Issue #1 | 2024

WAZA
World Association of Zoos and Aquariums

news

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This edition of WAZA News is also available at:
www.waza.org

Cover Photo:
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Printed on FSC-certified paper

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Affiliate:	8
Association:	21
Corporate:	33
Institution:	295
Life:	102
Honorary:	35

Future WAZA Conference

2024: Taronga Zoo, Sydney, Australia, 3–7 November

Contents

PRESIDENT'S LETTER

Kia ora/Hello members of the World Association of Zoos and Aquariums (WAZA), I am so pleased to welcome you all to this year's first edition of the WAZA magazine.

As we look forward to 2024, I am filled with great optimism and hope for what our community can achieve together. Having worked through the strategic planning process in 2022 and taking the first steps towards operationalising it in 2023, we must keep momentum and push ourselves to make WAZA a globally recognised and trusted leader advancing conservation and animal welfare.

2023 was a landmark year as several of our member Associations met the 2023 Animal Welfare Goal. We look forward to having all of our Association members meet this goal. We are now in the initial stages of developing the 2027 Population Management Goal, which will be another crucial milestone for our Association and global community. Along with this, the role of our community in supporting conservation was strengthened and reiterated through the IUCN SSC Position Statement on the Role of Zoos, Aquariums and Botanic Gardens in Conservation.

All of this demonstrates the incredible impact of our work when we collaborate. But it also highlights that there is so much more to do to save wildlife and wild places and halt biodiversity decline.

I am excited to see what we will achieve together in 2024 as WAZA's new Council and Executive Office start working to implement the vision we have laid out for our community. As well as our existing Council Committees, we have a new Communications Committee, which has an ambitious mandate. Some of you will be joining other WAZA Committees for the first time and will invigorate them with fresh and innovative ideas.

These Committees have enormous impact, and the members go well above the call of duty to support our global work.

This year, in partnership with the IUCN SSC, and other key partners, the World Species Congress, a 24-hour online event will be held on 15 May 2024. WAZA is making a commitment to ensure the success of the event that will celebrate species conservation achievements while energising key stakeholders to further action.

Lastly, I am delighted to welcome all of you to join us at Taronga Zoo, Sydney, Australia for the 79th Annual WAZA Conference later this year. The Conference is such a wonderful way for our community to come together, share ideas, collaborate, form partnerships and learn from one another. My thanks to the Taronga Zoo team for the work they will be doing to welcome us all to the beautiful city of Sydney and the exceptional Taronga Zoo.

I look forward to seeing you all in 2024!

Ngā mihi/Regards

Karen Fifield MNZM
WAZA President

CEO'S LETTER

Dear WAZA members and friends, welcome to the first issue of the WAZA News Magazine of 2024. In this edition, I am excited to share some experiences and reflections that emerged from recent meetings and workshops, offering insights into the evolving landscape of our community.

January commenced with two significant gatherings, each illuminating different facets of our collective journey. The first was a workshop on assessing best practices in acquiring marine fish for aquariums, jointly hosted by Sea Life Aquariums and the Shedd Aquarium. This session not only delved into the intricate supply chain dynamics but also underscored the profound impact of our practices on local economies and the habitat protection of these species. It rekindled the essence of our 2009 strategy, 'WAZA Turning the Tide', urging us to address this challenge on a global scale. As we navigate this complex terrain, the imperative to foster sustainable acquisition practices becomes increasingly clear.

Subsequently, I had the privilege of attending The Association of Zoos and Aquariums (AZA) Directors' Policy Conference, where the generosity and inclusivity of the AZA community was palpable. Amidst discussions on global trends, it was heartening to witness a collective sense of belonging and commitment to the broader community of aquariums and zoos.

These meetings mark the beginning of new chapters for WAZA, yet they also serve as reminders of inevitable transitions. Around one of those meetings, I became aware that at least two leaders who have been championing WAZA for years are planning to retire. Initially, I was perplexed: "*This is happening too soon, we need them now more than ever*!" The reality is that both changes and the uncertainty around them are natural. In my role, I have had the pleasure of hearing some of the thoughts of soon-to-be-retired leaders: "*There doesn't seem to be much interest in anyone in my team to replace me*." "*The staff now commit for fewer years and are expected to work for two to three years before moving to another organisation*." "*Younger generations seem less willing to take over*." While some intergenerational dissonance can be expected and may even contribute to our identity through difference, it also underscores the need for a more intentional process of knowledge exchange between established and emerging leaders. This is vital as incoming leaders are expected to operate in much more complex contexts than their predecessors. Consider climate change with both immediate and secondary consequences and how much more resilience and adaptability it requires from our organisations, or the emerging need to re-think mental health in the workplace. The world is evolving, and we are aware that it will continue to change more rapidly in the future.

With the development of more ethical approaches, the desire to be better connected across our global community of aquariums and zoos, and improved inter-generational exchange of knowledge, we will be better placed to hand over the privilege and responsibility of leading organisations that are working to improve the co-existence of humans and wildlife.

Please feel free to reach out to me with your thoughts.

Warm regards,

Dr Martín Zordan
WAZA Chief Executive Officer

BIODIVERSITY BANKING: PRESERVING INVALUABLE CONSERVATION CAPITAL

Dr Elyan Shor, *San Diego Zoo Wildlife Alliance*

Frozen cells from a black-footed ferret and Przewalski's horse have already been used to produce clones that revive invaluable genetic diversity for their species © *San Diego Zoo Wildlife Alliance*

The extensive loss of biodiversity around the world is a critical threat to the health of wildlife, humans, and the ecosystems we share and depend on. Our planet is undergoing an extinction crisis: wildlife populations have declined by an average of 69% since 1970,[1] and we are losing the genetic variation that underpins species' potential to adapt to our rapidly changing world. In the face of these challenges, biodiversity banking represents a key opportunity to safeguard genetic diversity, support population sustainability and reduce extinction risk.

Biodiversity banking is the preservation of biological materials, including somatic cells, gametes, tissues, nucleic acids, and seeds and other plant materials. By banking these materials, we secure future access to genetic capital and simultaneously aggregate a library of biological information that will be available to generations of future scientists.

Access to banked biomaterials has been crucial to studies of ecology, evolution, genomics and wildlife health, fostering an unprecedented understanding of life on Earth. These materials also serve as the foundation for a pivotal new set of conservation options, such as cloning, as well as the many more technological advances that can be anticipated. Further, banked samples provide an avenue for accelerated clinical diagnostics and treatment discovery and are thus an essential resource in matters of both animal and human wellbeing.

San Diego Zoo Wildlife Alliance (SDZWA) has been at the forefront of biodiversity banking since 1975. SDZWA's Wildlife Biodiversity Bank has six subcollections – the Frozen Zoo®, Tissue and DNA Bank, Clinical Repository, Pathology Archive, Native Plant Gene Bank and Wildlife Artifacts – encompassing millions of living and non-living materials that are diverse in type and taxa. SDZWA receives and shares samples with scientists worldwide, making the Wildlife Biodiversity Bank the most extensive and most utilised resource of its kind in the world.

Collaboration is foundational to the Wildlife Biodiversity Bank, and SDZWA is committed to working together to advance biobanking and to safeguard biodiversity on a global scale. To propel these efforts, SDZWA has partnered with the IUCN Species Survival Commission to launch the Center for Species Survival: Biodiversity Banking.

Introducing the Center for Species Survival: Biodiversity Banking

Founded in 2023, the Center for Species Survival: Biodiversity Banking is one of eighteen (and counting) Centers for Species Survival. Each Center for Species Survival (CSS) represents a partnership between the Species Survival Commission Chair's Office and conservation organisations around the world; the Centers also typically align with complementary Species Survival Commission Specialist Groups. These partnerships maximise conservation impact by catalysing knowledge, action and communication.[2] The CSS's are a launchpad for collaboration among a diversity of stakeholders, supporting conservation efforts for taxa, ecosystems and geographic regions that are both informed and inclusive.

The CSS: Biodiversity Banking is aligned with Species Survival Commission Specialist Groups, including the Animal Biobanking for Conservation Specialist Group, which shares many of the CSS's objectives. Foremost among these objectives is to cultivate a global network of conservation practitioners engaged in biodiversity banking. Success for the world's biodiversity requires widespread participation, and the Center seeks to identify partners and facilitate connections among participants.

This CSS also hopes to usher in a culture of transparency and data sharing; this will be the foundation for a much-needed global understanding of banked materials and data. Open communication will allow for more effective conservation planning by clarifying needs, identifying opportunities, and enabling the development of a FAIR (Findable, Accessible, Interoperable, Reusable)[3] and cohesive data framework.

Another of the Center's objectives is to establish justice, equity and inclusivity as irrefutable standards in biodiversity banking. These values must be central in the preservation of, and access to, genetic resources and the knowledge and benefits that stem from their use. This CSS also advocates for investment in local biobanking capacity enhancement in the form of training, resources and infrastructure.

WILDLIFE POPULATIONS HAVE DECLINED BY AN AVERAGE OF

69%

since 1970

Interested in connecting with the Center for Species Survival: Biodiversity Banking, learning more, or getting involved in biobanking? Get in touch with the Center at

sandiegozoowildlifealliance.org/biodiversity-banking

Containing gametes and fibroblasts (skin cells) from over 11,000 individuals, SDZWA's Frozen Zoo is the most extensive and taxonomically diverse resource of its kind in the world © *San Diego Zoo Wildlife Alliance*

Tissue samples (such as those preserved in glass slides) open a window into wildlife health and could inform critical care and conservation decisions © *San Diego Zoo Wildlife Alliance*

A Call to the WAZA Community

The CSS: Biodiversity Banking is the first Center for Species Survival with a focus on a strategic skillset, and SDZWA is honoured to help nurture the growth of biobanking capabilities and activity worldwide. Any objectives on a global scale are inherently ambitious, but because the need to save biological resources is more urgent than ever, biobanking objectives on a global scale are more than warranted – they are imperative. The WAZA community can play a critical role in achieving these objectives.

As a first step, the Center encourages WAZA members to embrace biodiversity banking and consider participation. Connecting with a local or regional biobank to discuss opportunities could generate meaningful advances for both biodiversity and communities. An objective of the CSS is to serve as a resource for networking and establishing connections among interested parties.

Several conservation organisations already manage or contribute to biobanks, but there remain many unmet opportunities. The Frozen Zoo® (part of SDZWA's Wildlife Biodiversity Bank) contains cells from 5% of threatened mammals, birds, amphibians and reptiles on the IUCN Red List. However, nearly 17% of these threatened species are represented in zoos and aquariums around the world.[4] As such, the CSS: Biodiversity Banking encourages zoos, aquariums and botanic gardens to incorporate opportunistic sampling into their wildlife care protocols. By banking precious samples from wildlife under their care, these institutions could significantly expand their conservation impact. Concurrently, the Center encourages existing biobanks and biobanking participants to welcome collaborations; to share sampling and storage protocols; and to make their inventory and data accessible for the benefit of wildlife, people and ecosystems everywhere.

It will take a global effort to secure the genetic diversity of life on our planet, and the time to act is now. The Center for Species Survival: Biodiversity Banking is proud to work with multinational partners to guide these urgent efforts. By engaging in biobanking, the WAZA community can help steward an enduring shift in our capacity to protect biodiversity around the world, and for generations to come.

Life-saving veterinary care and novel diagnostic tool development are made possible by banked blood products © *San Diego Zoo Wildlife Alliance*

References

1. WWF. *Living Planet Report 2022 – Building a nature-positive society.* (2022).
2. Centers for Species Survival. *International Union for Conservation of Nature* (2023).
3. Wilkinson, M. D. *et al.* (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* **3**, 160018
4. Mooney, A. *et al.* (2023). Maximizing the potential for living cell banks to contribute to global conservation priorities. *Zoo Biol* **42**

‘LIVE AND LET FLY’. CHESTER ZOO ATTEMPTS TO CLOSE THE LIFE CYCLE OF THE SCARCE YELLOW SALLY STONEFLY (*Isogenus nubecula*)

Joe Chattell, *Aquarium Assistant Team Manager, Chester Zoo*

The Scarce Yellow Sally (*Isogenus nubecula*) is a Critically Endangered species of stonefly (Plecoptera) found within the UK and Europe. Its natural habitat is mature lowland sections of large stony rivers with marginal vegetation required for its adult life stage. Within the UK, the species was absent from its single known location for 22 years until its rediscovery in 2017. In 2022, as part of a conservation project called *‘Natur am Byth!’* partnered by Natural Resources Wales and Buglife, Chester Zoo was invited to become a project partner and assist in the care and reproduction of this elusive and poorly understood species, with the goal to one day be able to bolster current wild populations.

Getting Started

The first step was setting up a facility for the species at the zoo that would allow us to provide the best care for them whilst at the same time educating ourselves about their habitat. There is little to no data on the care of *Isogenus*, and we drew from information given to us by a stonefly expert and project partner, John Davy-Bowker, in the requirements of the species. High dissolved oxygen levels, seasonal variety in water temperature and emergence opportunities for nymphs were our main priorities. Emergence opportunities are when the nymphs are ready to begin the next stage of their lifecycle, where they must reach and break through the water’s surface.

We designed a system to allow us to move the animals between their aquatic and terrestrial life stage along with equipment to replicate seasonal variance such as water temperature and photoperiod.

Once this set up had been put in place, the animals were ready to be brought to the zoo with the aim of closing the lifecycle of the Scarce Yellow Sally.

We joined the project leads in the field helping with kick sampling within the River Dee in Wales. We managed to find a number of different species during sampling including a very similar species – *Perlodes mortoni* – along with a small number of our target species. The nymphs were moved into transport buckets along with battery powered air pumps to maintain the high dissolved oxygen levels required before being transported to the zoo for acclimatisation.

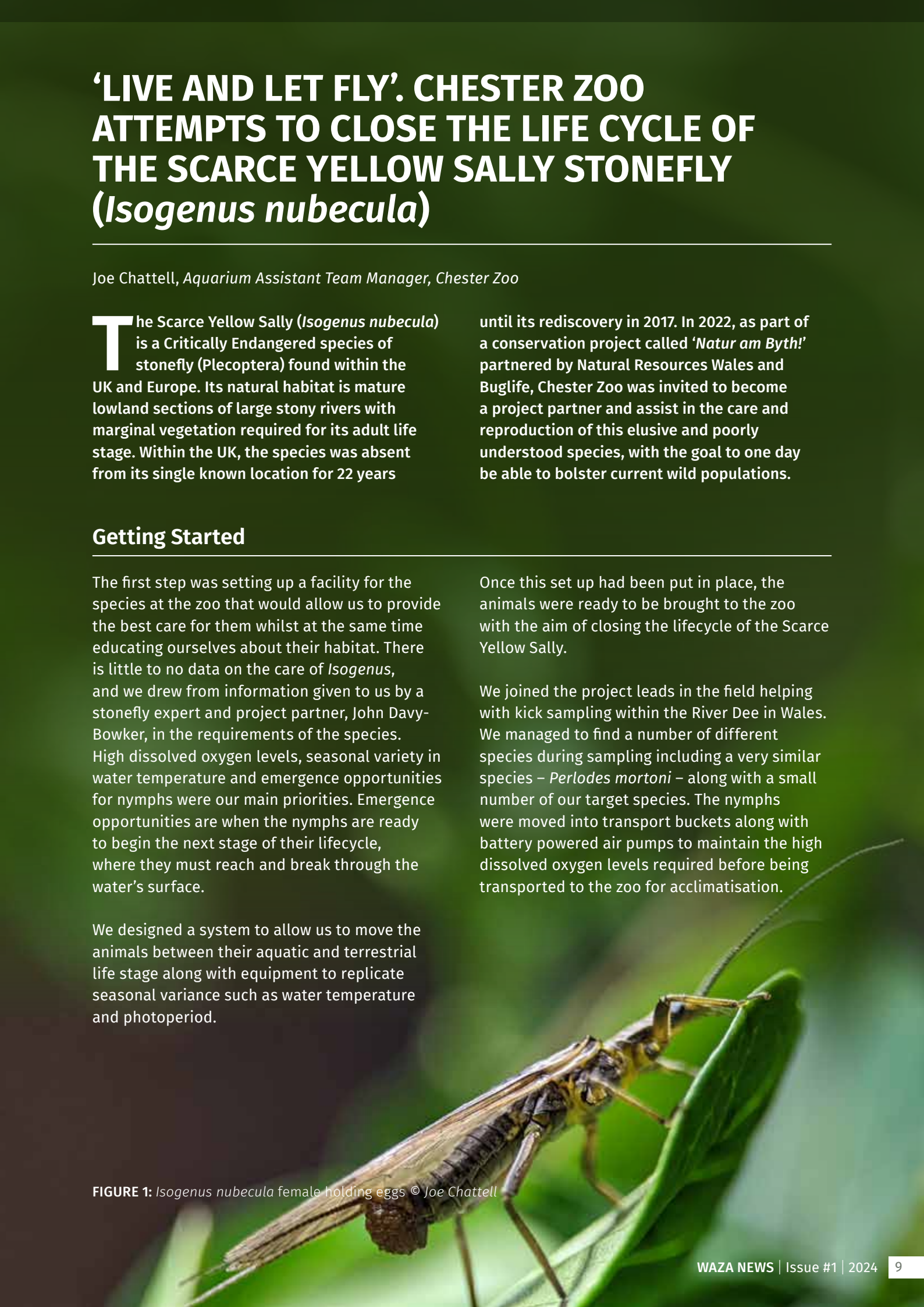

FIGURE 1: *Isogenus nubecula* female holding eggs © *Joe Chattell*

Husbandry

The animals settled into their new surroundings quickly and began to feed on live food such as White Worm and Grindal Worm. They were cared for in groups within 13l containers with aeration and a constant turnover of water via an inlet and overflow. Furnishings included pea gravel, cobbles, and emergent pieces of wood. Some began to develop thickened wing pads associated with emergence and were transferred into a tall mesh habitat within the system. Within a few days they moulted into their adult stage. Over the following weeks, all nymphs gradually replicated this process until only adult stoneflies remained. They were misted twice daily and provided with hawthorn as vegetation. The diet of adults is poorly documented with some evidence suggesting they may eat moss and lichens, however, on several occasions adults were seen amongst the hawthorn flowers and possibly feeding on pollen.

Reproduction

Mating in this species generally occurs 10–13 days after emergence. Prior to reproduction, male and female stoneflies will drum to each other. This behaviour involves the male rapidly tapping the end of his abdomen against a piece of wood and waiting for a female to reply. He will then triangulate her location and approach her to copulate. Once a female has successfully mated, she will no longer reply to the drumming of other males. After 24 hours the female will produce an egg mass that will be deposited within water. The adults will only live for 3–6 weeks so will most likely reproduce as many times as they can during their short lives.

We noticed several females carrying egg masses within our aquatic habitat despite not witnessing any drumming or mating. These females were transferred to smaller sparsely furnished boxes so we could document where the eggs were laid. There seemed to be no consistent pattern with eggs sometimes being laid on vegetation, the walls of the box, and in shallow water. We transferred the eggs in rotifer sieves placed within water to allow us to monitor them. This was relatively difficult with the eggs only measuring around 200 microns. Research suggested that the eggs could take anywhere from 30–78 days to hatch, so regular checks took place to monitor them. Small live food such as Banana Worm and Paramecium were added to the system every few days to ensure there would be food available should any nymphs hatch. We started to notice small nymphs not only in the rotifer sieves, but throughout the system including the filtration unit. These animals continued to grow well and from our initial 30 individuals, had risen to almost 200 individuals.

FIGURE 2: *Isogenus nubecula* nymphs © *Joe Chattell*

FIGURE 3: *Isogenus nubecula* adults © *Joe Chattell*

Scarce Yellow Sally stonefly nymph (*Isogenus nubecula*) © *Chester Zoo*

The Next Generation

Our new generation of stonefly nymphs continued to grow well and began to emerge as adults. They gave us an excellent opportunity to gather more reproductive data on the species to help further our knowledge. Our main objective was to capture an audio recording of the drumming behaviour as no audio existed for this species. A male and female were placed into a cardboard box, which in turn, was placed on an AudioMoth microphone to try to record this complex drumming. A data logger was placed into the box with the animals to look for any temperature trigger involved. We were successful in recording the drumming of this species and noted that the trigger for drumming was between 20.2 ºC and 24.7 ºC, with no drumming observed outside of this range.

Conclusion

Phase one of our work on the Scarce Yellow Sally Project has been a remarkable success and has given us a blueprint for this species to improve on in the future. The successful reproduction of the species at the zoo gives the project a safety net in terms of bolstering *in situ* populations. Much of our experiences with the species could also be transferred to other predatory Plecoptera species which are becoming increasingly threatened with river pollution.

Phase two of the project will investigate improving our on-site facility for the species, and joining Buglife and Natural Resources Wales in future survey work and raising awareness for the Scarce Yellow Sally.

We're enormously proud to be the first zoo to successfully breed this special stonefly, adding valuable scientific insight into the project, helping to safeguard the species and its future here in the UK.

Palmoil scan

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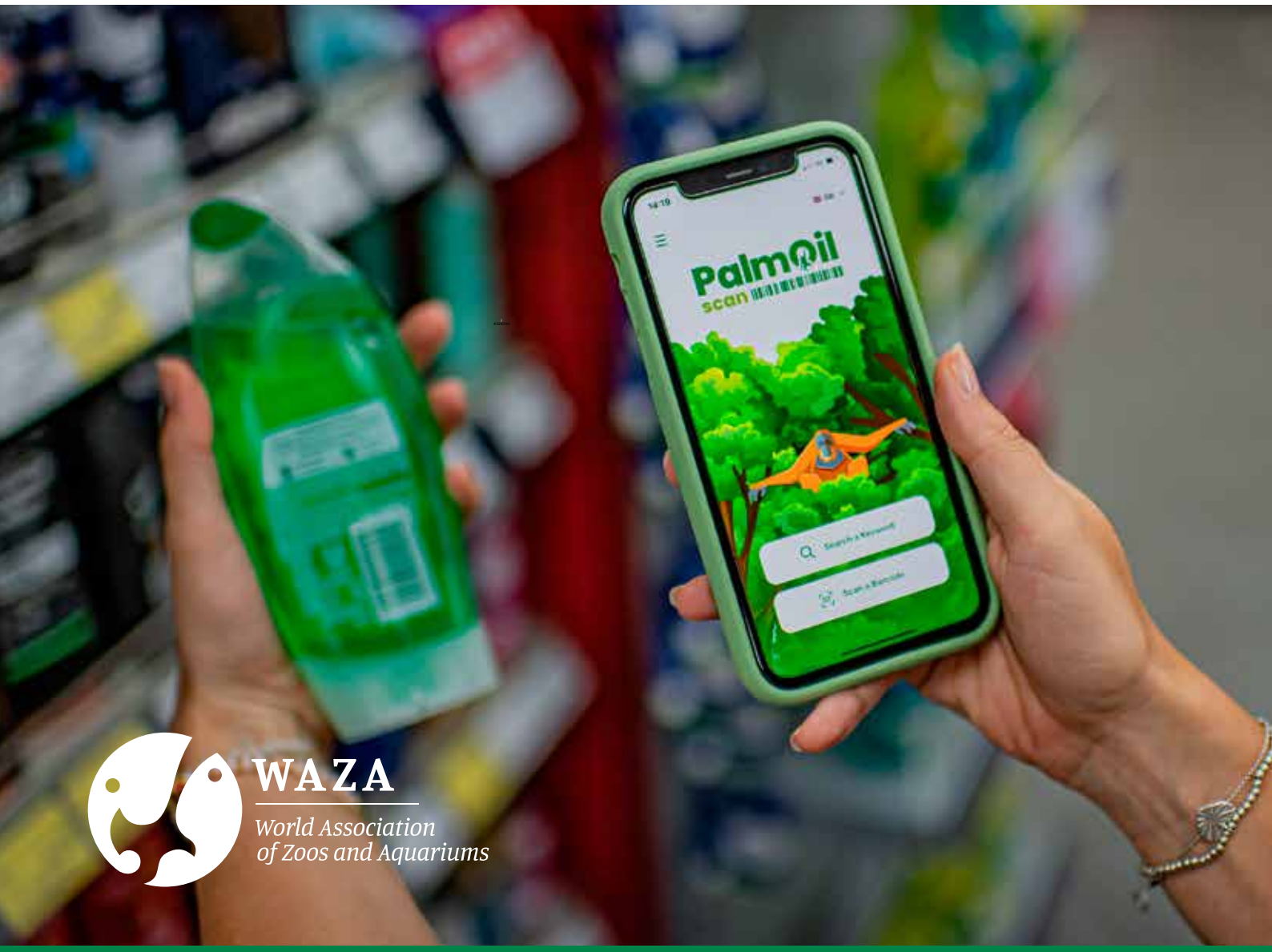

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ZOOS AND AQUARIUMS ARE CHANGING HOW THEY ENGAGE WITH INDIGENOUS PEOPLES AND LOCAL COMMUNITIES

Gretchen Walters, Samantha Sithole, Olivier Hymas
University of Lausanne, Institute of Geography and Sustainability, Lausanne, Switzerland

Zoos and aquariums can play an important role in interpreting nature conservation to the general public. In 2020, WAZA published a strategy entitled Social Change for Conservation: The World Zoo and Aquarium Conservation Education Strategy[1] which encourages zoos to work with partners such as communities to reach new audiences while being diverse, equitable, accessible and inclusive for visitors, communities, staff and volunteers.

Recent global agreements, such as the 2022 Kunming-Montreal Global Biodiversity Framework, encourage conservation organisations to take a stronger stance on including diverse perspectives. This gives zoos and aquariums the opportunity to engage with Indigenous peoples and local communities in ways that promote both positive community relationships and further species conservation.

Carving of *Tāne Mahuta* in *Te Wao Nui* © *Auckland Zoo*

Zoos and aquariums that are located on land that have current or historic ties to Indigenous or local communities, or carry-out species and ecosystem conservation through exhibits or projects with Indigenous peoples and local communities, are ideally situated to carry out conservation that includes diverse perspectives. Between February and June 2023, we talked with senior conservation scientists and chief executive officers from five WAZA member zoos around the world who told us about how they are changing their ways of collaborating with Indigenous peoples and local communities in the field and at the zoo. Here's what they had to say.

Representing cultures within zoo exhibits

In 1981 Seattle's Woodland Park Zoo created the Association of Zoos and Aquariums (AZA) award-winning African Savanna exhibit. In 2001, a replica of an African Village was added. This African Village was based on Maasai- and Kikuyu-inspired architecture and cultural interpretations about everyday village life and experiences at the intersection of people and wildlife. It was authenticated by a member of the Maasai community. However, 20 years later in 2020, following engagement with members of Seattle's East African immigrant community, the zoo realised that the exhibit no longer appropriately represented key perspectives of East African modern culture and conservation and the zoo decided to close parts of the exhibit[2]. Alejandro Grajal, president of Woodland Park Zoo[3], a Spanish biologist who grew up in Venezuela and is dedicated to social change in conservation, explained that, "*because Seattle has such a vibrant and diverse community, and because the world is made smaller by travel and technology, the zoo can and must seek the expertise of people who have direct connections to these places and biomes. By engaging community partners, we can work together to create connection and inspiration points that spark empathy and empowerment for conservation.*" He notes that zoos are "*catalysers of social change in conservation*" whereby zoos, like Woodland Park Zoo, can tap into a city's cultural diversity to make significant changes on how they engage with communities, moving beyond a Western view of ecosystems, to one that includes cultural perspectives. To do this, he created a team and made connections with cultural partners. For him, "*Change is happening to you or you make it happen.*" Following this approach, the Woodland Park Zoo has changed two out of 37 of their exhibits so far.

National Indigenous Peoples Day. Activities on site at the Toronto Zoo with Indigenous community partners
© Toronto Zoo, Canada, June 2023

Family visit to *Te Wao Nui* in Auckland Zoo © *Auckland Zoo*

Weaving Indigenous thought throughout the organisation

Auckland Zoo's position in the world is unique, with the strong cultural identity and influences of *Te Ao Māori* (the Māori worldview) that come from being a zoo in modern Aotearoa New Zealand. Reflecting this, Auckland Zoo is on a journey to strengthen its relationship with *Te Ao Māori* as part of its mission to '*bring people together to build a future for wildlife*'. The Zoo has a strategic roadmap that focuses on being both "*a community-focused cultural organisation*" and a "*modern wildlife conservation science organisation*"[4]. It aims to be recognised by the *Mana Whenua* (Māori with ancestral rights and authority of the land, native species and natural resources) of *Tāmaki Makaurau* Auckland as a "*valued and trusted partner in community and conservation initiatives*".

Auckland Zoo is progressing on how it authentically weaves Indigenous thought throughout all aspects of the organisation. This has involved an intentional evolution of how it delivers its master planning, habitat design, native species conservation fieldwork, conservation learning, public programming and community engagement. As this is a holistic approach to cultural change, the Zoo acknowledges that everyone at the Zoo has a part to play. Lyndelle Paniora, the Zoo's *Kaupapa Māori* Advisor leads in nurturing a vital aspect of this cultural journey to invest in and support all staff and volunteers with opportunities to build confidence and cultural capabilities in *Te Reo Māori* (Māori language) and strengthen their relationship with *Te Ao Māori*. The Zoo's approach to cultural safety is advancing through changes in policies, recruitment practices and organisational culture, and by listening to the voices and needs of the diverse communities that the Zoo serves. Dr Sarah Thomas, the Zoo's Head of Conservation Advocacy and Engagement says, "*We know we're just taking the first steps on a long-term journey, but we are committed to building meaningful, embedded and deep relationships with Te Ao Māori that drive better outcomes for people and nature*".

In Canada, the Toronto Zoo is rethinking their mission to integrate Indigenous knowledge. According to Dolf DeJong, CEO[5], they first began thinking about this issue during the pandemic, noting that "*to address conservation, we must first address social justice*". The Toronto Zoo acknowledges the land they are situated on is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples. They also acknowledge that Toronto is covered by Treaty 13 with the Mississaugas of the Credit and the Williams Treaty signed with multiple Mississaugas and Chippewa bands.

AUSTRALIA'S ZOOS VICTORIA

4

CONSERVATION-BASED ZOOS THROUGHOUT VICTORIA

35

LOCAL SPECIES INCLUDED IN THREATENED SPECIES RECOVERY EFFORTS

The Master Plan[6] opens the Zoo to dialogue with First Nations elders and community members about caring for mother Earth together and provides space on zoo land for Indigenous programming and cultural gatherings. Jennifer Franks, Director of Indigenous Relations[7], who is Red River Metis and a citizen of the Manitoba Metis Federation, is currently looking at the zoo's policies, processes such as procurement of clan animals at the zoo, and access to land by Indigenous community members. She notes that the Zoo is "*having an uncomfortable conversation about the colonial history of zoos*". In their exhibits, she mentions that there should be "*nothing about us without us*". The Zoo partners with Indigenous groups in various ways, including as advisors on how to teach and represent animals and conservation appropriately from a cultural perspective.

In situ conservation with Indigenous peoples and local communities

Australia's Zoos Victoria operates four conservation-based zoos throughout Victoria and supports threatened species recovery efforts for over 35 local species. According to Sally Sherwen, Head of the Wildlife Conservation and Science Team, the Zoo is undergoing a '*decolonising*' process that involves '*unlearning*' and reimagining approaches to zoo-based conservation. This process focuses on three broad areas: firstly, the review of processes and policies to ensure a more inclusive approach. Secondly, the review of design, interpretation and community engagement elements across the four zoo sites to identify areas that require change to more appropriately consider culture and any unintended messages that might be projected. Lastly, the review of field conservation programmes and the development of relationships and partnerships with First Peoples. For example, a need to better consider cultural protocols into wildlife response and rescue work has been identified to ensure that communities have the ability to decide how wildlife in their Country is managed. There is a need and opportunity for the sharing of expertise with First Peoples, if they so choose, on topics relevant to their Country Plans. It is hoped that this will lead to new ways of working and tackling the ongoing challenges for the health of the Country.

Lyndelle Paniora with the carving of *Tāne Mahuta* in *Te Wao Nui* © *Auckland Zoo, New Zealand*

Kaumātua blessing Auckland Zoo-bred *wētāpunga* prior to their release on Urupukapuka, Moturua and Motuarohia islands © *Auckland Zoo, Bay of Islands, New Zealand, June 2023*

Family visit to *Te Wao Nui* in Auckland Zoo © *Auckland Zoo*

Conclusion

Zoos and aquariums are key institutions which translate complex conservation ideas to a wider public while also engaging in the field of conservation. Often, they are the only link between urban public and rural conservation efforts, making them important institutions with great responsibility to represent aspects of conservation from the socio-cultural to the natural. Some zoos are located on land that has current or historic ties to Indigenous peoples and local communities, while others carry out conservation work with Indigenous peoples and local communities. Zoos in these positions should integrate into their work the conservation culture and views of these peoples. In turn, this opens up the opportunity to illustrate the different ways of valuing nature, increasing engagement with diverse groups, and improve species conservation.

Such work requires building trust and integrating communities and institutional commitment, which translates to higher impact and culturally appropriate conservation. According to Alejandro Grajal of the Woodland Park Zoo, "*Changing the tone of the exhibit*" is the last step: the zoo must first internalise a process of change. To make these changes, the zoos we interviewed underwent high-level internal discussions involving changes to their master plans, engaged consultants or sought counsel from local Indigenous communities or hired staff members from Indigenous communities. To move forward, general guidance that could be adapted to local situations appears to be useful, since these topics are relevant to many zoos and aquariums.

Acknowledgements

We wish to thank all the participants for giving their time to enable this article to be written, and Dr Martín Zordan (CEO of WAZA) for facilitating the correspondence between the authors and the zoos interviewed. In particular, we would like to extend our gratitude to Sarah Thomas (Head of Conservation Advocacy and Engagement) of the Auckland Zoo, Sally Sherwen (Director of Wildlife Conservation and Science) of Zoos Victoria, Dolf DeJong (CEO) and Jennifer Franks (Director of Indigenous Relations) of Toronto Zoo, Sara Basque (Executive Assistant to the CEO and Board Coordinator) and Alejandro Grajal (President and CEO) of Woodland Park Zoo, and Carlos Calvis (Head of Populations Department) of the Cali Zoo.

1. https://www.waza.org/priorities/community-conservation/the-ize-waza-education-strategy/
2. https://blog.zoo.org/2020/12/evolving-for-and-with-our-community.html
3. https://www.zoo.org/executive-leadership-team
4. https://cdn.aucklandunlimited.com/zoo/assets/media/auckland-zoo-strategic-roadmap-a5-16pp-2022.pdf
5. https://www.torontozoo.com/press/2018/!newsite.asp?pg=20180817
6. https://www.torontozoo.com/!/pdfs/temp/TZ_MasterplanBooklet.pdf
7. https://www.aza.org/connect-stories/stories/toronto-zoo-appoints-director-indigenous-relations

ANIMAL WELFARE BEYOND THE RESPONSIBILITY OF AN AREA, THE COMPREHENSIVE COMMITMENT OF AN INSTITUTION

DVM. ESP. Dave Wehdeking, *Zoo Manager at Cali Zoo*,
DVM Laura Cubides, *Animal Welfare Coordinator at Cali Zoo*

Jaguar (*Panthera onca*) enrichment © *Cali Zoo*

The processes concerned with animal welfare should be as holistic as possible within institutions. Though some departments may be more directly involved than others, the responsibility should not be borne solely. Budget allocation, cost evaluation and finally project execution all share an importance in nurturing an institutional culture of well-being.

To begin evaluating a well-being programme, we at Cali Zoo decided to take a critical look at our compliance with standards of species care, what elements we currently have in our favour, and what we hope to achieve. We began to develop a roadmap outlining good practices, mechanisms for continued improvement of processes and our overall approach to well-being within our institution. Concentrating initially on programmes such as preventive and reactive medicine, population management, enrichment, conditioning and nutrition, and how each area can be linked to processes while maximising positive impact.

Though we are an accredited institution we are based in Latin America and the realities that come with that. Implementing an institutional change of mindset has been hard work, from the caregivers through to the directors. In tackling this challenge we needed to accept that there were many aspects that needed to be improved. Identifying the necessary training was essential and our accreditation by the Association of Zoos and Aquariums (AZA) and the Latin American Association of Zoos and Aquariums (ALPZA) provided us with great tools to begin the process.

We undertook a training programme emphasising that well-being is an ongoing, evolving concern. Modifications were made to the process, and quality of life evaluations were introduced. These evaluations were oriented towards purposeful benefits for the animals, and focused on the individual needs of the species, nutritional requirements and population management. Effort was taken for caregivers to understand their roles as promoters of well-being, a conduit between the processes and the species under their care.

The purpose behind this initiative was to discover the current state of the well-being of our species and draw up improvement plans at all levels. In response to the growing demand and recognition of the importance of understanding and addressing the well-being of all species in our care, we have established coordination dedicated to the annual evaluation of well-being. Since 2022, we have implemented a new phase in this process by adopting the H.E.B.A tool, an innovative software developed by ALPZA. This tool not only allows us to measure, but also to effectively improve, the state of well-being of our animals.

The evaluation through H.E.B.A is structured around four essential domains of animal well-being: health, nutrition, behaviour and environment. Each of these approaches is evaluated through various indicators, generating findings that reveal both positive and negative aspects. This new phase not only represents an effective systematic way to specifically address and improve each crucial aspect of our animals' well-being but also strengthens our ability to ensure optimal and sustainable care.

The dynamics of the evaluation are divided into two distinctive phases: the first consists of the evaluation of 100% of the species, while the second focuses on the execution of the actions derived from said findings. Once all findings are compiled, a specific area of responsibility is assigned, accompanied by a proposed action plan and evidence to support the response. These findings are subsequently socialised with the personnel in charge, from management to wellness promoters, ensuring the comprehensive participation of the entire team.

This approach not only allows for the involvement of all levels of the animal welfare area but also fosters a collective commitment to continuous improvement. Knowing the current state of well-being of our animals and determining how we can improve becomes a team commitment. This transversal vision promotes a culture of constant care and attention.

With this transformation, we have managed to generate a comprehensive change at the institutional level, but we also seek, as a certified and pioneering institution in these processes, to become a facilitator for institutions in the region that express interest in developing a comprehensive animal welfare programme adapted to their reality, capacity and resources. In this way, we recognise that the more we generate and promote this culture in Latin America, the more knowledge we will jointly develop for the well-being of our animals.

Nutrition process © *Cali Zoo*

Preventive medicine in real time © *Cali Zoo*

Animal welfare assessment © *Cali Zoo*

ANIMALS AND NATURE – A VALUABLE RESOURCE FOR CHILDREN AT THE HOSPITAL

Jenny Loberg, *Head of Education at Nordens Ark*,
and Björn Johansson, *Educator at Nordens Ark*

Plaster cast of a wolverine foot-print being painted by a child © *Nordens Ark*

Children suffering from illnesses that might prohibit them from connecting to animals and nature, are offered equivalent digital experiences with the help of staff from Nordens Ark zoo. This is a three-year project with the aim of giving children at two hospitals in Sweden experiences connected to animals and nature, even though they are unable to visit the zoo.

There is research indicating that seeing or being in nature can have a pain-relieving effect on humans[1]. The natural environment and animals have been used in therapy for depression, and to increase well-being in different situations[1,2]. Over some years, we at Nordens Ark ran caretaker courses for those caring for people with disabilities. The aim was to encourage the caretakers to increase the number of activities spent in nature and with animals. This research was evaluated and published[3]. One of the main results from the study was that it revealed a more conscious exploring and sensory experience whilst spending time in the natural environment. Following these positive experiences, we wanted to expand our efforts to include children who for various reasons are hospitalised and have difficulties spending time in nature or with animals.

In this project, funded by the Swedish Inheritance Fund, we collaborate with two hospitals and their play therapists to meet children both at the hospital but also virtually. Play therapy is available for children and young people, up to the age of eighteen, who are in contact with the hospitals. They are characterised by rooms where children and families can play, process and prepare for upcoming medical examinations or treatments together with professional play therapists. Children who are unable to visit these rooms are visited by play therapists in their hospital department or care room. The play therapists focus on the healthy part of the children and young people by offering adapted play and meaningful activities. In this context, Nordens Ark contributes with experiences and knowledge about animals and nature.

During the first year we developed an interactive web application together with consultants to inspire and educate children about some of the species that we work with at Nordens Ark. In our efforts for the children to meet different types of species we have chosen one mammal, one bird and one amphibian where we are engaged in both *ex situ* and *in situ* conservation. Our aim is to raise more funding to increase the number of species in the web application.

Three different film series have been produced together with a professional filmmaker. The first series consists of short films with facts about animals. In the second series, one of our educators meets zookeepers and experts working with the animals in our zoo, and in the third series a 13-year-old boy helps the keepers to take care of different animals at the zoo. These films are available for the children on tablets that the project has funded and are kept by the staff at the play therapies. The most popular film series is the one in which the 13-year-old boy helps the keepers. It is apparent that it is more engaging for children to watch someone of an equal age.

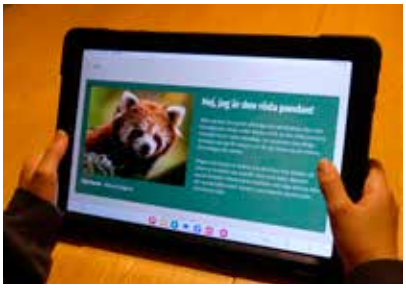
We also started to visit the hospitals and meet children individually once a week. During these visits we bring a virtual reality (VR) headset and invite children to experience the enclosure of our red pandas by using VR-technique. One of the goals for our second year of the project is to produce more films that can be experienced through VR. It is evident from our conversations with the children that seeing the enclosures with VR "*is almost like being there*". At one of their play therapies, the children's treatment schedules are adjusted to allow them to meet with the educator from Nordens Arks, where they have the opportunity of meeting our educator individually. Our experience so far is that many children appreciate the visits from us.

One of the goals we wish to achieve during year two and three is to have digital guided tours with a GoPro camera for the children who are unable to visit the park due to their health restrictions. During these tours the children can ask the guide questions and request what they would like to see. Not everything in the project is digital. We have bought a lot of books about animals and nature that are placed at the hospitals and are suitable for children of different ages. Also, board games and hobby equipment connected to animals and nature are provided. The educator brings different items from the zoo at every visit, such as feathers from birds at the park, skulls and horns, soft toys and equipment to follow animals that are released in the wild.

For children who are well enough to visit Nordens Ark at the end of the project period, we will plan individual visits tailored to each child. During these visits the children's parents and siblings will be invited and our hope is to give them an incredible day with many happy memories to share. We believe this will be beneficial for the children as well as their families. It gives the child something to look forward to during their treatment and is also a shared experience for siblings and parents.

To relate our experiences with personnel from other hospitals, we plan to organise a workshop at the end of the project. The workshop will preferably take place at Nordens Ark during the third year of the project, or at a national conference for persons working with children in play therapies all over Sweden.

We encourage other zoos to engage in outreach activities for people who have limited access to zoos or nature. These activities can increase quality of life and fulfil dreams for people.



Interactive webpage with information about the red panda © *Nordens Ark*

Nordens Ark educator and one of the play therapists together with one of the children visiting the play therapy © *Nordens Ark*

Virtual reality experience where the tablet shows what the child with the VR-headset is experiencing © *Nordens Ark*

References

1. Oh, B., Lee, K.J., Zaslawski, C., Yeung, A., Rosenthal, D., Larkey, L. & Back, M. (2017). Health and well-being benefits of spending time in forests: systematic review. *Environmental Health and Preventive Medicine* 22:71
2. Steigen, A.M., Eriksson, B., Kogstad, R.E., Toft, H.P. & Bergh, D. (2018). Young adults in nature-based services in Norway – In-group and between-group variations related to mental health problems. *Nordic Journal of Social Research* 9: 110–133
3. Sahlin, E., Johansson, B., Karlsson, P.O., Loberg, J., Niklasson, M. & Grahn, P. (2019). Improved wellbeing for both caretakers and users from a zoo-related nature based intervention – A study at Nordens Ark, Sweden. *International Journal of Environmental Research and Public Health* 16: 4929

WORLDWIDE COLLABORATION LEADS TO HOPE FOR EXTINCT PARTULA SNAILS

Kathleen Balogh, *Animal Care Manager at Akron Zoo*

Several species of Partula snails, a land snail, were once common in the South Pacific Islands. This small, herbivorous snail was vital to the ecological system of the French Polynesian islands by maintaining forest health. The snails supported plant respiration and contributed to important nutrient recycling as part of the wider Polynesian ecosystem. They were also an important cultural symbol used to decorate ceremonial wear and jewellery by native people.

In the 1960s, a non-native African land snail was established on the islands after escaping cultivation programmes. Unfortunately, this snail began eating local agricultural crops. In an attempt to control the infestation, yet another carnivorous snail was released.

This snail, the Florida rosy wolfsnail *(Euglandina rosea)*, preyed upon the Partula snail and began hunting and eating its way through nearly 76 species of the native Partula snail. More recently, a predatory species of flatworm was introduced to the islands which continues to add pressure to the native populations of snails.

It was determined in the 1990s that action was necessary. Zoological organisations created insurance populations in a collaborative effort to save a dozen of these Partula species. Today, there are 11 species of Partula considered extinct in the wild, one of which is the *Partula nodosa,* currently housed at the Akron Zoo.

Collaborative breeding efforts of 12 species across 19 institutions within zoos across the United States and the United Kingdom led to a massive reintroduction effort to re-establish these species in Tahiti and the surrounding islands. With 11 species and more than 25,000 snails released, this has now become the largest reintroduction of a species extinct in the wild known to mankind.

Partula snails at Akron Zoo prior to release © *Akron Zoo*

Akron Zoo partula snail team © *Akron Zoo*

In the fall of both 2016 and 2017, the Akron Zoo was able to send 60 *nodosa* to the island of Tahiti. At the time, this amount felt monumental to the zoo staff. Unfortunately, the population was initially unable to take hold. Recent breeding successes over the last several years, however, led to a large boom in the Akron Zoo population of snails. In September 2023, the Akron Zoo was able to release more than 1,400 snails back into the island of Tahiti.

Staff at the Akron Zoo worked closely with the St. Louis Zoo to prepare the snails for reintroduction. The snails were sent to St. Louis to go through a pre-quarantine period, where they were fed a pasteurised diet to comply with Tahiti's importation laws. Two members of the Akron Zoo's animal care team travelled to Tahiti ahead of the snails in order to receive the shipment from St. Louis. There the team met with partners from the Zoological Society of London (ZSL) and Cambridge University to assist with field work, monitoring the release of four other species to the island of Moorea.

In order for the snails to safely make the journey from St. Louis to Tahiti, the tiny travellers were made to go dormant in a state of aestivation. Once aestivated, they were carefully wrapped in tissue paper and then secured in empty paper towel rolls and marked for transfer. The snails were then packed with temperature and humidity data loggers and surrounded by bags of water to act as a buffer for temperature swings.

After clearing customs in Papeete, the snails were brought to the Direction de l'Environment (DIREN) environmental office for assessment. The Akron team, along with ZSL, carefully unpacked each snail and rehydrated them to end the aestivation period. The snails were fed and their overall health monitored throughout the process. Unlike previous releases, the snails were fed their normal formulated diet, along with leaves from Sea Hibiscus trees, which are a native species of plant that Partula snails had been known to feed on.

The transport was an outstanding success with only two mortalities. During their four-day recuperation period, and as a response to aestivation, the 1,000 snails quickly became 1,400 snails. All of the snails were marked with a specific UV reflective paint in order to make them easier to spot during field monitoring efforts.

THE LARGEST REINTRODUCTION OF A SPECIES EXTINCT IN THE WILD KNOWN TO MANKIND

11
SPECIES

25,000
SNAILS

Partula snail release close up © *Akron Zoo*

Akron Zoo Zookeeper Elizabeth Maille (left) and Animal Care Manager Kathleen Balogh (right) © *Akron Zoo*

Partula snails in containers prior to release © *Akron Zoo*

The snails were then transported to their release site as far as the island road would allow, and then hand carried into a closely monitored valley. The area was surveyed to look for the presence of *nodosa* from a previous release in 2022 of snails from Detroit Zoo and St. Louis Zoo. The field team was ecstatic to find what is believed to be a wild-born *nodosa* snail from previous releases.

The new Akron snails were placed into release pots mounted onto tree trunks approximately 1.5 metres above the ground. Six previous release sites were used as well as three new sites, which were identified by the field team as suitable.

The snails needed to make the final trek up into the forest canopy, where they will live for the remainder of their lives. This last leg of their journey was undoubtedly the toughest for the small snails due to the invasive predatory flatworms. In order to prevent the flatworms from reaching the snails, cloths soaked in sea water were wrapped around the trunk of the trees below the release pots as a trial. Biologists at DIREN theorise that the native snails should be able to tolerate small amounts of sea salt compared to the non-native flatworm.

The snails were again monitored the next morning to check for early mortalities, since the first few hours are suspected to be the most treacherous. The field team checked the tree canopy to see several of the snails at the 3–5-metre height. The forest floor was also carefully checked for marked shells to track mortality levels.

The field team was overjoyed to see less than 3% mortality over the first night. More mortalities are expected over time, but this had proven to be an extremely successful release and renewed hope for the tiny tree snail. The biologists at DIREN continue to monitor the sites and report their findings on a monthly basis. Mortality rates continue to be relatively low as compared to previous releases. In the months since the release, wild-born individuals have been spotted at the site.

The success of this release could have been contributed by several factors. The salt barrier may have been somewhat effective in protecting the snails as they climbed into the tree canopy. There was also a noticeable absence in the sheer numbers of invasive flatworms. This could have been due to the time of year the snails were released. The beginning of the rainy season may have been an ideal time of year to release this species, giving them the upper hand on their predators.

But undoubtedly, the most important factor leading to the successful release is the collaboration among several international partners. The passion and decades of dedication of these zoos, universities and government agencies have led to a herculean effort and new hope for the *Partula nodosa*.

SISTER ZOO PARTNERSHIP BETWEEN ZOOS IN PAPUA NEW GUINEA AND AUSTRALIA TURNS 10

Chris Banks, *Manager International Conservation, Zoos Victoria, Australia*

Zoos Victoria (ZV) has supported wildlife conservation in Papua New Guinea (PNG) since the late 1980s, initially on Long-beaked echidna research followed by conservation partnerships with the Tenkile Conservation Alliance and Tree Kangaroo Conservation Program[1]. This was expanded in 2013 with a sister zoo partnership with the Port Moresby Nature Park (PMNP). The partnership is the outcome of a recommendation in WAZA's 2005 Conservation Strategy, *Building a Future for Wildlife*, that "*well-resourced zoos and aquariums should develop partnerships with well-intentioned but under-resourced institutions*", i.e. sister zoo relationships[2].

The 12 hectare Nature Park was established in 1971 as the National Capital Botanic Gardens. While the botanical focus remains strong, significant change has occurred over the last decade and its lush vegetation, quality animal experiences and a calm escape from Port Moresby's hustle and bustle are consistently seeing the Park rated as number one on Trip Advisor as the best attraction in Port Moresby. More than 350 animals from almost 60 species native to PNG are on display in themed exhibits.

The shared goal of the ZV-PMNP partnership is "*collaboration to increase the institutional capacity of the Nature Park to become a zoo-based conservation organisation.*"
The relationship is managed strategically via three-year partnership agreements with agreed objectives, measurable targets and annual reviews. At the heart of the relationship is sharing of staff knowledge, skills and passion. The relationship works through identification of operational priorities at the Nature Park and subsequent alignment of those with the most effective mode of delivery, which is mainly visits by ZV or PMNP staff to each other's institution, with specific goals.

Raggiana Bird of Paradise (*Paradisaea raggiana*) © *C. Banks*

Supporter banner at POM Nature Park © *C. Banks*

Lead Nature Park Mammal Keeper Karo Karua at Healesville Sanctuary © *K. McBarron*

Melbourne Zoo Educator Geraint Stirling with school group at PMNP © *Port Moresby Nature Park*

±350

ANIMALS

FROM ALMOST

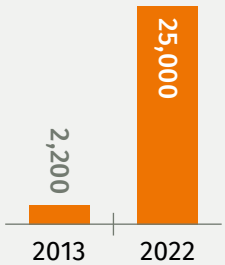
60

SPECIES

Native to Papua New Guinea are on display in themed exhibits

±22 800

STUDENT PARTICIPATION GROWTH 2013–2022



The partnership has a whole-of-organisation approach. Since the partnership began, more than 40 people across functional sectors of the two zoos have participated directly in Education, Horticulture, Master-planning, Retail, Animal husbandry and Welfare, Interpretation, Environmental Sustainability, Veterinary care, Membership programmes and Board management.

In addition, remote support and advice has been provided for Information Technology and Workplace Health and Safety. External support for some of the training has also come from the Australian Government's Australian Volunteers International Program.

Strengthening education outcomes

Education has been a major focus since the beginning, with continual development and review of the Park's education programme resulting in the growth of student participation from 2,200 in 2013 to over 25,000 in 2022. Its World Wildlife Week Program, for which the Park won the Small Institution Education award from the Zoo & Aquarium Association (ZAA, Australasia) in 2018, focuses on three main themes – '*City people don't eat bush-meat*', '*Don't buy native animals as pets*' and '*Lukautim bilas bilong yu*' (look after your traditional dress/adornments). The last-mentioned encourages people to store their traditional items (eg. possum skins and bird feathers) carefully to allow them to be used for multiple years, rather than replacing them each year. The programme is a highlight of the Nature Park's commitment to education for students in Port Moresby.

In 2022, Zoos Victoria and Port Moresby Nature Park (ZV and PMNP) teamed up to deliver '*Skul na Komuniti Save Projek*' (School and Community Citizen Science Project) to 14 secondary schools across Australia and Papua New Guinea. The project was part of the PNG-Aus Secondary Schools Partnership, an initiative of the Australian High Commission Port Moresby and the Australian Department of Foreign Affairs and Trade, and supported by Asia Education Foundation and Australia Awards Papua New Guinea.

Damian Goodall, ZV Frog Specialist (rear), with PMNP keepers Ryan Reuma (front) & Dougie Solomon (middle) © *Port Moresby Nature Park*

It strengthens the ties between secondary schools in Australia and PNG through the exchange of education ideas and collaboration on projects. The focus is STEM for Year 9–11 students. Students from both countries came together to learn about bird biology, habitats and migration. Students collected and analysed bird observation data, using the power of eBird – the world's largest biodiversity-related citizen science platform. They then shared their findings with each other and with zoo scientists via video. Teachers built their capacity to include STEM and wildlife conservation in their curriculum and were provided with a range of lessons and resources that they can use again in the future. The programme also ran in 2023.

These many collaborations underpinned the Park's induction into the Trip Advisor Hall of Fame in 2019. The Park is an accredited member of the Zoo & Aquarium Association (ZAA) and has won ZAA awards for Sister Zoo Capacity Development Program (2016; Innovation Award for the sister zoo programme), Small Institution Education (2018), and Small Institution Exhibit Design and Engagement (2021). The Engagement Award was for 'Snaketastic', a snake appreciation and first aid community project, noting that there are 1,000+ deaths from snake-bites each year in PNG.

Increased exposure to the broader PNG community is delivered through weekly coverage in 'The National', PNG's premier daily newspaper. This profiles a full page '*Kids Nature Talk*' section that enables the Park to share its educational messages across all of PNG and is a wonderful step towards building a more actively-engaged community. The importance of this goal speaks to PNG's global significance as an area of exceptional biodiversity, but which faces significant challenges for its protection and sustainable management.

Protecting PNG frogs

Papua New Guinea's frogs are a perfect example of this challenge. More than 400 species are currently described, but this is considered to be only about half of the total inhabiting this island[3]. Equally significant is that the best available knowledge points to PNG being the world's last large landmass that has not been affected by the Amphibian Chytrid Fungus – a disease that has decimated frog populations elsewhere across the globe[4]. Zoos Victoria and the Nature Park are working with Australian scientists and the PNG Government to overcome this threat and develop a plan to future-proof PNG frogs and build management capacity at the Park. A public display was opened in 2018 and three species are being maintained and bred or raised from wild-laid eggs, another first for a PNG institution[5]. The impacts of the Covid pandemic slowed progress with this initiative, but it is now being reinvigorated.

In 2019, ZV and the Nature Park participated with other experts as the host for an IUCN Red List review and Amphibian Ark Conservation Needs Assessment of PNG frogs. This identified 22 species as being Near Threatened, Vulnerable or Critically Endangered, with another four as Data Deficient. Subsequent evaluation resulted in 27 species being added to the IUCN Red List in 2020.

IUCN RED LIST REVIEW AND AMPHIBIAN ARK CONSERVATION ASSESSMENT OF PNG FROGS

22

SPECIES

Identified as being Near Threatened, Vulnerable or Critically Endangered

NT VU CR

4

SPECIES

Identified as Data Deficient

DD

WAZA members are invited to share their experiences with the author if they are engaged in similar sister zoo partnerships at

cbanks@zoo.org.au

Melbourne Zoo Sustainability Manager Tom Meek with Nature Park Green Team
© Port Moresby Nature Park

Creation of the Park's 'Green Team' focused on improving the Park's environmental footprint and, as one of the first for a PNG organisation, has enabled a transition to better recycling outcomes; use of bore and rainwater harvesting, and solar power to generate night lighting around the Park, with reductions of up to 30% annually in the Park's water consumption and electricity usage. Additionally, the Park established composting stations to recycle food waste generated from their café and accepts old vegetable waste from a local hydroponic business, as well as green waste from within the Park.

Zoos Victoria has a long-term commitment to wildlife conservation and beneficial outcomes for people in PNG. Our decade-long partnership with the Port Moresby Nature Park, including through difficult times such as during the Covid pandemic, is a hugely important vehicle in helping to deliver that commitment. It is also a wonderful platform for building friendships and acknowledging the skills, knowledge and passion of the dedicated people working at both of these zoos.

References

1. Banks, C. (2018). Saving species, one brew at a time. *Wildlife Australia Spring* 2018: 24–25.
2. WAZA (2005). Building a Future for Wildlife – The World Zoo and Aquarium Conservation Strategy. WAZA 2005.
3. Menzies, J. (2006). The frogs of New Guinea and the Solomon Islands. *Pensoft Publishers*, Sofia.
4. Bower, S.D, Lips, K.R., Amepou, Y, Richards, S., Dahl, C., Nagombi, E., Supuma, M., Dabek, L., Alford, R.A., Schwarzkopf, L., Ziembicki, M., Noro, J.N., Hamidy, A., Gillespie, G.R., Berger, L., Eisemberg, C., Li, Y., Liu, X., Jennings, C.K., Tjaturadi, B., Peters, A., Krockenberger, A.K., Nason, D., Kusrini, M.D., Webb, R.J., Skerratt, L.F., Banks, C., Mack, A.J., Georges, A., and Clulow, S. (2019). Island of opportunity: can New Guinea protect amphibians from a globally emerging pathogen? *Front. Ecol. Environ*. 20257–2063.
5. Reuma, R. and Banks, C. (2022) Update from Port Moresby Nature Park, Papua New Guinea. *AArk Newsletter 57*, March 2022.

THE "DAY OF THE FIRE SALAMANDER" WAS CELEBRATED FOR THE FIRST TIME

Sandra Honigs, *Aquazoo Löbbecke Museum, Düsseldorf, Germany*

Compared to the frogs (Anura), comparatively few species of Caudata are native to Europe. A maximum of seven species of caudates live in Germany, with the fire salamander (*Salamandra salamandra* (Linnaeus, 1758)) being the most famous. The charismatic amphibian is listed on Germany's Red List of endangered species[6,7] in the "early warning species list" (the species, not the subspecies). The total proportion of its European distribution in Germany is 10% and two subspecies are known here: the spotted fire salamander (*S. s. terrestris*) is widespread in the north, west and south, and the nominate form (*S. s. salamandra*) in the extreme south-east of Bavaria and Saxony. In central Germany there is a broad transition zone in which mixed populations are existing. Numerous other subspecies and related species exist in Europe[3]. In the IUCN Red List[8], the fire salamander is classified as Vulnerable, however with a declining population trend (IUCN SSC Amphibian Specialist Group, 2023).

In Germany, many people remember the fire salamander from their childhood, as until a few years ago it was a commonly encountered wild animal on hiking tours in forests. Many people are unaware that this well-known native amphibian is now facing a very serious threat. The dramatic decline in the population of this species is partly due to habitat loss and partly to an often fatal disease, in Germany known as "salamander eater" or "salamander plague". This fungal disease is caused by a relatively new species of a pathogenic fungus (*Batrachochytrium salamandrivorans* (Chytridiomycota), for short "Bsal"). After *B. dendrobatitis*, this is another pathogen that has a devastating effect on the amphibian world. Bsal was first scientifically described on September 3rd 2013[4], and now has its core distribution in Europe in the Eifel region of Germany[2]. The fungus was introduced to Europe from Asia through the amphibian trade[1] and first appeared in the Netherlands and Belgium[4,5]. In regions where Bsal occurs, massive population declines were observed, especially in north-west Europe.

Participant of the scientific lecture programme at the Aquazoo Düsseldorf together with Lurchi

Therefore, on the initiative of the Aquazoo Löbbecke Museum, Düsseldorf (Germany), the 3rd of September has now been proclaimed as the "Day of the fire salamander" – to counter the danger with something positive. In addition to World Frog Day (20th March), Waterfrog Day (1st April), Salamander Saturday (first Saturday in May) and Save the Frogs Day (last Saturday in April), the amphibian community can now also celebrate the Fire Salamander Day, for the first time in 2023. The Aquazoo was joined by more than 30 organisations, associations, zoological institutions, nature parks and protected areas across Germany and Austria to celebrate one of Europe's most charismatic and largest amphibians. This event was a great way to promote the conservation of this species and raise public awareness of the fire salamanders' threats. The day was celebrated with posts on the internet as well as inspiring actions by the various participants. Therefore, the festival included many creative games, craft activities and illustrative information points that presented the fire salamander in an entertaining way. For example, there was a giant fire salamander puzzle and beautiful stickers of this animal in Schönbrunn Zoo (Vienna, Austria). Numerous institutions offered illustrative information desks in cooperation with organisations such as the German Nature and Biodiversity Conservation Union (NABU), the German Society for Herpetology and Terrarium Science (DGHT) and the Vivarium Association (ViVe). Video contributions also livened up the programme (Frogs & Friends). In many places, creative handicrafts were carried out and salamanders were made out of cardboard and painted on T-shirts (Augsburg Zoo, Germany), creative pictures with colourful salamanders and dioramas of the salamanders' habitat (Bochum Zoo, Germany), a quiz (Wolgast Tannenkamp Zoo, Germany) and various puzzles (Aquazoo Düsseldorf) about the fire salamander attracted curious people of all ages. Special guided tours and excursions were offered in many places. All participating institutions were provided with an infopack (posters, flyers, a logo and a "Salamandala") by the Aquazoo.

An important message to all guests was, that research about Bsal needs to be supported financially. Therefore, there was an opportunity to collect donations for research projects. In addition, the need to keep and breed fire salamanders in order to preserve this species for the future was explained. There are informations on various approaches to this: Initiatives by the Amphibian-Taxon Advisory Group of the European Association of Zoos and Aquaria (EAZA), such as a breeding programme by the *ex situ* Salamandra Group (ESG) and the creation of the Best Practice Guidelines[9] and by private organisations, such as breeding for conservation by Citizen Conservation.

Information material about the fire salamander (*Salamandra salamandra*) © *Tierpark Tannenkamp Wolgast, Germany*

The artist Jörg Mazur signs his limited edition bronze sculpture "Halt durch kleiner Lurch" © *Aquazoo Löbbecke Museum*

Diorama with artificial fire salamander to represent its habitat in the Tierpark and Fossilium Bochum, Germany *© Mr. Kriener, NABU Bochum, Tierpark Bochum*

Handmade T-shirts depicting salamanders presented by Barbara Hilbich, Head of Marketing at Augsburg Zoo, Germany *© P. Bretschneider, Augsburg Zoo*

This organisation, which has its origin in Germany, combines the capacities and expertise of zoological institutions and private keepers to conserve selected endangered species. In this way, even more species can be kept and preserved. Since available space in zoos and aquariums is limited, well-organised private keepers also play a decisive role in terms of species conservation and professional exchange (more information at https://citizen-conservation.org). The Aquazoo has a long tradition of keeping and breeding fire salamanders, which is why this species is also a focus species of the Breeding and Conservation station for Amphibians there. The station is also involved in the Citizen Conservation project with a group of fire salamanders.

There was a public lecture programme at the Aquazoo, in which Zoo Wuppertal and the universities of Wuppertal and Leipzig also participated with actual research results. The Species Conservation Foundation (Stiftung Artenschutz) and Citizen Conservation presented their projects for the protection of endangered amphibians and the local Lower Nature Conservation Authority discussed the occurrence of the fire salamander in the area of Düsseldorf. An important piece of information for all guests was how to behave in the forest and on hikes in order to curb the rapid spread of Bsal. The habitat of the fire salamander, cool deciduous, mixed or sometimes coniferous forests with well-shaded streams and small rivers, is a favourite destination for excursions and hikes in many parts of Europe. As early as 2015, there was a call for volunteers (Lötters *et al*., 2015) to report dead or ill-looking fire salamanders in order to clarify the distribution of Bsal in Germany. The public still has the opportunity to contribute to the research and protection of the fire salamander.

Creative colleagues of the Aquazoo designed individual 3-D print figures of the fire salamander (© Hellbender Museum). These 39 unique specimens were sold for the benefit of the fire salamander conservation project. The very differently designed figures are meant to illustrate each animal's individuality through its very own pattern and how valuable each individual is for biodiversity. A much larger sculpture in bronze was created by the German artist Jörg Mazur. This bronze sculpture "*Halt durch kleiner Lurch*" (Hold on little amphibian) shows a friendly Caudata reaching out to mankind and promoting the protection of its real-life conspecifics. The limited edition sculpture is available for purchase at the Aquazoo. Part of the financial income will go to the fire salamander protection project.

Big fire salamander Puzzle in Vienna Zoo Schönbrunn *© www.zupanc.at Schönbrunn*

TAKE PART IN THE FIRE SALAMANDER DAY IN 2024

REGISTER

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References:

1. Auliya, M., García-Moreno, J., Schmidt, B. R. *et al*. (2016) The global amphibian trade flows through Europe: the need for enforcing and improving legislation. Biodiversity Conservation, 25: 2581–2595. https://doi.org/10.1007/s10531-016-1193-8.
2. Bolte, L., Goudarzi, F., Klenke, R., Steinfartz, S., Grimm-Seyfarth, A. & Henle, K. (2023) Habitat connectivity supports the local abundance of fire salamanders (*Salamandra salamandra*) but also the spread of Batrachochytrium salamandrivorans. Landscape Ecology 38: 1537–1554 Vol.: (0123456789), https://doi.org/10.1007/s10980-023-01636-8.
3. Frost, D.R. (2023) Amphibian Species of the World: an Online Reference. Version 6.2 (26. Dez 2023). Electronic Database accessible at https://amphibiansoftheworld.amnh.org/index.php. American Museum of Natural History, New York, USA. doi.org/10.5531/db.vz.0001.
4. Martel, A., Spitzen-van der Sluijs, A., Blooi, M., Bert, W., Ducatelle, R., Fisher, M. C., Woeltjes, A., Bosman, W., Chiers, K., Bossuyt, F. & Pasmans, F. (2013) *Batrachochytrium salamandrivorans* sp. nov. causes lethal chytridiomycosis in amphibians. Biological Science, Proceedings of the National Academy of Sciences (PNAS) 110(38): 15325–15329.
5. Martel, A., Blooi, M., Adriaensen, C., Van Rooij, P., Beukema, W., Fisher, M. C. *et al*. (2014) Recent introduction of a chytrid fungus endangers Western Palearctic salamanders. Science 346(6209): 630–631.
6. Rote-Liste-Gremium Amphibien und Reptilien (2020) Rote Liste und Gesamtartenliste der Amphibien (Amphibia) Deutschlands. – Naturschutz und Biologische Vielfalt 170 (4): 86 pp.
7. https://www.rote-liste-zentrum.de/de/Detailseite.html?species_uuid=74ac0ebf-2a5e-468b-8114-70d5668d3044.
8. IUCN SSC Amphibian Specialist Group (2023) *Salamandra salamandra*. The IUCN Red List of Threatened Species 2023: e.T59467A219148292. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T59467A219148292.en. Accessed on 26 December 2023.
9. Bogaerts, S., S. Lötters, A. Spitzen-van der Sluijs, K. Preißler, B. Caspers, P. Oswald, C.J. Michaels, T. ter Meulen, T. Reinhardt, A. Martel & F. Pasmans (2021) EAZA Amphibian Taxon Advisory Group, Best Practice Guidelines (striped) fire salamander, *Salamandra salamandra* (*terrestris*). – First edition. European Association of Zoos and Aquariums, Amsterdam, The Netherlands, 69 pp.

The fire salamander (*Salamandra salamandra*) is in danger! © *Aquazoo Löbbecke Museum*

WAZA MEMBERS PARTNER FOR THE DEVELOPMENT OF ATTRACTION IN FRENCH ZOO

Anja D'Hondt, *Managing Partner at BoldMove Nation*

Multiple awarded Champi'Folies family attraction offers seamless transition between attraction and animal park.

Leisure venues are diversifying their offering so they can meet visitor expectations of all ages and preferences. Families looking for an entertaining afternoon, teenagers searching for fun challenges, friends enjoying a relaxing time amongst animals and nature. Whilst loud outdoor attractions are more difficult to integrate in an animal park, an indoor family attraction is the perfect solution for all-weather entertainment!

With more than 1,000 animals and 31 attractions, Le PAL is recognised as one of the leading attraction parks and zoos in the Auvergne-Rhône-Alpes region of France. Created 50 years ago, this family-run institution is a place for animal and nature discovery as well as entertainment. Certified as 'Sustainable Tourism', Le PAL is committed to public education and biodiversity conservation with its numerous educational programmes and the Le PAL Nature Foundation. Its immersive accommodations, a unique safari-like style hotel extended over 9–12 acres based in Europe, but made to feel like the heart of the African savannah, Les Lodges du PAL and Le Savana Reserve, make the park a tourist destination and allow it to attract an ever-growing clientele.

The addition of the indoor Champi'Folies attraction last season further cements the park's reputation as a must-visit destination for families. This exciting media dark ride merges an immersive storyline with thrilling action and impressive theming, combining digital and physical elements. Guests are taken on an unforgettable journey through a world of hilarious mushrooms they need to freeze during their frantic invasion from the forest into the city. At Le PAL the attraction was integrated into an existing building which housed a 4D-cinema. The ride is a development by Triotech and BoldMove, as part of their Smash & Reload media dark ride family. It recently received the International Association of Amusement Parks and Attractions (IAAPA) Brass Ring award in Orlando for best new product, as well as the Parkscout and European Star Awards for best new family attraction in 2023.

Champi'Folies family attraction exterior © *Thomas Faull Photography, BoldMove Nation*

Arnaud Bennet, President of Le PAL, comments: *"Champi'Folies introduces a new 'species' that speaks to the heart of our visitors, who are warmly embracing these cute TooMush characters. It is a pleasure to see that young and old enjoy this immersive experience side by side in a friendly competition. The attraction offers a seamless transition between the theme and animal park, re-energising this park area with a weatherproof attraction. We are really pleased with the cooperation, which results in a high-quality and fun attraction with rich theming."*

Next-generation interactive attraction with high capacity

Smash & Reload is a family of media-based interactive dark rides, developed by BoldMove Nation and Triotech, combining fun gameplay with a smart ride system on a compact footprint. It can stand alone or be integrated in a park area, and perfectly combines with other attractions. This high-energy dark ride is future-proof due to its advanced and proven technology with upgradeable media content. The easy gameplay ensures an interactive all-family experience with a choice of different characters and theming, up to a fully customisable format. With its amazing visitor capacity, Smash & Reload offers the best price to throughput ratio across the industry with high repeatability, and it is weather-proof for all-year round operations. The centralised projection system keeps the entire attraction compact and maintenance-savvy, without compromising on fun.

Inclusive ride recipe for immersive experiences

The gameplay of the ride is easy and fun, making it a true delight for visitors of different age groups. Grandparents and grandchildren playing together, competitive players searching for hidden clues to get the highest score... the ride is totally inclusive, providing entertainment for all skill levels.

While Smash & Reload was designed as a product, it is customisable to the specific park environment and visitor dynamics. The media contains many elements that can be adjusted to individual occasions like a birthday, an event or seasonal park activities. Whatever area or corner the eyes can see is decorated with many elements to be discovered. This feeling of total immersion is made possible thanks to the small footprint of the ride. However, despite the compact size, the ride itself feels much larger and provides a perfect playing duration. The reload stations bring variety to the gameplay, and by use of moving media scenes players experience an exciting adventure from their vehicle. The combination of all of these elements guarantees that this ride provides the best value for money on the market, while delivering a great throughput.

Champi'Folies attraction © *Thomas Faull Photography, BoldMove Nation*

TooMush Forest Gameplay © *BoldMove Nation*

Blending physical and virtual environments

As for the 'virtual' environment, the design team developed a complete 360° view of the world surrounding the hill where the Mushies are present. This physical world is not only 'mirroring' the virtual one, but also completes it with a perfectly matching decoration. The physical world has a purpose since it is in this environment that the visitors reload the 'cubers' with enough ice cubes to cool down the Mushies and contain the invasion. Characters are brought alive on screen, and Artificial Intelligence is added to personalise guest experiences.

Because the ride is very limited in terms of square footage, a rich and intense tri-dimensional environment was created, which is normally only reserved for higher budget installations. Both the virtual world and the physical world share some common objects. Players will see certain virtual elements of a digital scene as props in the decoration of another scene. The cherry on the cake is the extensive theming which was created with 3D decoration up to a real car, all of these reflecting their digital counterparts.

Guests can experience Champi'Folies at Le PAL and discover the thrilling world of the TooMush characters for themselves. The group-play combined with the friendly competition to get the highest score encourages replayability of this new family-oriented attraction.

About Triotech

Triotech, market leader in digital interactive attractions

Triotech is the creator of award-winning immersive and interactive media-based attractions for the entertainment and edutainment market. With thousands of attractions and games deployed in 65 countries across all continents, more than 985 million guests have had a Triotech experience over the last 20 years. Triotech creates attractions such as Interactive and 4D Theatres, Dark Rides, Virtual Reality attractions, Flying Theatres, Walkthroughs, Dark Coasters, edutainment experiences and a multitude of coin-operated games. Triotech offers integrated turnkey solutions including content developed in its own studio in Montreal, Canada. Founded in 1999, Triotech is a privately held group with over 200 employees deployed in Canada, Europe, the USA and Asia.

About BoldMove Nation

BoldMove Nation creates happy worlds for leisure, tourism and retail venues. Media-based attractions are based on proven technologies and fun gameplay around compelling stories for immersive visitor experiences. With the customer interest at heart, the BoldMove Nation team offers turnkey creative and experience design services from master planning to installation, with a broad choice of IPs and theming. Products include Smash & Reload media dark rides with TooMush, Voodoo or custom theming, and Artificial Reality Walkthroughs like Raptor Expedition. Established in 2021, the team is headquartered in Brussels, Belgium and headed by interactive dark ride veteran Benoit Cornet as CEO, and Managing Partner Anja D'Hondt.

For further questions or a live presentation, contact us: anja@boldmove-nation.com

Watch ride experience video here

THE 2023 INTERNATIONAL ZOO EDUCATORS CONFERENCE

Dr Sarah Thomas, *Vice President International Zoo Educators Association/Auckland Zoo New Zealand* and Lian Wilson, *Journal Editor International Zoo Educators Association/Zoos Victoria Australia*

Delegates at IZE Conference © *IZE*

Forging Connections and Building Professional Capacity at the 2023 International Zoo Educators Conference, Wellington Zoo, 16–20 October 2023.

What happens when you bring 144 delegates from 28 countries together on a South Pacific island for the 26th Biennial IZE Conference? The answer is a week of quality professional development through global knowledge exchange, networking and collaborative conversations structured around the chapter themes in Social Change for Conservation – the World Zoo and Aquarium Conservation Education Strategy. Feedback from participants confirmed the value and positive impacts IZE Conferences have on several levels. Multiple benefits were reported by the individuals who attended, noting that gatherings such as these catalyse the collective progress of conservation education in global zoos and aquariums, with the knowledge acquired from the conference being shared widely with colleagues.

Excellently hosted by Wellington Zoo, whose mission is '*Me tiaki, kia ora – we must look after our environment so all life can flourish*' informed the conference's title – Caring for Animals, Caring for our Planet, Caring for People. The conference format included in-person talks, short video presentations, workshops, discussion sessions and a social programme against the backdrop of Wellington. Delegates enjoyed spending time in the beautiful capital city of Aotearoa, New Zealand, which has a rich mix of nature, culture and of course welcoming Kiwi hospitality.

Some of the conference highlights are listed below. There was positive feedback from delegates who were unanimously impressed by the diversity of topics, variety of global speakers and the quality and usefulness of the conference content overall.

Diversity, Equity Inclusion and Belonging (DEIB)

In exploring the area of DEIB, we were encouraged to consider how we are building belonging for our staff, visitors and communities. Belonging is the feeling of being accepted and part of a community and goes hand in hand with strategies for DEI. The keynote speaker, Mary Haddock-Staniland, who is renowned for her dedication to advocating for change and her unwavering commitment to creating a more equitable world, gave a masterclass on how to consider barriers and that their removal is the goal beyond equity. Presenters shared with the delegates various tools, programmes and community relationships they are building to support DEIB to make our spaces more welcoming and inclusive, with the aim of expanding our audience reach and support conservation education for all. Particularly relevant to the conference being held in Aotearoa, New Zealand, a bicultural country on a journey to strengthen its relationship with *Te Ao Māori* (Māori worldview).

Delegates learnt and reflected on weaving Indigenous knowledge systems into zoos and aquariums. Talena Hansen from Auckland Zoo shared pertinent advice which was "*be comfortable with being uncomfortable*" and "*acknowledge that mistakes will be made on the journey and not to let fear of getting it wrong or being corrected halt progress.*"

Conservation Education and Youth Engagement

The conference also explored youth engagement – involving diverse young people in zoo and aquarium work and decision-making. As future leaders of the conservation field, providing young people with the opportunity to develop and practice skills to care for and save wildlife is critical to our success in tackling the current and future issues wildlife face. We heard from the keynote speaker George Hobson, a 20-year-old local Wellingtonian and conservation activist, who reflected on his own experiences and shared examples of authentic and effective youth engagement and tips to involve youth meaningfully. We were encouraged to trust young people to take responsibility and that having a network of youth helps inspire each other and keeps the hope and passion alive. Delegates were cautioned not to use normal metrics to measure the impact of youth engagement and to instead focus on the longer-term impact, skills and confidence. Presenters shared their youth programmes, including paid apprenticeships to build skills and professional networks, and programmes that support teens (13–18 year-olds) to develop their own sense of agency through creating conservation projects/campaigns.

Driving Social Change

There was a strong theme of leading positive change throughout the conference. Another keynote speaker, Doug Walker, President of the New Zealand Association of Science Educators, showed that innovative and often explosive approaches to teaching science connects more young people across New Zealand to science and conservation career pathways. We heard global perspectives on how awe, wonder and building empathy for wildlife are core factors that drive impactful conservation and social outcomes. In addition, several zoos and aquariums evidenced how they are using health, well-being, and nature connectedness frameworks to nurture positive changes in their communities, as well as how human health and wellbeing are linked to driving behavioural changes that benefit people and nature. We gained insight into different behaviour change models and practices through a new consumer-based conservation campaign on wildlife-friendly coffee, WAZA's Palm Oil Scan App and how zoos can use behaviour change theory to increase their impact and contribute to biodiversity conservation.

Delegates at IZE Conference © *IZE*

WHAT IS THE INTERNATIONAL ZOO EDUCATORS ASSOCIATION (IZE)?

IZE has members from almost 60 countries, dedicated to conserving global biodiversity and expanding the educational impact of zoo and aquarium programmes. With the mission of achieving biodiversity conservation by encouraging sustainable behaviours in people who visit zoos and aquariums, members are supported with access to programmes that build professional capacity, online conservation education resources, networking and a high-quality journal.

JOIN AS A MEMBER TODAY

https://izea.net/membership/

Conservation Education Contributions to Global Policies and Frameworks

One important conference highlight was how to better link our conservation education work in zoos and aquariums to meet the goals and targets in global biodiversity policies and frameworks. There were rich conversations on how we can strengthen and evidence our contributions to the Kunming-Montreal Global Biodiversity Framework and the UN Sustainable Development Goals. This linked to work presented by Chester Zoo, United Kingdom, on how we can measure the educational influence and integrated role that education plays across all areas of zoos and aquariums, through the new 'Sphere of Influence' model[1].

The importance of the field of conservation education (and all that falls under this broad umbrella term) to meet these Global Frameworks was praised and acknowledged throughout the conference. The vital role that those involved in conservation education play in delivering on WAZA's strategy was clearly demonstrated and the strong partnership between WAZA and IZE was seen through the participation of WAZA CEO Martín Zordan, WAZA President Karen Fifield and Council members Judy Mann (WAZA Conservation & Environmental Sustainability Committee Chair and IZE President) and Cynthia Whitbred-Spanoulis (WAZA Finance Committee Chair) at the conference. Delegates also learnt more about the WAZA Carbon Guide, Social Change for Conservation the World Zoo and Aquarium Conservation Education Strategy and Reverse the Red.

Making this conference even more special and impactful was that it was the first in-person IZE conference since 2018. With over 50% of the attendees being first-time IZE conference delegates, the conference helped foster conversations and connections to build an engaged and active community. IZE would like to acknowledge and thank all the Wellington Zoo team and the IZE board whose work over the last few years have made this conference happen.

Work is already underway to start organising the next IZE Conference to be held in 2026 – the call for a conference host deadline is 30 April 2024. Contact the IZE office on izeaoffice@gmail.com if you would like more details of hosting criteria and application deadlines.

References

1. Spooner, S., Walker, S., Dowell, S., and Moss, A. (2023). The value of zoos for species and society: The need for a new model. *Biological Conservation*, 279 (4).
2. Thomas, S. (2020). Social Change for Conservation: The World Zoo and Aquarium Conservation Education Strategy; *Barcelona, WAZA Executive Office*, 89pp.

ZOOS AND AQUARIUMS COMMIT TO THE REVERSE THE RED SPECIES PLEDGE

Megan Joyce, *Communications Officer at Reverse the Red*

Join Reverse the Red in a global pledge to commit to and showcase efforts to reverse declines in species around the world. As an outcome of the World Species Congress, taking place on 15 May, 2024, we would like to invite all zoos and aquariums to join the Reverse the Red Species Pledge. The goal of the Species Pledge is to accelerate impact towards species recovery by mapping key, strategic actions and facilitating collaboration.

Strategic impact-driven efforts to reverse declines for species are meaningful, and each of our organisations has a critical and unique role to play.

Iconic species such as the Scimitar-Horned Oryx, Przewalski's Horse, Indian Rhinoceros, Giant Panda, Iberian Lynx, Golden Lion Tamarin, Black-faced Spoonbill, Banahao Forest Frog and Yellow-Eared Parrot are some of the best-known global success stories. But zoo, aquarium and botanic garden efforts for other taxa which generally receive less conservation attention or funding are also proving that action can lead to improvement, such as for freshwater fish, invertebrates and plants. The number of success stories can, and should, be multiplied.

WORLD SPECIES CONGRESS

REVERSE THE RED

Golden Lion Tamarin (*Leontopithecus rosalia*) in Poço das Antas Biological Reserve
© *Bart van Dorp/Flickr*

Scimitar-Horned Oryx (*Oryx dammah*) © *Greg Lasley*

With more than one million species at risk of extinction, we need to increase our targeted efforts towards recovery. A few of our colleagues have taken clear steps in this direction and are helping shape our community's role on the global stage.

The Indianapolis Zoo's Saving Species Challenge committed one million USD to contribute to the recovery of a species achieved by a detailed recovery plan undertaken over a five-year period. All the organisations that applied have detailed plans which outline their ability to save a species or a group of species with adequate resources.

Zoos like the Royal Zoological Society of Scotland and Zoos Victoria have already committed to "*reverse the decline of at least 50 species by 2030*" (RZSS) or pledged that "*no Victorian Terrestrial Vertebrate Species will go extinct on our watch*" (Zoos Victoria). These are bold declarations, leading the conservation community forward with a vision for a world with abundant and thriving plant, animal and fungi populations.

The Reverse the Red Species Pledge aims to guide organisations towards using species-specific metrics, like Convention on Biological Diversity headline indicators such as the Red List Index and Green Status, and evaluate your impact and align your efforts with national and global biodiversity targets. We will ask which of the Global Species Action Plan's (GSAP) seven critical actions for Target 4 you are participating in for each species you pledge.

With these species commitments, we will be able to visually demonstrate the breadth of experience, knowledge and skill that exists to support species recovery. We will also be able to show our respective governments that we are committed to the outcomes of reversing species declines and meeting global biodiversity targets.

After the World Species Congress, the Reverse the Red Species Pledge Map will be available to all wanting to increase collaboration. As Reverse the Red works to accelerate and amplify species recovery, the pledges will be used to help connect impact-driven national networks in support of the National Biodiversity Strategy and Action Plan updates due to the Convention on Biological Diversity (CBD) in November of 2024.

A year and a half after countries signed on to the Kunming-Montreal Global Biodiversity Framework, we will be able to show the impact-driven strategies of varied organisations all making efforts to meet the targets, and this work will continue after the Congress is over. The Reverse the Red Species Pledge will continue to live and breathe, and we hope that organisations will continue to make pledges, committing to reversing declines for more species, and using the resulting data to work together, telling stories that help with adaptive learning and partnering to share resources, knowledge, products and expertise.

To support anyone interested in preparing a successful project to reduce species' risk of extinction, Reverse the Red released Conservation Status Improvement Guidelines for Practitioners in 2023. This approach enables conservation practitioners to increase the impact of their work by systematically selecting species, setting targets and successfully acting to move species from a higher category of threat within the IUCN Red List to a lower one.

Reversing declines and recovering biodiversity is possible. We need to accelerate and amplify successful strategies as we collaborate to increase the collective impact for species.

How your institution can be involved in the World Species Congress:

- Host an in-person Congress viewing party for staff and support staff participation.
- Host a satellite event for your visitors, membership and community.
- Sponsorship through the WAZA Collective Gift.
- Make a commitment to saving a specific species.

REGISTER

For the World Species Congress, follow Reverse the Red on social media, and connect with the Reverse the Red team on ways to get involved

https://www.reversethered.org/world-species-congress-2024

CONTACT

worldspeciescongress@reversethered.org

Przewalski's Horses (*Equus przewalskii*) © *Reverse the Red*

Vietnamazing launch at the 2023 EAZA Annual Conference in Helsinki © *J. Pfleiderer*

THE 'VIETNAMAZING' EAZA CONSERVATION CAMPAIGN 2024–2025

Ziegler[1], T., Nguyen[2], T. Q., Le,[3] M. D., Dieckmann[1], R., Haase[4], C., Haizak[5], C., Heckel[6], J.-O., Lefaux[7], B., Mager[8], C., Michel[6], V., Schröder[1], L., Schulze[6], A., Stawinoga[9], M., Wirth[6], R., Junhold[4], J., Pagel[1], T. B., Zimmermann[10], M., Meyerhoff[4]. M. & R. Ratajczak [4,11]

The conservation campaigns of the European Association of Zoos and Aquaria (EAZA) have already focused on a wide range of species and habitats. Through the campaigns, funds are raised for species conservation projects on the ground. They also clearly serve the purpose of environmental education. Last but not least, hundreds of millions of zoo visitors were informed about the campaign topics and the general importance of biodiversity conservation.

The current campaign focuses on Vietnam's unique habitats and their threatened biodiversity. In this campaign it is very important for the team to clearly integrate the 'One Plan Approach to Conservation', i.e., the holistic approach to species conservation, which originates from the Conservation Planning Specialist Group (CPSG) of the International Union for Conservation of Nature (IUCN). The One Plan Approach aims to protect a species by involving all those responsible and relevant and drawing on a wide range of expertise – in other words, contemporary, optimised, integrated species conservation in which all resources are pulled together.

During EAZA's annual meeting in Helsinki, Finland, in 2023, the new campaign was launched in an hour-long plenary session to almost 900 participants from 327 institutions and 70 countries and then made public. In this session, we also presented the flagship species and priority projects of the campaign for which support is requested, and likewise how to become part of the campaign, following the motto: 'Be part of it!'. EAZA members, as well as other interested conservation partners, can sign up and prepare for the campaign launch at their own institutions (https://vietnamazing.eu/). The recording of the plenary session is also available on EAZA's YouTube channel (EAZAvideo) (https://youtu.be/yXBlicjBCHE?-feature=shared).

[1] Cologne Zoo, [2] Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology, Hanoi, [3] Central Institute for Natural Resources and Environmental Studies, Vietnam National University, Hanoi, [4] Leipzig Zoo, [5] Beauval Zoo, [6] Zoological Society for the Conservation of Species and Populations (ZGAP), [7] Mulhouse Zoo, [8] Royal Burgers' Zoo, [9] Dortmund Zoo, [10] European Association of Zoos and Aquaria (EAZA), [11] Endangered Primate Rescue Center (EPRC), Cuc Phuong National Park

Under the 'Vietnamazing' campaign, the aim is to highlight the uniqueness of Vietnam as a biodiversity hotspot, promote and implement the One Plan Approach, build bridges between EAZA institutions, zoo visitors, and Vietnamese and international conservation partners and beyond. The objective is to link conservation planning processes, *in situ* and *ex situ* conservation with habitat restoration efforts, scientific research, conservation education, fundraising and public awareness. In this way, the campaign will raise awareness of threatened species from Vietnam and attempt to conserve them and their habitats in the long term.

Flagship species Vietnamese giant magnolia snail (*Bertia cambojiensis*)

This is the largest terrestrial mollusc in Southeast Asia. The species is threatened because it is used by locals for food and medicine. The greatest immediate threat, however, is the collection of snail shells for the trade, which leads to a continuous decline. Therefore, this species, which is acutely threatened with extinction, is listed as Critically Endangered on the IUCN Red List.

The EAZA Vietnamazing campaign will promote:

- The expansion of the European conservation breeding efforts to include more participating zoos;
- The development of best practice guidelines for keeping and breeding this care-intensive snail species;
- Collaboration with Vietnamese partners to restart in country conservation breeding;
- Funding ongoing monitoring and increased One Plan Approach conservation in Vietnam.

Flagship species Núi Chúa stick insect (*Nuichua rabaeyae*)

This stick insect species was recently described in 2018. It is only known from Núi Chúa National Park in southeastern Vietnam's coastal region. Its habitat is unique and isolated from other rainforest areas of the Central Highlands. All knowledge on the species today reverts back to the original description or derives from breeding reports outside the natural range. Currently, it is regarded to represent a micro-endemic species.

To build up conservation measures together with the cooperation partners in Vietnam, the EAZA Vietnamazing campaign will foster:

- Population monitoring to find out whether the species is micro-endemic and threatened. If threatened, this will lead to Vietnam Red Data Book and IUCN Red List inclusion;
- The build-up of conservation breeding in Vietnam;
- The extension of the European zoo breeding programme;
- Site-specific conservation, which will also benefit the coexisting Silver-backed chevrotain (*Tragulus versicolor*), that was rediscovered recently within dry lowland forest in the region.

Flagship species Tiger hillstream loach (*Sewellia lineolata*)

Species of the genus *Sewellia* are very popular in aquaristics and are regularly found in the ornamental fish trade. Most species are rheophilic, i.e. adapted to fast, clear and oxygen-rich flowing water. The Tiger hillstream loach is endemic to central Vietnam. It is widespread in the aquarium trade and can also be found in zoos. The major threats to this species are overfishing and habitat destruction. The Tiger hillstream loach is classified as Vulnerable on the IUCN Red List and natural populations are declining.

The EAZA Vietnamazing campaign will promote:

- The study of population trends and habitat threats;
- The build-up of a reserve population in Vietnam.

The Tiger hillstream loach can also act as a representative for other threatened ornamental fish species. Therefore, this project should also serve as a pioneering project for the establishment of further conservation breeding programmes for other threatened freshwater fish species in Vietnam. To achieve this goal,

SAVING VIETNAM'S UNIQUE BIODIVERSITY

EAZA CAMPAIGN 2024-2025

The campaign species reflect the great biodiversity of Vietnam. Many of them are micro-endemic and face extinction. The campaign aims to join efforts between ex situ-conservation in zoos and aquaria and in situ-conservation in Vietnam.

Northern white-cheeked gibbon
(Nomascus leucogenys)

Vietnam pheasant
(Lophura edwardsi)

Vietnamese pond turtle
(Mauremys annamensis)

Vietnamese crocodile lizard
(Shinisaurus crocodilurus vietnamensis)

Crocodile newts
(Tylototriton spp.)

Mossy frogs
(Theloderma spp.)

Hillstream loach
(Sewellia lineolata)

Vietnamese giant magnolia snail
(Bertia cambojensis)

Nui Chua stick insect
(Nuichua rabaeyae)

Joining forces to save Vietnam's species

EAZA Campaign 2024-2025

vietnamazing.eu

the campaign will additionally promote the establishment of reserve populations of threatened freshwater fish species in various locations and field studies to launch these programmes, which is in line with the IUCN SSC Asian Species Action Partnership Singapore (ASAP), which lists nine species from Vietnam, including two threatened *Sewellia* species. Zoos that keep hillstream loaches can draw attention to the importance of research and conservation of Vietnam's threatened freshwater fish.

Flagship species Vietnamese crocodile newt (*Tylototriton vietnamensis*)

Some crocodile newts (*Tylototriton* spp.) previously thought to be widespread have been shown to hide cryptic species, all threatened by extinction. As many as 16 species have been described in the last five years alone. Currently, eight taxa are known from Vietnam, and all have been discovered in the last two decades. The Vietnamese crocodile newt (*Tylototriton vietnamensis*) was previously included in the Black crocodile newt (*T. asperrimus*), whose occurrence is now restricted to southeastern China. Unfortunately, there are only small, isolated remnant forest habitat stands which are increasingly giving way to agricultural use. Coal mining is also a threat, as well as collection for traditional medicine and for the pet trade. Because of this, the entire genus has recently been listed in Appendix II of the Convention on International Trade in Endangered Species (CITES). *T. vietnamensis* is listed as Endangered in Vietnam's Red Data Book. The species is now no longer listed as Endangered on the IUCN Red List, but only as Vulnerable because extensive protection measures have already been taken, including conservation breeding, population and threat analyses, as well as raising public awareness. Some newts have already been repatriated from Europe to Vietnam, a great example of the 'Reverse the Red' campaign. Nevertheless, there is still a lot to be done in terms of conservation.

The EAZA Vietnamazing campaign will promote:

- Monitoring (population status and threat assessment);
- Genetic analyses of new populations;
- Expansion of conservation breeding;
- Improvement of conservation measures, such as increased ranger patrols;
- Restocking or repatriating to recover wild populations, if necessary;
- Raising of conservation awareness.

The Ziegler's crocodile newt (*T. ziegleri*), located in similar areas to the Vietnamese crocodile newt, is also threatened, but due to its relative obscurity it is less well known. Thus, conservation measures should be combined and new data should be used to work towards the recommendation of the establishment of a nature reserve, also covering other threatened species like the Critically Endangered Tonkin snub-nosed monkey, or the only recently discovered Khoi's mossy frog, all of which would benefit from increased protection.

Flagship species Vietnam pheasant (*Lophura edwardsi*)

The Vietnam pheasant, which is listed as Critically Endangered with a decreasing population trend according to the IUCN Red List, occurs in central Vietnam's lowland evergreen forest, whose condition has unfortunately deteriorated dramatically. In addition, the species is extensively hunted by humans. It has not been reported from its natural habitat since the year 2000, despite subsequent intensive research. The Vietnam pheasant may already be extinct in the wild.

The EAZA Vietnamazing campaign will promote:

- Raising awareness of the pheasant and its threats;
- The set up and management of further breeding facilities in Vietnam in order to be prepared for future reintroductions;
- Field research in potentially suitable and protected forest sites for subsequent releases;
- Involvement of local residents to ensure their long-term survival;
- Genetic analyses by EAZA Biobank to identify and remove possible hybrids from the breeding programme and provide recommendations on pairing/release;
- Introduction of an action plan.

Flagship species Mossy frogs (*Theloderma* spp.)

Mossy frogs are well camouflaged and have a cryptic way of life. The genus currently consists of 28 species, 17 of which have been described from Vietnam. Mossy frogs are one of the amphibian groups with a high rate of new discoveries, but also with high threat potential, which is why they need our support. According to the IUCN Red List, 24 *Theloderma* species have a declining population status, with five of them – all found in Vietnam – listed as threatened. Eight species, especially *T. corticale*, are also kept in zoos. These zoos in particular are ideally suited to highlight the plight of threatened mossy frogs and the campaign goals, and to encourage participation.

To expand conservation efforts for Vietnamese mossy frogs, the EAZA Vietnamazing Campaign will work with its cooperation partners in Vietnam to promote:

- Monitoring (research on actual distribution, population size, and threats to primarily micro-endemic species);
- Carrying out integrative taxonomic research to determine the extent of species richness;
- Inclusion of micro-endemic species that are not yet protected and threatened in Vietnam's Red Data Book, and possibly in the IUCN Red List;
- Laying the foundation for *in situ* conservation efforts for those species not yet found in protected areas;
- Filling *ex situ* species conservation gaps, initially in Vietnam.

Flagship species Northern white-cheeked gibbon (*Nomascus leucogenys*)

Six of the seven known crested gibbon species are native to the forests of Vietnam. They are all threatened and the northern white-cheeked gibbon is even classified as Critically Endangered on the IUCN Red List. Population numbers are unknown, but there are probably only a few hundred groups left. The species is already extinct in some regions. Hunting, especially for use in traditional medicine, in combination with habitat destruction, is a serious problem.

The campaign will promote:

- Conservation breeding of gibbons, both in EAZA institutions and in rescue centres in Vietnam;
- Preparations for reintroduction through holdings within Vietnam;
- Building bridges between the EAZA community and local NGOs;
- Establishment of a network of *ex situ* conservation institutions in Vietnam;
- Increased capacities and standards in zoos and rescue centres;
- An *ex situ* strategy for *Nomascus* species within the natural distribution area.

Flagship species Vietnamese pond turtle (*Mauremys annamensis*)

The Vietnamese pond turtle is a medium-sized, semi-aquatic turtle endemic to the lowlands of central Vietnam. At the beginning of the 20th century, this species was still present in large numbers in the swamps and slow-moving waters. Today, suitable habitats have become rare due to urban expansion and intensified rice cultivation. The Vietnamese pond turtle is so rare that it is considered functionally extinct in the wild and is included in the list of the 25 most threatened turtles in the world. The species, listed as Critically Endangered, has not been detected in any protected area within its range. However, there are still animals in zoos in Europe and the United States, as well as several hundred individuals in sanctuaries and turtle centres in Vietnam, which can be used to restore populations in the species' natural range once suitable locations are found.

Together with its cooperation partners, the EAZA Vietnamazing campaign will promote:

- eDNA analyses in potential habitats within the distribution area in order to identify residual populations or suitable locations;
- Habitat assessment of suitable locations in order to identify suitable habitats for reintroduction or restocking;
- Supporting the creation of protected areas within the historical range;
- Population recovery once sites are confirmed and protected areas are designated.

Vietnamazing launch BE PART OF IT at the 2023 EAZA Annual Conference in Helsinki © *J. Pfleiderer*

Since the species has been shown to contain two different genetic lineages distributed in two separate areas, genetic screening before reintroduction to the wild is essential to avoid artificial interbreeding. If the molecular studies identify genetically important animals in zoos from Europe and the USA, they can be returned to Vietnam.

Flagship species Vietnamese crocodile lizard (*Shinisaurus crocodilurus vietnamensis*)

The crocodile lizard (*Shinisaurus crocodilurus*) is a semi-aquatic reptile that spends most of its time on branches overhanging shallow streams in evergreen deciduous and bamboo forests. For more than 70 years this species was only known from China. In 2003 it was reported for the first time from Vietnam as well. The Vietnamese population has subsequently revealed to represent a separate conservation unit – *S. crocodilurus vietnamensis*. Meanwhile, a closer look at the Chinese subspecies has now shown that it also consists of not just one, but three distinct genetic lineages. This clearly underlines how important research is for effective species conservation. The population of the Vietnamese crocodile lizard has been estimated at less than 150 individuals, which is well below known thresholds of viable natural populations. Its existence is threatened by deforestation, coal mining, infrastructure development, capture for the animal trade and tourism. It is listed as Endangered on the IUCN Red List and on Appendix I of the CITES. *Ex situ* measures were set up years ago in both Vietnam and Europe. Conservation breeding facilities have been established and breeding has already been successful up to the F2 generation. If the above population estimates for Vietnam were correct, more than 20% of the world's known population has already been bred in Europe (with 31 offspring generated so far in the Cologne Zoo alone). This shows that zoos can make a difference. But the species needs our further support.

The EAZA Vietnamazing campaign will promote:

- Collaboration with various stakeholders and protected areas within the species' range to reduce direct threats (e.g. providing patrol equipment);
- Habitat conservation, if possible, through new nature reserves;
- Continued population monitoring and habitat as well as threat assessment;
- Additional studies to identify possible additional subpopulations in Vietnam;
- Continued genetic screening;
- Identification of suitable locations for releases into the wild;
- The extension of the conservation breeding network;
- The measures planned by the Vietnamese Ministry of Natural Resources and Environment to restock natural populations through the repatriation of offspring from Europe;
- Nature and environmental education to inform and raise awareness among the public and tourists.

FURTHER READING

More information can be found on the campaign homepage

https://vietnamazing.eu/

Or on social media, such as Instagram, where news is continuously presented

@vietnamazing.eaza

UPDATE ON INTERNATIONAL STUDBOOKS (ISBS)

Changes between 18 October 2023 and 30 January 2024

International Studbooks

Published International Studbooks

- **Indochinese Sika Deer** ***(Cervus nippon)*****,** 2023 ed.
  – Jan Pluháček (Zoo Olomouc, Czechia) sent the 2023 edition
- **Yellow-backed Duiker** ***(Cephalophus silvicultor)*****,** 2023 ed.
  – Jessica Biggins (Milwaukee County Zoo, US)
- **Coquerel's Sifaka** **(*Propithecus coquereli*)****,** 2023 ed.
  – Danielle Lynch (Duke Lemur Centre, US)
- **Somali Wild Ass** **(*Equus africanus somaliensis*)****,** 2023 ed.
  – Beatrice Steck (Zoo Basel, Switzerland)
- **Greater Bamboo Lemur** **(*Prolemur simus*)****,** 2023 ed.
  – Delphine Roullet (Cotswold Wildlife Park and Gardens, UK)
- **Tiger** ***(Panthera tigris* sspp)****,** 2023 ed.
  – Peter Müller, Ruben Holland and Thomas Liebenstein (Zoo Leipzig, Germany)
  - **Amur Tiger** ***(Panthera tigris altaica)***
  - ***South China Tiger*** ***(Panthera tigris amoyensis)***
  - ***Indochinese Tiger*** ***(Panthera tigris corbetti)***
  - ***Malayan Tiger*** ***(Panthera tigris jacksoni)***
  - ***Sumatran Tiger*** ***(Panthera tigris sumatrae)***
  - ***Bengal Tiger*** ***(Panthera tigris tigris)***

ISB Transfers

- **Black Lion Tamarin (*Leontopithecus chrysopygus*)** from Dominic Wormell to Rachel Cowen (Durrell Wildlife Trust/ Jersey Zoo, UK)
- **Tiger** ***(Panthera tigris sspp)*** from Peter Müller to Ruben Holland and Thomas Liebenstein (Zoo Leipzig, Germany)
  - **Amur Tiger** ***(Panthera tigris altaica)***
  - ***South China Tiger*** ***(Panthera tigris amoyensis)***
  - ***Indochinese Tiger*** ***(Panthera tigris corbetti)***
  - ***Malayan Tiger*** ***(Panthera tigris jacksoni)***
  - ***Sumatran Tiger*** ***(Panthera tigris sumatrae)***
  - ***Bengal Tiger*** ***(Panthera tigris tigris)***

Vacant International Studbooks

- **Buff-crested Bustard** ***(Lophotis gindiana)***
- **Edward's Pheasant** ***(Lophura edwardsi)***

Would you or someone in your team like to keep an International Studbook? 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

Vicuña (*Lama vicugna*) © *Tierpark Hellabrunn*

BEHIND THE ZIMS
A Q&A with WAZA International Studbook keepers

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 Dr Christian R. Schmidt

Dr Christian R. Schmidt

Retired, former director of Zoo Frankfurt, Vicuña ISB Keeper*, Vicuña EEP Coordinator*,
*Until 1 January 2024

LC Least concern

ISB kept and featured:	*Lama vicugna*
ISB Host Organisation:	Zurich Zoo
Year Started as ISBk:	1969

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

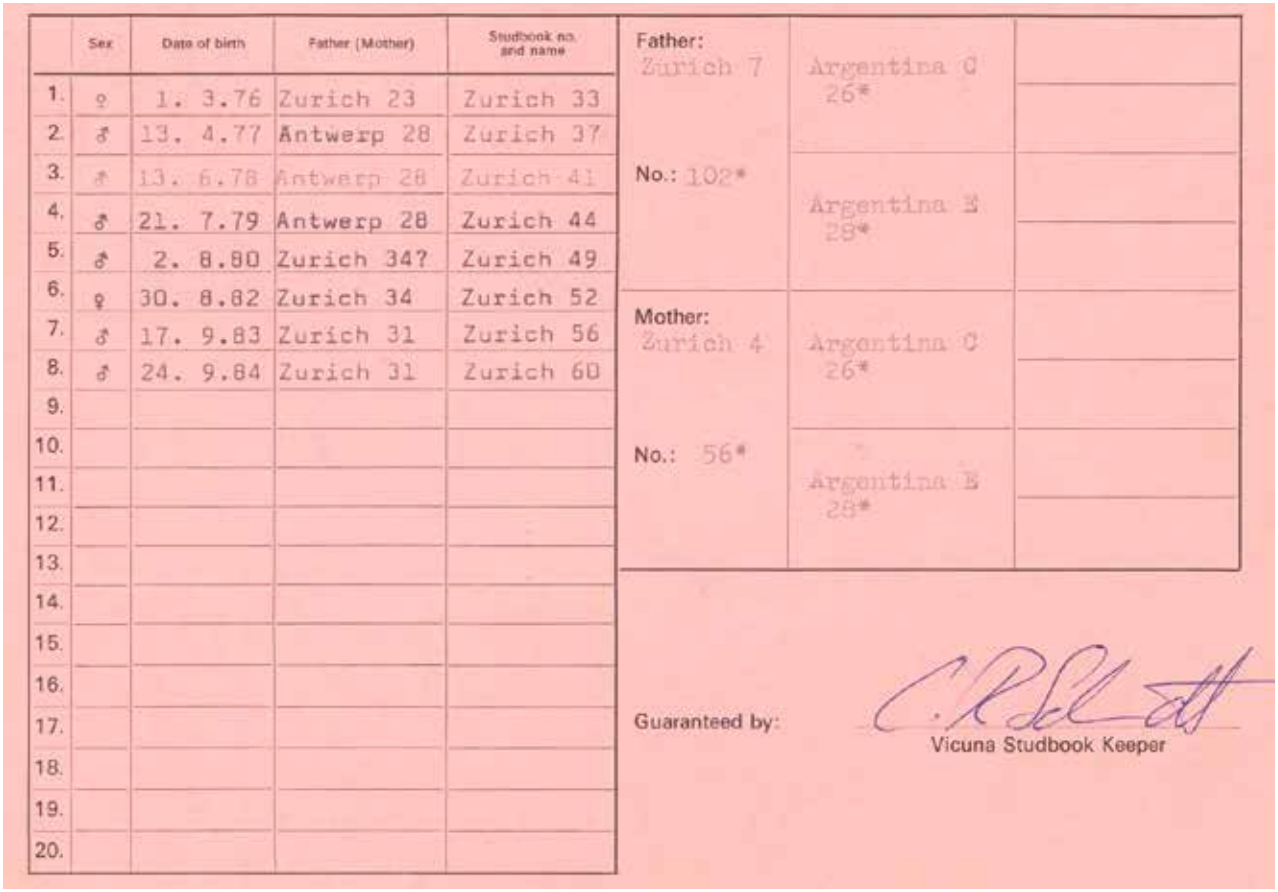
I have served as the longest-acting ISBk for fifty-four years. During my studies at the University of Zurich under my PhD supervisor, Heini Hediger – the founder of scientific zoo biology – the renowned German mammologist Erna Mohr suggested that an International Studbook for the Vicuña (*Lama vicugna*) was needed. Zurich Zoo was a renowned expert in keeping Vicuñas, and kept, at that time, the best breeding records for the species. So, I personally applied for the Vicuña ISB, and it was immediately accepted in 1969 by the International Union of Directors of Zoological Gardens (IUDZG), the organisation that we now know as WAZA.

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

During the mid-20th century, the Vicuña population plummeted from millions to approximately 6,000 in the 1960s. This was due to the rampant and unrestricted poaching for their expensive and valued wool. As a result, the species was declared Endangered in 1974. Naturally, the population of sixty individuals in all zoos worldwide was too small for any potential reintroduction efforts. Nonetheless, the Vicuñas in zoos played and continue to play a vital role as ambassadors for the species' conservation.

The work I initiated in 1969 as the Vicuña ISB keeper laid the foundation for establishing a European Association of Zoos and Aquaria (EAZA) *ex situ* programme (EEP) for the Vicuña. I have served as the coordinator of this programme since 1985.

Vicuñas (*Lama vicugna*) in Salar de Chalviri, Bolivia
© *Kallerna/Wikimedia Commons*



	Sex	Date of birth	Father (Mother)	Studbook no. and name
1.	♀	1. 3.76	Zurich 23	Zurich 33
2.	♂	13. 4.77	Antwerp 28	Zurich 37
3.	♂	13. 6.78	Antwerp 28	Zurich 41
4.	♂	21. 7.79	Antwerp 28	Zurich 44
5.	♂	2. 8.80	Zurich 34?	Zurich 49
6.	♀	30. 8.82	Zurich 34	Zurich 52
7.	♂	17. 9.83	Zurich 31	Zurich 56
8.	♂	24. 9.84	Zurich 31	Zurich 60
9.				
10.				
11.				
12.				
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15.				
16.				
17.				
18.				
19.				
20.				

Stud card for a female Vicuña. Descendants on the left, progenitors on the right.

How has the ISB contributed to *ex situ* conservation in practical terms?

Except for its specialised social behaviour, the Vicuña is a species that can easily thrive under human care. Consequently, there hasn't been extensive research on zoo-housed Vicuñas, however the ISB, and particularly the Vicuña EEP since 1985, have played a crucial role in establishing a self-sustaining Vicuña population, growing from sixty individuals in the early 1960s to the current 322. The last acquisition of a single female from the wild occurred in 1971. Currently, all Vicuñas outside the four native range countries (Bolivia, Chile, Argentina and Peru) reside in Europe, except for two groups in North America whose ancestors came from Europe. Unfortunately, data from these two groups has been missing for several years.

I have recently published another peer-reviewed paper on seasonality in births, juvenile mortality and the timing of births in Vicuñas, utilising the extensive data from the International Studbook, which covers 1,328 individuals. Some examples of publications I have authored or contributed to are listed alongside.

Schmidt, C.R. 2023 Saisonalität von Geburten und Jugendmortalität und die Geburtszeit beim Südlichen Vikunja, *Lama v. vicugna* (Molina, 1782), in *Zoos. Zool. Garten N.F.* 91: 41–46.

Bosch,P.C. & G.E.Svendsen. (1987). Behavior of male and female Vicuna (Vicugna vicugna) as it relates to Reproductive Effort. J.Mamm. 68, 425–429.

Johansson,F. (2021). Vicunas as protectors at Kolmarden Zoo. *Int. Vicuna Studbook 2020*, p. 34.

Schmidt,C.R. (1973). Breeding Seasons and notes on some other aspects of Reproduction in captive Camelids. *Int. Zoo Yearb. 13*, 387–390.

Schmidt,C.R. (1975). Captive Breeding of the Vicuna. In: Breeding Endangered Species in Captivity, R.D.Martin, ed., *Acad.Press, London*, 271–283.

Schmidt,C.R. (2006). The European Endangered Species Programme (EEP) for Vicunas. In: *South American Camelids Research Vol.I, Proc.4th Europ.Symp.South American Camelids, Wageningen Acad. Publ.* 65–75.

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

The studbook serves as a crucial resource for managing the Vicuña population in zoos and aquariums, particularly through the EAZA *ex situ* Programme, facilitating coordinated breeding efforts and ensuring genetic diversity. By maintaining detailed records of each Vicuña's lineage, health and genetic information, we are able to keep a self-sustaining population in zoos. Keeping genetically diverse and viable populations as insurance populations for potential restoration is an important role that the Vicuña ISB and the EEP have fulfilled. Many zoos in Europe currently hold Vicuñas, and thanks to them, we are raising awareness for their wild counterparts.

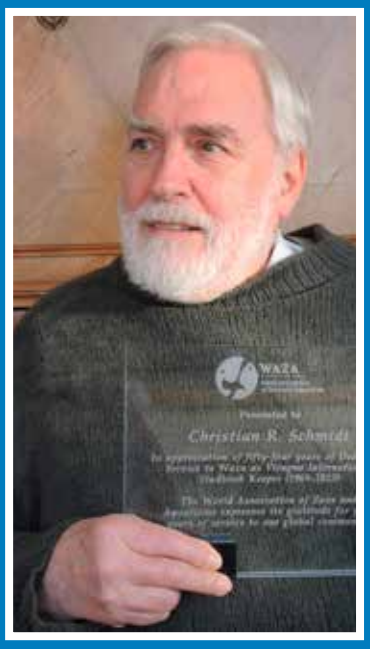
What do you see as the next chapter or role for International Studbooks?

When I started, long, long before computers, studbooks were kept in a very different way. We manually created two stud cards for each animal in the studbook, with one being pink for female and the other being blue for male Vicuñas. The studbook keeper retained one card, while the other one accompanied the animal as it moved from one zoo to another.

Considering the evolution from typing individual stud cards on a typewriter to the present ZIMS for studbooks, I am optimistic that organisations like Species360 will keep developing the necessary tools to respond to the new needs in our community for studbook keeping. However, a significant challenge remains in finding trained individuals to maintain them and we should find ways to engage capable people in this important task, avoiding frequent handovers every few years.

In the future, it's vital to establish International Studbooks (ISBs) for various zoo species, not limited to endangered ones. We need to consider the possibility that even species that are currently low-risk may face threats in the future, as we have seen with the Vicuña. The difficulty in importing wild animals, even common species, emphasises the need for ISBs to keep accurate records to ensure genetically healthy, self-sustaining zoo populations.

I'm delighted to pass on the responsibilities of the Vicuña ISB and EEP after 54 and 28 years, respectively, to Lena Bockreiss, the curator at Tierpark Hellabrunn in Munich, Germany. In my role as the general advisor of the Cattle and Camelid TAG and EEP, I am excited to witness Lena's vision for the next chapter and the role of the Vicuña International Studbook.



Dr Christian Schmidt holds a recognition on his fifty-four years serving our community as ISB keeper for the Vicuña.

After fifty-four years, Christian R. Schmidt stepped down from his role as the Vicuña International Studbook Keeper in January 2024. Dr Schmidt has been WAZA's longest standing International Studbook Keeper since the organisation has kept records.

The World Association of Zoos and Aquariums (WAZA) would like to acknowledge Dr Schmidt's immense contributions to the International Studbook programme and his dedication to the conservation of numerous animal species. WAZA extends its best wishes to Dr Schmidt for a fulfilling retirement and success in his new endeavours.

WAZA Expands Executive Office

In April 2023, WAZA members voted unanimously to approve the new vision and strategic priorities for the future of our global association. This was followed by the Annual General Assembly in October 2023, in San Diego, where the membership also voted on and unanimously approved the changes in membership fees that will allow WAZA to work towards achieving the ambitious mandate its members have entrusted upon it. As the Executive Office begins the process of operationalising the new vision and strategic priorities, a key step is ensuring that there is enough capacity within the office.

MARÍA JESÚS SANZ

Finance and Office Manager

In September 2023, the Executive Office welcomed María Jesús Sanz as the new Finance and Office Manager. With a background in Economics and a master's degree in international Humanitarian Action, María has extensive experience as a financial project controller in the Administration Department of different NGOs, with a focus on international cooperation and the social sector.

MILLY WERNERUS

Communications Intern

In October 2023, the team also welcomed a new Communications Intern, Milly Wernerus. Milly has recently moved to Barcelona after two years in Helsinki. Following a summer job kayaking in the Costa Brava, Milly is happy to be joining WAZA for the next few months and is looking forward to developing new skills, learning more about the world of zoos and aquariums and meeting new people. Milly holds a university degree in Anthropology and is passionate about travel, wildlife conservation and sustainable living.

JANET HO

Membership and Events Director

Towards the end of 2023, Janet Ho, the WAZA Membership Director, and Emma Burke, the WAZA Administrative Assistant, were also elevated to the roles of WAZA Membership and Events Director and WAZA Membership and Events Assistant respectively. Janet Ho joined WAZA in 2018 as the Membership Director, where she was responsible for developing and leading the global association's membership growth and maintenance strategy. With the expansion of her role to Membership and Events Director, she will also oversee the organisation of WAZA events such as annual conferences and other events.

TANIA KAHLON

Head of Communications

Tania joined WAZA in May 2022 as the Communications Coordinator. She has worked with a host of stakeholders including civil society organisations, policy makers, and think tanks to evaluate and communicate policy. Her extensive experience in communications and campaign management has enabled her to effectively employ communications as a powerful tool to disseminate key ideas to both technical and non-technical audiences to influence change. This has been integral to her work with sustainability think tanks and political consultancies that she has worked with. In her new role as the Head of Communications, she looks forward to building WAZA's reputation as a leader in animal welfare and conservation while also strengthening WAZA's niche role as a global convenor, bringing together diverse stakeholders and experts from around the world.

EMMA BURKE

Membership and Events Assistant

Emma Burke joined WAZA as the Administrative Assistant in June 2022. Originally from Ireland, Emma has a diverse background, having worked in various roles such as hospitality, HR administration and Corporate Coordination. Emma's passion for learning and growth has led her to transition into the role of Membership and Events Assistant. Emma is eager to contribute her established skills to support WAZA and the WAZA Team and accompany the organisation in its exciting journey towards achieving the new vision.

PAULA CERDÁN

Head of Conservation and Animal Welfare

Paula Cerdán joined WAZA in 2019 and was appointed as the new Head of Conservation and Animal Welfare in 2024. In her previous role as WAZA's Animal Welfare and Conservation Coordinator, she was instrumental in shaping the WAZA 2023 Animal Welfare Goal and is currently working on the WAZA 2027 Population Management Goal. She provided support to the Conservation and Environmental Sustainability Committee, the Committee for Population Management, and the Ethics and Animal Welfare Committee, actively engaging in their initiatives. Paula is eager to broaden her involvement within WAZA, contributing to impactful initiatives aligned with the organisation's new strategy.

THALIA PELEGRIN

Conservation and Animal Welfare Intern

Lastly, in February 2024, Thalia Pelegrin has joined WAZA as the new Conservation and Animal Welfare Intern. Thalia is from France and has recently finished her master's in wildlife management and conservation. Her passion for wildlife conservation varies widely including human-wildlife co-existence, the distribution of invasive species, and how climate change may impact different aspects of conservation. She also enjoys spending free time travelling, dancing, discovering new foods, and beautiful nature. She is eager to use her skills as WAZA's new Animal Welfare and Conservation Intern and contributing to the implementation of the WAZA 2023 Animal Welfare Goal and the 2027 Population Management Goal, amongst other initiatives and projects.

Scottish Wildcat © RZSS - Saving Wildcats

5TH JOINT TAG CHAIRS MEETING

6-9 May, 2024

RZSS Edinburgh Zoo

Supported by

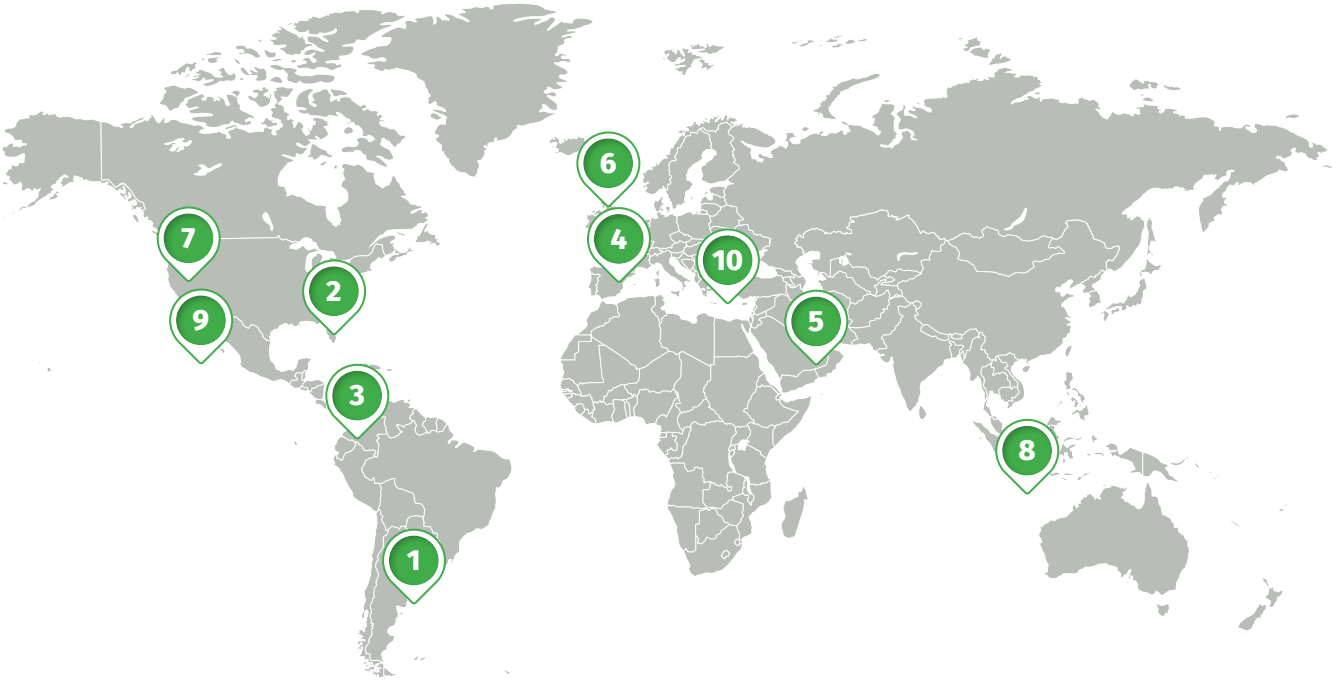
WAZA World Association of Zoos and Aquariums

EAZA European Association of Zoos and Aquaria

Association of Zoos & Aquariums

RZSS The Wildlife Conservation Charity

WAZA WELCOMES NEW MEMBERS



WAZA is pleased to welcome six institution members; Mundo Marino, The Florida Aquarium, Reserva Natural Bioparque Wakatá, Wingham Wildlife Park, Emirates Park Zoo, RZSS Highland Wildlife Park and four corporate members; PJA Architects + Landscape Architects, Bernard Harrison and Friends, EcoLeaders and MAT Filtration Technologies; from different parts of the world.

Ring-tailed Lemur
(*Lemur catta*)
© *Mundo Marino*

1 Mundo Marino S.A.

WAZA welcomed Mundo Marino S.A. as a new Institution Member.

Mundo Marino, Argentina, is a family company which strives to protect and educate about wildlife while cultivating harmony amongst members, employees, visitors and families. Their education and outreach actions are oriented towards different levels, from kindergarten students to professionals and university professors.

Mundo Marino has multidisciplinary work teams to carry out the necessary controls, changes and improvements over time required for the promotion and development of the best conditions of animal welfare. These teams include trained animal care staff, the nutrition and logistics department, and the Animal Health and Development (SDA) veterinarians.

Mundo Marino's conservation strategy is based on the International Union for Conservation of Nature (IUCN) guidelines for *in situ* and *ex situ* conservation, with a focus on identifying the priority conservation problems affecting the local marine megafauna, their sustainability and the ecosystem in which they develop. Within this conservation strategy, Mundo Marino are carrying out a series of *in situ* and *ex situ* projects covering ecological, biological and sanitary aspects.

North American River Otter (*Lontra canadensis*) *© The Florida Aquarium*

2 The Florida Aquarium

WAZA welcomed The Florida Aquarium as a new Institution Member.

The aquarium focuses on building awareness and inspiring action for species and habitat by offering visitors a variety of experiences, such as engaging with interactive and informational exhibits, exploring complex ecosystems and searching for wild dolphins in Tampa Bay.

Over the past six years, The Florida Aquarium has transitioned from an attraction aquarium to a conservation-based aquarium, allowing them to grow significantly to deliberately fulfil their purpose of saving marine wildlife. They are actively engaged in stewardship of the natural environment through mission programmes which include conservation, education, research, outreach and delivering world-class animal care.

Collared Aracari (*Pteroglossus torquatus*) *© Reserva Natural Bioparque Wakatá*

3 Reserva Natural Bioparque Wakatá

WAZA welcomed Reserva Natural Bioparque Wakatá as a new Institution Member.

The Colombian non-profit works for the conservation of nature, culture, the family union and life of the most vulnerable populations. Through sustainable recreation and purposeful tourism, Reserva Natural Bioparque Wakatá provides spaces of reconciliation with nature and its care, of family reunion and strengthening, and of historical and cultural learning. Their profits go to the most vulnerable population of the region and to the protection of ecosystems.

Reserva Natural Bioparque Wakatá have dedicated 200 hectares to the creation of a learning space offering cultural activities, care for nature, family recreation, eco-friendly practices, artistic manifestations, opportunities to learn and research, and social appropriation of knowledge.

Group of Chimpanzees (*Pan troglodytes*) *© Wingham Wildlife Park*

4 Wingham Wildlife Park

WAZA welcomed Wingham Wildlife Park as a new Institution Member.

For the past 15 years, Wingham Wildlife Park, UK, has been working on bringing people closer to wildlife by educating visitors on a wide range of topics and ensuring that their animals are happy and healthy by furthering their animal welfare goals and achievements.

Wingham Wildlife Park participates in and runs animal breeding programmes, and are expanding their conservation reach beyond their borders, with their latest *in situ* project involving the Crested Argus, a species which they do not have at the park. In addition, they have started to carry out their own research, such as their long-term studies on giraffe and chimpanzee welfare, as well as short-term welfare studies for various invertebrates.

Alpaca (*Lama pacos*)
© *Emirates Park Zoo*

5 Emirates Park Zoo and Resort

WAZA welcomed Emirates Park Zoo and Resort as a new Institution Member.

Emirates Park Zoo and Resort, located midway between Abu Dhabi and Dubai in the United Arab Emirates, consists of a Zoo, a Resort, an arcade area, restaurants, a pet hospital, and a pet hotel. With 220 different species, including mammals, reptiles, birds, and fishes; the zoo has a strong focus on conservation, education, research and edutainment.

Emirates Park Zoo and Resort follows a 5 year master plan to expand and enhance its outcome as a modern zoo. The expansion will include a butterfly garden, mini safari, ancestor land, and more modern exhibits with 360 views.

Scottish Wildcat (*Felis silvestris silvestris*)
© *RZSS Highland Wildlife Park*

6 RZSS Highland Wildlife Park

WAZA welcomed the Royal Zoological Society of Scotland's (RZSS) Highland Wildlife Park as a new Institution Member.

In 1986 RZSS acquired Highland Wildlife Park in Kincraig. Highland Wildlife Park, a 105-hectare site situated in the beautiful Scottish Highlands, is now home to over 200 mammals, including native Scottish species such as the Scottish Wildcat, as well as rare and endangered animals from the world's mountains and tundra regions.

RZSS is working to reverse the decline of species native to Scotland by establishing a restoration centre at Highland Wildlife Park. In addition to the work being done to save wild species at RZSS, Highland Wildlife Park is also focusing on supporting conservation breeding, advancing species recovery science, strengthening on-site biodiversity and developing the park as a scientific resource.

Visitors in tunnel tank at Zoo Miami © *PJA Architects*

7 PJA Architects + Landscape Architects p.s.

WAZA welcomed PJA Architects + Landscape Architects p.s. as a new Corporate Member.

The firm provides a broad range of management and design services, including master planning, concept design, schematic design, designer development, construction documentation, and Interpretive Planning, among others.

PJA Architects + Landscape Architects p.s. have developed a team focused on establishing innovative trends in botanical and zoological design and planning, wildlife sanctuaries, theme parks and in the interpretation of nature and culture.

Leopard © *Bernard Harrison & Friends*

8 Bernard Harrison and Friends Ltd.

WAZA welcomed Bernard Harrison and Friends Ltd. as a new Corporate Member.

Founded in 2002, Bernard Harrison and Friends Ltd is a wildlife and ecotourism design consultancy. Over the past 20 years they have been involved in over one hundred projects worldwide.

The design firm provides expertise in the conceptualisation and development of zoological and botanical gardens, currently focusing on master planning, development, concept design, and business operations.

Strategic Planning Workshop at the WAZA 77th Annual Conference © *Ecoleaders*

9 EcoLeaders LLC

WAZA welcomed EcoLeaders LLC as a new Corporate Member.

The company offers a range of consulting services, including organisational planning, leadership and team development, and managing culture and change.

EcoLeaders LLC have reimagined traditional organisational planning to support each organisation's learning and evolution, with a focus on achieving social and environmental impact. They help organisations reimagine their challenges, goals and aspirations through the lens of EcoLeadership.

Giant Panda (*Ailuropoda melanoleuca*) habitat © *MAT Filtration Technologies*

10 MAT Filtration Technologies

WAZA welcomed MAT Filtration Technologies as a new Corporate Member.

MAT Filtration is a design and manufacturing leader of Mechanical, Electrical & Plumbing (MEP) Engineering and specialised water filtration technologies for public aquariums, zoos, waterparks, and commercial swimming pools. The company handles the entire process, from conceptualisation and fabrication to commissioning and installation of specialty water treatment equipment, Recirculating Aquaculture Systems (RAS), public aquarium Life Support Systems (LSS), MEP equipment for waterparks and complete ozone and UV disinfection solutions.

Beyond being providers of equipment, MAT's mission is to safeguard animals, preserve nature, and support society. As an example, as part of a Giant Panda conservation programme in collaboration with Chinese and Qatari partners, MAT Filtration took on the responsibility of creating an exceptional enclosure, ensuring the well-being of two pandas.

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