



WAZA

*World Association
of Zoos and Aquariums*

2020

03

NEWS

**One Health in the
Time of COVID-19**

**Future Species
Planning**

**Zoos and Aquariums'
Scientific Contributions**



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Cover Photo: Visiting the aquarium
and adapting to the "new normal" in
the COVID-19 pandemic.
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WAZA Membership

WAZA members as of 7 September 2020

Affiliates	10
Associations	23
Corporates	19
Institutions	283

Future Events

- 2020:** 75th WAZA Virtual Annual Conference, 12-15 October
2021: Moscow Zoo, Moscow, Russia
2022: Loro Parque, Tenerife, Spain
2023: San Diego Zoo Global, San Diego, United States

President's Letter

Prof Theo B. Pagel

President of WAZA

Dear colleagues,

2020 has been an incredibly challenging year for all of us so far. While most of our members have reopened to the public, there are still some who have not been able to reopen due to local lockdown restrictions, or who have had to close to the public again following a surge in COVID-19 cases. For all of us, closing our gates has been an extremely challenging time – receiving no income but maintaining full costs. We know that governmental support for our institutions differs across various countries. Some governments have provided financial funding for zoos and aquariums, but there are many which have not.

During the lockdowns, WAZA and several other associations provided support webinars. We hope they were conducive in helping with some of the issues that arose during these challenging times. We are keen to support whenever we can, and would like to emphasise that our members can contact the WAZA Executive Office and we will try to assist you in any way we can. One option that some of you have availed of already is to request the WAZA letter of support and excellence. We keep our fingers crossed that circumstances will improve soon and remain convinced that the role of zoos and aquariums will become even more essential and at the forefront of conservation efforts as they were prior to the global pandemic.

Unfortunately, we had to cancel our 75th WAZA Annual Conference in San Diego, USA – which has been the case for all other important conferences in 2020, such as the IUCN World Conservation Congress and the meetings of the various regional and national associations. We thank our colleagues from San Diego Zoo Global for all the preparation they put into the conference, and we are happy to announce that we were able to postpone the conference to 2023.

However, while we might not be able to meet in person, we will still hold a virtual conference from 12-15 October 2020. I hope that it will be the first and last virtual WAZA Annual Conference ever held!

Nevertheless, we should look to the future with optimism and be proud of the work we have achieved so far within our community. In this magazine, you will find many positive stories on topics such as



IUCN motions, information on how WAZA is representing our members at the International Air Transport Association (IATA) and the progress towards achieving the 2023 WAZA Animal Welfare Goal.

Through the combination of our magazine, our news stories and online postings we try to provide you with information which would otherwise be inaccessible, and we hope that you find it helpful for your institution and your team. Share the magazine with your staff and let them be a part of WAZA too.

I am probably the first WAZA President who has so far in the role been restricted to only being able to work "locally". Because of the health and travel restrictions, my team and I had to cancel our participation in many of the conferences which we would have loved to attend to show our support in your work and strengthen the relationship between WAZA and our members. I hope that we will overcome the global crisis and look forward to meeting again in person as soon as possible. However, please be assured that your WAZA team is working 100 percent for you in the meantime. Regular Zoom calls, email exchanges with the IUCN Species Survival Commission (SSC), Conservation Planning Specialist Group (CPSG), regional and national associations, and phone calls around the globe keep us in touch.

Take care and stay a part of the WAZA family.

Prof Theo B. Pagel

CEO's Letter

Martín Zordan

WAZA Chief Executive Officer

As our WAZA President has pointed out in his letter for this issue, 2020 continues to be a daunting year. While there is still uncertainty, it is incredibly comforting to find support in our community. Whether it is a surprise lip-sync video from the WAZA Women wishing a fast recovery to a dear member, or joining forces to ask for governmental support, the key is to remain united as a community. At the WAZA Executive Office, which is now a "virtual office", I am grateful to the team whose commitment to WAZA is stronger than ever, which has been especially demonstrated during these difficult circumstances.

In the past few months, we have sadly lost three inspiring members of our community. Dr David Wildt (Smithsonian's Conservation Biology Institute's Center for Species Survival), Amy Camacho (Africam Safari, Mexico) and Petr Čolas (Ostrava Zoo and Botanical Garden, Czech Republic). I invite you to read about their legacies on page 31. We honour them by continuing our commitment to the natural world that they worked so hard to protect.

The pandemic has shown us how intrinsically (for better or worse) we are connected with nature. To that end, you can read more about how zoos and aquariums can further engage in the One Health approach in the article by Dr Sharon Deem. As we look to the future, Zoos Victoria has written an article 'Future Species – Zoos Victoria's approach to Species Planning' on how they have developed a decision-making framework to determine which species they should house at their zoos.

At WAZA, we want to make sure our members are adequately informed about relevant developments we are achieving together. I am therefore excited to share that the Ethics and Animal Welfare, Associations, and Membership committees have done a remarkable job in progressing the development of the WAZA Animal Welfare tool. This tool will be used to appraise the animal welfare evaluation processes that WAZA member associations will use, and it is a crucial component of the WAZA 2023 Animal Welfare goal. At this stage, we are also getting valuable feedback from the Membership Committee and engaging with the WAZA Council to share their views. Read more about the work completed so far and join us at the first WAZA Virtual Conference to find out more about what has been achieved on the road to the WAZA 2023 Animal Welfare goal.



As we have done in previous issues, we feature an update from one of our Association members on their journey to achieving the WAZA 2023 Animal Welfare Goal. In this issue, you can read more about the Southeast Asian Zoos and Aquariums Association's (SEAZA) progress towards the goal. Additionally, Kyoto City Zoo shares an insight into their new animal welfare guidelines on page 24 and the new exhibit feature looks at Barcelona Zoo's new Sahelian Savanna lion exhibit.

You can read about WAZA's environmental sustainability commitments on page 19 which gives an update on the work of the WAZA sub-committee on Sustainable Palm Oil. Additionally, page 21 provides an insight into how WAZA has been representing its members for over eight years at the International Air Transport Association (IATA).

Finally, we look forward to seeing you at the 75th WAZA Virtual Annual Conference. Please visit the conference website www.waza2020.org for more details. Remember that WAZA members have free registration. We will be sharing important updates on our joint work to increase the global conservation impact of our members at different international forums (CITES, IUCN, CBD). We will also be launching two new WAZA strategies and providing updates on our environmental sustainability commitments and on the progress toward achieving the WAZA 2023 Animal Welfare Goal.

A stylized handwritten signature in black ink, appearing to read 'M Zordan'.

Dr Martín Zordan

A Time of Great Opportunity

One Health in the Age of Climate Change, Extinctions, and a Pandemic



Photo: Keri Lammering of the Saint Louis Zoo educates students in the Saint Louis region on the principles of One Health using Missouri's state reptile, the three toed box turtle.
© Saint Louis Zoo

Sharon L. Deem, DVM, PhD, Dipl ACZM

Director, Saint Louis Zoo Institute for Conservation Medicine

In recent months, the majority of people around the world became familiar with terms like “flatten the curve” and “social distancing,” and learned to appreciate what a pandemic is as well as what is sold at a wet market. This is also true for our WAZA institution members and their millions of visitors.

As we work to reopen our zoos and aquariums and survive the economic fallout, we should consider how COVID-19 provides us with an opportunity to better conserve wildlife, ensure public health, and educate people on both. We can best do this using the One Health Approach. There may be no better time for One Health than when we are struggling with the impacts of a pandemic that originated in animals and which challenges human health and livelihoods, global economic security, and animal and ecosystem health.

Some WAZA members may not yet be familiar with the term ‘One Health’, although many have been practising it for years. An accurate definition is: ‘One Health is a collaborative effort of many different disciplines working locally, nationally, and globally to attain optimal health for people, animals and environments.’ (Deem et al., 2019). The mission statements of many of our facilities fit within the One Health framework.

The last decade has seen significant planetary health impacts due to anthropogenic causes which have resulted in increased recognition and support for the One Health initiative from many governmental and non-governmental organisations.

These impacts include the increase in emerging infectious diseases (EIDs) in plants, animals, and humans with many of these EIDs zoonotic (e.g. SARS-CoV-2 the causative virus of COVID-19) and/or diseases of conservation concern (e.g. Ebola in great apes, chytridiomycosis in amphibians, chestnut blight of chestnut trees). Climate change and associated impacts (e.g. Australian wildfires and over one billion animals dead as a result of the fires); to plastic pollutants, and the loss of biodiversity are all conservation and health challenges. To help mitigate these, and the many other, 21st-century conservation and public health challenges, zoo and aquarium staff as members of One Health teams have much to offer from our unique skill sets and expertise in animal husbandry, welfare, behaviour, and health, to our growing footprint of conservation and health initiatives around the world (Robinette et al., 2017).

‘One Health is a collaborative effort of many different disciplines working locally, nationally, and globally to attain optimal health for people, animals and environments.’



During this time of uncertainty created by the COVID-19 pandemic, we have been given an opportunity to participate within One Health and to share this concept with our visitors as we highlight how and why animal and environmental health are essential for human health (Padda et al., 2018). Similar to the past two coronavirus epidemics — sudden acute respiratory syndrome (SARS) in 2003 linked to civet cats at a wet market, and Middle Eastern Respiratory Syndrome (MERS) first identified in 2012 and linked to dromedary camels — the current

coronavirus pandemic demonstrates on a global scale, the challenges that threaten animal conservation and public health from the trade in wildlife and the potential of pathogen spillover from non-human to human animals. And people are listening. Additionally, with a three trillion-dollar price tag in the US alone, the economic fallout and impact on human livelihoods have been a catalyst for many people to begin to appreciate why we must work to optimise health across the One Health Triad of environmental, animal, and human health.

WAZA facilities have many roles to play within One Health. These roles provide benefits for biodiversity conservation and human health and include:

- Providing healthcare for zoo and aquarium wildlife, thus ensuring the sustainability of biodiversity;
- Conducting studies on diseases of conservation concern;
- Understanding diseases in zoo wildlife as sentinels for emerging diseases of humans and animals;
- Leading surveillance of diseases in wild animals at the interface of wildlife, domestic animals and humans;
- Contributing to the field of comparative medicine and the discovery of life;
- Demonstrating the importance of the natural world for human health and livelihoods; and
- Educating the public on the many ways that WAZA helps with the conservation of wildlife and public health (Deem, 2015; Robinette et al., 2017; Padda et al., 2018; Coolman et al., 2020).

As we move past this pandemic into a new normal post-pandemic world, our facilities are more important than ever before. Not only do we provide educational, recreational, and health benefits for our visitors (Robinette et al., 2017; Coolman et al., 2020), we also provide *in situ* and *ex situ* conservation and science actions that help to save species and advance public health. COVID-19 has given us a unique opportunity to consider how each of our facilities may start to incorporate, or continue and expand, One Health approaches. We have a responsibility to our members and visitors to play our part. The public look to us as leaders in wildlife conservation. In the post-COVID pandemic world, they also expect us to be leaders in One Health as we strive to attain optimal health for people, animals and our environment.

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Photo: In Galapagos, Drs Sharon Deem and Julie Sheldon work as part of the Galapagos Tortoise Movement Ecology Programme to better understand giant tortoise movement and health: an example of an *in situ* programme with a One Health focus. © Saint Louis Zoo





Future Species – Zoos Victoria's approach to Species Planning

Photo: Cotton-top tamarin. A Zoos Victoria Conservation grant provides support for wild populations of cotton-top tamarin
© Zoos Victoria

Amanda Embury

Senior Manager, Animal Welfare Life Sciences – Wildlife Conservation and Sciences, Zoos Victoria

If Zoos Victoria were to start over, what species would we house? This question shaped a 12-month project, named the 20 Year Species Plan, to determine the future of animal species at our three zoos – Melbourne Zoo, Healesville Sanctuary and Werribee Open Range Zoo. The role of Zoos Victoria, established in 1857, has changed significantly over the years. Activities that seemed appropriate 150 years ago, like the release of introduced species, may be frowned upon today. Creating a species plan that future-proofed our requirements presented many challenges.

This article outlines the approach we took and describes the resulting framework to support species decision-making.

Approach – Project Summary

The approach was to gather and refine information; applying a series of filters to identify those animal species that were aligned with our vision, mission and values. Key sources of data were the IUCN Red List, Species360 and the Zoo and Aquarium Association (ZAA Australasia) Regional Census and Plan. Consultation occurred with representatives of individual zoos, regional zoo associations, governmental agencies and non-governmental organisations. Findings were considered from global, regional (Australian) and local (Victorian/Zoos Victoria) perspectives. We used the following broad categories.

Global biodiversity – an opportunity

The first phase was to think about possibilities, the starting point being global biodiversity. We held staff workshops and invited participants to nominate animal species that they would like to see at Zoos Victoria. We then reviewed current species lists. This first assessment resulted in a list of over 1,500 animal species for consideration. Zoos Victoria currently houses around 350 animal species.

Species at risk – zoos saving species and helping wildlife

Zoos Victoria is committed to fighting extinction; the second assessment considered species at risk of extinction. Species for zoos that are currently participating in recovery programmes and those threatened species for which *ex situ* projects are a recommended action were noted. Victorian and Australian species were prioritised, as well as those threatened species from countries and regions where Zoos Victoria has sister zoo relationships and international conservation programmes.

Providing help for wildlife at risk was identified as a further way in which zoos can contribute to the safeguarding of species and wild populations.

Zoo Victoria's activities in this area include care of injured and orphaned wildlife and care of animals facing immediate threats.

Sustainable populations – risk assessment and futureproofing

An objective of the 20 Year Species Plan was to future-proof species at Zoos Victoria. The third assessment sought to identify species which have thriving populations. The species which have robust global or regional populations, sound genetic health and successful, well-co-ordinated breeding programmes are more likely to be sustained in the future.

Approval – compliance and social licence

The final assessment related to approvals. Existing legislation and regulations both have an influence on decision-making for species. Within Australia, we have robust frameworks, regulations and standards which we must adhere to.

Community perceptions are also a crucial consideration for species planning. Knowledge of the most popular species, the most visited exhibits and current concerns relating to zoos is required to ensure that a zoo remains relevant and valued by the community.

Outcome: Zoos Victoria's Animal Species Selection Guiding Principles and Framework

The key recommendation of the 20 Year Species Plan was rather than developing a list of species for Zoos Victoria that we instead design a framework to support decision-making now and in the future. The benefits of having a framework rather than a species list include:

- Acknowledgement of the ever-changing environment in which zoos operate and the influence of these changes on species choices.
- Flexibility to respond to emerging issues, such as threatening processes that might place a species at risk.
- Empowerment of staff to consider species and to make choices that are consistent with our organisation's vision and values.

Thus, the Zoos Victoria Animal Species Selection and Guiding Principles Framework was born. The Framework supports our vision of a future rich in wildlife. Three key questions guide decision-making for species:

- Is it justified?
- Is it humane?
- Is it effective?

Photo: Zoos Victoria's response to the recent bushfires included care of koalas
© Zoos Victoria



Photo: Zoos Victoria participates in the recovery programme for the orange-bellied parrot, including breeding birds for release.
© Zoos Victoria



Justified – Support of Conservation Outcomes

The justification for housing any species at Zoos Victoria is to support our conservation goals. Every species at Zoos Victoria has a clearly defined role and must satisfy at least two of the following conservation value categories:

Recovery – housing the species at Zoos Victoria supports species survival, including participation in a government-agency managed recovery programme.

Ark – housing the species at Zoos Victoria supports species survival such as protection from an immediate threat.

Ambassador – housing and display of the species showcases Zoos Victoria's conservation work and influences community values/behaviours towards conservation.

Enabling – housing and display of the species showcases Zoos Victoria's commitment to animal welfare and increases the perception of bringing added value to the community, leading to the motivation to visit our zoos.

Research – housing this species increases knowledge and enables evidence-based decisions to support conservation/animal welfare outcomes.

Humane – Animal Welfare

Zoos Victoria is committed to housing species that can thrive in our care. Factors that influence decision-making to acquire and house a species include:

Species' needs – both now and in the future, including likely future housing requirements, animal care practices and contemporary values.

Wildlife rescue – the decision to return animals to the wild or to continue to house them in our zoos will be based on an assessment of likely welfare outcomes.

Ethical – diligence in assessing source and recipients of animals to ensure that all animal transfers are ethical.

Compliance – housing and animal care practices for this species will comply with our Code of Animal Welfare and Ethics.

Effective – Outcomes

Decision-making will be supported by evidence with annual assessments scheduled and research completed to determine the effectiveness of a species in delivering its role. To future-proof species populations at Zoos Victoria, long-term planning will occur to provide for:

Succession-planning – including strategies to phase-out species and acquire new species.

Procurement strategy – to ensure that there are reliable methodologies for acquiring the species that align with contemporary values.

Transfer potential – to ensure that animals can be transferred to other organisations as required.

Breeding programmes – population metrics, including founder base and genetic diversity, are understood.

The effectiveness of species in achieving their roles may be measured in the following ways:

Recovery and ark species – goals may include the number of animals bred for release, the survival rate of offspring born, and the percentage of successful breeding outcomes.

Ambassador species – goals may consist of results of behaviour change campaigns, community awareness of Zoos Victoria Fighting Extinction programmes, and the proportion of time that species are visible to the public.

Enabling species – goals may include the popularity of species with visitors and the percentage of time that visitors have access to these species.

Research species – goals may consist of the satisfactory completion of a project, using knowledge that can be applied to improve the welfare of species in our zoos or for survival of wild populations.

In addition to the framework, the 20 Year Species Plan project has identified key actions that we will progress in the coming years. It also includes the identification of long-term requirements for core species; working with the Zoo and Aquarium Association Australasia (ZAA) and other regional zoo associations to determine tactics to support sustainable populations and to seek innovative solutions for species planning.

Concluding Comments

Justified, humane and effective – three powerful words that summarise Zoos Victoria's approach to the selection of animal species. Every species must have a clearly defined role that supports our vision. We must have the resources and expertise required to house species whose presence in Zoos Victoria is justified, humane and effective now and in the future. Moreover, we must regularly assess species outcomes; if goals are not being achieved, we need to either amend our practices or reconsider the housing of the species at Zoos Victoria.



IUCN World Conservation Congress – Motions, Elections, and Engagement from Zoos and Aquariums

Photo: WAZA supports the IUCN motion: 'Treating environmental crimes as serious crimes'. Rhino populations are an example of a species whose populations are declining as a result of environmental crimes © Pixabay

Martín Zordan

WAZA CEO

Every four years one of the most important events for global conservation takes place – The IUCN World Conservation Congress (WCC). It is an opportunity for the world to come together to set priorities and drive conservation and sustainable development policy and action. More than 1,300 member organisations will vote on major issues which will guide humanity's relationship with the planet for the decades ahead.

The 2020 congress, hosted by the French Government, was scheduled to take place between 11-19 June 2020 in Marseille, France, but as a result of the COVID-19 pandemic has had to be postponed. A second postponement has recently been announced and a new date is to be decided.

With more than 10,000 attendees and 800 speakers this congress is a unique opportunity to network with colleagues from conservation organisations, as well as for our community to celebrate and showcase the great work being done by aquariums and zoos. A vital element to engaging in the IUCN world is the motions.

Motions are the mechanism by which IUCN members influence third parties and guide the policy and programme of IUCN. As the only international conservation forum that brings governments, civil

society and indigenous peoples' organisations to the same table, the IUCN Members' Assembly at the Congress carries a powerful mandate. Members vote to approve motions, and once adopted, they become Resolutions and Recommendations, and therefore they form the body of IUCN's general policy.

IUCN members can provide valuable input into IUCN's general policy by either sponsoring, co-sponsoring or by being active participants in the motions' review and voting processes. For the upcoming Congress, 128 motions were submitted for consideration, of which 35 are being co-sponsored by zoological organisations. WAZA is co-sponsoring five of these motions and one we are particularly excited to support is motion No.57: 'Law enforcement regarding commercial trade in tigers and tiger parts' which was submitted by the European Association of Zoos and Aquariums (EAZA) and is being supported by numerous zoos, aquariums, and their associations as co-sponsors.

The IUCN World Conservation Congress (WCC) is an opportunity for the world to come together to set priorities and drive conservation and sustainable development policy and action.

Other motions which are being co-sponsored by our community and/or WAZA include:

- **Treating environmental crimes as serious crimes within the scope of the United Nations Convention against Transnational Organized Crime (UNTOC)**
- **Promoting conservation through behaviour-centred solutions**
- **Linking *in situ* and *ex situ* efforts to save threatened species by applying the One Plan Approach, to ensure effective use of all available conservation tools**
- **Improving process and action to identify and recover 'Extinct in the Wild' species.**
- **Action against Asian songbird trafficking**

This year, the European Association of Zoos and Aquaria (EAZA) has kindly invited WAZA to observe its regional process to coordinate positions among its members. More than half (28 institutions) of the zoo and aquarium members of IUCN are also EAZA members, so the aim is for zoos and aquariums to have a unified response. A significant contribution of EAZA is leading the proposal of the motion "Action against Asian songbird trafficking" which in addition to its relevance for the IUCN, is a topic in which CITES is also working on.

An additional aspect to consider is that IUCN member organisations will have a chance to vote for their preferred candidates for President, Treasurer, Commission Chairs, and Regional Councillors through the Congress website. WAZA invites our members to familiarise yourselves with the candidates and their views on how the zoo and aquarium community serves conservation – we strongly encourage you to touch base with your national and/or regional zoo and aquarium associations to gather more information. The electronic vote for the IUCN Motions has been rescheduled to 7-21 October 2020.

At least 46 aquariums, zoos, zoo and aquarium associations, and like-minded organisations, e.g. Species360, Zoological Society for the Conservation of Species and Populations (ZGAP), European Association of Zoo and Wildlife Veterinarians (EAZWV), including

WAZA are IUCN members. While this is positive, IUCN has more than 1,300 members so there is room for our community to increase its representation within this important, global conservation body.

If your institution is an IUCN member and you will not be able to vote, please remember to share your proxy vote with a colleague from another facility, your national or regional zoo and aquarium Association, or with WAZA. Make your vote count.

We encourage you to consider becoming an IUCN member if you are not already one, we are aware that several WAZA members are in the process of doing so. And if you are currently a member, one way to further engage to drive conservation and sustainable development action is through opportunities available at your national and/or regional zoo and aquarium associations to ensure the zoo and aquarium community has a unified response and to make our voices stronger together.

Photo: Sumatran tiger. WAZA is co-sponsoring the motion titled: 'Law enforcement regarding commercial trade in tigers and tiger parts'
© Chester Zoo





Evaluating the Contribution of Zoos and Aquariums to Science

Photo: Research on wildlife in human care is an important tool to support a better understanding of species and evidence-based conservation approaches. © J. Gübert

Dr Julia Kögler

Deputy Executive Director of the Association of Zoological Gardens (Verband der Zoologischen Gärten, VdZ)

Not only since COVID-19 do we know: Scientific research and the insights gained from it build a solid basis for evidence-based decision-making processes. This also applies to husbandry and wildlife conservation within the zoo and aquarium community. However, presently only a small percentage of the estimated 10-15 million species enriching our planet have been described scientifically.

The IUCN's Red List of Threatened Species currently only contains data on 120,372 species of plants and animals. Thus, the need for further profound scientific research on species' biology and taxonomy, and in the case of animal species their behaviour, well-being, reproductive patterns and dietary requirements is obvious. Zoos and aquariums can contribute to shedding light on the white marks of the scientific maps of animal species and their conservation – but do they?

The concept of keeping and simultaneously conducting research on animals in zoos and aquariums is not new. In 1942, Heini Hediger, a biologist and the former director of Zoo Bern, Zoo Basel and Zoo Zürich (Switzerland), underpinned research as being one of the four major tasks of zoos and aquariums. This commitment is still strongly present in our community. Most zoo and aquarium associations around the globe rightfully call upon their members to actively engage

in scientific research and to follow scientific-based approaches in all aspects of their operation.

The value of *ex situ* collections to science can best be characterised by at least three aspects: (1) zoos and aquariums provide ready access to a vast number of animal species and individuals under partially controllable conditions; (2) Species360's Zoological Information Management Software (Species360 ZIMS) contains millions of single data points on 22,000 species and 10 million individuals which are entered and regularly updated by 1,100 zoos, aquariums and wildlife institutions in 96 countries; and (3) accessibility to biological samples of living and deceased animals, which can be obtained during regular medical check-ups or in cases of specific needs. These unique features make zoos and aquariums ideal centres of research and vital hubs of knowledge.

But to what extent do zoos and aquariums make use of this remarkable potential? Do all zoos fulfil their role as scientific institutions, and if not – what are the barriers impeding contributions to science? What are the main focal disciplines and animal groups of zoo-based research? And is the global scientific community noticing the scientific contributions of zoos? So far, answers to these and other questions remain scarce.

However, three recently published evaluation reports now shed light on the contributions to science by members of the Association of Zoos and Aquariums (AZA), the European Association of Zoos and Aquaria (EAZA) and the Association of Zoological Gardens (Verband der Zoologischen Gärten, VdZ).

Loh et al. (2018) state that between 1993 and 2013 the mainly US-based 228 AZA members published 5,175 peer-reviewed manuscripts which resulted in 81,342 citations. Publication output increased over time. Furthermore, several factors were identified which are associated with high research productivity such as research-affiliated mission statements, financial assets and a non-profit structure.

Another study (Hvilsom et al. 2020) found that in the period spanning 1998 to 2018, the 291 mainly European-based EAZA members published a total of 3,345 peer-reviewed manuscripts, with output increasing threefold during the past decade. However, they also noted that the output was heavily skewed amongst the EAZA membership, with seven institutions producing 37% of all publications whilst 32% of institutions did not publish at all during the 21-year period.

A third study carried out by VdZ and the Opel-Zoo Foundation Professorship Zoo Biology at the Goethe University Frankfurt (Kögler et al. 2020) showed that the 71 VdZ members, mainly based in Germany, Switzerland and Austria – with the majority also being EAZA members – published 1,058 manuscripts in 284 different types of peer-reviewed journals over an 11 year period (2008-2018). This resulted in 8,991 citations. Overall, 14 VdZ members (nearly 20%) did not contribute to peer-reviewed science during the time period given. They register on average 239,000 visitors per year whilst the 10 institutions with very high research productivity welcome 1,491,000 visitors

per year. Interestingly, 24% of the publications of VdZ-members are based on data collected on wild animal populations, indicating that a few of the VdZ-member zoos are also heavily involved in field studies.

Furthermore, Kögler et al. (2020) demonstrated that contrary to average distribution rates of taxa in zoo and aquarium collections, the zoo-based research concentrates mainly on mammals, whereas for example bird and fish species are particularly underrepresented. Overall, all three studies noted an increase in research productivity over time and found that zoos' publications main focus is most often on the subject categories of zoology and veterinary science.



Graphic: The number of research projects assigned to the respective vertebrate classes and invertebrates does not mirror their actual rates of abundance in zoos and aquariums (Source: Kögler et al. 2020).

“Ex situ collections of zoos and aquariums allow research under semi-controlled conditions and provide great accessibility to a large number of species, individuals, data and samples. This unique potential makes it possible to shine light upon questions that simply couldn’t be answered when studying animals in the wild only.”

Dr Julia Kögler

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So, the initial questions “do zoos and aquariums make use of their potential for science?” and “does the science community notice our contributions?” can in general be answered with a proud and happy “Yes”.

However, despite overall encouraging results the three recent evaluation reports also reveal room for improvement. With research productivities greatly varying across association members it is obvious that the financial load and work is currently not shouldered equally. Amongst others, annual visitor numbers which likely result in larger financial assets and more staff seem to be an indicator of research engagement within institutions, yet there are also a few smaller-scale institutions with high interest in and engagement for science. Some members which were documented as having “zero peer-reviewed publications in the time period given” might have been involved in other research activities that were not captured by the methods applied. But with regards to the quality of research, knowledge-sharing and visible contributions to the international scientific discourse, zoos and aquariums should aspire to publish their results in peer-reviewed journals. We would therefore like to encourage institutions which have so far considered peer reviewed science as a “can” rather than a “must” to rethink their position and to take action to become engaged in the research community. Should their internal capacities not be sufficient to carry out extensive research projects they could actively approach external research teams and collaborate with them.

Furthermore, the reports also indicate major preferences for two disciplines: zoology and veterinarian science. This can surely be traced back to zoos’ historic and consistent ambition to understand more details of the biology and taxonomy of the species kept in order to improve husbandry, breeding, animal welfare and veterinarian care. It is also acknowledged that whilst research of any discipline is often focused at a project- or single question-level, each piece of gained scientific knowledge can potentially be the missing link that will one day be needed for a successful system-level conservation planning and management approach.

The upcoming years will be crucial for the reversal of extinction trends and in ensuring that zoos and aquariums are recognised by politicians, NGOs, media, scientists and the public as important stakeholders for the protection of biodiversity. With this and the One Plan Approach in mind, our community might therefore be well advised to use research not only as a pragmatic approach to solving questions that



Photo: Regular and controlled accessibility to bio samples underlines that zoos and aquariums are unique hubs for science.
© Zoo Heidelberg

evolve around keeping our animals, but also to increasingly engage in research that is specifically directed at benefitting *ex situ* and *in situ* conservation. Likewise, zoos should extend their research activities equally across all taxa and not disproportionately focus on prominent species as is currently the case. Unfortunately, the lesser studied animal groups such as invertebrates, freshwater fish and amphibians are amongst the most endangered species.

So, in conclusion let’s all work together in the future to make best use of the huge value of our *ex situ* collections in order to contribute even more to the scientific knowledge base on global biodiversity and its conservation.

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Roadmap to the WAZA 2023 Goal

Progressing the SEAZA Animal Welfare Certification Programme

Willem Manansang

Deputy Director Taman Safari Indonesia Bogor and Chair of the SEAZA Animal Welfare and Ethics Committee

The Southeast Asian Zoos and Aquariums Association (SEAZA) has begun the development of an Animal Welfare Standard that will be integrated within the association's Certification Programme to achieve a standardised animal welfare guideline for all member institutions. Beginning under President Phan Viet Lam's leadership in 2016 and with the continued guidance of current President Cheng Wen Haur, the Animal Welfare Standard has now been adopted by all SEAZA member institutions.

When comparing the SEAZA Animal Welfare Evaluation process with those of other regions during the 2018 WAZA Animal Welfare Summit, it was evident that its processes were aligned and shared the same vision for wide-scale reform and improved conditions. The SEAZA Standard on Animal Welfare was designed and spearheaded by the SEAZA Animal Welfare and Ethics Committee and Chair of the committee Willem Manansang, in collaboration with Wild Welfare, to create a holistic and comprehensive expectation for its members.

In creating the SEAZA Animal Welfare Certification Programme, the association hopes to devise a process for long-lasting change. Unlike a test, the SEAZA evaluation is a continuous process of improvement that encompasses operational guidance for the holistic care of animals in all environments. Built upon the Five

Domains model of animal welfare and a foundation of critical evaluation involving the thorough training of auditors, interviews, field evaluations, and a peer review process, the certification programme will be a cornerstone in securing the future of positive animal welfare in the region.

However, evaluations and improvements at this regional level have not been without challenges. The amalgamation of several cultures and practices to create this Standard has proven difficult, but, as SEAZA recognises, it is absolutely necessary for the development and growth of current standards for animal welfare in the region. Some stakeholders have expressed concern over the high SEAZA Standards and what is considered by some as costly nature of achieving and maintaining them, as well as the repercussions of what would happen in the event of partial compliance or failure to comply with them.

“SEAZA strives to improve animal welfare in the Southeast Asian region through this certification programme.”

Willem Manansang

Nevertheless, in addressing these concerns, SEAZA must aim for rigorous and thorough Animal Welfare Standards to commit to a positive welfare state but, in doing so, institutions need not always incur high costs. Although members must fully comply with the Standard, the Animal Welfare Certification is not a “pass” or “fail” test, but rather the demonstration of efforts of improvement. The association wholeheartedly commits to uphold the WAZA animal welfare aligned standards in keeping with the WAZA 2023 Animal Welfare Goal which requires the adoption of these guidelines in one step, as opposed to numerous stages.

Since 2019, three of the five SEAZA member institutions that were evaluated – Khon Kaen Zoo, Vinpearl Safari & Conservation Park, and Bali Safari & Marine Park – have completed their improvement recommendations and were awarded the Certification. As a SEAZA membership requirement, Certification is valid for five years, after which the member will be re-evaluated. In doing so, the association ensures that its members continue to uphold the SEAZA Standard for Animal Welfare in the future.

An additional ten members were scheduled to be evaluated in 2020; however, due to the pandemic, those evaluations have had to be postponed. In light of recent improvements in regional situations, SEAZA aims to restart the evaluations by the first or second quarter of 2021. In accordance with the WAZA 2023 goal finalised at the 2018 WAZA Animal Welfare summit, the association is confident that all WAZA members that are currently SEAZA members will be evaluated through the Certification Programme by 2023. Additionally, the SEAZA Board is collaborating with the Zoo and Aquarium Association Australasia (ZAA), which will peer-review the evaluation process and certification programme.

As one of the first SEAZA member institutions to go through the SEAZA Animal Welfare Standard and Certification Programme, Vinpearl Safari Curator Mr Bùi Phi Hoàng, provided this feedback, “As a young zoo and a new member of SEAZA, Vinpearl Safari still has weak points and a thirst to improve. It clearly cannot be denied that joining SEAZA and following SEAZA’s Standard supports us in achieving our vision and goal. Assessing and certifying members draws zoo stakeholders’ attention to positive animal welfare.”



Photo: Members receive their certification certificates at the 27th Annual Conference of the South East Asian Zoos and Aquariums Conference. © SEAZA

SEAZA will continue to strive towards continuous improvement and the maintenance of these animal welfare standards in its member institutions. Above all, this evaluation process and the certification programme are designed to measure a culture change in snapshots. This change was envisioned for years but has finally come to fruition.

“Partnering with SEAZA in the development and finalisation of their Welfare Certification procedure has been an enriching and validating experience for Wild Welfare. We are extremely proud of the rapid progress made by our SEAZA colleagues and the material improvements to animal welfare within the region that have since occurred. There is still a road to be travelled however, and Wild Welfare looks forward to assisting SEAZA further with this process.”

Dave Morgan, Founder and Field Director
Wild Welfare.



WAZA

Virtual Annual Conference 2020

Join us for the 75th WAZA Annual Conference

Don't miss out on the 75th WAZA Annual Conference, which will be held virtually for the first time ever, from 12-15 October 2020 CEST.

The online conference is free for all WAZA Members to attend, and the registration fees for non-members are:

- Non-WAZA member but a member of one or more WAZA recognised-associations: €100
- Non-WAZA member and not a member of a WAZA recognised-association: €200

Topics of discussion include lessons learned over the past months and how the global zoo and aquarium community has adapted to the challenges presented by COVID-19, as well as how to continue our commitments to the protection of animals under our care and in the field. WAZA will launch two new, exciting strategies: the *World Zoo and Aquarium Conservation Education Strategy* and *Protecting our Planet – the WAZA Sustainability Strategy*; and provide updates on progress made towards the WAZA 2023 Animal Welfare Goal.

Hear from international keynote speakers including Elizabeth Maruma Mrema, Executive Secretary of the Convention on Biological Diversity (CBD) and Ivonne Higuero, Secretary-General of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). They will discuss the role WAZA member zoos and aquariums can play in supporting the goals of the CBD and CITES in a post-2020 global biodiversity framework.

This year's virtual format will ensure the conference is accessible to all WAZA members. There will be opportunities for immersive and collaborative discussions, as well as virtual networking with colleagues from the global WAZA community. The conference is open to all staff of WAZA members, as well as members of WAZA's recognised regional and national associations.

We look forward to connecting with you in October.



For more information and to register, please visit waza2020.org. For any questions, please contact conference@waza.org.

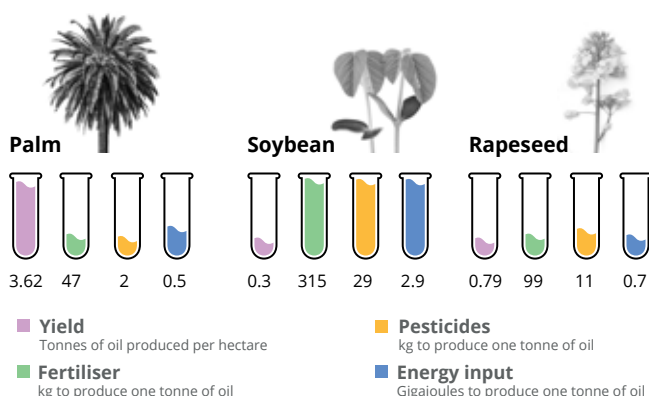
WAZA's Commitment to Certified Sustainable Palm Oil and the RSPO

Tracey Gazibara

VP of Development and Marketing, Cheyenne Mountain Zoo and member of the WAZA Sub-committee on Sustainable Palm Oil

Palm oil is found in many products ranging from processed foods to shampoo, lotions, cosmetics, pet food, and many more. It is the most widely produced edible oil.

Supply and demand pressures are driving the production of palm oil to an all-time high. When produced sustainably, palm oil is the most efficient and affordable option for edible vegetable oil, requiring less land, pesticides, and fertilisers than other oil alternatives.



However, when produced unsustainably, millions of acres of rainforest mainly in Indonesia and Malaysia (and expanding to areas such as Africa and Latin America) are cut down each year to plant more oil palm. This spread of non-sustainable palm oil plantations is destroying rainforest habitats, contributing to the loss of biodiversity, and pushing many critically endangered species closer to extinction.

The Roundtable on Sustainable Palm Oil (RSPO) is a well-established organisation with more than 4,800 worldwide members representing all entities along the palm oil supply chain, to advance the production and use of sustainable palm oil. To help make the palm oil industry sustainable, the RSPO developed a set of environmental and social criteria which members must comply with in order to produce certified sustainable palm oil (CSPO). When they are correctly applied, these criteria can help to minimise the negative impact of palm oil cultivation on the environment and the communities in palm oil-producing regions. Currently, the RSPO has certified 19% of all palm oil produced.

WAZA and RSPO combined efforts through a Memorandum of Understanding (MoU) in October 2017. The goal of the MoU is to build consumer awareness and increase the demand for CSPO. A WAZA Palm Oil sub-committee, under the WAZA Conservation Committee, was established to fulfil the goals of the MoU.

Although there are several elements within the MoU, the Palm Oil sub-committee has been working hard to make progress on two main goals;

- 1) 50% of WAZA members will have sustainable palm oil awareness programmes, and
- 2) 50% of WAZA members will demonstrate their commitment to sustainable palm oil by converting from the use of non-sustainable palm oil products at their facility.

To gather baseline data, WAZA sent an online survey to its members in 2018 to find out how members are engaging with palm oil. The responses received indicated 47 WAZA members had awareness programmes at their facility to promote CSPO, and 49 WAZA members had made a commitment to increase their use of CSPO. With an average of 300 WAZA members, there is still plenty of work to be done to achieve the MoU goals.

Sub-committee members have been involved in speaking engagements, holding workshops, and working on different web-based projects to help promote the use of CSPO. At the 74th WAZA Annual Conference in November 2019, the sub-committee held a palm oil workshop to help organisations gain a better understanding of how to launch a successful sustainable palm oil awareness programme. A committee member was also invited to speak about the partnership between WAZA and the RSPO at the International Congress for Conservation Biology in Malaysia in July 2019.

Members of the sub-committee are currently busy working on a new website for WAZA members. The site will provide resources to help start a palm oil awareness programme, tools for institutions to determine their own sustainable palm oil use, and tips on how to increase their usage of CSPO.

Several WAZA member zoos are also working together to create a global sustainable palm oil shopping app to promote CSPO and help consumers make informed choices. The goal is to ensure the tool will be successful in numerous countries and will have the ability to add new countries as required, especially those in high palm oil user areas, such as Indonesia, Malaysia and India. The aim is to have the app developed by late 2020, with a launch date of early 2021.

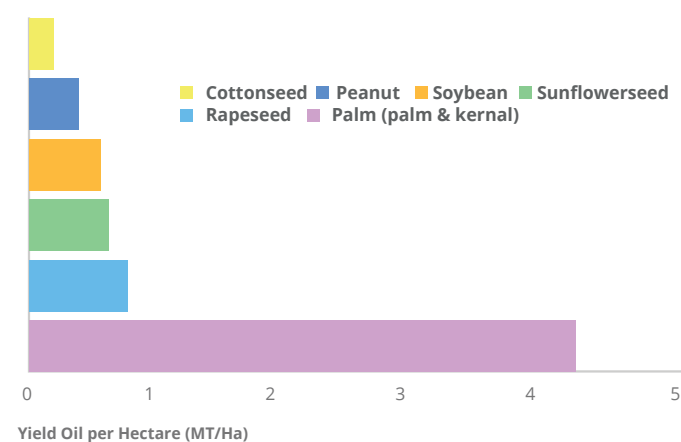
To determine if there was any movement toward reaching the sustainable palm oil goals outlined in the MoU, a second survey was emailed to WAZA Members in January 2020. The survey revealed the number of organisations promoting certified sustainable palm oil had increased from 24 members to 71, and the number of institutions who committed to using more sustainable palm oil increased from 18 members to 67. Although there is still a long way to go to reach the MOU goals of 50%, the sub-committee views the progress so far as being positive, as the numbers are moving in the right direction.

To promote the use of certified sustainable palm oil and help the RSPO garner more credibility with WAZA members, the sub-committee is working to provide a better understanding of the importance of the RSPO's role as well as providing evidence that the RSPO's processes are working.

Through the surveys, the sub-committee discovered that there are still some WAZA member facilities who are boycotting palm oil or have awareness programmes that are putting forth mixed messages by promoting boycotting, as well as the use of sustainable palm oil.

Comparison Yields of Major World Oilseeds*

*Average yields 2001-2006



The reality is that boycotting palm oil is not a sustainable option. Oil palms are the most productive type of all edible oil crops. Oil palms produce four to ten times more oil per acre than other crops like soy or canola. Palm oil can be a more environmentally friendly oil because less land is needed to produce the same amount of oil. If we boycott palm oil, it is likely that another crop will take its place that will be more damaging to the environment.

To help stop the destruction of the rainforest and protect the biodiversity of the earth's oldest ecosystem, the sub-committee is continuing to explore different avenues to help WAZA members raise guest awareness about the environmental benefits of purchasing sustainable palm oil.

Air Transportation of Animals: How the Voice of Zoos and Aquariums is heard at IATA

Andreas Kaufmann

WAZA/EAZA Consultant, GoWild

Humans have transported animals for thousands of years. While the Romans imported countless wild animals from Asia and Africa to sustain their circus games, the reasons why animals are transported today have changed dramatically and are manifold, as are the methods of transport.

Transportation of animals by air started in the early 1920s, and has since become the preferred method for long distance migration. It is considered to be the most humane and expedient way to bring an animal from one location of the world to another. Many zoo animals are transported by air and bound by specific regulations but, what are these regulations, who decides them, and how can we ensure that they meet the needs of our animals?

International Air Transportation Association

The International Air Transport Association (IATA) is a trade association representing more than 250 airlines around the world. IATA publishes the IATA Live Animals Regulations (LAR) which is considered to be the global standard for air transportation of live animals.

Live Animals Regulations

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has adopted the LAR for all modes of transport of CITES-listed species since March 2013.

The most current edition – the 46th edition of the LAR – came into effect on 1 January 2020. The LAR is the global standard and the essential guide to transporting live animals by air in a safe, humane and a cost-effective manner, whether the animal is a pet, an animal transported for zoological or agricultural purposes or for any other reason. The LAR provides access to the most current and efficient practices for live animal cargo including airline and governmental requirements, information on the use of appropriate containers, loading, handling, marking, and labelling as well as the documentation required for transporting animals.

Photo: Unloading animals being transported at the airport © Andreas Kaufmann





Photo: Tigers are listed under CITES Appendix I. Species listed in this category are of the most endangered among CITES-listed animals and plants. CITES adopts the Live Animals Regulations for all transport of CITES-listed species. © Andreas Kaufman

Live Animals and Perishables Board

The body within IATA responsible for the development of these regulations is the Live Animals and Perishables Board (LAPB). The LAPB comprises 12 elected airline representatives who meet twice a year to revise, improve and update the LAR, which is published annually in English, French, and Spanish. It is their responsibility to set the standards for the transportation of live animals contained in the Live Animals Regulations.

LAPB Advisory Panel

Expertise on animal welfare, animal care, identification, animal behaviour, scientific progress and commercial trade requirements are provided by government agencies involved in the regulation of animal transportation and the LAPB's Advisory Panel.

The Advisory Panel comprises of five members elected by the LAPB to provide input on agenda items and to propose matters for LAPB discussion and action. From time to time, IATA requests advice from

the Advisory Panel to address transport questions that arise during the year. WAZA has been serving on the LAPB Advisory Panel since 2012 through its representative Andreas Kaufmann.

For decades zoos and aquariums have been moving animals domestically and internationally to contribute to *in-* and *ex situ* conservation, for animal welfare reasons, as well as for reintroductions into the wild. Zoos and aquariums have a unique history of hands-on experience in the care of wildlife. As the unifying organisation of the global zoo and aquarium community, WAZA is perfectly positioned to provide expertise on the biological and welfare needs of zoological animals in transit.

WAZA's representation on the LAPB Advisory Panel offers zoos and aquariums a unique chance to contribute to the future of ethical animal transportation and to shape the regulations in which they have to comply.

WAZA and IATA

WAZA's representation on the LAPB Advisory Panel offers zoos and aquariums a unique chance to contribute to the future of ethical animal transportation and to shape the regulations in which they have to comply. This collaboration has resulted in positive results for the zoo and aquarium community in recent years, with the reduction of excessive restrictions for the benefit of zoo animal transport and population management programmes. However, significant challenges remain. IATA is open to and welcomes proposals for improvement and editorial suggestions to incorporate into their guidelines. Professionals working in zoos and aquariums are encouraged to engage with IATA to share their vast experience of transporting animals and to provide feedback and suggestions. If you encounter difficulties with the animal transportation process, are aware of more efficient methods of preparing animals for transportation and caring for them in transit, or if you detect text passages in the LAR you think could be improved, etc. please voice your experiences or concerns through your WAZA recognised association. This information will be collected via the WAZA Associations Committee and then shared with the WAZA/EAZA representative on the IATA LAPB Advisory Panel.

To further promote the scale of collaboration on this matter, the European Association of Zoos and Aquariums (EAZA) and WAZA have signed a Memorandum of Understanding to further support the ethical and efficient transportation of animals for the benefit of the zoo and aquarium community.

Changes to the LAR

The LAPB has a procedure in place and a template to follow for proposed amendments and changes to the LAR. Each proposal should be supported by facts and data, which could include scientific studies, field tests, or observational data. All information should be unbiased, objective, and statistically sound, i.e. through an adequate sample size of studied or observed animal shipments over several shipments to ensure valid data.

As animal transportation is not exclusive to the zoo and aquarium world, the ramifications imposed have to be taken into consideration and consultations must be held with other stakeholders, groups, and organisations before amendments to the LAR can be implemented.

Please share your knowledge and expertise for the benefit of animals in transit through your WAZA recognised-association.



Top photo: Animal transport – the natural way. © Andreas Kaufman

Bottom photo: Modified rigid, plastic containers for transporting animals. © Andreas Kaufman

If you are interested in learning more about IATA as well as WAZA's interactions with airlines, please contact the WAZA Executive Office on secretariat@waza.org.

Providing the Best Possible Care – Kyoto City Zoo's Animal Welfare Strategy



Dr Yumi Yamanashi

Principal researcher, Center for Research and Education of Wildlife, Kyoto City Zoo

Photo: The young chimpanzee, Niini, lies in his newly built bed, a skill he learnt from his mother
© Kyoto City Zoo

Attention to animal welfare is currently growing in Japan. Last March, Kyoto City Zoo in Japan released its animal welfare guidelines on its website. The guidelines cover everything from daily husbandry to management issues, which are both essential for improving animal welfare. Other elements of the guidelines include policies on enrichment and husbandry training, animal-visitor interactive programmes, animal welfare assessments, collection plans, the acquisition and transfer of animals, and the establishment of an animal welfare committee.

Dr Yumi Yamanashi from Kyoto City Zoo tells WAZA about the process of creating these new animal welfare guidelines.

We created these guidelines because we believe that it is vital for all staff to follow the same direction in improving animal welfare. Our zoo is small and does not have a lot of resources, so collaboration among staff and with experts outside of the zoo is vital. We wanted the guidelines to be realistic, making the best use of our zoo's resources, and to be the starting point for continuous, systematic improvement.

Target species approach

One of the strategies included in the guidelines is the target species approach. Starting in 2018, every year, we decide on a few target species (enclosures) that we

will focus on. We took this approach to gradually fill in the gaps on the level of animal welfare across different species taking into account environmental elements. The target species of the first year were a Japanese black bear and scarlet and great green macaws. Using an animal welfare assessment sheet developed by Wild Welfare, most of the keepers and researchers assess the enclosures of these species and make recommendations for improvement. Based on the suggestions, we provide environmental enrichment for each species. We also conducted behavioural observations before and after implementing enrichment, in collaboration with university students.

For the female Japanese black bear, we provided several materials such as logs, plants, some feeders, and hammocks to increase their available space and encourage species-specific behaviours. Results of the behavioural observations indicated that stereotypic behaviours decreased and active behaviours such as moving increased. For the scarlet and great green macaws, we also provided items such as perches, hiding boxes, feeders, and tree branches. Although we had expected similar results to the bear, we observed initial neophobic responses to the new items. The results of the observation showed that the idle time increased while the time spent moving decreased. They gradually used some of the enrichment items such as perches and branches over time, but scarlet macaws were never observed using items made of

PVC pipes, even after several months had passed. We are unsure of the exact reasons underlying the differences in their reaction; a potential explanation could be that the macaws had not previously encountered much exposure to enrichment in the past.

From the activities of the first year, we consider that the target-species approach with the combination of assessments and implementation was useful. At the same time, we noticed that there were various points that could be improved in the process. We modified the assessment sheet to fit our aim in the subsequent year (2019). Our current assessment sheet includes 21 questions regarding the environment (physical, social, hygienic, foraging environment, and human-animal relationship) and nine questions regarding individual animal states (natural living, affective states, and health). Each question regarding their environment was rated for daytime and night-time so that we can consider animals' lives on a 24-hour basis. The target species in 2019 were the Japanese black bear, again, and guinea fowls. We continued with similar efforts described above. The average score of questions regarding the night-time environment was low, and subsequently, there were many relevant suggestions for improvement. Therefore, we modified the environment and husbandry routines to give the animals more choices outside of staff working hours to support the animals in their night-time environment.

Supporting lives of animals from birth to death

Supporting appropriate behavioural development

Ways of caring for animals depend on their developmental and ageing status. Providing an appropriate environment that is aligned with the specific needs of animals related to their particular life-stage is treated as an important point in our guidelines. Our recent study describes the developmental process of bed-building behaviours in captive chimpanzees (Yamanashi et al.). Building beds are the characteristics of all the great ape species. However, not all captive apes build well-constructed beds for sleeping. Our recent survey of 217 chimpanzees in Japanese zoos revealed that complex bed-building behaviours depended on rearing history. Wild-born individuals exhibited more sophisticated skills than captive-born chimpanzees (Kyoto City Zoo, 2018).



Photo: Staff at Kyoto City Zoo implement new climbing structures for the Japanese black bear.
© Kyoto City Zoo



Photo: Three geriatric rhesus macaques at the senior monkey home. Isoko, the oldest living rhesus macaque sits in the foreground. © Kyoto City Zoo

Therefore, although bed-building behaviour may be partly innate, learning the skill during infancy is essential for becoming proficient at it. Notably, creating beds from branches requires particular expertise because chimpanzees have to adjust their motor output when weaving and pay careful attention to how materials are joined. To pass the bed-building skills of wild-born chimpanzees to the next generation, we installed bed-building platforms and provided branches on the platforms regularly. We then monitored their behaviour with an infrared camera over three years. We started this project when one of our chimpanzees named Niini was two years old, and his mother was wild-born. Although he only showed simple techniques at the beginning of the longitudinal study, his repertoire of bed-building behaviours became as complex as that of his wild-born mother by the age of five. Our study results suggest the importance of providing learning opportunities during appropriate stages of development.

Geriatric animal care

In 2016, our zoo established a senior monkey's home to accommodate several geriatric individuals by modifying an old gorilla enclosure taking into consideration their locomotive skills (e.g. logs placed at gentle angles and hay on the ground in case of falling). They have free access to indoor and outdoor enclosures during the daytime, and it enables the primates to choose places with comfortable temperatures. They can also eat at their own pace. The average age of monkeys at the senior monkey's home was 35 (N = 3), and that of the younger monkeys was 18 (N = 12) as of June 2020. We hope that they can continue to lead comfortable but stimulative lives.

Improving animal welfare is a never-ending process, and there is still much to be done in the future. In addition to the efforts written about above, various additional efforts were made by our staff. Please visit our website and SNS for further information.

Acknowledgement: We thank Wildlife Reserves Singapore and Zoo Atlanta for providing us with valuable information for the welfare guidelines.

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New Exhibit Feature

Barcelona Zoo's Sahelian Savanna Lion Exhibit

Conrad Ensenat

Mammals Curator, Barcelona Zoo

Barcelona Zoo, in Spain, recently opened its new lion exhibit as a part of its extensive representation of the Sahelian savanna. The new addition is the third major facility in the broader Sahel exhibit which was inaugurated in 2016.

The African savanna is one of the most popular habitats in zoos around the world. Many zoos currently have or are planning to introduce African savanna exhibits. These exhibits are usually home to species such as gnus, zebras, gazelles, ostriches, lions and elephants.

Barcelona Zoo originally had an African savanna exhibit built in the 1960s. Redevelopment of this part of the Zoo, initiated in 2010, offered a unique opportunity to refocus the enclosure on one of the most threatened African habitats, the Sahelian savanna. Spanning across Africa, these savannas were once home to abundant wildlife, however now, nearly all the large animal species in this region are endangered or have become extinct in the wild.

Barcelona Zoo's engagement with the Sahel partly grew out of its *in situ* work in the region. The Zoo has been involved in a Dorcas gazelle conservation and reintroduction project in northern Senegal since 2007, in collaboration with the Spanish National Research Council and Direction des Parcs Nationaux

of Senegal. This involvement grew to become the main *in situ* project of Barcelona Zoo over the last decade. As such the Zoo decided the time had come to educate its visitors on the situation there and what Barcelona Zoo has been doing to help support conservation efforts in the Sahel.

The Sahel borders the Sahara Desert on the South, extending across Africa from east to west. It is the transition zone between the desert, with little or no vegetation, and the Sudanian savanna has a characteristic grassland landscape with acacia trees. The Sahel is prone to drought and very sensitive to climate change, having a short irregular rainy season providing only around 150-750 mm of water yearly.

Although the Sahel shares some species typically found in traditional African Savanna Zoo exhibits, their status in the wild is far more endangered: West African giraffes have been reduced to a small relict population in Niger; scattered, small lion populations survive in the Western Sahel; the population of African spurred tortoise, endemic to this area, is declining, as are the gazelle populations – including the Dorcas gazelle – Barcelona Zoo's target species for its *in situ* conservation efforts.

These species were selected for the recently concluded first phase of the new Sahelian exhibit at Barcelona Zoo. A second phase will include the scimitar-horned oryx, which is extinct in the wild, the Mohr gazelle, which has a subspecies also extinct in the wild, and the red-necked ostrich, which has only a few remaining specimens in the wild.

Water, as one of the limited resources of the Sahel, was the guiding theme of the exhibit design. A 'guelta' (pocket of water that forms in drainage canals) in the lion exhibit, a mud pool in the elephant area and a temporary pond in the giraffe enclosure were included in the design to show temporary wetland areas that dry out during the dry season and convey to the visitors the value of water in these arid regions. As with the other new Sahelian facilities, the new lion enclosure was designed to provide optimal animal welfare and ensure staff safety, while at the same time enhancing the visitor experience and promoting awareness of this threatened species.

In addition to species-specific welfare requirements, the new facility was created to increase opportunities to allow the animals to make choices which is a key consideration in positive animal welfare. As Barcelona has a mild climate, the zoo is able to let the animals choose to roam outside or inside, both at night and during the day. This is incredibly important for cathemeral species such as lions which are active at night. Welfare monitoring is greatly aided by outdoor and indoor infrared cameras, which allow for 24-hour monitoring of the lions' behaviours and sleeping patterns.

The outdoor area of the lion exhibit features a large sandhill with rocks and several viewing points, as well as two large viewing windows for the public. There are several sunny and shady areas providing the lions with the choice of where they would like to stay. A water area, representing a Sahelian guelta with varying water levels provides the lions with the opportunity to bathe. The indoor area has six different interconnected holding areas for the lions, with a common corridor that allows them to move easily between holding areas and the outdoors. These areas have a double grid between them with a curtain that provides optional visual barriers. Thus, a single visual space for all the group can be provided. The indoor facility is connected with the outdoor exhibit through two doors which provide a circuit for the lions' movements.



Photo: Visitors and staff enjoy up close views of the lions in the new exhibit. © Josep Garcia

The Sahelian exhibit at Barcelona Zoo goes beyond just the animal kingdom. To provide a fuller habitat awareness experience for visitors, the Zoo teamed up with the Botanical Garden in Barcelona to enable them to grow Sahelian flora. The Sahel exhibit at the Zoo now includes *Acacia seyal*, *Acacia nilotica*, *Acacia senegal*, *Grewia bicolor* and *Ziziphus mauritanica*.

The zoo intends to expand this list of flora grown at their facility in the near future.

Unfortunately, the baobab, one of the most representative trees in the Sahel, cannot be grown in the Barcelona climate. The Zoo has therefore opted for two similarly shaped trees instead: the *Brachychiton rupestris* and *Chorisia speciosa*.

“It is hoped that zoo visitors will not only enjoy this new Sahelian area at Barcelona Zoo but also become aware of the great biodiversity of the Sahel, its frailty and threats, and the efforts needed to preserve it.”



New Exhibit Feature

Photo: A pair of lions at Barcelona Zoo
© Barcelona Zoo



Photo: A lioness roams in the new Sahelian lion exhibit.
© Paula Cerdán



Update on International Studbooks (ISBs)

Changes between 4 May and 5 September 2020

ISBs published ISBs (11)

- **Bald ibis** (*Geronticus calvus*), 2019 ed. – Harrison Edell (Dallas Zoo, United States)
- **Black-footed cat** (*Felis nigripes*), 2019 ed. – Kara Heynis (Lory Park Zoo and Owl Sanctuary, South Africa)
- **Blue-crowned laughingthrush** (*Garrulax courtoisi*), 2019 ed. – Laura Gardner (Wildwood Trust, United Kingdom)
- **Grévy's zebra** (*Equus grevyi*), 2019 ed. – Tanya Langenhorst (Marwell Zoo, United Kingdom)
- **Hartmann's mountain zebra** (*Equus zebra hartmannae*), 2019 ed. – Tanya Langenhorst (Marwell Zoo, United Kingdom)
- **Japanese serow** (*Capricornis crispus*), 2019 ed. – Hitoshi Murai (Toyama Municipal Family Park Zoo, Japan)
- **Kori bustard** (*Ardeotis kori*), 2020 ed. – Sara Hallager (Smithsonian National Zoological Park, United States of America)
- **Polar bear** (*Ursus maritimus*), 2018 ed. – Antje Angeli (Zoologischer Garten Rostock, Germany)
- **Raggiana bird-of-paradise** (*Paradisaea raggiana*), 2020 ed. – Jessica Theule (San Diego Zoo, United States)
- **Visayan spotted deer** (*Rusa alfredi*), 2019 ed. – Christina Schubert (Zoo Landau, Germany)
- **Western lowland gorilla** (*Gorilla gorilla gorilla*), 2019 ed. – Sabrina Linn (Zoo Frankfurt, Germany)

ISB Transfers

- **Coquerel's sifaka** (*Propithecus coquereli*) – Intra-institutional transfer from David Haring to Katherine Byrnes (Duke University Lemur Center, United States)
- **Amur Leopard** (*Panthera pardus orientalis*) – Inter-institutional transfer from Joanna Cook (ZSL London Zoo) to Victoria Larkin (Highland Wildlife Park, Royal Zoological Society of Scotland, United Kingdom).

Would you or someone in your team like to become an International Studbook Keeper? The following studbook is currently vacant:

- **Giant eland** (*Taurotragus derbianus gigas*) ISB

Get in touch with the WAZA Executive Office at conservation@waza.org to find out more.

In Memoriam

The global zoo and aquarium community has sadly lost several remarkable people this year. We remember and honour the legacies and contributions of Dr David E. Wildt, Amy Camacho and Petr Čolas.

Dr David E. Wildt

Renowned scientist, conservationist and former Director of the Smithsonian's Conservation Biology Institute's Center for Species Survival, passed in January of this year surrounded by his family. Over the years, David has made innumerable contributions to conservation biology, and his breakthroughs in reproductive biology and population genetics have benefitted wildlife enormously. Wildt established genome resource banks and developed ground-breaking assisted reproductive technologies for giant pandas to name just one of more than 50 endangered species that his visionary work helped to protect. His scientific legacy includes more than 300 scientific papers and mentorship and training of hundreds of graduate and post-doctoral students, and colleagues around the world.

Wildt's early pioneering work on cheetahs led to the creation of the New Opportunities in Animal Health Sciences (NOAHS Center) in 1988 fostering interdisciplinary collaboration among the Smithsonian's National Zoo, the National Institutes of Health, and the National Cancer Institute, with the mission to promote the health, genetic diversity, and reproduction of endangered species in zoo and wild populations.



Amy Camacho

Former General Director for over 30 years and one of the owners of Africam Safari, Mexico, passed in June. A beloved and prominent figure in the zoo community, Amy dedicated her life to the care and protection of animals and nature.

After the passing of her parents, she took over Africam Safari at the young age of 17 while at the same time caring for her seven brothers and sisters. She went on to make Africam Safari one of the most popular attractions in the State of Puebla, and the largest zoo in Latin America. As past President of the Latin American Association of Zoos and Aquariums (ALPZA), and through her involvement in the Mexican Association of Zoos and Aquariums (AZCARM), she helped to support colleagues with the growth of their facilities.



Many of you had the chance to experience how welcoming Amy was when Africam Safari hosted the 2016 WAZA Conference.

Amy also served as head of the Secretariat of Environmental Sustainability and Land Management during the State administration of Rafael Moreno Valle. During her time in this position, her achievements included the construction of the Metropolitan Ecopark, advancing reforestation rates and increasing protected areas from 2,000 hectares to almost 80,000.

Amy was a lively, vibrant and radiant force of love and compassion. She devoted her life to travelling the world to learn more about wildlife and was considered to be one of the most influential women in Mexico.



Petr Čolas

Director of Ostrava Zoo and Botanical Garden passed away in August after battling a short illness. A well-respected and loved member of the global zoo community, Petr dedicated his life to working for zoos and was a fierce advocate for promoting the role of modern zoos as centres of education, research, recreation, conservation and animal welfare. Many of you might have met Petr at past WAZA Annual Conferences.

Petr had been with Ostrava Zoo since 1990 and was the zoo's Director from 2004. He has been credited for making Ostrava Zoo one of the most visited tourist destinations in the Czech Republic. From the moment he was appointed as Director of the Zoo, Petr worked to ensure Ostrava Zoo became a world-leading conservation organisation. He was an enthusiastic conservationist and inspired many people around him.

During the establishment of the Stolen Wildlife campaign Petr said: "We humans have already destroyed and exterminated so much that any loss of another species of animal or plant would lead us to the collapse of whole ecosystems. Each one of us is in the world only on a short visit. Therefore, in the time given to us, and we do not know how long it will last, we should not just accumulate perishable possessions. Instead, we should rather try to do everything to hand Earth over to those who come after us at least in the state in which we received it from our predecessors, or even in a better state."



Photo: Underwater tunnel
© L'Aquàrium de Barcelona

WAZA is pleased to have recently welcomed three new members to the global zoo and aquarium community. L'Aquàrium de Barcelona, Spain, and Toyohashi Zoo and Botanical Park, Japan, both joined as Institutional members, while Hanart Culture LLC, United State of America, joined as a Corporate member.



L'Aquàrium de Barcelona, celebrated its 25th anniversary in September, marking the day it first opened its doors to the public in 1995. The aquarium is situated in the old port of Barcelona and is home to more than 360 fish species and around 200 different species of invertebrates.

The aquarium's motto, 'Knowing to love, loving to protect, protecting to conserve, conserve to enjoy', has become the driving force behind all of its activities. L'Aquàrium de Barcelona promotes the study, knowledge, protection and conservation

of Mediterranean Sea species. The aquarium was awarded the Barcelona Biosphere Commitment to Sustainable Tourism distinction recognising its commitment to responsible and respectful management of the environment, culture, working conditions, gender equity and social and economic returns.

L'Aquàrium de Barcelona is also a member of the Iberian Association of Zoos & Aquaria (AIZA).



Toyohashi Zoo and Botanical Park, located in the Aichi prefecture of Japan, is a municipal institution owned by Toyohashi city. It opened to the public in 1954 and further expanded in 1992. Following the expansion, it has become a sprawling park, covering 40 hectares, which includes a zoo, natural history museum, botanical garden and amusement park.



Toyohashi Zoo and Botanical Park prides itself on its education programmes, which not only support school education but also aim to foster lifelong learning for all local people, across all age ranges. The zoo and natural history museum together provide visitors with a unique opportunity to learn about the evolution of life, from the dawn of Earth to the present day.

Toyohashi Zoo and Botanical Park is also a member of the Japanese Association of Zoos and Aquariums (JAZA).



Hanart Culture LLC produces and manages live entertainment, including the Chinese Lantern Festival – a premier event of colourful and lively interactive entertainment immersing guests in the art, culture, music, performance and life of Asia.

The lanterns for the Chinese Lantern Festival are handmade by masters of the craft in Zigong, China's centre of lantern heritage, using modern materials and eco-friendly technology. Each lantern is carefully crafted and custom-made, ensuring that they can be built to accommodate specific environments, taking into consideration a site's natural environment. The beautiful light displays of animals, flowers, plants, characters and architectural landmarks take inspiration from the ancient folk art of lantern making.

In addition to the Chinese Lantern Festival, Hanart Culture LLC also produces an animatronic dinosaur empire and ice sculpture shows called Ice Wonderland. They also represent performing artists and attractions and organise live theatrical entertainment.

Top Photo: Zebras at Non Hoi Park. © Toyohashi Zoo and Botanical Park

Middle/Bottom Photo: Animal paper lanterns created by Hanart Culture LLC. © Hanart Culture LLC







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For every edition of WAZA NEWS, the magazine printer, Gràfiques Ferpala, gives WAZA oak trees to plant, as part of their sustainability initiative.

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