2023
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WAZA
World Association of Zoos and Aquariums

NEWS

The Post-2020 Global Biodiversity Framework and Opportunities for Zoos and Aquariums

Avian Health in the Galápagos Islands

Bavarian Pine Vole of Alpenzoo Innsbruck

Recovery of the Huemul in Patagonia, Argentina

WAZA

World Association of Zoos and Aquariums

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WAZA Membership

WAZA Members as of 28 March 2023

Affiliates	9
Associations	21
Corporates	26
Institutions	286
Life	101
Honorary	35

Future WAZA Conference

2023: San Diego Zoo Wildlife Alliance, San Diego, United States, 8-12 October www.waza2023.org

Cover Photo: Northern Bald Ibis (*Geronticus eremita*) © Waldrappteam Conservation & Research, Tiergarten Schönbrunn

Contents

In the third issue of the WAZA News magazine from 2022, the photo credit on page 17 mistakenly said '*At the terrarium section of Cologne Zoo, the natural breeding of the Philippine crocodile could be documented and studied. © T. Ziegler*'.

The correct caption is '*This year we had the first breeding success of the critically endangered Mitchells monitor lizard (Varanus mitchelli), the parents of which derived from a confiscation and were provided to us in 2021. © A. Rauhaus*'.

We apologise for the error.

President's Letter

Dr Clément Lanthier
WAZA President

Dear WAZA Members,

Welcome to the first edition of the WAZA News Magazine of 2023. We enter this year after witnessing the ambitious goal setting at the 15th Conference of the Parties (CoP15) to the Convention on Biological Diversity in Montréal, Canada. The Kunming-Montreal Global Biodiversity Framework can provide guidance to our community as we think more deeply about conservation, biodiversity and sustainability.

The year ahead will be an exciting one for WAZA with the culmination of the strategic planning process. I appreciate all the work that has been conducted by the Council, Committees, WAZA Executive Office and the various members who shared their feedback along the way. In following this strategic process, I hope that WAZA will adopt the role of a brave and dynamic leader in animal welfare and conservation for zoos and aquariums.

In 2023 we will also see WAZA members elect a new Council, and it will be my last year as WAZA President. I am confident that the new Council will take forward the ambitious plans we set out in WAZA's vision.

Last year, I was inspired by the insightful discussions at the 77th WAZA Annual Conference and I look forward to meeting the diverse WAZA members at the 78th WAZA Annual Conference in San Diego this year.

As we continue to share stories of success and achievements from our community, I invite you all to get in touch with the WAZA Executive Office to share your news and stories with us, so that we can disseminate them to our wider community.

Yours sincerely,

Dr Clément Lanthier
WAZA President

CEO's Letter

Dr Martín Zordan
WAZA Chief Executive Officer

Dear WAZA Community,

Together with this first issue of the WAZA Magazine for 2023, I want to wish you a great year ahead.

Since our 77th WAZA Annual Conference, which was kindly hosted by Loro Parque, to whose leadership and team I am very grateful, I have had the pleasure of representing WAZA in several meetings. Those include the International Aquarium Congress (IAC) hosted by Nausicaa, the AZA Directors' Policy Conference hosted by the San Antonio Zoo and Sea World San Antonio, the 19th CITES CoP hosted by Panama, and the 15th Convention on Biological Diversity (CBD) CoP hosted by Canada and China.

In November, during the IAC, I received feedback to indicate that WAZA needs to focus more attention on helping aquariums to feel a stronger connection to our association.

Aquariums need to feel visible within our WAZA community, and a starting point might be to indicate our willingness to get to know them far better. At WAZA, we have 32 aquariums as members and 62 institutions that identify themselves as aquarium and zoo facilities. I kindly ask them, and all who might be interested in contributing, to share their thoughts with me as we intend to put together a more formal space to open this discussion.

For the first time I also attended the AZA Directors' Policy Conference, which turned out to be a previously unknown treasure for me! I left feeling hopeful that every member of WAZA could deepen their connections with the AZA community and wondering how we may facilitate this further. The AZA community is generous and welcoming, and despite all their experience and knowledge, it was apparent that there is a growing interest on their side to reciprocate and share learning experiences with other WAZA members.

I will be honest, as a Latin American, I have seen for a long time what to me is a rather inexplicable distance between two of the regions where WAZA has the greatest number of members: Europe and the US. Yet, I see so many common challenges and opportunities to work closer together. In recent years, through the WAZA Conferences and the Joint TAG Chairs meetings, we have tried to get these regions (as well as others) to work more closely together. I expect that the 78th WAZA Annual Conference (8-12 October 2023, kindly hosted by San Diego Zoo Wildlife Alliance) will also provide that opportunity, particularly for those in North America. But I believe we need to explore further meeting points, perhaps even some cross-pollination at our regional and national Directors' Conference. Again, we need to get to know each other better.

Finally, beyond our core group of aquariums and zoos community, the CITES and CBD CoPs (you will find articles for each one of these events in this issue). The largest representation of our community was at the CITES CoP19 meeting, where three regions were represented through AZA, EAZA, and ZAA.

The CBD CoP15 marked a key milestone, the post-2020 global biodiversity framework was adopted. At a global level, this is the most ambitious commitment there is to protect biodiversity. We need to find our way to be part of its implementation and we are actively looking at it through Reverse the Red (more at reversethered.org). Below I include three things you can easily do to familiarise yourself.

1. Read the final post-2020 global biodiversity framework the Kunming-Montreal (post-2020) Global Biodiversity Framework.
2. Talk to your regional and/or national zoo and aquarium association and to us at WAZA about it.
3. Read your country profile at https://www.cbd.int/countries/ and identify there who your national contacts are. This might spark some conversations!

Finally, a historical achievement in the making: The draft - IUCN SSC Position Statement on the Role of Botanic Gardens, Aquariums, and Zoos in Conservation. This draft Position Statement was developed by the IUCN Species Survival Commission and a group of experts to contribute to the implementation of IUCN WCC-2020-Res-079 on linking in situ and *ex situ* efforts to save threatened species. It is a remarkable opportunity for progressive aquariums and zoos to receive the acknowledgment they deserve and to inspire others to follow them. The draft went through an online consultation period has now ended and the IUCN Species Survival Commission is carefully reviewing and considering all comments received.

We look forward to seeing how this process evolves and we thank all of those who have been actively contributing.

Sincerely,

Dr Martín Zordan
WAZA CEO

The Post-2020 Global Biodiversity Framework and Opportunities for Zoos and Aquariums

David Ainsworth[1], James Biggs[2], Martín Zordan[3], Paula Cerdán[4], Tania Kahlon[5]

[1]Head of Communications, Secretariat of the CBD, [2]Director, Conservation and Population Management, ZAA, [3]CEO, WAZA, [4]Animal Welfare and Conservation Coordinator, WAZA, [5]Communications Coordinator, WAZA

On 19 December 2022, the Kunming-Montréal Global Biodiversity Framework (also known as the Post-2020 Global Biodiversity Framework, or GBF) was adopted at the Fifteenth meeting of the Conference of Parties of the Convention on Biological Diversity (CBD CoP15). Zoo and Aquarium Association Australasia (ZAA), Calgary Zoo and WAZA were among representatives from the global zoo and aquarium community that attended the conference in their capacity as observers.

Although non-binding, this framework is the most ambitious commitment to date of governments from across the world to protect biodiversity. It is a landmark deal to halt and reverse biodiversity loss and was developed in the context of the Convention on Biological Diversity, an international treaty signed in 1992 and ratified by 196 nations and the European Union. It builds upon the successes of previous international commitments on biodiversity and seeks to correct shortcomings in earlier agreements.

WAZA's engagement with the CBD and the Aichi Targets

Zoos and aquariums have a history of successful engagement with the CBD secretariat and working to support the objectives of the Convention. In 2010, WAZA, amongst other organisations, signed a Memorandum of Understanding (MoU) to commit to the United Nations Decade on Biodiversity - 2011-2020. Back then, parties committed to what was known as the Aichi Biodiversity Targets. The Aichi Targets' main goal was to improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. These were a set of 20 targets that sought to address each of the five strategic goals defined in the Strategic Plan for Biodiversity 2011-2020.

As a global association and as part of the work to support the MoU with the CBD Secretariat, WAZA focused on Target 1 "*By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.*" At the time, WAZA developed both an awareness campaign called "*Biodiversity is Us*" and supported research (Jensen et al., 2016; Moss et al., 2016) to identify if a visit to a zoo and/or an aquarium was contributing to this Target.

Aichi Targets by 2020

The Aichi Targets brought new hope, and as a part of their commitment to the Convention and its new Targets, Parties agreed to develop National Biodiversity Strategies and Action Plans (NBSAPs). These included country-specific instruments that would help to strategically guide monitoring, reviewing and implementation of the Convention and Targets over the following decade. While many Parties did develop their own NBSAPs, by the end of the decade, little progress was achieved and most NBSAPs were not fully implemented. Only six of the targets were partially achieved at the global level, with most falling well short of the agreed thresholds. The actions failed because they were too little, too late, and not fully mainstreamed at all levels of government and society.

> **"At a global level, none of the Aichi Biodiversity Targets were met or achieved, but we also know that some progress was made at the national level in a number of countries."**
>
> **Elizabeth Maruma Mrema, Executive Secretary of the CBD at the time of CBD CoP15**

A lack of clearly defined metrics, monitoring, planning and reporting systems contributed to this failure. There was also insufficient funding to support developing countries to implement the framework. Finally, a lack of commitment beyond ministries of environment were attributed to the Targets' failure.

↑ Tiger (*Panthera tigris*) habitat © Zoo Sauvage de St-Félicien

A new reason for hope
The adoption of the Kunming-Montréal Global Biodiversity Framework (GBF) is lauded as the most ambitious commitment to date to stop and reverse the global trend in biodiversity loss.

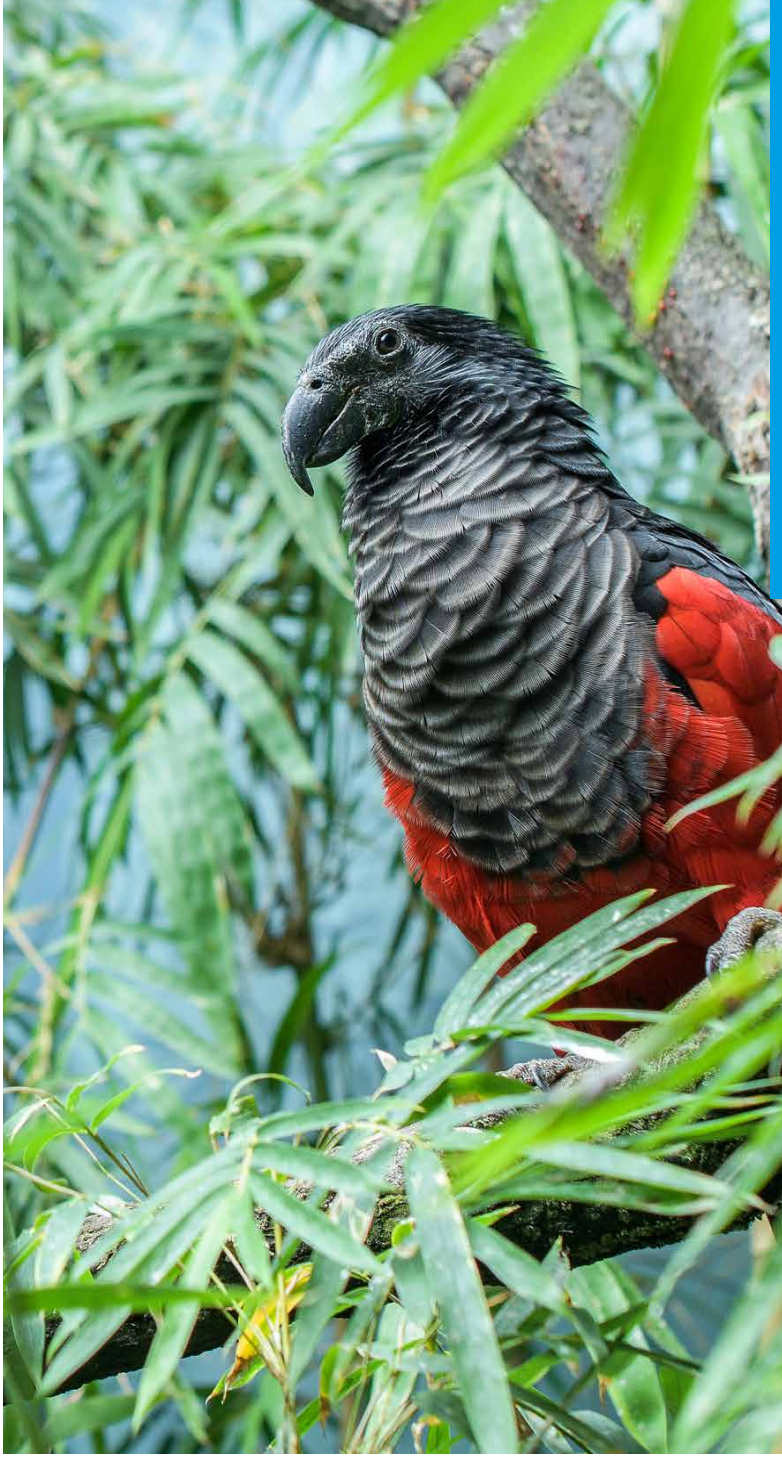
The Framework, adopted by all the Parties to the Convention, comes as part of a package including guidance documents, a monitoring framework, resource mobilisation, mechanisms for planning, monitoring, reporting and review, capacity-building and development amongst others. These are intended to address the reasons considered as the failure of the Aichi Targets and set the stage for a more successful achievement of the targets set out within the GBF.

The GBF contains four goals and 23 action-oriented targets, and a number of decisions were also adopted to help parties implement the framework. The framework seeks to address the root causes of biodiversity loss such as ecosystem connectivity and the need for an increase of protected areas, the reduction of human-induced extinction, the preservation of genetic diversity of wild species (including through *ex situ* efforts), the sustainable use and management of nature and the fair and equitable sharing of resources, amongst many others. The agreement also includes a commitment to mobilise at least USD 200 billion per year by 2030, including 30 billion in Official Development Assistance, to progressively close the Global Biodiversity Financing Gap to reverse species extinction, quantified at USD 700 billion/year.

What can zoos and aquariums do to support the Kunming-Montréal Global Biodiversity Framework?
This is a question that zoos, aquariums, national and regional associations in collaboration with WAZA, and other initiatives in which we are involved (e.g. Reverse the Red) are looking into, now that the framework has finally been adopted.

"*Zoos and aquariums and their network of expertise in animal care and species knowledge are obviously well-placed to support conservation efforts, both in situ and ex situ*" says David Ainsworth Head of Communications for the Secretariat of the CBD.

At the CBD CoP15 the Open-Ended Working Group on the Post-2020 Global Biodiversity Framework was tasked with negotiating all aspects of the draft GBF. During a plenary session, and amongst other contributions an intervention was made, drafted by James Biggs, ZAA Australasia's Director of Conservation & Population Management, and Participant of the GBF Open-Ended Working Group. This intervention was made on behalf of ZAA and WAZA:



↑ Pesquet's parrot *(Psittrichas fulgidus)* © Prague Zoo

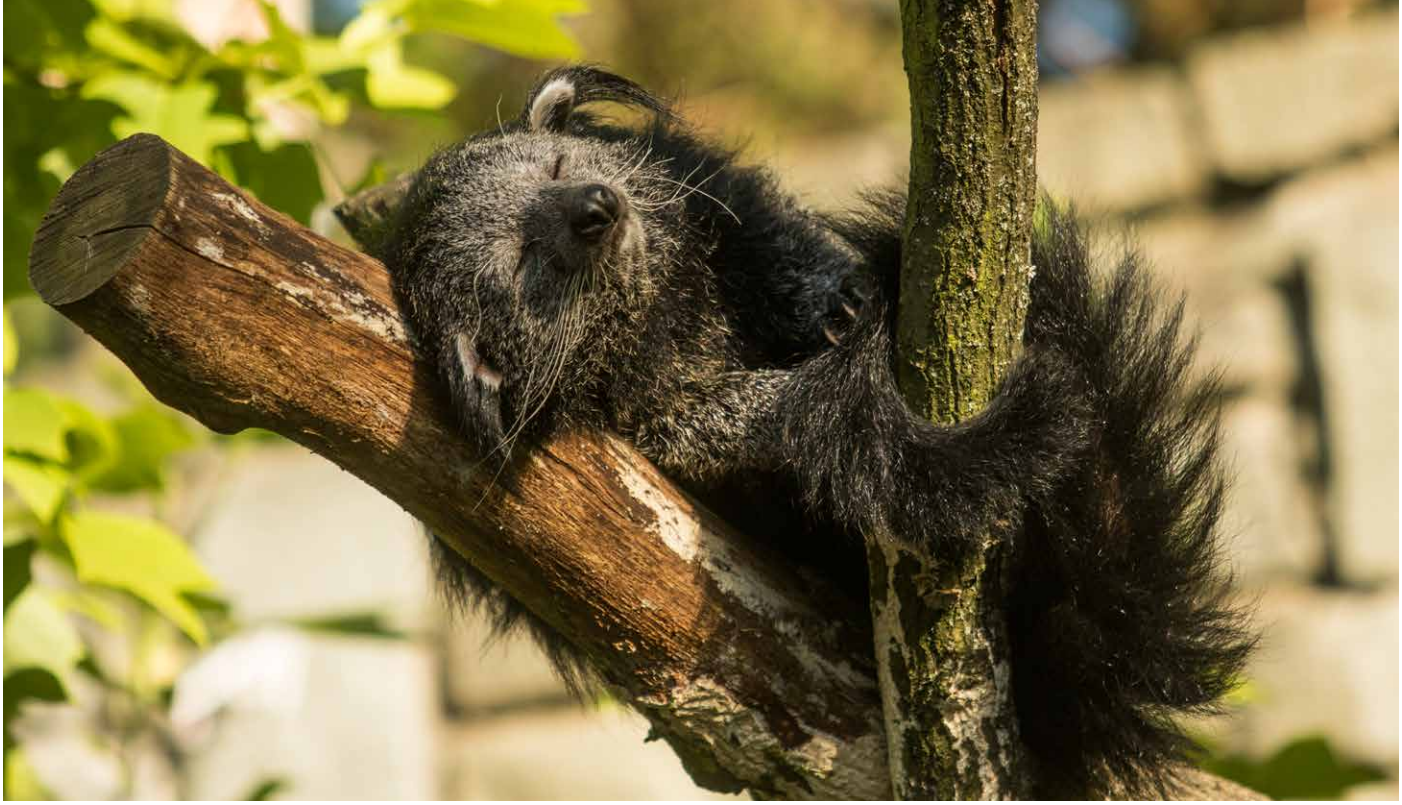
"We acknowledge, respect and support the diverse and important roles and contributions of indigenous peoples and local communities as custodians of biodiversity and partners in conservation, restoration and sustainable use; as well as other stakeholders in their collective endeavours to achieve the goals of the Post-2020 Global Biodiversity Framework.

We stand ready to support all stakeholders at the global, regional, national and subnational levels, implement active management actions to enable the recovery and conservation of biodiversity, including genetic diversity and the diversity of wild species through contributing to animal conservation across the entire in situ ex situ spectrum, wherever possible, employing the IUCN One Plan Approach.

We can no longer operate in silos if we're to turn the biodiversity crisis around. Invoking a universal moral imperative is a matter not so much of ethics as of sanity; doing what is necessary within a world whose transformation demands the participation of atypical allies. Educators, scientists, policymakers, communities and others must unshackle themselves from ideologically charged issues or there will be no chance for rallying the will or consensus for action. Our end goal is the same – to un-cause that which our species has caused – to halt human-influenced declines in biodiversity.

We are ready, and urge stakeholders to call on the Zoo and Aquarium Association of Australasia and the World Association of Zoos and Aquariums to support outreach, awareness and uptake of the post-2020 framework, as well as to assist with the delivery of educational, advocacy messaging and social change in support of biodiversity conservation, to the estimated 700 million people who visit zoos and aquariums around the world each year.

We call on governments to adopt unambiguous and ambitious targets, and to make available the resources required to deliver on these ambitions, for the benefit of all life on earth."



The Kunming-Montréal Global Biodiversity Framework
The Framework includes four goals and 23 targets to be achieved by 2030, and is designed for use by governments and society as a whole. "*Its success requires political will and recognition at the highest level of government and relies on action and cooperation by all levels of government and by all actors of society.*" (UN CBD, 2022). It aims to guide and promote the revision, development, updating and implementation of policies, goals, targets, and to facilitate monitoring and review of progress at all levels of society.

This new GBF presents an opportunity for individual organisations and associations to align with a global framework to focus and quantify their contributions to biodiversity conservation, historically a task perceived as being almost insurmountable.

The Framework and accompanying guidance documents have been developed in such a way so as to enable varying but meaningful contributions from many different stakeholders, regional and national associations and individual zoos and aquariums, who can contribute to almost all of the goals and targets in the new pact.

The Monitoring Framework for the Kunming-Montréal Global Biodiversity Framework, remains a work in progress and the finalisation of its development is scheduled for delivery in Turkey at CoP16. Notwithstanding, significant work has gone into identifying headline, component, and complementary indicators as measures of success against each of the Goals and Targets. Many tools and indices have been identified that can support the Parties as well as other participating non-State actors in their efforts to measure progress against the GBF Goals and Targets.

Although formal progress reporting to the CBD is the responsibility of the 196 Parties, there will be a need to undertake a global review of collective progress on the implementation of the GBF in the near future. This will likely be based on national reports and reports from other appropriate sources, including information on non-State actor commitments and contributions towards the GBF.

Non-State actors are invited to voluntarily report commitments to the GBF, and although commitments and contributions to the GBF Goals and Targets are expected to be high, inconsistency in data types and measures is a likely concern.

For the zoo and aquarium community there is perhaps the opportunity, via WAZA and regional/national associations coordination, to establish a framework of goals and targets with a consistent data reporting model.

Several WAZA campaigns and movements are already underway that will appropriately contribute to the GBF i.e. the WAZA-IUCN SSC Reverse the Red initiative, the One Plan Approach etc. However, there is a clear need to work together to develop guidance for WAZA members on the data to collect from the many and various initiatives, and how to report it in a way that is of greater value in the context of the GBF.

WAZA might consider developing a biodiversity-based goal, consistent with the WAZA 2023 Animal Welfare Goal. This could guide regional and national associations to report consistently to governments whilst also supporting the global *ex situ* community with an aggregated conservation data set, a clear representation of a global zoo and aquarium biodiversity conservation footprint. The Zoo and Aquarium Association Australasia (ZAA) is currently developing guidance for its member organisations on relevant GBF Goals and Targets and developing systems for recording data and measuring progress against the identified indicators in the monitoring framework. Concurrently, ZAA is considering how it can work more effectively with non-zoo, non-state actors like fenced reserves, sanctuaries, hospitals, biobanks, and academia, to increase impact in species conservation and contribute more to reducing extinction risk in line with the GBF.

↑ Binturong (*Arctictic binturong*) © Zoo Ostrava

In the immediate future, organisations may wish to engage with their national governments to support the revision or development of National Biodiversity Strategies and Action Plans.

Dr Martín Zordan, WAZA CEO, who attended the CoP15 also shares his view, "*Target 4 is definitely one that is calling on our ex situ community to play an active role on species recovery, if you are a zoo or aquarium truly committed to conservation, Target 4 is a minimum contribution, and one that WAZA will anticipate participation from member organisations, as leaders of the zoo and aquarium community. We have examples of other organisations such as the Botanical Gardens Conservation International (BGCI) who are supporting the CBD Secretariat with reporting on recovery of a number of tree species, and we, from the zoo and aquarium community, need to explore how we can better serve the CBD's GBF*".

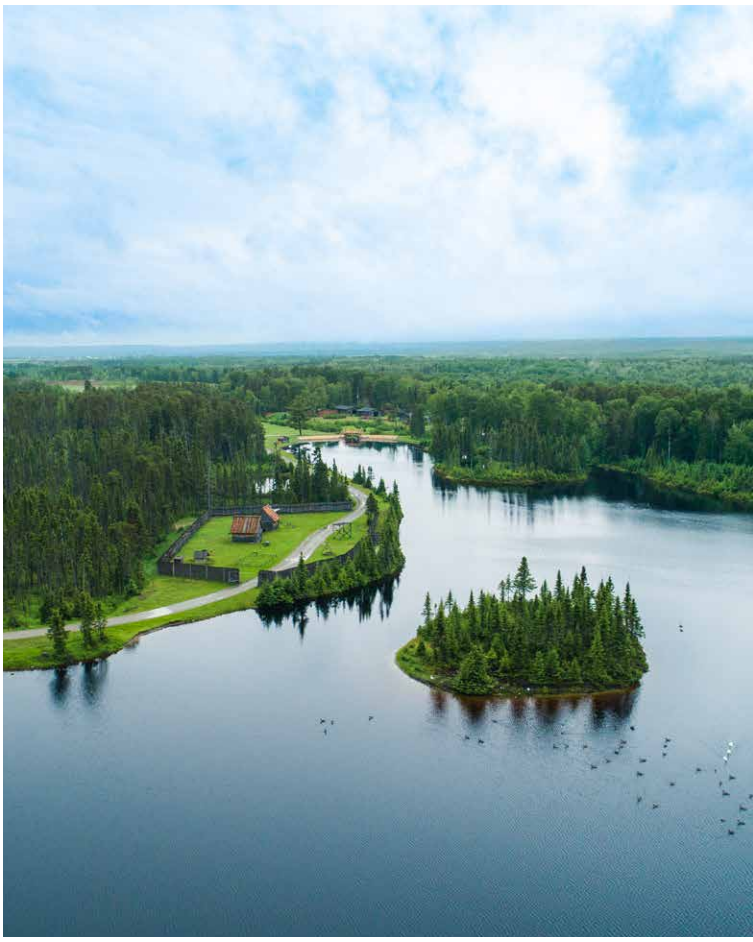
Dr Clément Lanthier, WAZA President and CEO and President of Calgary Zoo stated "*After attending the CBD CoP15 in Montréal, I am more aware that we need to do more and prepare to have a more active role at a CBD level.*"

David Ainsworth added "*Zoos and aquariums are the lynchpin in work to raise the awareness and change behaviour of urban citizens towards sustainable consumption.*"

"*Zoos and aquariums can step up and work with sub-national governments, and local and large businesses to build a culture of responsible and sustainable behaviours that protect local and exotic biodiversity.*"

We have the opportunity to show, at a global scale within an international forum the work that we do as modern conservation organisations. Now it is time for zoos and aquariums to liaise with governments, work closely with national and regional zoo and aquarium associations and the global zoo and aquarium community through WAZA. As well as align our collective efforts and offer our work as tools and resources to support the implementation of the framework and continue changing the outcomes for biodiversity.

↑ White rhinoceros (*Ceratotherium simum*) at Zurich Zoo © Marco Schaffner



↑ Drone shot © Zoo Sauvage de St-Félicien

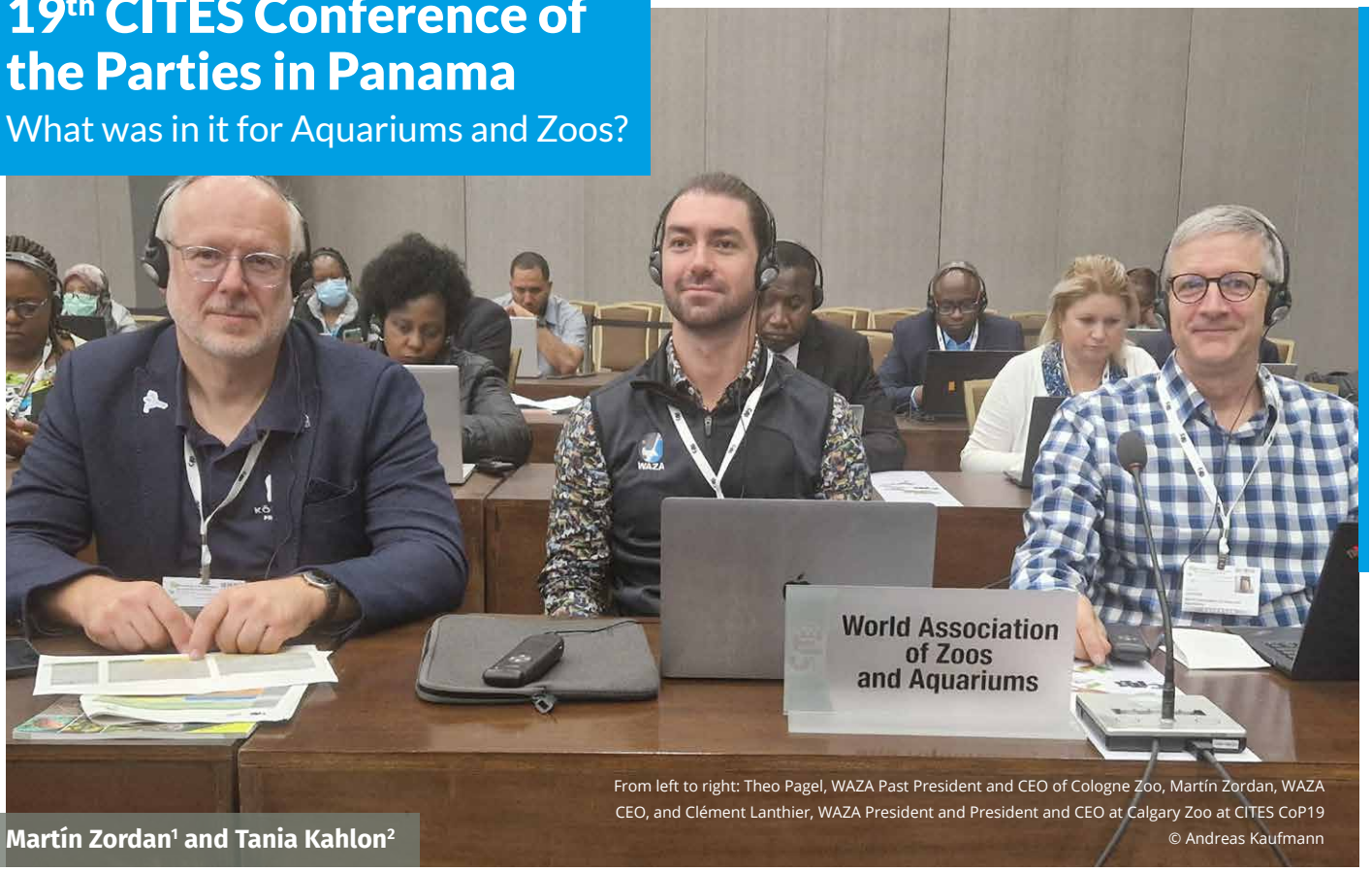
References:

United Nations Environment Programme (2022) Capacity-building and development and technical and scientific cooperation Draft decision submitted by the President https://www.cbd.int/doc/c/f071/ba75/4aeaaa842acdaf622d1b6a18/cop-15-l-28-en.pdf

United Nations Environment Programme (2022) Convention on Biological Diversity Kunming-Montréal Global biodiversity framework, Draft decision submitted by the President. https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf

19th CITES Conference of the Parties in Panama

What was in it for Aquariums and Zoos?



From left to right: Theo Pagel, WAZA Past President and CEO of Cologne Zoo, Martín Zordan, WAZA CEO, and Clément Lanthier, WAZA President and President and CEO at Calgary Zoo at CITES CoP19
© Andreas Kaufmann

Martín Zordan[1] and Tania Kahlon[2]

[1]CEO, WAZA, [2]Communications Coordinator, WAZA

Between 14-25 November 2022, the Nineteenth Conference of the Parties of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) took place in Panama City, Panama.

A reminder of what CITES is

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments helping to fight the extinction crisis through wildlife trade regulations. It advocates for the sustainable use of wildlife and the conservation of wild species.

There are approximately 38,700 species protected by CITES which include roughly 5,950 species of animals and 32,800 species of plants. Species are listed on one of three Appendices (I, II or III), with trade in those listed in Appendix I the most tightly regulated.

CITES CoP19 and representation of zoos and aquariums

An estimated 2,500 attendees, including 170 of the 184 parties (signatory countries), representatives from intergovernmental organisations, non-governmental organisations and the private sector joined to discuss proposals that conserve species through sustainable and traceable international trade.

With over 30 delegates representing zoos and aquariums, the CITES CoP19 has seen an increase in the number of representatives from the global zoo and aquarium community.

Among the registered delegations that provided expertise through working groups leading to this CoP were: the Association of Zoos and Aquariums (AZA), the European Association of Zoos and Aquaria (EAZA), the Zoo and Aquarium Association Australasia (ZAA), San Diego Zoo Wildlife Alliance, Species360, Taronga Wildlife Society, Zoological Society of London (WAZA member, London Zoo) and Wildlife Conservation Society (with Bronx Zoo as WAZA member).

WAZA members presented their views and perspectives about a range of matters discussed through interventions during plenary sessions, side-events, contribution to working groups discussion, and providing feedback in stakeholders meetings.

Some of the key results for zoos and aquariums at this CITES CoP

Increased protection for two species of songbirds

The IUCN Red list Critically Endangered straw-headed bulbul is now listed under CITES Appendix I and the Least Concern white-rumped shama is now listed in the CITES Appendix II. In practice, this means that all international commercial trade in the straw-headed bulbul is now prohibited, and all international trade for the white-rumped shama is now regulated and monitored to ensure that it does not threaten wild populations. Zoological organisations from the United States, Europe, and Singapore contributed to creating an understanding about the need to adopt these measures. The listing of species at CITES needs to be led by at least one party, and in this case, the listing was led by Malaysia, Singapore, and the United States of America. This is a landmark as just over 1% of songbirds are CITES listed, and actions promised at the previous CoP in 2018 did not gain momentum.

EAZA in collaboration with Species360 also organised the Silent Forest – Songbird Trade Side Event, that allowed CITES Parties and Observer organisations to learn more about the songbird trade and create an opportunity to meet and discuss songbird trade research and conservation. Speakers shared current songbird trade research, mentioned in CoP19 Doc. 74, that can be used to support the CITES decision-making process. There was particular emphasis on the need for more research and data collection, which would enable stronger evidence-based decisions in the future.

WAZA welcomes this decision and acknowledges that without the contribution of all the members and partners this would not have been possible.

Listing of requiem and hammerhead sharks
Another landmark decision reached during CITES was that 54 species of requiem sharks, six species of hammerhead sharks and 37 species of guitarfish were included on Appendix II of CITES. In the future, international trade in these species will only be permitted if the stocks of sharks and rays are not endangered. This is crucial as some shark species have seen their numbers decline by up to 70% in the past 50 years. The measures apply to the requiem shark family including tiger sharks, and six small hammerhead sharks. The inclusion of these species in Appendix II will bring the majority of the shark fin trade under this regulation, which helps to ensure that their trade is sustainable and legal.

Inclusion of reptiles and amphibians
CITES CoP19 adopted numerous inclusions of reptiles and amphibian species, including 21 listing applications for trade in live animals. Four of the submitted applications came from the EU, including two proposals drawn up by Germany on listing the endangered Lao warty newt (*Laotriton laoensis*) endemic to Laos and the heavily traded Chinese water dragon (*Physignathus cocincinus*).

In addition to these decisions, other crucial agreements were reached during the CITES CoP in Panama. In order to reduce the trade of exotic animals as pets, protections for glass frogs were also increased by listing them in Appendix II. This is a vital decision as the IUCN Red List currently lists 10 species of glass frogs as Critically Endangered, 28 as Endangered, and 21 as Vulnerable.

Purpose codes on CITES permits and certificates: definition of code Zoo
After months of work through participation of AZA, EAZA, and WAZA in an intersessional working group, the definition of the code Z (Zoo) among other amendments for our purpose code definitions, was amended and approved. It is vital to be an active participant of discussion where our profession is defined.

CITES role to help the prevention of future pandemics
The 184 CITES member governments have committed to a new policy to define the role international plants and animal trade policies can play to prevent future pandemics. Members of the global zoos and aquariums community remain available to help in this mission.

Decision of process to define appropriate and acceptable destinations
There was an agreement to define a process that will allow the importing country to evaluate its satisfaction about the suitability of a recipient to house and care for African elephants, and for both the importing and exporting country to decide if the trade would promote *in situ* conservation has been agreed.

Side-events
WAZA members also led a record number of side-events (zoos and aquariums have never previously hosted so many side events at a CITES CoP). The five side-events were:

- Novel forensic tool to combat illegal wildlife trade: Using elemental analysis of animal keratin to determine provenance (Taronga Conservation Society Australia – by WAZA member Taronga Zoo)
- Silent Forest – Songbird Trade Side Event (EAZA and Species 360)
- Reverse the Red: Community engagement as a tool for CITES (IUCN SSC and WAZA)
- Ornamental fishes, Sharks and Rays: Opportunities and challenges to support CITES (Species 360 and WAZA)
- Captive care and Conservation (San Diego Zoo Wildlife Alliance / AZA).

As Craig Hoover, AZA's Executive Vice-President and former Chief of the U.S. CITES Management Authority - International Affairs shared through closing remarks on behalf of the community of zoos and aquariums represented at CITES CoP19:

> **"We are grateful to provide support for many important, science-based decisions here at CoP19, such as the listings of numerous species of sharks and turtles, and the advancement of songbird and ornamental fish conservation. We stand ready to support the Animals Committee, Standing Committee, the Secretariat, and the CITES Parties to advance these important outcomes of CoP19. As you know, the end of a CoP is also a beginning of important conservation work to come. We are here to serve."**

WAZA is proud to have represented its members at this CoP19 in Panama, to support and faciliate the side events while also ensuring that the global zoo and aquarium community had a greater presence at this Conference. Zoos and aquariums and their role in conservation and animal welfare cannot be understated and so we look forward to WAZA playing a greater role in advocating for these causes at international forums in the future, by working more closely with the CITES Secretariat and through the intersessional working groups.

2024 New Fee Model Development

Martin Zordan, WAZA CEO, Clément Lanthier, WAZA President, Janet Ho, WAZA Director of Membership and Nicola Craddock, WAZA Membership Committee Chair, during the New Membership Fee proposal at the WAZA Conference © WAZA

Janet Ho[1], Nicola Craddock[2]

[1]WAZA Director of Membership, [2]WAZA Membership Committee Chair

At the 74th WAZA Annual Conference that took place in Buenos Aires, Argentina in 2019, a 'Future of WAZA' session was held where WAZA members were asked to provide their feedback on WAZA as it currently stood and how they envisage WAZA in the future. During the session, amongst other feedback received, there was a recurring theme – the need to support and enable zoos and aquariums in lower income regions to be able to continue with their WAZA membership or join as new members.

Currently, WAZA Membership has a flat fee structure, which means that all members in the same membership category pay the same amount. This structure does not cater for varying economic regions or varying member organisation sizes. It makes the annual membership fee proportionately low for members in high income regions and/or with high operational budgets, and high or exceedingly high for members in low economic regions and/or smaller organisations. At the same time, the membership fee has been frozen since 2019 to assist our members through global challenges such as Covid19 and the energy crisis.

Following the feedback from members requesting a more equitable global membership fee structure relevant to their organisation location and operational size, coupled with the need for WAZA to review the current fee structure to fulfil strategic planning goals and assist in WAZA's growth and continued relevance in an ever-changing world, the Membership Committee started the development process for a new membership fee structure back in January 2022. Through the development of the proposed fee structure, factors such as member's visitor attendance numbers, operating budget, and their country's Gross Domestic Product (GDP) status were taken into consideration. After modelling different factors, creating various scenarios for comparison, and consultation with the WAZA Finance Committee, WAZA Executive Committee, and WAZA Council, the following fee structure was deemed to be the most appropriate to meet WAZA's strategic objectives and to cater for the needs of the global body of WAZA membership. The timing of this proposed new membership fee structure is intended for 2024.

The proposed new membership fee structure groups members by:

- High and Low economic regions defined by a country's GDP status as per the World Bank's GDP Model, which is published and regularly maintained.
- A member's size of operation, via their annual operating budget data.

An example of the new fee structure is included in the table on the following page.

At this stage, exact membership fee values for each category of membership have not been finalised. This calculation requires members' annual operating budget data to determine the final fee values.

The proposal for the 2024 new fee model presented at the 77th WAZA Annual Conference © WAZA

WAZA MEMBERSHIP FEES (EURO)							
	INSTITUTION MEMBERS			ASSOCIATION MEMBERS		AFFILIATE MEMBERS	
	CATEGORY 1 (Low Range <XXX€)	CATEGORY 2 (Medium Range XXX€ - XXX€)	CATEGORY 3 (High Range >XXX€)	CATEGORY 4 (Low Range)	CATEGORY 5 (High Range)	CATEGORY 6 (Low Range)	CATEGORY 7 (High Range)
Category code	CAT 1	CAT 2	CAT 3	CAT 4	CAT 5	CAT 6	CAT 7
Operating budget	Low Range	Medium Range	High Range	Low Range	Medium Range	Low Range	High Range
GROUP 1 COUNTRIES (High Income & Upper Middle Income)	2500€*	>2500€*	>2500€*	<2500€*	≥2500€*	<1000€*	≥1000€*
GROUP 2 COUNTRIES (Lower Middle Income & Low Income)	<2500€*	<2500€*	<2500€*	<2500€*	<2500€*	<1000€*	<1000€*

**The operating budget range (low, medium & high) and the corresponding fee values will be proposed when members' operating budget data is received*

The new fee structure is applicable to all membership categories except for WAZA Corporate Members, for which only future annual inflation adjustments will be applied to match the annual increase in WAZA's operating costs.

The proposal for the 2024 new membership fee model was presented at the 77th WAZA Annual Conference in Tenerife in October 2022, with positive feedback supporting the change. The next step for the development process is to collect further feedback from members for analysis, to review if any adjustments are required for the model and to define the ranges of operating budget and the fee values. WAZA's operational plan to achieve the new strategic planning goals will also be taken into account in the development of the corresponding membership fee values for each category.

All members should have received an email request along with the 2023 membership invoice to provide their organisations' 2022 operating budget. Please share your 2022 operating budget data (period 1 January to 31 December 2022) with WAZA Director of Membership, Janet Ho, at membership@waza.org by 31 May 2023. We understand that for some organisations the 2022 operating budget might not have been finalised yet, if that's the case, please share the most recent annual operating budget data with us.

The new fee structure is planned to be launched in 2024 and your input is essential to help us develop a structure that meets the needs of our membership. All feedback is welcome, please send your thoughts to Janet.

Lastly, we would like to take this opportunity to thank the WAZA Membership Committee for developing this plan and to our Council, members, and everyone else involved in the process for sharing your valuable feedback with us. We look forward to launching the new fee structure; a more equitable model to reflect WAZA's global membership, and to working together to achieve our shared vision and maximise our conservation impact.

Your response will be gratefully received.

For easy reference, please forward your 2022 operating budget by 31 May 2023 to Janet.

All feedback, comments, and questions are welcome, please share them with us at membership@waza.org

A Step Closer to Meeting the WAZA 2023 Animal Welfare Goal

Paula Cerdán

Animal Welfare and Conservation Coordinator, WAZA

In its 2015 World Zoo and Aquarium Animal Welfare Strategy, the World Association of Zoos and Aquariums (WAZA), highlighted the importance of making welfare-based accreditation a priority.

In 2016, representatives from WAZA-member national and regional associations met in Singapore to discuss a pathway to implement this within the WAZA community; and in 2019 another meeting was held in Barcelona, which ironed out additional details to implement this goal for WAZA and moved one step further into the implementation of a global goal by establishing the requirements to shape a global benchmark for regional and national animal welfare evaluation processes.

The WAZA 2023 Animal Welfare Goal

In 2019, the WAZA Council set the goal that by 31 December 2023:

- WAZA National and Regional Associations must have an animal welfare evaluation process in place and such a process must include specific elements approved by WAZA.
- All WAZA institutional members must be compliant with this process.

WAZA Members passed Resolution 74.3 at the 2019 WAZA Annual General Meeting.

↑ Musk ox (*Ovibos moschatus*) © Annika Sorjonen/Korkeasaari Zoo

Following the decisions taken at the Barcelona meeting by representatives of WAZA Member Associations, a substantial amount of effort has gone into the development of the framework for a national and regional animal welfare evaluation processes and the creation of a transparent, documented endorsement process.

In a nutshell, the process involves four main steps:

Process for national and regional Associations toward the WAZA 2023 Animal Welfare Goal

Self-assessment: The Association starts the process toward meeting the Goal by comparing their animal welfare evaluation process against the requirements set by WAZA. Evidence of meeting the requirements needs to be provided.

Peer-review: A peer Association will receive the self-assessment and review it to confirm the evidence provided. Associations can engage in conversations, mentor and exchange expertise between them. A recommendation and general feedback by the reviewer is provided to the Expert Panel.

Expert Panel: Made up of a WAZA Council Member, an Association Reviewer and a member of the WAZA Ethics and Animal Welfare Committee, the panel guarantees the consistency of the WAZA process, reviews the recommendation by the reviewer and manages any disagreement between Reviewer and the Reviewee.

Final endorsement by the WAZA Executive Committee

You can learn more about all these details in the first issue of WAZA NEWS, 2022 [1].

Recent efforts and steps forward

Developing a process leading to member Associations meeting the WAZA 2023 Animal Welfare Goal, as well as a strong framework that can be implemented in every regional and national context has been a long process. However, several pilot reviews with volunteer associations, allowed us to test the consistency of the tools developed as part of the WAZA confirmation process and shed light on the optimal way to approach such an ambitious goal from a process point of view. Four national and regional associations have been involved at several stages of these pilot reviews, these are the Zoo and Aquarium Association Australasia (ZAA), the Pan African Association of Zoos and Aquaria (PAAZA), the European Association of Zoos and Aquaria (EAZA) and Canada's Accredited Zoos and Aquariums (CAZA).

Feedback from these four associations has indicated that they found the peer review from other national and regional associations to be a key element in following the process and one of the highlights. They are currently undergoing step three of the process whereby Expert Panels are reviewing the recommendation from the Reviewer on meeting the WAZA 2023 Animal Welfare Goal. Nick de Graaff, Director of Accreditation and Animal Welfare Assessment at ZAA Australasia, said:

> **"It was an honour to be peer-reviewed by EAZA – a very large and well-established peak body. I learned a few things about our programme through the process and will work on strengthening these."**
>
> **Nick de Graaff, Director, Accreditation and Animal Welfare Assessment, ZAA Australasia**

The WAZA 2023 Animal Welfare Goal, will not only provide an opportunity for WAZA Member Associations to work together and exchange expertise on their Animal Welfare Evaluation processes, but will also allow our joint member zoos and aquariums to meet a consistent global benchmark of standards that further ensures and demonstrate that animal welfare is one of the highest priorities globally, as modern conservation organisations. This has already trespassed our community in different ways, as with the travel industry or in conversations with national governmental bodies. As Jim Facette, Executive Director and Chief Executive Officer of Canada's Accredited Zoos and Aquariums (CAZA), explains:

> **"WAZA recognition going forward will give CAZA something to point to as we advocate in Canada why CAZA is the 'tide that raises all boats"**

The 77th WAZA Annual Conference in Tenerife, provided a great avenue for all WAZA-member regional and national associations to share their progress towards meeting the goal, with several associations having completed their self-assessment and preparing for the peer-review process in early 2023.

↑ Red panda (*Ailurus fulgens*) © Annika Sorjonen/Korkeasaari Zoo

↑ Swift parrot chick (*Lathamus discolor*) © Laura Moore/RZSS

References

[1] Cerdán Codina, P. (2022, Issue 1). The WAZA 2023 Animal Welfare Goal: Becoming a Reality. WAZA News, 17–19. https://www.waza.org/wp-content/uploads/2022/05/WAZA-magazine-2022-01-Web.pdf

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Reverse the Red

A Strategy of Hope

Megan Joyce

Communications Officer, Reverse the Red

Zookeepers with Red wolf (*Canis rufus*) pups © North Carolina Zoo ↑

CITES COP19 and CBD COP15

Reverse the Red was well represented in the 19th CITES Conference of the Parties (COP19) in Panama in November, with delegates hosting a side-event on community engagement as a tool for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Martín Zordan (Chief Executive Officer of WAZA) moderated a panel of speakers including Dr Jon Paul Rodriguez (Chair of The International Union for Conservation of Nature Species Survival Commission – IUCN SSC), Prof Theo Pagel (WAZA Immediate Past-President and CEO of Cologne Zoo), and Dr Dilys Roe (Chair of IUCN SSC Sustainable Use and Livelihoods Specialist Group – SULi).

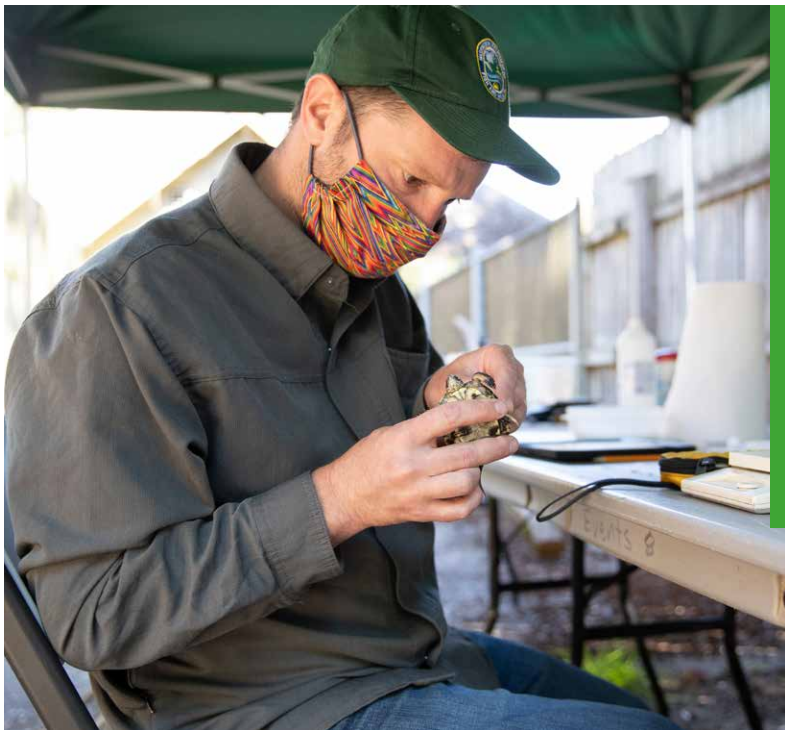
In December, Reverse the Red held a side-event at the 15th meeting of the Conference of the Parties (CBD COP15) in Montreal, Canada and Martín Zordan presented "*A Strategy of Hope: Mobilising national networks and empowering communities to reverse biodiversity loss trends*".

Post-2020 Global Biodiversity Framework

Nearly 200 governments adopted the post-2020 Global Biodiversity Framework with four goals and 23 targets for 2030.

> Goal A, point two:
> "*Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold and the abundance of native wild species is increased to healthy and resilient levels.*"

Reverse the Red's four pillars align with many aspects of the framework and we hope to support some of the structure needed by governments if they are to deliver on these goals and targets. For example, the Assess-Plan-Act cycle supports efforts to meet Target 4, which seeks to ensure action for the recovery and conservation of species including through *in situ* and *ex situ* practices. Reverse the Red's social movement and behaviour change campaigns improve education and access to relevant and accurate information and alternatives, which relates to Target 16.



↑ Western pond turtle (*Actinemys marmorata*) work up @ Woodland Park Zoo

↑ OCG saving the ocean © Ocean Clean Up Group

Reverse the Red puts together a collaborative structure to support governments and agencies in setting goals, planning and delivering collaborative actions to achieve post-2020 Global Biodiversity Framework targets. Perfectly poised with a vast network of organisations, institutions, governments, coalitions, and communities, Reverse the Red can convene national partnerships to support increasing national-level capacity for target-based biodiversity assessments, planning and action. With 10 Centres for Species Survival and three IUCN SSC National Species Specialist Groups already signed on with more on the way, Reverse the Red is convening a diverse range of experts and resources working across taxa to support governments and facilitate science-based decision making.

What are you doing to Reverse the Red and act on Global Biodiversity Framework (GBF) targets?
The conservation community celebrated Reverse the Red Day on February 7 with virtual content, storytelling of conservation action, on-site events and activities at zoos, aquariums and botanic gardens, and a worldwide uptake of optimistic messaging.

For 2023, as the conservation world focuses on meeting post-2020 GBF targets, it's time to get involved in the Reverse the Red movement. No matter who you are or what type of organisation or institution you work for, there are a variety of ways to connect with the Reverse the Red movement and make a difference.

REVERSE THE RED

Commit to creating a Centre for Species Survival at your organisation or join IUCN SSC and engage with the IUCN in your country. Contribute data on your conservation actions or those you support to international databases and consider creating Conservation Status Improvement Plans for species you work with. Join Reverse the Red's social movement and share your success stories during the Year of Action campaign.

↑ Feeding lemurs (*Lemuroidea*) © Tennessee Aquarium

When Impactful Conservation Work Leads to Impactful Change

Avian Health in the Galápagos Islands

Bob Merz

Assistant Director, Saint Louis Zoo WildCare Institute

Galapagos sunset © Saint Louis Zoo ↑

The core mission of the Saint Louis Zoo is to conserve animals and their habitats. The Zoo also has a long history of supporting *in situ* field conservation efforts. In 2004, in order to focus and brand these projects, Zoo leadership created the Saint Louis Zoo WildCare Institute. Funded through a generous USD 19 million commitment from a Zoo Association endowment, this enabled the Zoo's conservation work to expand in both scope and scale. Additional funding sources include the Conservation Carousel at the Zoo and a Change for Conservation Programme, where Zoo guests are asked to round up their payment on purchases to raise funds to support conservation.

Today, the Zoo supports over 30 field conservation programmes and has 17 collaborative projects in which they play a leadership role. You can imagine our delight this past autumn, when the Zoo was honoured to have two of our field conservation efforts considered for the WAZA Conservation Award: The Ron and Karen Goellner Centre for Hellbender Conservation and the Centre for Avian Health in the Galápagos Islands. It was humbling to be considered alongside so many other effective, zoo-based conservation programmes.

The hellbender conservation programme, which began over 20 years ago, with the idea of returning hellbenders into native rivers, has shown tremendous impact with the largest Salamander in North America. The hellbender is currently listed as Near Threatened by the IUCN and is close to qualifying for Vulnerable status. One concrete example of the programme's success, is that over 10,000 zoo-raised hellbenders – of the two subspecies – have been reintroduced to their native habitats, into local streams, in partnership with the Missouri Department of Fish and Wildlife and the United States Fish and Wildlife Service.

However, it was the Centre for Avian Health in the Galápagos Islands that was awarded the 2022 WAZA Conservation Award. Patricia Parker, Ph.D., has directed this Centre's work over the past 20 years. Dr Parker, who held the E. Desmond Lee Professorship of Zoological Studies in the Department of Biology at the University of Missouri Saint Louis (UMSL), and is Senior Scientist at Saint Louis Zoo, began work in the Galápagos Islands in 2001 by studying albatrosses. This quickly expanded to studying diseases in the over 50 endemic bird species across the major islands of the Galápagos Islands.

Working with our partners at the Galápagos National Park and the Charles Darwin Foundation, this collaboration initiated a strong bird-monitoring group. Further efforts involved annual broad surveillance of pathogens of varying levels of concern, on the islands. Follow-up studies have focused on their transmission and intervention. Although many of the bird populations are critically small and considered endangered, there has been only one extinction to date. After 20 years of the Centre's ongoing work, this record still holds.

→ Cormorant (*Phalacrocoracidae*) in the Galapagos © Saint Louis Zoo

↑ Dr Judy Mann-Lang (Chair of the WAZA Conservation and Environmental Sustainability Committee) handing out the 2022 WAZA Conservation Award to Dr Lisa Kelley, Executive Director, Saint Louis Zoo WildCare Institute, Dwight Scott, Dana Brown President and CEO of the Saint Louis Zoo, and Michael Macek, Saint Louis Zoo Director © WAZA

The Centre's primary focus is to understand how pathogens arrive on the islands, their impact, transmission dynamics and possible interventions. Consequently, their work intersects significantly with other groups working specifically on habitat restoration and it has provided valuable guidance.

The Centre collaborates with local agencies, building their internal capacity and identifying individuals committed to Galápagos conservation. By offering multiple international training workshops in the Galápagos, led by the Zoo veterinary health team, field partners were trained in collecting, storing and sampling tissues from deceased animals to identify the cause of death.

In 2017, the Centre hosted staff from Agencia de Bioseguridad Galápagos (ABG), at Saint Louis Zoo and UMSL for weeks of intensive training. The ABG staff returned in 2018 to open the first animal disease-testing lab on the islands which is now independent and thriving. In 2020, the ABG lab, the most modern testing facility on the islands, pivoted to become the primary COVID-19 testing facility during the pandemic, providing immediate value to the local communities.

In order to build capacity in the Galápagos and to continue the conservation work, the Centre has provided scholarships for three Ecuadorian students to come to Saint Louis for graduate training, including one native Galapagueña. All received a Master of Science, and two earned their doctorates.

The Centre has coordinated teams (with expertise in veterinary, population genetics and wildlife sciences), conducting annual surveys of birds on all 16 major islands in the archipelago, eventually covering more than 20,000 individual birds of 40 different species. Each island was surveyed at least twice, some annually depending on the findings. The academic impact of this work is significant. It has led to 17 master's theses conducted by students from Brazil, Ecuador, Mexico, Peru and the United States. Two of those former students are employed in positions through the Zoo.

In total, 14 doctoral dissertations have been produced by students from Brazil, Ecuador, El Salvador, Mexico, Papua New Guinea, Peru and the United States. These graduates now have leadership positions in academia and policy-making positions at NGOs and government agencies.

We can also attribute over 130 publications in peer-reviewed literature, including 109 peer-reviewed journal articles, 24 book chapters and one book synthesising the overarching goals and findings from this conservation effort.

The Centre's work is also used to introduce laboratory techniques to promising paid high school interns from impoverished areas of St. Louis and is used to teach Saint Louis undergraduate students the fundamentals of biology.

Galápagos National Park requests annual reports from the Centre to make management recommendations. Tourist excursions to small islands have been stopped because of the Centre's work. A finding showed larger islands had larger bird populations, higher levels of genetic diversity and immune function; with lower parasite numbers than small islands, where genetic diversity was low, immune function was low and parasites were high. The Centre showed that tour boats may inadvertently introduce exotic pathogens, and that small island populations are particularly susceptible.

Now all flights to the Galápagos are required to be fumigated in the coastal city of Guayaquil. This legislation resulted directly from the desire to reduce the introduction of infected insects 'hitch-hiking' on flights to the islands after a series of workshops and negotiations with government agencies and airlines.

We are proud and humbled by the recognition from WAZA but also realise that this work in the Galápagos is only one example of the amazing impact that zoo-based field conservation efforts are having across the globe and we are sincerely proud to be part of this.

Vulture Conservation Project by Tierpark Berlin
© Jan Zwilling Leibniz-IZW

Vultures From Berlin with an Important Mission

Katharina Sperling[1], Katharina Herrmann[2]

[1]Head of Wildlife Conservation Programme at Zoo and Tierpark Berlin, [2]Wildlife Conservation Coordinator at Zoo and Tierpark Berlin

White-backed vultures at Tierpark Berlin are part of an innovative new research project.

As scavengers, vultures have an important key function in the ecosystem and contribute significantly to a healthy cycle in nature. At the same time, vultures are among the most endangered birds worldwide. At Tierpark Berlin, we are now collaborating in a new project with leading experts from the fields of wildlife ecology, satellite communication and artificial intelligence. With the help of vultures at Tierpark Berlin, scientists will develop a new generation of GPS transmitters that will provide completely new insights into the world of animals and their natural habitats.

Vultures have extraordinary sensory abilities and intelligence. They can detect a carcass from the air, sometimes hundreds of vultures find their way to a dead animal within a very short time. Making use of the evolutionary intelligence of vultures – coupled with innovative technology – could be an exciting new way to detect and solve environmental problems. The renowned German Leibniz Institute for Zoo and Wildlife Research (Leibniz-IZW) and the Fraunhofer Institute for Integrated Circuits (Fraunhofer IIS) have been collaborating on an ambitious new research project since early 2022: The GAIA project, funded by the German Aerospace Center (DLR), aims to develop a new generation of animal transmitters that will allow significantly faster and more accurate insights into ecosystems.

Zoo and Tierpark Berlin are an indispensable partner for the development of this new generation of transmitters. Two White-backed vultures (*Gyps africanus*) in the Tierpark wear small GPS transmitters for several months, which record the animals' movements as data. A camera records in parallel whether the vulture is forraging, resting or flying. The combination of GPS data and video recordings enables the training of the artificial intelligence software that will be used on the newly developed transmitters. "*We can identify the exact second when the bird shows a typical behaviour and can thus recognise these spots as patterns in the movement data,*" explains Wanja Rast, Artifical Intelligence (AI) specialist at Leibniz-IZW. *"This training data is the base for AI software, which for the first time recognises and evaluates certain behaviour patterns directly on the transmitter*."

The joint project shows vividly how different actors from *ex-situ* and *in-situ* conservation work together. Everyone contributes with their expertise to make this promising project a success.

In future, the scientists will use AI, modern camera technology, energy-efficient electronics and satellite-based communication technology to register any changes in the vultures' behaviour in their natural habitat almost in real time. A small camera attached to the front of the vulture's chest will then take photos at crucial moments, which in turn can be analysed using AI. A new satellite-based communication link will ensure that even in the most remote ecosystems, information can be transmitted directly from the transmitter to the satellite and the scientists. With the help of vultures in Africa, the scientists will be able to check what is going on in the ecosystem from a distance and thus create a kind of early warning system for ecological changes. Critical changes in the ecosystem detected by AI – for example, when vultures come across a particularly large number of animal carcasses, which in turn could be an indication of a local outbreak of wildlife diseases – can thus be recognised directly with the help of AI and communicated to the local authorities.

Zoo and Tierpark Berlin support the researchers in their work and thus make an important contribution to the development of state-of-the-art technologies for species conservation. "*As Zoological Gardens of Berlin, we are essential partners for education, research and species conservation. Thanks to our conservation programme Berlin World Wild, we can not only facilitate such promising projects in our institutions, but also accompany and specifically support innovative initiatives outside our zoos in the long-term*," explains Zoo and Tierpark Berlin CEO Dr Andreas Knieriem. "*We are very happy to support the researchers of the GAIA project,*" he adds.

As the project progresses, the team from Leibniz-IZW and Fraunhofer IIS will further develop the prototype into a fully operational animal transmitter. This will also include the ability of the transmitters to communicate with each other, i.e. to form a virtual swarm in order to jointly identify occurring irregularities in the ecosystem. The transmitters are being designed as an example for use on vultures in southern Africa, but the system can also be transferred to other ecosystems.

European pine vole (*Microtus bavaricus*) © AlpenZoo

We Saved an (Unknown) Species

The Species Protection Project Bavarian Pine Vole of Alpenzoo Innsbruck

Dr André Stadler

Director, Alpenzoo Inssbruck

The Bavarian pine vole (*Microtus bavaricus*) is one of the rarest mammals in Europe, if not the world. In the IUCN Red List, it is classified as Critically Endangered.

The only currently existing (and known) occurrence of the species is in Tyrol, Austria right around the corner from the Alpenzoo Innsbruck-Tirol zoo. Bavarian pine voles were only discovered in 1962 close to the German city Garmisch-Partenkirchen. Unfortunately, the original site is now blocked by a hospital and the Bavarian pine voles can no longer be found there, which is also the case in other places in the Alps. As a result, the species was considered as lost or extinct.

Fortunately, in the year 2000 some animals were sighted in Tyrol and have been subsequently identified as Bavarian pine voles. Since 2014 there has been regular monitoring (search cycles) in connection with some basic botanical surveys at the site in the Rofan Mountains, Tyrol where the animals were found.

The Alpenzoo Innsbruck-Tirol zoo has been keeping their first animals of this species since September 4th, 2021. On June 13th, 2022, there was a sensation in the Alpenzoo. Two offspring were seen in the enclosure. "*We are as happy as little children about these offspring, because this vole is more endangered than a tiger, snow leopard or panda,*" says zoo director Dr André Stadler who was visibly proud. After 21 days the young animals were separated from their parents and the sex was checked. Luckily, they were two females and so it was possible to establish another breeding pair.

The Alpenzoo Innsbruck-Tirol sees itself in a leading role for the protection of this species, since these babies were the world's first offspring, which is a very important step for species protection allowing us to build up a conservation population in the zoos, since the threats to these animals are far from over. Together with many other partners, we are doing our utmost to protect this vole under the heading: "*We are saving an (unknown) species*". In the meantime there have been five successful births, with 11 animals raised in total. The Alpenzoo now keeps roughly 10% of the world's population as the data from the wild shows that there are not more than 100 animals left in the Rofan Mountains, in the best-case scenario.

The animals are currently housed in their own area behind the scenes, since this species has never been kept not only by the Alpenzoo, but in any zoo in the world. The animals are therefore not only observed ethologically for the first time, basic data such as gestation periods etc., are for the first time being collected, but they are also examined from a veterinary point of view. Later in the year, the voles will be put on display in the new "*Untertierisch*" enclosure. A special thanks goes to the non-profit GmbH for nature Aufwind for the support of the project.

↑ Bavarian Pine Vole (*Microtus bavaricus*) enclosure © AlpenZoo

Recovery of the Patagonian deer (*Hippocamelus bisulcus*)
© Fundación Temaikèn

Recovery of the Huemul in Argentine Patagonia

Temaikèn Foundation started a new conservation project within the framework of its endangered species programme

Florencia Roqueta

Integrated Communications, Fundación Temaikèn

Temaikèn Foundation, a WAZA member and home-base of the IUCN-SSC Species Survival Center Argentina, is working on the recovery of the species through the implementation of a Rehabilitation and Breeding Station, located in the town of Alto Río Senguer in the province of Chubut, Argentina.

In addition, research will contribute to obtain information to conserve and save this emblematic Patagonian deer in danger of extinction. This is the first project of its kind for this species in Argentina.

The rehabilitation and breeding station is a milestone for the conservation of this species of which only an estimated 350 to 500 individuals remain in Argentina. The project aims to work on the recovery, reproduction and reintroduction of this Patagonian deer (*Hippocamelus bisulcus*) which is currently almost at the limit of extinction in suitable environments for the species. At the same time, valuable information is sought for its conservation through research at the breeding station.

The initiative links Fundación Temaikèn, which brings its field work experience and animal management experience with Fundación Shoonem, which specialises in huemul research in the Senguer River Basin, in Chubut. The alliance is endorsed and monitored by the provincial wildlife authority.

During the initial stages of this work, the animals were managed and translocated to the Station to form the first founding group. "*The extraordinary work carried out in the mountains and forests required an extremely exhaustive coordination between the institutions that we were able to contribute our experience in chemical containment in the field, transfer of specimens and sample collection*", explained Guillermo Delfino, Conservation Specialist of Fundación Temaikèn.

Since then, the Station has assigned specialised personnel in the field to the project who are dedicated to the monitoring, behavioural study and follow-up of the animals to gather fundamental information to to continue conserving this species.

Lessons learnt about the huemul

Following the initial set-up, the specialists were able to observe various behaviours of male and female huemul, which is extremely valuable for the conservation of the species as records of these animals are scarce.

In this new stage it was possible to observe the adaptation, growth and development of the hemuls; including their behaviour, the general condition of their teeth (which are being affected by the lack of certain minerals, among other contributory factors) as well as their acceptance and consumption of supplements to improve their diet, natural feeding, movement and use of the territory. A remarkable event during this period was the birth of a calf. While going through its gestation and birth at the Station the specialists were able to document the stages of pregnancy and any behavioural changes in the female.

> **"The calf is observed developing its own natural behaviours, growing healthy and strong, as well as continuing to explore the entire station day by day. In the last days of December, it was observed that she began to consume plants that the mother consumed at her side and little by little she began to become more independent, although she is still very close to her mother during the whole day"**
>
> **Guillermo Delfino, Conservation Specialist of Fundación Temaikèn.**

About the huemul
The huemul, also called shoonem or shoan, is an endemic animal of the Andean-Patagonian forests of Argentina and Chile. Currently in Argentina it lives in the Patagonian Forest region, from Neuquén to Santa Cruz. Within the mountainous environment it occupies steep, irregular and rocky slopes, which have a vegetation dominated by shrubs, with scattered forests and grasslands. In winter it moves to those areas most exposed to the sun, which are the first to be cleared of snow. The huemul seeks shelter and food on these slopes, as long as travel is possible.

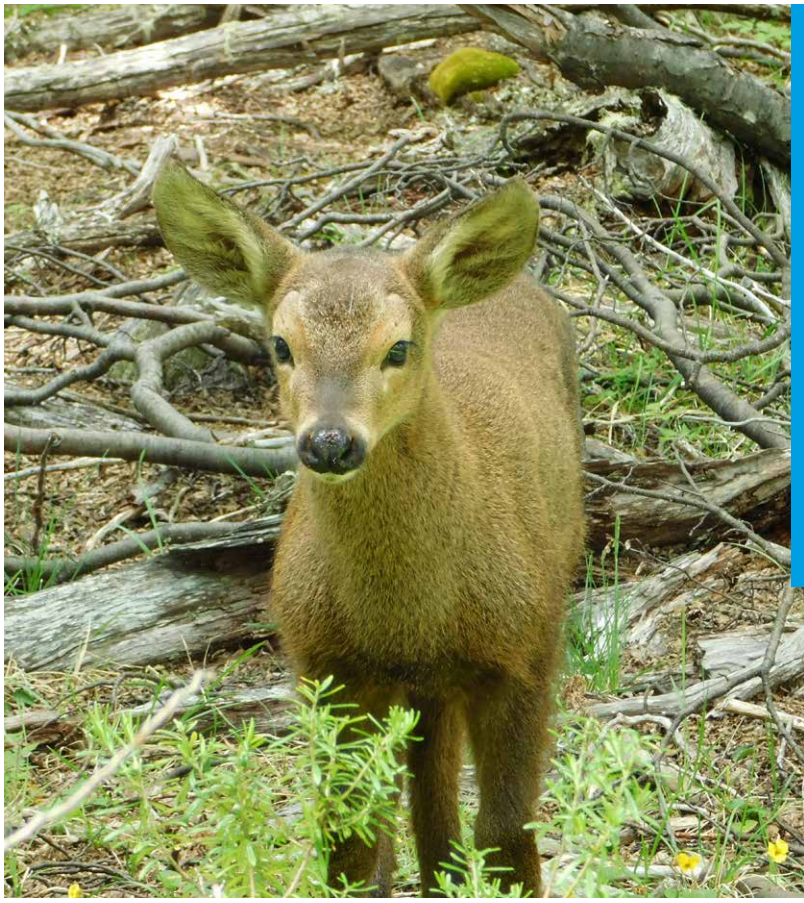
This species is considered Endangered by the International Union for Conservation of Nature (IUCN). Huemul populations in Argentina are small, fragmented, and facing a continuous decline. Their survival is affected mainly by loss of territory and/or fragmentation, malnutrition, disease, and the introduction of exotic species and their management, especially cattle and dogs. Most of the remaining huemul subpopulations subsist in remote areas, far from human populations or human / anthropogenic activities.

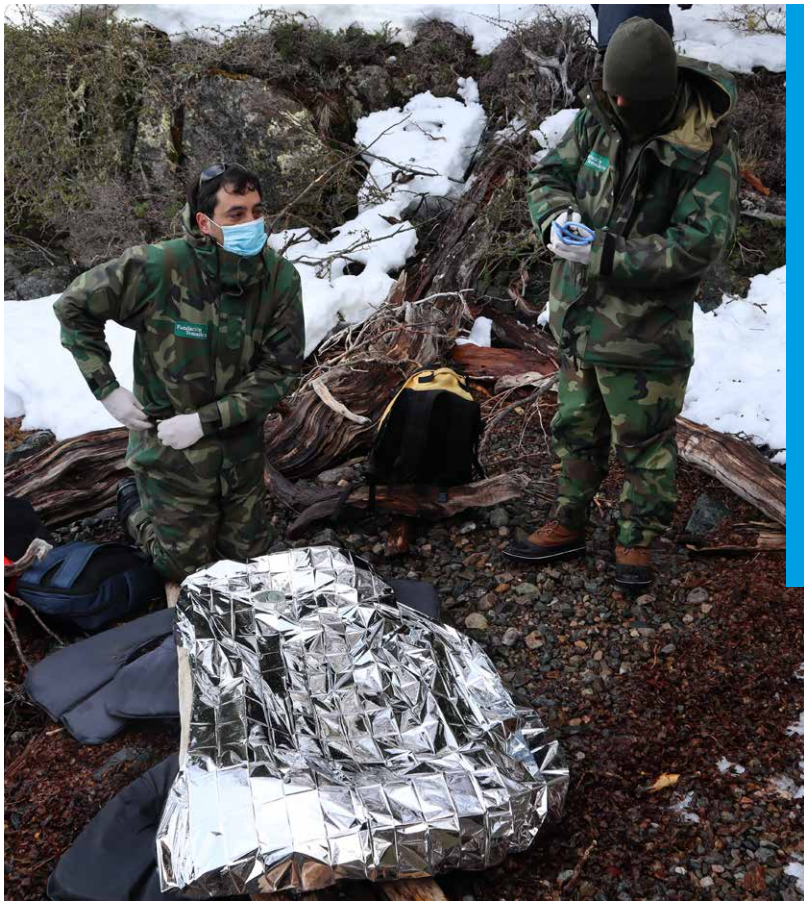
How the Breeding Station came into being
The Station, which combines rehabilitation, breeding and reproduction activities, was built in two years with the contribution of another Swiss NGO: Erlenmeyer Foundation, and houses the huemules of the Fontana and La Plata lakes in a 108-hectare natural field with fences specially adapted for the containment of the species and the protection of possible natural predators.

The features of the Station allow for flexible management to the composition and distribution of the group of individuals, and it also has a building that can be used for more management, as well as the possibility of setting up a laboratory. "*The station is inspired by the experience of the Huilo Huilo Foundation in Chile, which managed to raise and reinsert huemul in the Los Ríos Region, where they had become extinct. We add applied research to this model, as we seek to understand and solve some specific problems that we detected in the field work: infections in mouths, missing teeth, chronic sinusitis, fragility in minerals, and other problems related to the mountain habitat,*" said Werner Flueck, Scientific Director of Shoonem and Argentinean National Scientific and Technical Research Council (CONICET in Spanish) researcher, and Miguel Escobar, President of Shoonem Foundation.

Shoonem Foundation has been conducting huemul studies since 2014 and has postulated novel approaches to the cause of extinction in its study area, especially the problems arising from the loss of wintering as a fundamental cause of the animal's critical decline. It currently holds the facilities to allow for the collection of fundamental data to support the postulates and clinical care of native ungulates.

Next steps
Delfino has confirmed that Shoonem and Temaikèn Foundations will continue to collaborate to maintain and guarantee the station's operations. For this, among other steps, the aim is to continue adding strategic allies, increase the Station's population and carry out new translocation and management efforts. To further the search for information on this rare species, research projects will be developed and knowledge will be exchanged with other specialists in the region. As a final milestone, the breeding station will aim to reintroduce specimens into their natural habitat.





↑↑ Patagonian deer (*Hippocamelus bisulcus*) calf © Fundación Temaikèn
↑ Recovery of the Patagonian deer (*Hippocamelus bisulcus*) © Fundación Temaikèn

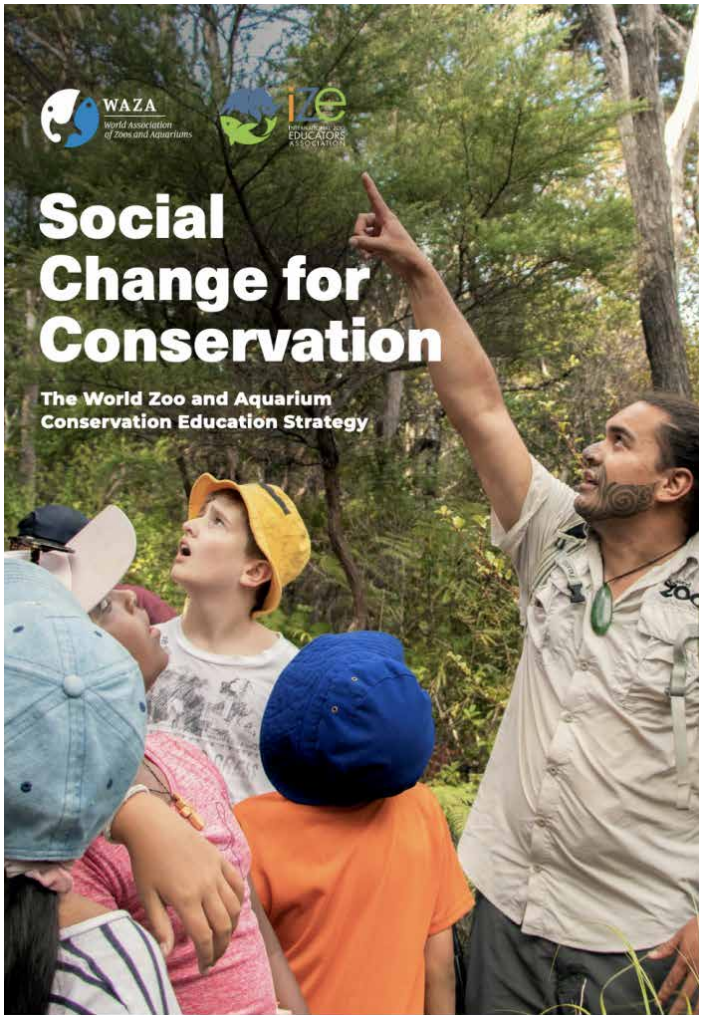
Conservation Education
A Vital Role for Zoos and Aquariums

Tania Kahlon
Communications Coordinator, World Association of Zoos and Aquariums

The way people interact, understand and connect with nature has a crucial role to play in sustaining our planet. Progressive zoos and aquariums play a pivotal role in facilitating this interaction, as they provide spaces where people can experience nature in a manner that may not otherwise be possible. This is also what makes zoological institutions the ideal sites for connecting citizens with nature and facilitating conservation education. By providing opportunities for awareness and engagement we can build wider support for conservation as we reach a widespread and diverse audience.

It is in this context that the International Zoo Educators Association (IZE) and the World Association of Zoos and Aquariums (WAZA) signed a Memorandum of Understanding (MoU) in 2021. The aim of this collaboration is to enhance the capacity of our members in biodiversity conservation through communications, visitor engagement and a large variety of educational and interpretive programmes for all ages. This MoU is just one step that WAZA has taken to focus on conservation education, building on our World Zoo and Aquarium Conservation Education Strategy (available in nine languages; WAZA, 2022), published with the leadership of the IZE in 2020.

Simply understood, the term 'conservation education' is used to reflect that biodiversity conservation should be at the core of any visitor engagement activity delivered by a zoo or aquarium. However, understood more broadly, it also includes activities that make contributions to biodiversity conservation – such as education for sustainable development, biological, science or environmental education, ocean literacy, practical skills-based programmes, campaigns, and interpretation. This highlights its potential as a powerful tool to promote awareness on issues that directly or indirectly impact conservation and are interconnected with sustainability. Thus, there is a need to recognise the importance of conservation education as being on par with animal care and welfare and conservation.



↑ Reptile Encounter with a yellow anaconda (*Eunectes notaeus*)
© The Madras Crocodile Bank Trust

Taking forward WAZA's relationship with IZE, there is going to be a shared focus on impact evaluation from 2023. As Dr Judy Mann, IZE President Elect elaborates, "*We all put a great deal of effort into our conservation education programmes, however, while we have some evidence of the effectiveness of these efforts, there remains much to be done to really measure impact – both in the short and long term. We need to better understand how to inspire long term environmentally responsible behaviours amongst all of our visitors.*"

Conservation education highlights the scope that we are presented with when we combine the power of education and communication to transform the way visitors support conservation and environmentally responsible behaviours. It is a process for social change. This social change is pivotal at a time when there is a dire need to prioritise timely, ambitious, and coordinated action to address unprecedented and enduring changes to species, climate, ecosystems, and communities. Dr Martín Zordan, WAZA CEO highlights this further, "*At WAZA, we recognise that progressive zoos and aquariums must play a leading role in facilitating conservation education and engage their audiences for a sustainable future. Using our knowledge and passion for wildlife, we need to be part of the cultural shift so that the communities we connect with are as committed as we are (or even more) about protecting our future*".

Conservation education and facilitating behaviour change can be delivered by individual zoos or aquariums – across the world, regardless of size. We therefore invite our readers to share their thoughts and insights on how they envision this IZE-WAZA agreement could support their work as they engage with wider audiences for a sustainable future.

↑ Conservation Education © Lincoln Park Zoo

To share your thoughts, please write to secretariat@waza.org and if possible include "IZE-WAZA collaboration" in the subject line.

References

Thomas, S. (2020). Social Change for Conservation: The World Zoo and Aquarium Conservation Education Strategy; Barcelona: WAZA Executive Office.

WAZA. (2022). Social Change for Conservation: The World Zoo and Aquarium Conservation Education Strategy (in nine languages). Available at: https://www.waza.org/priorities/community-conservation/the-ize-waza-education-strategy/

↑ Conservation Education © Ocean Park Hong Kong

Update on International Studbooks (ISBs) and Global Species Management Plans (GSMPs)

Changes between 14 November 2022 to 26 January 2023.

ISBs Published

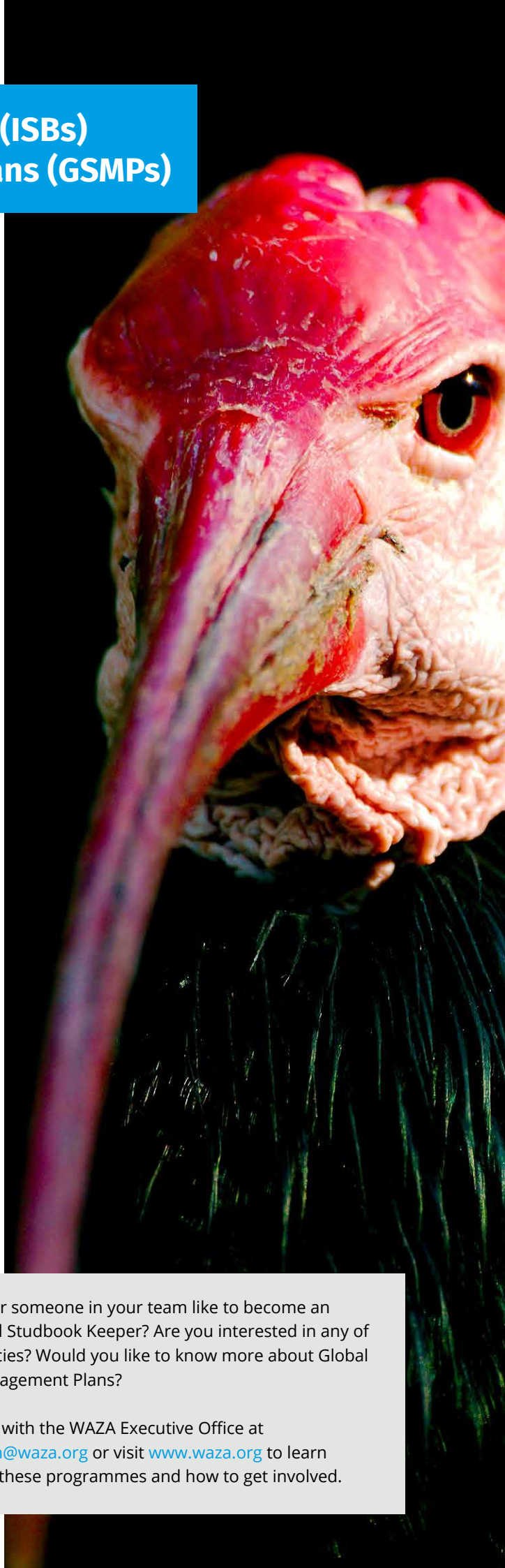
- **Indochinese sika deer** (*Cervus nippon*), 2022 ed. – Jan Pluháček (Zoo Ostrava, Czech Republic)
- **Orangutan** (*Pongo sp*), 2021 ed. – Megan Elder (Como Park Zoo & Conservatory, US)
- **Bald ibis** (*Geronticus calvus*) 2022 ed. – Harrison Edell (Dallas Zoo, US)
- **Wattled crane** (*Bugeranus carunculatus*) 2022 ed. – Frederick B. C. Beall (Zoo New England, US)
- **Goeldi's marmoset** *(Callimico goeldii*) 2022 ed. – Sheila Wojciechowski (Chicago Zoological Society, US)
- **Greater bamboo lemur** (*Prolemur simus*) 2022 ed. – Delphine Roullet (Cotswold Wildlife Park and Gardens, UK)
- **Tiger** (*Panthera tigris spp*) 2022 ed. – Peter Müller (Leipzig Zoo, Germany)
- **Pygmy hippopotamus** (*Choeropsis liberiensis*) 2022 ed. – Beatrice Steck (Basel Zoo, Switzerland)

ISB Transfers

- **Turkmenian kulan** (Equus hemionus kulan). Intra-institutional transfer from Anna Mekarska to Paweł Sroka (Zoo Wrocław, Poland)

Vacant Studbooks

- **Buff-crested bustard** *(Lophotis gindiana)*
- **Edward's pheasant** *(Lophura edwardsi)*



→ Southern Bald Ibis (*Geronticus calvus*) © Josh More

Would you or someone in your team like to become an International Studbook Keeper? Are you interested in any of these vacancies? Would you like to know more about Global Species Management Plans?

Get in touch with the WAZA Executive Office at conservation@waza.org or visit www.waza.org to learn more about these programmes and how to get involved.

Behind the ZIMS
A Q&A with WAZA International Studbook Keepers

Paula Cerdán
Animal Welfare and Conservation Coordinator and WAZA Office liaison to the Committee for Population Management

Behind the ZIMS aims to showcase the behind the scenes work of International Studbook Keepers and their management using Species360's Zoological Information Management System (ZIMS), to show the relevance and contributions of WAZA International Studbooks in the work we do in wildlife conservation and professional population management.

Q&A with Beatrice Steck

Beatrice Steck
Scientific assistant, Basel Zoo
International Studbook Keeper for Pygmy Hippo, Somali Wild Ass and Indian Rhinoceros.

ISB kept: Pygmy hippopotamus *(Choeropsis liberiensis)*
ISB Host Organisation: Basel Zoo, Switzerland
Year Started as ISBk: 2008

For how many years have you been acting as the species' International Studbook Keeper (ISBk) and why did you become an ISBk?

In 1975, Kathleen Tobler, Basel zoo, became the first studbook keeper of the pygmy hippopotamus. When she retired, Dr Gabriele Wirz-Hlavacek took over until 2007. After she left, I gladly accepted the opportunity to be in charge of this studbook in 2008. I have been responsible for the coordination of the European breeding programme of this species since 1995 and used the data in the studbook for the genetic and demographic management of the European population. The data in the global studbook allows me to see the "bigger picture" and cooperate with other regions to exchange animals for the benefit of the entire population.

↑ Pygmy hippopotamus (*Choeropsis liberiensis*) © Torben Weber

How has the International Studbook (ISB) contributed to the species' conservation? What do you see as the value of your ISB?

The studbook includes detailed information on a 1677 pygmy hippos that have been held in human care since 1873, including specimens kept by various private holders, and their pedigree is known to 91%. The principal function of the studbook has always been to gather correct genetic and demographic data to provide the basis for scientific population management. When regional breeding programmes were established in Europe, the Americas, Africa and Australia, their coordinators were able to use the demographic and genetic data recorded in the international studbook to manage their programmes in the best possible way. Thus, the population under human care can serve as an insurance population for the species that is seriously threatened in the wild.

Since the pygmy hippo is a shy, crepuscular inhabitant of tropical rainforests, it is very difficult to study and its population size is unknown. However, its habitat has been seriously decreasing because of logging, mining, and other activities of human encroachment. The *ex situ* population therefore serves a vital role as a backup and the international studbook, with its detailed information on the currently living 452 individuals, provides the necessary tool to avoid inbreeding and maintain the genetic diversity.

How has the ISB contributed to *ex situ* conservation in practical terms?
Are there examples of discoveries in veterinary care, nutrition, housing, breeding manipulation, etc., based on the larger available sample sizes present in an aggregated dataset? Is there any ongoing or published research utilising the data?

The data recorded in the ISB have increased the knowledge of various aspects of pygmy hippo biology which are difficult to study in the wild, for example its gestation length. It has also contributed to research detecting major health issues and their importance for the population under human care, such as polycystic kidney disease (PKD).

Every other year, the genetic and demographic information of the global population is analysed in detail and the analysis presented in the international studbook. In addition, this information is used for the various regional breeding programmes and included in their publications. This means that the health of the populations can be monitored and continually improved.

Furthermore, the data of the international pygmy hippo studbook have been used to contribute to the following publications (among others):

Zschokke, S. 2002: Distorted sex ratio at birth in the captive pygmy hippopotamus, Hexaprotodon liberiensis. S. Zschokke. Journal of Mammalogy 83 (3): 674-681.

Flacke, G. L., Tomkins, J. L., Black, R. and Steck, B. L. 2017. Demographics of polycystic kidney disease and captive population viability in pygmy hippopotamus (Choeropsis liberiensis). ZooBiology 36 (2): 136 – 151.

Flacke, G. L., Tkalcic, S., Steck, B. L., Warren, K., and Paris, M. C. 2015: A Retrospective Study of Mortality in Captive Pygmy Hippopotamus (Choeropsis liberiensis). Proceedings Annual Conference AAZV: 138 – 139.

Flacke, G. L., Chambers, B. K., Graeme, B. M., and Paris, M. C. J. 2015: The Pygmy Hippopotamus Choeropsis liberiensis (Morton, 1849): Bringing to Light Research Priorities for the Largely Forgotten, Smaller Hippo Species. Zoologischer Garten N. F. 84 (2015): 234 – 265.

Pluhacek, J., and Steck, B. L. 2015: Different Sex Allocations in Two Related Species: The Case of the Extant Hippopotamus. Ethology 121: 462 - 471.

How do you see your work as an ISBk supporting conservation action for the species in the wild?

The international studbook for the pygmy hippo provides the basis for maintaining a healthy *ex situ* insurance population that is self-sustaining and no longer needs to import pygmy hippos from the wild.

This *ex situ* population serves a vital role for the survival of this species since it is assumed to be in continuous decline because of habitat loss and re-introductions may be necessary some time in future.

The annually published studbook regularly includes updates on those conservation projects for the pygmy hippo that are endorsed by the IUCN SSC Hippo Specialist Group. All the holders always receive a copy and can thus inform themselves on the conservation and research endeavours carried out for the pygmy hippo in its range countries. Hopefully following this approach will result in increasing the number of zoos that contribute funds for a pygmy hippo conservation project.

What do you see as the next chapter or role for International Studbooks?

A considerable number of pygmy hippos are kept in facilities that are not Zoological Information Management Software (ZIMS) members or even by private individuals. It is my intention to improve communication and cooperation between these institutions, so that they can contribute to the viability of the *ex situ* population, which may play a vital role in possible future reintroductions.

It seems very important to me to provide studbooks with a better platform and more visibility in order to make sure that their contents – especially demographic and genetic analyses and conservation updates – are accessible to a wide range of zoo staff, including registrars, curators, veterinarians, educators, researchers and conservation officers. This increased visibility of studbooks will deepen understanding for the needs arising from population management, educate our visitors about the problems pygmy hippos face in the wild, and encourage financial support of conservation projects in range countries. So far, very few zoos provide funds for these projects although they are regularly presented in the pygmy hippo studbook.

Moreover, the studbook provides a valuable and comprehensive dataset that can and should be used for various kinds of research that will help improve the husbandry and veterinary care of the species as well as the maintenance of a genetically and demographically healthy *ex situ* population.

↑ Pygmy hippopotamus (*Choeropsis liberiensis*) © Torben Weber

WAZA Welcomes New Members

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Zigong Lantern Group

Zigong Lantern Group is based in Orlando, Florida, United States of America, and is a custom designer and manufacturer of lamps. The Group is the only American owned lantern manufacturer and is listed as one of the major US based exporters of lantern art inside all of China.

Zigong Lantern Group is a commercial member of the Association of Zoos and Aquariums (AZA) and a member of the International Association of Amusement Parks and Attractions (IAAPA). They have won the IAAPA Brass Ring Award in 2022 as a top major brand inside the global attraction industry. They are joining WAZA as a new corporate member.

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