling to a research camp in the Congolese jungle, and get a taste of how real fieldwork happens via an adventurous hiking trail and tents full of research material. Visitors climb high into the forest and come face to face with this impressive group of bonobos. This reflects the work done by staff from Planckendael in Congo and opens up a fascinating narrative that helps visitors to understand the lives of bonobos and the complex social structures that bind them together. Recently, a new playground was also opened at the start of the trail. The playground is based around a Congo river boat docked at the quay, providing stepping stones and other activities to draw children into the ambience of the heart of Africa.

While the enclosure itself has been open for a while, development

of the group and the activities have been ongoing for more than a year. A group of five animals was added to the troupe from Frankfurt and Cologne and these have integrated well into the original group, thanks in large part to the fission/fusion model facilitated by the enclosure's design. As with all such systems, the new animals were introduced slowly to the existing resident group, starting with lower-status individuals, and with close observation of the social rituals marking the gradual acceptance of the new animals. The Bonobo EEP is coordinated from Planckendael, and so the modernity and suitability of the enclosure, combined with three decades of experience with this species at the zoo, also help to drive the development of best practice more widely.

The great apes are listed on the IUCN Red List as Endangered, with estimates of the number of bonobos in the wild ranging from 15,000 to 50,000. Bonobos are only found south of the Congo River. The animals are killed for their meat or caught and sold as pets, but the greatest threat to their survival is the destruction of the tropical forests in which they live.

Elephant expertise

AS EAZA PUBLISHES NEW GUIDELINES FOR ELEPHANT MANAGEMENT, HOUSING AND CARE, IT IS NOT ONLY BUILDING ON THE SUCCESS OF THE PREVIOUS GUIDES, BUT ALSO BENEFITING FROM THE LESSONS LEARNED



Thomas Kölpin, Elephant TAG Chair, Wilhelma-Stuttgart Zoo, Germany; Jana Pluhačková, Elephant TAG Vice-Chair, Ostrava Zoo, Czech Republic; and Danny de Man, Elephant TAG Liaison, EAZA Executive Office

In 2020 the EAZA Elephant Taxon Advisory Group (TAG) completed the mammoth task of reviewing, editing and publishing a new edition of EAZA Best Practice Guidelines (BPG) for Elephants. The BPG define what EAZA believes to be the best and most modern way to manage, house and care for elephants within our Membership and beyond. The BPG are available from the EAZA website.

The Asian elephant and African elephant EAZA Ex situ Programmes (EEP, then called European Endangered Species Programme) were established in 1992 and 1993 respectively. Reaching increasingly demographically and genetically self-sustaining populations of behaviourally competent elephants has been the goal for both programmes from the start. At the time, this was an ambitious aim that required increased cooperation, commitment and investment from elephant holders.

The main challenge was to improve the demographic sustainability of the population, moving to a situation where the population would grow due to an improved birth rate, becoming less dependent on the need to import elephants from their range states.

To improve reproductive management, the way elephants were managed, housed and cared for

required a shift of paradigm. Elephants had to be allowed to have better opportunities to demonstrate a much larger array of natural behaviours or, in other words, holders had to create conditions that allow elephants to behave as elephants. What are now considered to be basic conditions were not generally applied then, things such as adequate feeding, foot care, housing and managing herds along matriarchal lines, for population management facilities to have a permanent bull facility, significant reduction of chaining, and allowing individual cows, herds and their keepers to increase their experience with birthing and survival of calves.

KEY RECOMMENDATIONS

Reproductive success started to increase throughout the 1990s; however the number of births were not yet at the level to sustain the populations of both species. The Asian elephant EEP and African elephant EEP therefore developed a set of key recommendations for the 'forward planning and EEP management for elephants in EAZA institutions' in 1998. To follow up, the EAZA Elephant TAG published the first edition of the elephant husbandry guidelines in 2004/2005, which were based on the elephant guidelines developed in the early 2000s and published in 2002 by British and Irish

Association of Zoos and Aquariums (BIAZA).

A decade after the publication of the first edition of the guidelines, students from Van Hall-Larenstein and Utrecht University based in the EAZA Executive Office worked in close cooperation with the TAG and the elephant holders to measure the extent to which the existing guidelines were implemented, and how the results compared to a similar study in 2003/2004 that contributed to the first edition of the guidelines. These studies concluded that, in general, holders complied with the guidelines, most notably in terms of indoor and outdoor enclosure sizes. It also recognised areas of further improvement, including in relation to social management, and, crucially, concluded that new knowledge and decisions needed to be reflected in a new edition of the guidelines. As many of the conditions described above had become standard practice, it was not surprising that the strategic management plan for elephants developed in 2013 demonstrated that the ambitious goal of a demographically and genetically self-sustaining population was moving within reach, in particular for the Asian elephant population.

In 2015 the TAG put together an editorial team to review and update the guidelines. Initially this was led



by Sander Hofman (Antwerp Zoo) and was later taken over by Jana Pluháčková (Ostrava Zoo). Again, there was a strong cooperation with BIAZA, which also was in the process of updating its guidelines, led by Fiona Sach (ZSL).

EXTENDED GUIDELINES

The resulting new EAZA Best Practice Guidelines for Elephants are much extended compared to the previous edition, and with more illustrations, examples and references compared to the first edition. There is stronger emphasis on management of bulls, the number of which has grown significantly with improved reproductive success and a 50:50 sex ratio at birth. With the Asian elephant population becoming demographically and genetically self-sustainable in the last few years, the need for more and better housing for bulls became apparent as well as the need for a careful but restrictive reproductive management strategy, including breeding and non-breeding recommendations. Expecting the African elephant population to follow their Asian relatives at some point, the new guidelines describe the need for all population management facilities to increase space to house sub-adult bulls longer and to manage elephants in a fission-fusion management system.

The new guidelines also have a stronger focus on the behavioural competency part of the EEP goals, including detail on the welfare of individual elephants, allowing for more choice by elephants, increasing enrichment and avoiding abnormal behaviour. The chapter on health care for elephants provides new guidance on disease management for Elephant Endotheliotropic Herpes Virus and Tuberculosis. With a portion of the elephants in the EEP populations being overweight there is more emphasis on appropriate diets and feeding regimes and body scoring indexes that holders are recommended to use. There are also more elephants in older age classes, and therefore a section on management of geriatric elephants has been added.

The Elephant TAG decided in 2019 to support only elephants managed in a Protected Contact system. A new definition of Protected Contact management was developed and all holders are required to use this definition to review their elephant management routines and align them accordingly, as soon as possible and at the latest by 2030. Following approvals of the EEP Committee and EAZA Council, the EAZA Annual General Meeting in October 2020 unanimously agreed to include this requirement in the 'EAZA Standards for the Accommodation and Care

of Animals in Zoos and Aquariums', making this a condition of membership from 2030 onwards. Full details are included in the BPG, and the TAG is available to answer any questions and provide support for this and any other aspect of the guidelines.

The Elephant TAG also completed guidelines for elephants in demonstration in 2020. Both the Asian elephant EEP and the African elephant EEP will produce a new Long-term Management Plan (LTMP) in early 2021, following meetings held in 2020. The Elephant TAG is confident that these documents address present challenges related to *maintaining* populations that are demographically and genetically sustainable and have behaviourally competent elephants. In addition to monitoring the implementation of the BPG and LTMPs, the Elephant TAG will prioritise better documentation and further increases in elephant research and conservation activities in the years to come.

The authors would like to sincerely thank the past and present Asian elephant EEP and African elephant EEP coordinators and studbook keepers, the former TAG chairs, BIAZA and the TAG members, particularly all 21 editors that worked on the BPG. An overview of the publications referred to in this article is available from the EAZA website.

NORTHERN WHITE-CHEEKED GIBBON (*NOMASCUS LEUCOGENYS*) AND SON © M. FOOS ZOO MULHOUSE



On the frontline

THE NEW REGIONAL COLLECTION PLAN AND LONG-TERM MANAGEMENT PLANS FOR GIBBONS PLACE EAZA MEMBERS FRONT AND CENTRE IN THE GIBBON TAG'S PLANS FOR THE FUTURE

Brice Lefaux, Director Mulhouse Zoo, France, and Gibbon TAG Chair; Elmar Fienieg, EAZA Population Biologist; and Kelly Lavooij-van Leeuwen, EAZA Animal Programmes and Conservation Coordinator

In February 2020, the EAZA Gibbon Taxon Advisory Group (TAG) held a Regional Collection Planning (RCP) workshop in Lagos Zoo, Portugal, which was followed by two days of Long-term Management Plan (LTMP) meetings. The workshop and meetings were attended by the TAG, as well as by Susan Cheyne of the IUCN Primate Specialist Group Section of Small Apes. All of the 20 known gibbon species, with ranges in over 10 different Southeast Asian countries, are threatened with extinction in the wild according to the IUCN

Red List, including three Critically Endangered and 14 Endangered species. Each species of gibbon faces roughly the same *in situ* threats, the most prominent of which are hunting and bushmeat consumption, pet trade, the lack of law enforcement, and deforestation and habitat fragmentation. This trend could be reversed if the right actions are taken to complement and support existing conservation projects.

Although only 10 species of gibbon are held in EAZA, all 20 species of gibbon were discussed during the RCP

workshop. No changes were made to the species managed in the six existing EEPs (Table 1 and Figure 1), but clear direct and indirect conservation roles were identified:

- **insurance** because extinction in the wild is deemed realistic considering the *in situ* status;
- **research** to benefit either *ex situ* or *in situ* populations;
- **fundraising** to aid identified projects, and
- **education** to raise awareness of the threats to the species and more specifically to educate on photo-props.

Holders of non-managed species of gibbon are asked to phase these out and replace them with a managed species. Meanwhile, these can still contribute to the education and fundraising roles mentioned above. For the 10 species that are not kept within EAZA, the recommendation is to not obtain these species.

As a priority, the EAZA Gibbon TAG supports the gibbon populations in range states. The TAG recommends the support of conservation projects that focus on reversing the threats that gibbon populations face *in situ*, and cooperation with the following projects is endorsed: Association Anoulak (Laos), the Angkor Centre for Conservation of Biodiversity (Cambodia), the Endangered Primate Rescue Center (Vietnam), the Cao Vit Gibbon Project (Vietnam), the Borneo Nature Foundation (Indonesia), the Frankfurt Zoological Society and Stiftung Artenschutz (Vietnam) and Huro (India). Research is suggested on behaviour, nutrition, genetics, veterinary aspects and health, with specific recommendations for studying the digestibility of fibres in gibbons (contact Francis Cabana, Wildlife Reserves Singapore), the effect of removal of contraceptive implants in crested gibbon species (contact the TAG Vet Advisor), and analysis of wild gibbon songs to determine the species status (contact Michal Hradec and Camille Coudrat), as well as the storage of gibbon DNA in the EAZA Biobank.

The main challenge for all six Gibbon EEPs is that these currently lack institutional space. Several EEPs have a skewed sex ratio towards males, which makes it particularly difficult

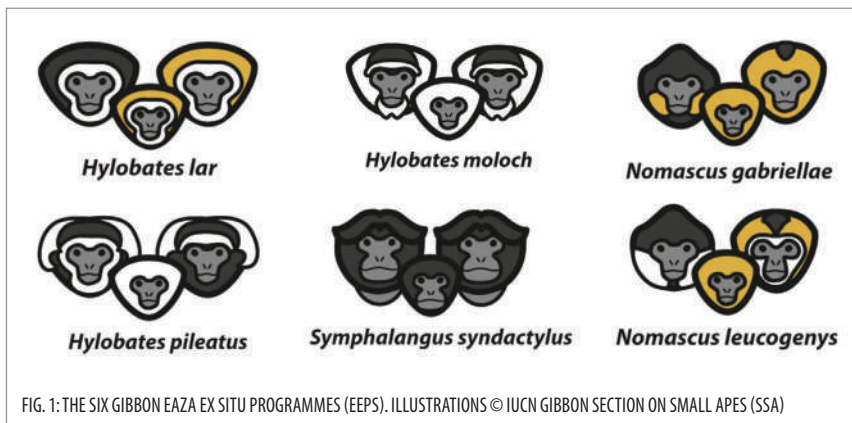


FIG. 1: THE SIX GIBBON EAZA EX SITU PROGRAMMES (EEPS). ILLUSTRATIONS © IUCN GIBBON SECTION ON SMALL APES (SSA)

Table 1: Details of the six gibbon EEPs

Common name	Scientific name	IUCN Red List Status
Pileated gibbon	<i>Hylobates pileatus</i>	Endangered
Javan gibbon	<i>Hylobates moloch</i>	Endangered
Northern white-cheeked gibbon	<i>Nomascus leucogenys</i>	Critically Endangered
Gabriella's gibbon	<i>Nomascus gabriellae</i>	Endangered
Siamang	<i>Symphalangus syndactylus</i>	Endangered
Lar gibbon	<i>Hylobates lar</i>	Endangered

to house males in these pair-breeding species. Nevertheless, with creative solutions and close cooperation between the different EEPs, it should be possible to normalise the situation and achieve stable insurance populations for these six gibbon species in EAZA within 10 years.

An important element of this strategy will be to use the existing space within EAZA in a better way. This will be done by phasing out the remaining 34 individuals of the non-managed gibbon species in EAZA. Also, the Siamang (*Symphalangus syndactylus*) and Lar gibbon (*Hylobates lar*) EEP populations, which are currently over capacity, will be decreased so that all animals can be structurally housed. As part of this, additional siamang bachelor groups will be established, and these will be monitored carefully because there is still only limited experience with this. Note that housing these bachelor groups – this applied, in fact, to any institution housing any individual – is an important contribution to the running of the EEP and the TAG. For any institution that is currently holding only one individual – perhaps, for example, because it is old and non-reproductive and its former partner has died – it is still important to pair up the remaining individual from the perspective of both space and welfare. This could even be done with a different gibbon species



if necessary. In addition to other gibbon species, mixed exhibits with other species, such as (male) orangutans and otters, are also encouraged. This is not limited to individual gibbons, but applies also to pairs, and this works well for all species of gibbon, except for the siamang and the northern white-cheeked gibbon (*Nomascus leucogenys*). This will be further explained in the Best Practice Guidelines, which will be published soon.

Another element of the Gibbon TAG's strategy is to normalise the skewed birth sex ratio of several EEPs.

EAZA Gibbon TAG mission statement

The mission of the EAZA Gibbon TAG is to maintain demographically and genetically stable and behaviourally competent populations of prioritised gibbon species that are viable in the long term. These populations might then be suitable for potential future reintroductions, if needed as part of their conservation strategy.

There are indications that parents of specific ages produce more females. The relevant EEPs will take this into account in their management while the TAG further investigates whether this is indeed a causal relationship. Most of the solutions mentioned so far are quite similar for most Gibbon EEPs; however, every gibbon is different and many species-specific actions have been identified as well. Most of these actions were set for the Pileated gibbon (*Hylobates pileatus*) EEP population, because it is currently the most fragile, particularly from a genetic perspective. To improve this in the short term, cooperation with rescue centres will be investigated; for the long term, starting the cryopreservation of gametes now seems to be of paramount importance. Also for the Northern white-cheeked gibbon EEP, several important actions were identified, in particular in respect to global cooperation. The EEP is already working closely with the Zoo and Aquarium Association (ZAA) in Australasia and is investigating whether this can be expanded upon with the Association of Zoos and Aquariums (AZA) in North America. An important element of this species' strategy is also to obtain more information on positive or negative experiences with reversibility of contraception for crested gibbons (please communicate this information to contraception@chesterzoo.org).

As a final note, many thanks are due to all the participants of the RCP workshop and LTMP meetings for their tremendous efforts, expertise and enthusiasm, and to Lagos Zoo for hosting. For more information, the final RCP and LTMP documents can be found on the Population Management page of the EAZA Member Area. For those of us who are gibbon holders and EAZA Members, there is a responsibility to maintain viable populations and conserve the gibbon species. Therefore our message is: keep gibbons to save gibbons!

A new plan for hornbills

THE NEW HORNBILL REGIONAL COLLECTION PLAN HAS AMBITIOUS PLANS FOR THESE FASCINATING BIRDS

Koen Brouwer, EAZA Hornbill TAG Chair, Attica Zoological Park, Greece; Joost Lammers, Curator at Avifauna, the Netherlands, and EAZA Hornbill TAG Vice-Chair; and David Aparici Plaza, EAZA Coordinator Animal Programmes and Conservation

In the autumn of 2019, the EAZA Regional Collection Plan (RCP) workshop for hornbills took place at Avifauna in the Netherlands. As an institution that specialises in birds, it was a great place to stimulate discussions about hornbills. To organise an RCP workshop properly, months of preparations and planning are required. These preparations include coordination with several crucial experts, gathering *in situ* and *ex situ* information, and in this case having the EAZA Hornbill Taxon Advisory Group (TAG) establish its vision and mission to find the best approach for the management and conservation of hornbills. The mission of the EAZA Hornbill TAG goes beyond coordinating the management of the *ex situ* hornbill populations at the highest welfare standard; it also pursues the fulfilment of roles that are key for the conservation of the species. Thus, the TAG would like to encourage and promote collaboration between EAZA Members and others with similar missions and goals.

Like many other taxa, hornbills are threatened by habitat loss, which, along with habitat degradation, has harmful impacts on many hornbill species throughout their Asian and African ranges. Great hornbills (*Buceros bicornis*), for instance, show a predilection for forests with large trees that may also be targeted by loggers. In addition, hornbills are hunted for food as well as for their casque; one example is the helmeted hornbill (*Rhinoplax vigil*), which is heavily targeted by hunters, and its casque is illegally traded as traditional medicine and carved for decoration. Other species are hunted for their tail feathers, or sometimes as a bycatch; for example, the rhinoceros hornbill (*Buceros rhinoceros*) is sometimes hunted as if it were a helmeted hornbill. In general, hunting poses a substantial threat to most hornbill species. Another major concern is the increasing illegal trade in living hornbills.

The EAZA Hornbill TAG is overseeing 62 species (30 African species and 32 Asian species), of



BLACK-CASQUED HORNBILL (*CERATOGYMNA ATRATA*) AT LAGOS ZOO, PORTUGAL

which 24 have been classified as Threatened (Critically Endangered, Endangered or Vulnerable) according to IUCN's Red List. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has only the majority of the Asian hornbill species listed, although efforts are being prepared to include some African species. Nevertheless, the TAG feels the necessity for an update in the IUCN status of at least the West African hornbill species, to more correctly reflect the current threat state of these species. Most of the African hornbills are currently classified as Least Concern, while the impression is that they are more threatened. Currently only the southern ground hornbill (*Bucorvus leadbeateri*), northern ground hornbill (*Bucorvus abyssinicus*), yellow-casqued hornbill (*Ceratogymna elata*) and brown-cheeked hornbill (*Bycanistes cylindricus*) are listed as Vulnerable.

To collect more data on the current status of African hornbills, the TAG's recommendation was to increase its 'eyes on the ground' and to work together with people, projects and institutions that are currently working in the field in Africa. To achieve this, the TAG suggested during the workshop that it should team up with other TAGs that already have a strong presence in the region, such as Old World Monkey TAG and Parrot TAG.

Previously, there were 10 hornbill EAZA Ex situ Programmes (EEPs) and European Studbook (ESB)



BLACK-CASQUED HORNBILL (*CERATOGYMNA ATRATA*) AT LAGOS ZOO, PORTUGAL



The 16 new-style EEPs created as a result of the August 2019 RCP workshop

Common name	Scientific name	IUCN Status	RCP category
Great hornbill	<i>Buceros bicornis</i>	VU	EEP
Rhinoceros hornbill	<i>Buceros rhinoceros</i>	VU	EEP
Black hornbill	<i>Anthracoceros malayanus</i>	VU	EEP
Wrinkled hornbill	<i>Rhabdotorrhinus corrugatus</i>	EN	EEP
Visayan hornbill	<i>Penelopides panini</i>	EN	EEP
Bar-pouched wreathed hornbill	<i>Rhyticeros undulatus</i>	VU	EEP
Papuan wreathed hornbill	<i>Rhyticeros plicatus</i>	LC	EEP
Southern ground hornbill	<i>Bucorvus leadbeateri</i>	VU	EEP
Northern ground hornbill	<i>Bucorvus abyssinicus</i>	VU	EEP
Von der Decken's hornbill	<i>Tockus deckeni</i>	LC	EEP
Rufous hornbill	<i>Buceros hydrocorax</i>	VU	EEP
Southern rufous hornbill	<i>Buceros mindanensis</i>	VU	
Knobbed hornbill	<i>Rhyticeros cassidix</i>	VU	EEP
Black-casqued hornbill	<i>Ceratogymna atrata</i>	LC	EEP
Silvery-cheeked hornbill	<i>Bycanistes brevis</i>	LC	EEP
Trumpeter hornbill	<i>Bycanistes bucinator</i>	LC	EEP

programmes in EAZA, covering seven Asian and three African species. The historically strong emphasis on Asian hornbill species may be because these were better represented in EAZA institutions, but also because they are often considered by visitors to be more colourful and attractive animals. In addition, the Asian birds mostly have a strong conservation component. Importantly, though, the number of EEPs for African species has doubled since the RCP workshop, reflecting the increasing interest among zoos to work with (larger) African hornbill species.

IMPROVED HUSBANDRY

Despite hornbill husbandry being perhaps less demanding in African than in Asian species, most hornbill species are in general still very challenging to keep and breed in human care. Research on compatibility, husbandry, pairing and population management of the larger Asian hornbills is ongoing and will continue to be encouraged and facilitated by the TAG. Additionally, the EAZA Hornbill TAG concluded at the RCP workshop that it is very important to devote more attention to the practicalities of keeping and breeding hornbills, for example, by conducting a series of hornbill husbandry workshops. The main idea behind these workshops would be to give keepers and curators of EAZA zoos keeping hornbills the opportunity to share their successes and failures, but also to encourage using new methods and techniques

(such as the use of nest cameras and temperature/humidity data loggers) in their attempts to increase population numbers. Institutions involved in the various hornbill EEPs should also be aware that their full commitment is required to work with these species.

In order to reach broader audiences and promote more active participation, the EAZA Hornbill TAG suggested, if possible, eliminating language barriers by conducting these husbandry workshops in different countries in the appropriate language and in cooperation with national zoo associations and zookeeper/staff organisations. Implementing these husbandry workshops would also include facilitating the conversion of the current EAZA hornbill husbandry guidelines into new Best Practice Guidelines (BPG) and to create new ones for specific species (e.g. the guidelines for the *Bucorvus* hornbill are now in final draft version and should be available in 2021).

HORNBILLS IN THE ILLEGAL TRADE

There has been an alarming increase in the number of living hornbills appearing in the illegal animal trade worldwide. In some cases, hornbills are being offered for sale and sold as if they were (multi generations) bred in human care, thus misleading the exporting and importing CITES authorities, and in some cases the zoo that is acquiring the birds. This is typically far from the truth; in many cases, sadly, the birds on offer

have been captured (often illegally) in the wild. As part of EAZA Members' responsibility, and in line with the Animal Acquisition and Disposition policy, all animals in an EAZA collection should come from a trustworthy source (ideally bred in human care) and be accompanied by all relevant legislative paperwork. In order to reinforce this point, and make it more specific to hornbills, the TAG is working on a statement that will describe concerns and will be accompanied by a checklist.

RESCUE CENTRE GUIDELINES

Another topic discussed during the RCP workshop was to create husbandry guidelines specifically for rescue centres/sanctuaries in Africa and Asia. The main objective of these 'Rescue Centre Guidelines' would be to provide sufficient basic knowledge to rescue centres located in range countries (which is different to our EAZA BPG). It is here where hornbills are often received – in poor condition – as a result of confiscations from illegal trade, and it is important to share with the centres basic knowledge of such things as diets and veterinary care so that they can ensure a minimum welfare standard and safe recovery of the animals before potentially releasing them back into the wild. The EAZA Hornbill TAG is developing these guidelines in cooperation with EAZA vet advisors and other hornbill specialists of the IUCN Hornbill Specialist Group.

KULAN (*EQUUS HEMIONUS KULAN*) GUNTAMBA AREA, GREAT GOBI B STRICTLY PROTECTED AREA © JAROSLAV ŠIMEK



Project equid

THE NEWLY PUBLISHED REGIONAL COLLECTION PLAN FOR EAZA'S EQUIDS RECOMMENDS A WIDE VARIETY OF MEASURES TO IMPROVE THE STATUS OF THE 12 TAXA THAT IT SET OUT TO PROTECT

Jaroslav Šimek, Prague Zoo, Czech Republic, Vice-Chair Equid TAG; Tanya Langenhorst, Marwell Wildlife, UK, Vice-Chair Equid TAG; and Ulrike Rademacher, Wilhelma-Stuttgart Zoo, Germany, Chair Equid TAG

The new EAZA Regional Collection Plan (RCP) of the Equid Taxon Advisory Group (TAG) was published in October 2020, following an EAZA RCP workshop in Wilhelma-Stuttgart Zoo in Germany in November 2019. The EAZA Equid TAG is dealing with 12 taxa of Asiatic and African equids, which were assessed within the RCP process. The RCP meeting was attended by the TAG Chair, Vice-Chairs, EAZA Ex Situ Programme (EEP) coordinators, representatives of the IUCN Species Survival Commission (SSC) Equid Specialist Group and EAZA Executive Office staff. Various equid experts were also consulted during the 2nd Wild Equid Conference held in Prague in September 2019, to provide current insights and comments on the *in situ* status of the species concerned.

Out of six currently recognised taxa of Asiatic equids, four are represented within EAZA holders. Turkmenian kulan (*Equus hemionus kulan*) and onager (*Equus hemionus onager*) are facing a slow but continuous decline of interest among holders, posing a threat to the future development of both populations. The taxonomy status and relatedness of both taxa is repeatedly discussed in regard to keeping both under separate management or pooling

them into one management unit. As this remains unclear, and the IUCN SSC Equid Specialist Group plans to undergo a large-scale review of wild equids taxonomy, it was decided to keep kulan and onager under separate EEP programmes for now. Both taxa are present in similar numbers, but while the Turkmenian kulan population is to be increased, the onager population should be maintained at the current level. Both kulan and onager programmes are or were interlinked with *in situ* activities, and the former has potential for reintroductions once genetic analyses to identify the origin of zoo animals are completed. The onager in human care will need to be analysed as well, to determine their genetic value and clarify the relatedness to the autochthonous populations in Iran.

A new EEP is proposed for kiang (*Equus kiang*), for which numbers in EAZA zoos are decreasing. As the status *in situ* is not very clear, it was decided that the population in human care should be maintained at the current level as an insurance population. For this new EEP, the TAG is currently in search of a coordinator.

The largest of all equid EEPs, and also the oldest one, is that for the Przewalski's horse (*Equus przewalskii*).

With numerous holders, both EAZA and non-EAZA Members, and several well-established reintroduction programmes, the species seems to be momentarily safe and the aim is to maintain the current insurance population, with a focus on retaining genetic diversity and the possibility for further *in situ* population restorations as new reintroduction sites are under discussion. This species also has high education value, as it shows the conservation success of saving species once extinct in the wild.

The remaining two Asiatic species – Indian wild ass (*Equus hemionus khur*) and Mongolian wild ass (*Equus hemionus hemionus*) – are not targeted for *ex situ* populations and were assigned the RCP category of MON-T (monitored by TAG) to ensure monitoring of the *in situ* situation.

Somali wild ass (*Equus africanus somaliensis*), the only African representative of wild asses, is listed by the IUCN as Critically Endangered, facing various threats within remnant areas of its occurrence in Eritrea and Ethiopia. The EAZA population has suffered a slight decrease in recent years, so the population target is set to increase. There are several direct and indirect conservation roles recommended for *ex situ* management,



SOMALI WILD ASS FOAL (*EQUUS AFRICANUS SOMALIENSIS*), WILHELMA-STUTTGART ZOO © JANA MÜLLER



KIANG (*EQUUS KANG*) © KLAUS RUDLOFF



GREVY'S ZEBRAS (*EQUUS GREVYI*) © ULRIKE RADEMACHER

the most important of which are insurance, capacity-building/training and research. There are veterinary issues (sarcoids) related to the *ex situ* conditions, which need to be addressed. Somali wild ass appears to be a reasonable candidate for cryopreservation as the tool for maintenance of gene diversity of a small and closed population with zero chance for new founders.

Hartmann's mountain zebra (*Equus zebra hartmannae*) is the first African zebra species on the list. The only representative of unique mountain zebra held by EAZA Members will be managed to increase the current population, with insurance being regarded as the main direct conservation role. In the wild the species is under increasing threat of severe droughts, which can wipe out large parts of the population at once. Similarly to the Somali wild ass, further veterinary research is needed to investigate and reduce the occurrence of sarcoids.

Plains zebra (*Equus quagga*) are the most numerous of wild equids in EAZA collections. The value of this still widely spread species is one of exhibit and education, in particular as many zoo individuals are generic plains zebra, with unclear subspecies status. The plains zebra is the only taxon in the RCP to be assigned MON-T REPLw status as current and future holders should consider a more endangered zebra species. (MON-T REPLw means 'monitored by TAG, RCP category for

non-managed species in EAZA, with a specific recommendation to replace the species with an EEP species'.) The only exception from the plains zebra spectrum is the maneless zebra (*Equus quagga borensis*), which is currently regarded as the most unique and distinctive taxon within plains zebras. Until the IUCN has clarified its status in the wild equid taxonomy review, the Equid TAG has decided to propose an EEP to manage the subspecies. Due to low numbers both *ex* and *in situ*, with limited genetic variation of the population in human care, the aim is to maintain the current population size. The non-favourable situation *in situ* has potential for conservation activities.

Last but not least, the robust and well-managed Grevy's zebra (*Equus grevyi*) EEP is another where the goal is to maintain the current numbers. The programme has long-term connections to the field, providing an exemplary link between *ex* and *in situ* conservation. As such, it opens the opportunity for indirect conservation roles of fundraising next to the direct roles of insurance, research, capacity building and expertise.

Aside from taxa assessments, the Equid TAG also addressed some other issues within the RCP, such as those of domestic equids and management-related challenges. The TAG acknowledges the relevance for some EAZA Members either to be involved in the conservation of local domestic breeds of equids or to keep them for

education purposes. While the TAG would like EAZA Members to consider holding wild instead of domestic equid species, this will not always be possible or relevant. The recommendation is, where possible, to hold the domestic species in relevant themed areas and include education messages on domestication of species and/or link to the conservation of wild equid species.

Keeping wild equids represents some management challenges; the appropriate space required to fulfil all the needs of large-bodied equids is not the only one. Many organisations like to keep them (in particular zebras) in mixed species exhibits to provide their visitors with a more varied and educational experience in displays of certain geographical regions. It is important to acknowledge that different species have very different social systems and therefore different behaviours and needs. One group of equids has a harem system like the Hartmann's mountain zebra and plains zebra, while the other group is based on a territorial stallion and loose groups of females, e.g. African wild ass (*Equus africanus*), Grevy's zebra and Asiatic asses. This can require different set-ups for stables, enclosures and management regimes. Regardless of the social system, the breeding groups of equids are made up of one stallion and several females and this creates issues for holding adult surplus males (either because they are genetically over-represented or old or more numerous than the places available). It is possible to hold young and surplus males of some equids in bachelor groups, e.g. Przewalski's horses, Grevy's zebra and, to a certain degree, African wild ass and Hartmann's zebra, but for others, like onager and kulan, this can be extremely difficult, if not impossible, again creating the need for extra holding space or other kind of management. The keeping of wild equids together with other species can create difficulties. It very much depends on the composition of all groups, the management of breeding animals within this mixed exhibit and size/design of enclosure.

Irrespective of various challenges, there is no doubt that wild equids have their essential role and place in modern zoos, bringing not only education lessons for visitors, but also in many cases direct links to *in situ* conservation activities.

Sea change

WILL THE CREATION OF A HIGH LEVEL PANEL FOR A SUSTAINABLE OCEAN ECONOMY BEGIN A NEW CHAPTER IN OCEAN CONSERVATION?



SETTING A TRAWL IN STEPHENS PASSAGE, ALASKA

David Williams-Mitchell EAZA Director of Communications and Membership, and Tomasz Rusek, EAZA EU Policy Manager

Twenty years ago, during the first of EAZA's conservation campaigns, nearly two million people signed a petition which resulted in bushmeat being recognised by the European Parliament as a serious environmental problem. Overfishing and unsustainable fisheries, one of the topics of the Which Fish? campaign, is a similarly pressing issue, but one that no longer requires petitioning: the decision-makers are

well aware of the challenge. This article looks at some promising recent initiatives dedicated to addressing it. On 2 December 2020, fourteen coastal states with significant interests in fishing announced that they would be implementing a new set of policies aimed at making their fishing industries sustainable over the long term. The High Level Panel for a Sustainable Ocean Economy unites

Canada, Mexico, Jamaica, Chile, Namibia, Kenya, Ghana, Portugal, Norway, Indonesia, Australia, Palau and Japan and is intended to create a new relationship with the ocean for all countries in the absence of a dedicated United Nations treaty on ocean resource use. As the Ocean Panel currently stands, its members represent 40% of the planet's coastlines and 30% of Exclusive Economic Zones, but the

Panel's campaigning calls for a '100% approach' – that is to say, to become fully sustainable by 2025 and to enrol all other nations with fished coastlines to do the same by 2030.

The Panel's call for action by 2030 is nothing if not ambitious, and is spread across several key areas:

Ocean wealth: This section calls specifically for sustainable fishing of wild-caught fish and an increase in sustainable aquaculture, with waste reduced as far as possible, or, where waste is unavoidable, managed so as not to disrupt food chains. The Panel calls for the elimination of subsidies that cause overfishing, and a precautionary and scientifically based approach to the rebuilding of fish stocks across the globe.

Ocean health: The Panel calls for action to protect and restore marine ecosystems and to reduce pollution both directly in the sea and in any way that causes global heating. This includes reference to the Paris climate accord, but also calls for nature-based solutions to the protection of key ecosystem elements including seagrass and kelp beds, mangroves and all kinds of reef.

Ocean equity: This point recognises that greater levels of equality in terms of access to the ocean-based economy would reduce industrialised exploitation and lead to a more equal stakeholder base that would protect the future of the oceans.

Ocean knowledge: This recognises that our understanding of the ocean, from both scientific and public literacy points of view is inadequate. Without more study and public engagement, sustainable use of ocean resources, as well as the imperative to make the changes that need to happen in order to protect the habitats, will be significantly hampered.

Ocean finance: The Panel recognises that frameworks already exist to ensure better allocation of infrastructure resourcing, such as the UN Environment Programme (UNEP) *Sustainable blue economy finance principles*, and calls for these to become the standard for approval of coastline infrastructure, or indeed any infrastructure that could cause ocean pollution. The Panel also calls for a risk index to be drawn up so that investors can better understand the oceanic context of all life on earth, and therefore of all human economic activity.

CHILEAN PURSE SEINE



There is no doubt that this is an interesting and ambitious set of demands, but there are still significant questions to answer: both Norway and Japan continue to hunt whales commercially, and Canada and Indonesia both have quotas for subsistence hunting of whales. We have seen catastrophic degradation of many of the terrestrial habitats in Indonesia, careless deregulation of mining and other extractive industries in both Canada and Australia (in the case of Australia, this includes the dumping of dredging sludge on the Great Barrier Reef), and the almost inevitable end of the vaquita (*Phocoena sinus*) in the Gulf of California as a bycatch of totoaba (*Totoaba macdonaldi*), which is used in Chinese medicine. Ghana's economy is reliant on petrochemical extraction, and Kenya has granted licences for oil exploration despite producing a climate change policy for 2030. In short, most of the nations participating in the Panel have much to do, and we must hope that the Panel itself is intended sincerely rather than as cover for these various unsustainable activities.

The single EU member in the Panel, Portugal, happens to be holding the rotating presidency of the European Union from January to June 2021. It is expected to put oceans and fisheries high among the EU's priorities and speed up the implementation of the EU Oceans Agenda. Adopted in 2016, the Agenda strengthens the EU's role in building a global framework for international ocean governance, in creating the conditions for a sustainable 'blue economy' and in stimulating ocean research.

Besides working globally, the EU is also focusing on its own fisheries, both marine and freshwater, under the umbrella of the EU Green Deal. In its latest Biodiversity Strategy for 2030, the EU has promised a tighter protection of European seas, with 30% of EU seas to be covered by protected areas, up from today's 11%. The EU Farm to Fork strategy on sustainable food systems was announced on the same day in May 2020. Among other objectives, it aims to bring fish stocks to sustainable levels, strengthen fisheries management in the Mediterranean and monitor how climate change affects EU fisheries. It contains a promise to step up the EU's fight against fraud and illegal fish products entering the EU markets. These ambitious goals can be achieved if the strategies align all relevant EU policies and if they enable all EU member states, businesses and other stakeholders to join forces for a truly transformative change.

As readers will be aware, the Which Fish? campaign is partly aimed at drawing attention to the scale of the exploitation of the seas and the collapse in both biodiversity and biomass in this most mysterious of ecosystems. The campaign would therefore encourage the fullest possible implementation of these initiatives and a high degree of cooperation between them. And as Portugal assumes its half-year EU leadership, we subscribe to the words of the country's president Marcelo Rebelo de Sousa that 'the current situation in the fight against Covid-19 cannot in any way take us away from our commitment to our seas, a common heritage of humanity.'



Creative response

BY EXAMINING JUST A FEW OF THE IMAGINATIVE AND EFFECTIVE WAYS IN WHICH CONSERVATION PROJECTS AROUND THE WORLD CAN BE SUPPORTED BY THE EAZA COMMUNITY, IT IS EASY TO SEE HOW EVERY MEMBER CAN CONTRIBUTE TO CONSERVATION

Merel Zimmermann, Animal Programmes and Conservation Coordinator, and Wouter van der Ven, Conservation Communications Officer, EAZA Executive Office

In 2019, at least 103 EAZA Members recorded support totalling €22.6 million for 600 species in 10 regions across the world, complemented by over 100,000 hours of staff time. This article shares various examples taken from the EAZA Conservation Database that show the ways in which EAZA Members have contributed to conservation – some familiar and some not so familiar.

All conservation efforts require resources to secure materials and staff. Some Members are able to dedicate part of their operational budget or profit to conservation efforts, while others have a dedicated conservation budget. For example, as part of their operational budget, Wildlife Reserves Singapore supports the training of pangolin detection dogs and pays their trainers' salaries as part of the the Palawan Pangolin Conservation Programme (1).

Many EAZA Members also fundraise among their visitors. One example is the 'Euro for Conservation' model (2), which a number of EAZA Members, including Parc Animalier d'Auvergne in France, add to their entrance fee.

Other ways in which Members have



PHILIPPINE PANGOLIN (*MANIS CULIONENSIS*) © GREGG YAN

contributed to conservation include providing materials or services – not just field equipment and medical equipment, but specific expertise or even simply office space. Members sometimes employ students and staff local to *ex situ* projects, and help to fund relevant university research programmes. A number of EAZA Members even own and manage entire

ecoparks and private nature reserves to improve habitat and increase biodiversity. The case studies that follow illustrate all of these approaches and more, but there are many more ways in which EAZA Members can contribute to conservation. We encourage each Member to find the way that is a good fit with the mission and structure of their institution.

1. The use of local dogs in detecting wild Palawan pangolins – Wildlife Reserves Singapore

Dogs have been shown to be effective at locating pangolins by smell and this project aims to train dogs of a local mixed breed to assist in pangolin abundance surveys without harming the animals. WRS supports this project by providing funds for training the dogs and salaries of the trainers.



2. Euro for Conservation – Zoo d'Auvergne, France

In 2019, Zoo d'Auvergne introduced Euro Nature or Euro for Conservation in their institution. From each entrance ticket, one euro is dedicated to support one of 16 pre-selected conservation projects. A counter at the entrance shows the real-time funds raised, and during 2019, €100,000 was collected.



3. Support to AEECL – Zoo Ostrava, Czech Republic

In 2018, Zoo Ostrava organised a charity run together with SSK Vítkovice Athletic Club, which provided a certified track through the zoo at night. This charity run raised approximately €7,000, which was donated directly to AEECL (Lemur Conservation Association).



4. Black Mamba Anti-Poaching Unit – Aalborg Zoo, Denmark

Since 2012, Aalborg Zoo has raised funds to support the all-female Black Mamba Anti-Poaching Unit. Within two years this unit had closed several poacher camps and slaughterhouses and reduced poaching in their area by as much as 76%. Each year, Aalborg Zoo funds a year's worth of food rations (€13,500) for the anti-poaching unit, consisting mostly of visitor donations collected during the annual Elephant Day at the zoo. One of the elephant keepers in Aalborg Zoo organises an annual trip to the project site in South Africa, organised in collaboration with Africa Tours.



5. Reintroduction of European bison in Romania – Parco Natura Viva (PNV), Italy

PNV became involved with the European bison project in 2004, and aside from being part of the reintroductions, they were also asked by Worldwide Fund for Nature (WWF) Romania to design the logo of the project and manage its online presence. PNV has donated materials and raised public awareness about the programme, focusing especially on digital media, sharing the reintroduction process from birth to release and beyond to establish a connection between the public and the bison.



6. Support for West African Primate Conservation Action (WAPCA) – Paradise Wildlife Park, UK

West African Primate Conservation Action is an NGO based in Ghana, western Africa. Aside from their Ghana office in Accra Zoo, WAPCA has a UK headquarters at Paradise Wildlife Park. This office space is used as a base for WAPCA to seek funding, engage with partners and develop the NGO from a central location.



7. Foundation for Bat Conservation, Switzerland – Zoo Zürich, Switzerland

The Bat Conservation Switzerland Foundation aims to combat the threats to bats in Switzerland, and Zoo Zürich assists them by providing office space in the zoo. Together with a third project partner, the Zürich Animal Protection Association, both Bat Conservation Switzerland and Zoo Zürich run the Bat Helpline and an Emergency Bat Care Centre for injured and weak bats (also located in the zoo). These bats are rehabilitated and released back into nature after full recovery. In 2019, almost 1,800 emergency calls were made to the Bat Helpline and a total of 260 bats were rehabilitated in the Bat Care Centre, two-thirds of which were released back into the wild. Furthermore, Zoo Zürich has constructed and maintained numerous nationally important bat roosts throughout the country, recruiting local house owners and public authorities wherever possible.



8. Projet Grands Singes (PGS) – Antwerp Zoo Society, Belgium

Antwerp ZOO has been implementing its scientific research programme in Cameroon since 2001 and used it as a model for great ape conservation in the Dja Faunal Reserve (DFR). By employing 10 Cameroonian staff and 62 research students (42 of which are from Cameroon), PGS has managed to publish 70 peer-reviewed papers and book chapters and has been represented at nearly 120 national and international forums.



9. Opel-Zoo Endowed Professorship – Opel-Zoo, Germany

Opel-Zoo started a collaboration with the Johann-Wolfgang-Goethe University Frankfurt in 2014 to offer a zoo animal biology course. Recently the project team has worked to establish a research field at the university, focusing on behavioural biology, field research, genetic analyses and environmental education research.



10. Conservation of the Griffon Vulture in Israel – The Tisch Family Zoological Gardens, Israel

The Tisch Family Zoological Gardens (Jerusalem Zoo) established the National Center for Raptor Egg Incubation with the aim of optimising population results for griffon vultures (*Gyps fulvus*). In collaboration with the Israel Nature and Parks Authority, the Israel Society for the Protection of Nature and the Israel Electric Company, eggs from all over the country are incubated in Jerusalem Zoo, reared by foster parents and subsequently released into the wild after they have fledged.

Since 1993, the project team has released into the wild more than 150 griffon vultures that were born in human care, and a new breeding colony has established itself at Mount Carmel where the species had stopped nesting decades ago.



11. Habitat Restoration – Create an Ecopark – Nordens Ark, Sweden

In 2011, Nordens Ark created its own ecopark by changing a 1km² plot of species-poor monocultural spruce forest into a more diverse wooded pastures grassland. This ecopark was meant not only to increase the biodiversity of the area, but also to make the park more accessible and educational for the public. The park now forms an important part of education programmes at the zoo and universities. To maintain the park, free-ranging cattle and sheep of old Swedish breeds are used. These cattle and sheep are also served in the ecopark restaurant.



12. UmPhafa Private Nature Reserve – Colchester Zoo, UK

In 2004, Colchester Zoo decided to establish its own charity called Action for the Wild, through which they have collected more than €3 million, which has been spread over various projects. One of these projects, dating from 2005, concerned developing a 6,000-hectare nature reserve in South Africa called the UmPhafa Private Nature Reserve. The first release took place in 2006, and since then many iconic species have returned to the reserve and more reintroductions are planned.



13. Support for Egyptian Vulture Populations in Algeria – Bioparc de Doué la Fontaine, France

The Bioparc de Doué la Fontaine participated in a three-year action plan to safeguard the Egyptian vulture population in the Tlemcen region (Algeria). This included creating a feeding station to support the breeding couple from Tlemcen National Park in raising their brood, resulting in two fledglings in 2018 and 2019. In 2019, a second and third breeding pair are thought to have been observed.



EAZA is supported in this work by the European Union LIFE NGO funding programme. The European Union is not responsible for the views displayed in publications and/or in conjunction with the activities for which the grant is used.



Eating our words

IT IS AN INCONVENIENT TRUTH THAT CHEAP MEAT IS LITERALLY COSTING US THE EARTH – SO WHY AREN'T WE TALKING ABOUT IT?

Dominic Wormell

I will start with a sobering and depressing fact: in 2019, worldwide, 38,000 square kilometres of forest were destroyed, equivalent to a football pitch every six seconds.

When working in conservation, you have to try to be optimistic. We are often fighting against huge forces that are systematically changing landscapes and, with it, destroying habitats and the species within them. But I think we have been guilty of not seeing the wood for the trees.

For many years I have been travelling to South America and working with the conservation of some of the planet's rarest marmosets and tamarins. The endangered primates of the Atlantic rainforest still hang on, trapped in remnants of habitats, marooned with little hope of connecting with other populations without human intervention. Such small populations are doomed to go extinct in the future without intensive management *in situ*. Stochastic events such as fires and outbreaks of disease – such as yellow fever in Brazil – are unfortunately becoming more and

more likely and will almost certainly cause local extinctions in the future.

We have thought that both the causes and the solutions to the conservation dilemma were complex, but over the years it has become clear to me that the main cause of habitat destruction both here in Europe and internationally is something many of us do every day: namely, our insatiable appetite for meat. It is time to stop ignoring the elephant in the room and acknowledge that the big issue of our times that affects the planet and our lives in so many profound ways is the industrial livestock industry. The many billions of livestock reared in intensive units around the world do not grow on fresh air.

When I first travelled to Brazil back in the 1990s, the typical rural scenario was cattle pasture everywhere, and only in specially protected forested areas could you still see such animals as the rare golden lion tamarin (*Leontopithecus rosalia*) and black lion tamarin (*Leontopithecus chrysopygus*). At the time cattle pasture was not mentioned explicitly as a threat; we

used to talk about logging and mining and probably thought livestock farming was a necessary practice to support the local population. The general feeling was that with human population increase, the accompanying expansion of agriculture was simply how it was, and this was what we had left – tiny fragments of forest. Much like the European countryside, a patchwork of agricultural fields is seen as the norm; that is what the countryside looks like, and should look like, isn't it?

Cattle ranching is big business in Brazil, which is one of the largest exporters of beef in the world. The vast cattle ranches are often owned by big international companies, with pretty much none of the profits going to local people. Forest protection has been weakened under Brazil's president Jair Bolsonaro, and the agencies that protect and work to conserve the environment have been hugely weakened in recent years. This is accompanied by the stripping away of protective regulations and weakening of the forest code, and things are only going to get worse.

Yet conservationists and zoo professionals, even UN specialists the world over, have not had the industry on their radar until very recently, and served up unsustainable menus dominated by meat at conferences, seemingly oblivious to the impacts of that choice on the very species and habitats they were meeting to discuss. But if a group of orang-utan conservationists dined out at a specialist palm oil restaurant every night, they would rightly be condemned.

Effectively we are 'eating' the rainforest. When the devastation that meat production causes is so obvious, and it is clear that it is the main threat to the species we are conserving, it seems bizarre that the people trying to save the species don't highlight this fact.

Both in Colombia and Brazil, I have seen the devastation caused by livestock. Forests are being cleared for pasture or, in more recent years, to grow soya beans for livestock feed sold to the US, Europe and China. South America is literally going under the hoof or being turned over to grow livestock crops.

In 2017, the EU imported beef and livestock products associated with the equivalent to the destruction of 300 football pitches a day of Brazilian rainforest, more than 2 billion euros' worth. One-sixth of the carbon footprint of EU diets is causally linked to tropical deforestation, but consumers are ignorant of this fact. Poultry and pork production in Europe are almost entirely dependent on imported soy, and more than 90% of soy meal imported is used for animal feeds. As this is not an ingredient of meat products but an embedded element of production, it does not have to be labelled.

While the moratorium on soy production in the Amazon in 2006 seemed to reduce the destruction of Amazon forest, the demand was still there. So operations just moved to the cerrado and gran chaco regions and quite legally converted vast areas of unique habitat to soya bean plantations. Half of the natural vegetation has now been destroyed. And over the past couple of years, the assault on the Amazon has resumed with staggering ferocity – in July 2020



alone 1,654 square kilometres were destroyed. This destruction is not driven by small-scale farmers, but by huge agricultural business, to provide livestock products for the international market.

The worldwide impact of the livestock industry is monumental. Half of the planet's usable land is taken up by agriculture, and nearly 80% of all agriculture is livestock-related, either pasture or feed crops. This equates to 35–40% of the usable surface of the earth and yet provides around only 18% of total calorie supply to humans. As a way of providing nourishment for people, there could hardly be a more inefficient and wasteful system. Setting these figures against the 60% decline in biodiversity worldwide over the last 50 years, it is plain that our eating habits, especially in wealthier countries, are the cause.

Here are some more frightening statistics: of total terrestrial mammal biomass, 96% is made up of humans and their livestock, while the remaining 4% is collectively all the wild mammals. And we slaughter 60 billion chickens each year; their collective mass is three times that of all other birds. Yet we barely hear anything about this from conservationists. No one dares mention livestock. Why? We are happy to talk about the devastation caused by palm oil and invasive species. For example, in New Zealand and Australia there is a focus on the impact of alien species such as foxes and cane toads. Obviously these do cause problems for endemic local species, but surely their impact is dwarfed by the farming of alien livestock species, with millions of square kilometres devoted to pasture? There are about 11,800 dairy herds, which is more than 4.6 million cows, in New Zealand, and 95% of all the milk produced is exported. Water courses are seriously polluted and local habitats

dramatically altered and damaged.

It sometimes seems that conservationists are content to focus on conserving small areas – fragmented scraps of forest or islands – and do not look beyond to rewilding on a grand scale. The golden lion tamarin conservation project, for example, is hailed as a great success, and it has achieved amazing things in the last 40 years, but if you look at the area of habitat that is under protection for the species, it is tiny, surrounded by a livestock-dominated landscape. The species is not safe by any stretch of the imagination, and I would argue that the initiative has only just started in terms of where it needs to be to maintain long-term protection.

Perhaps it seems too large a problem to contemplate, but we need to bring back great swathes of forest and other habitats, making the environment robust once more and meeting the urgent need to mitigate the biodiversity and climate crises we face.

We need land to do this, and the obvious answer is to reclaim the third of the world's surface devoted to livestock. Our food system is completely broken and a billion people are close to starvation, yet we feed most crops produced to livestock. The EU's Common Agricultural Policy rewards farmers to keep land clear for grazing or crops, stopping any regeneration.

It is not an insurmountable problem – the World Health Organization in a recent publication has pointed to the fact that the human diet is the greatest cause of morbidity and mortality the world over. Other studies have shown that if we adopted a healthy diet centred on plant-based foods, land use for farming globally could be reduced by 60–70%, biodiversity loss would be largely halted and the carbon sequestration achieved through restoration of former agricultural land would be 332–547 gigatonnes of CO₂, which would meet much of our collective climate change target.

We need a huge reduction in the demand for livestock products and an urgent move to land restoration. Whether restoring the forest of Brazil or the uplands of the UK, it will have huge benefits for all in the decades ahead.

Changing our diets is the low-hanging fruit, easy to achieve – if we end our love affair with meat.

Taking a stand against Bsal

AS CONSERVATIONISTS AROUND THE WORLD TAKE ACTION AGAINST BSAL, A FUNGAL THREAT TO CAUDATA SPECIES, WE SHARE SOME OF THE STRATEGIES FROM THE EAZA AMPHIBIAN TAG THAT AIM TO STRIKE BACK AGAINST THIS EMERGING PATHOGEN

David Aparici Plaza, EAZA Coordinator Animal Programmes and Conservation; Allan Muir, EAZA EU Policy Coordinator; Gerardo Garcia, Curator Lower Vertebrates and Invertebrates at Chester Zoo, UK, and EAZA Amphibian TAG Chair; Benjamin Tapley, Curator of Reptiles and Amphibians at ZSL, UK, and EAZA Amphibian TAG Vice-Chair; and Olivier Marquis, Curator of Reptiles and Amphibians at Paris Zoo, France, and EAZA Amphibian TAG Vice-Chair.

First described in September 2013, *Batrachochytrium salamandrivorans* (Bsal) is a chytrid fungus that has recently emerged in the Western Palearctic region and represents a major threat to many Western Palearctic salamander species. In susceptible species, this fungal pathogen can produce significant skin lesions, which can result in changes in osmoregulation and can even lead to sepsis. Newts and salamander (Caudata) species are the most vulnerable to Bsal. Nevertheless, some anuran species are also known to be vectors of this pathogen without any visible clinical signs.

With growing awareness of this pathogen, and its listing by the OIE (World Organisation for Animal Health), countries and regions around the globe are putting into place measures to prevent its further spread. Since this emerging infectious disease is thought to have appeared in Europe as a result in the global trade of East Asian salamander species, new legislation was put in place within the EU to control the threat posed by the transport of Caudata across Member State borders. EU Regulation 2018/320 came into force two years ago and lays down the rules for the prophylactic requirements for the movement of salamanders into the EU as well as between Member States. The clear focus of this legislation is the commercial trade, not the small movements of conservation-dependent species from biosecure facilities that move between EAZA Members. Nevertheless, movements of salamander and newts between our institutions are now subject to these rules, too. In conclusion, salamanders that have to move between countries within or outside Europe have to follow a six-week quarantine period or, for movement within the EU only, a preventive treatment programme (see box for more information).

With this in mind, the Amphibian



Taxon Advisory Group (TAG), along with the EAZA EU office, is closely following the development of this legislation and hopes to have some input, to improve its applicability for our community, when this regulation is incorporated into the new EU Animal Health Law in April 2021.

In order to raise awareness about Bsal as well other infectious disease threats to these taxa, such as ranavirus and the other pathogenic chytrid fungi *Batrachochytrium dendrobatidis* (Bd), at the beginning of 2020 the EAZA Amphibian TAG contributed to a disease alert document called 'Reducing disease risks in captive amphibians and protecting our wild native amphibians from invasive disease' (see box for a link to the relevant document).

Furthermore, during the Western Palearctic Caudata Regional Collection Plan (RCP) workshop that took place in February 2020, EAZA and the EAZA Amphibian TAG decided to develop a workshop to have a pragmatic approach and develop a powerful educational tool that could contribute to minimising the devastating effects that Bsal could have on populations of caudate amphibians in the region.

Due to the Covid-19 crisis, we have been forced to adapt the original plans for a face-to-face workshop and run the course as a Massive Open Online Course (MOOC). On the bright side, the MOOC will allow us to have

a broader reach than a face-to-face workshop. This online learning event is due to take place during the first half of 2021 (the date will be published on the EAZA website and eNews) and will aim to provide an overview of the current knowledge and understanding of different aspects of Bsal, the threats it poses to caudate populations, both free-living and in human care, and the conservation examples and opportunities that exist for the *ex situ* community.

The various sessions will also explore Bsal from a veterinary point of view (infection, diagnosis and treatment), biological conservation, epidemiology, matters related to EU and international legislation, development of rescue programmes, *ex situ* management programmes (including quarantine and biosecurity protocols) and conservation translocation, including practical cases such as the EEP Montseny brook newt (*Calotriton arnoldi*).

Further information

EU regulations on the movement between countries of salamanders and newts:

www.gov.uk/government/publications/the-import-of-salamanders-and-newts

EAZA Amphibian TAG Disease Alert document:

www.gardenwildlifehealth.org/2020/06/10/amphibian_disease_alert.pdf



WISBROEK

SPECIAL FEED FOR SPECIAL BIRDS

Wisbroek develops high quality feed, especially for exotic bird species.

All products are constantly being (re)developed and tested in cooperation with the Wisbroek R&D Center, nutritionists, vets, private breeders and zoos. In this way, we're able to provide high quality extruded pellets with a large variety of natural ingredients and raw materials.



Follow us on:



www.wisbroek.com



Get in touch

We're always looking for partners to share experience and knowledge with each other.

Send an e-mail to info@wisbroek.com to get in touch.





*Some passengers need a
special travel agency*

**ZOO
LOGISTICS**

Amsterdam Airport
ZooLogistics BV
Hoeksteen 155
2132 MX Hoofddorp
info@zoologistics.com
www.zoologistics.com
+31 (0)20 / 31 65 090



**ANIMAL
LOGISTICS**

Frankfurt Airport
AnimalLogistics FRA GmbH
Langer Kornweg 34 K
65451 Kelsterbach
michael@animallogistics.de
www.animallogistics.de
+49 (0)6107 / 40 779 -21