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ZOOQUARIA

WINTER 2022

ISSUE 116



SPRING INTO ACTION

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KEY: a quick guide to frequently used acronyms

EEP: EAZA Ex situ Programme
IUCN: International Union for Conservation of Nature
LTMP: Long-term Management Plan
RCP: Regional Collection Plan
TAG: Taxon Advisory Group
ZIMS: Zoological Information Management System

Zooquaria

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FROM THE DIRECTOR'S CHAIR

My last 'From the Director's Chair' focused on thoughts of resilience and unity. I am seeing lots of evidence of this now that we are in the midst of a busy conference season. It was wonderful to welcome the highest number of delegates ever to our Annual Conference in Albufeira. Being able to meet in person helped to strengthen understanding, trust and unity across a range of discussion topics and organisations. I won't steal too much from the article on page 8, but I would like to highlight our keynote speaker, Edith Coron, who set the scene perfectly with her engaging presentation on raising awareness of cultural differences and how to communicate successfully as a united community. We were also honoured to have with us Volodymyr Topchy, President of the Association of Zoos of Ukraine, to provide an update on the continuing situation in Ukraine and what more we can do to help. Resilience was also needed by some delegates and session organisers as we experienced cases of COVID-19; perhaps inevitable when you bring so many people together. Nevertheless, communication was effective, plans were adapted, care packages sent to those in need, and the conference continued successfully.

I also had the opportunity to see unity in action on a global scale at the WAZA Annual Conference. The programme contained diverse presentations, many with an underlying emphasis on the importance of evidence-based decision-making, communication and partnerships, which are essential for progress and success. It was pleasing to see the involvement of EAZA in many of the activities discussed, from population management to the WAZA Animal Welfare Goal, and in engagement with IUCN, CITES and CBD. As might be expected from a global community, we also spent some time reviewing and reinforcing our joint thinking on ethics and considering the potential to bring more equity and inclusion into all areas of our work. Suggestions relating to language use also raised interesting thoughts for future changes. Should we have (or indeed, need) a united language on, for example, using conservation breeding programmes vs population management programmes? Should you be developing an 'Institutional Collection Plan' or an 'XXX Zoo/Aquarium Species Plan': wording that moves the tone away from potentially negative ownership terms? This is also before we even get into the understating of such terms once translated into the multiple languages across a global community and how such terms might be understood by non-zoo-speaking audiences.

Some might say that this is 'getting into the weeds' too much and we should concentrate on the impact of activities and not what we call them. I agree that we need to evidence what we do, but I also strongly believe that

words have power. Being able to communicate clearly with a united voice about our activities is vital if we are to remain current and influential. I am looking forward to having more conversations on this with many of you in the future.

As this will be our last *Zooquaria* of 2022, I would like to finish by thanking everyone who has been involved in helping to make it another busy but good year for EAZA. The articles in *Zooquaria* showcase a small proportion of the vast amount of work that is carried out. I appreciate the dedication, unity and resilience of all in our community and wish everyone a happy and successful transition into 2023.

Myfanwy Griffith
Executive Director, EAZA



NOTICEBOARD

ANNUAL GENERAL MEETING

The EAZA Annual Conference was organised by ZooMarine in Albufeira (Portugal) in September (see page 8).

During the event, an extraordinary Annual General Meeting (AGM) took place and approved the [EAZA Field Conservation Standards](#). These Standards are a progression from the existing Conservation Standards and describe what involvement in field conservation is expected from EAZA Members. They include guidance about their interpretation. Further support materials will be produced.

The AGM also approved Can Bodur from Faruk Yalcin Zoo as Council member for Turkey.

COUNCIL DECISIONS

During the Conference, EAZA Council met and approved the following:

- [EAZA Guidelines on meat and soya](#)
- [EAZA Guidelines on timber](#). An extensive supporting document is also available to help with implementation of the Guidelines
- Extending the 2023 membership fee payment deadline from 31 March to 30 June due to the energy crisis
- Renewal of the Memorandum of Understanding (MoU) between EAZA and European Association of Aquatic Mammals for 2022–2027

The new Standards and Guidelines are available in the EAZA Documents section on our website.

Council agreed to review the EAZA Statement on the war in Ukraine.

They also received reports from all the Committees and reviewed progress updates on the MoUs with the European Union of Aquarium Curators, and various partners regarding anoa, banteng and babirusa 'Action Indonesia' activities.

The meeting of Council included the following membership decisions based on the recommendations of the Membership and Ethics Committee:

APPROVED NEW MEMBERSHIP RECOMMENDATIONS

Full Membership and Accreditation: Amnéville Zoo, France

Temporary Membership Under Construction: Tbilisi Zoo, Georgia (new

zoo under construction at a new site; old site will remain a Candidate for Membership until new site is open)

Temporary Membership to Full Membership and Accreditation: Parc d'Isle, France

Temporary Membership Under Construction to Temporary Membership: Les Terres de Nataé (previously Pont-Scorff Zoo), France

Terminate Membership (effective immediately): Oasis Wildlife Fuerteventura, Spain

Withdrawing Members: Monkey World, UK (due to the use of a non-Species360 animal records database; will remain a Member until 1 January 2023)

APPROVED EAZA ACCREDITATION PROGRAMME RECOMMENDATIONS
Full Membership and Accreditation: Landau Zoo, Germany; CERZA, France

Temporary Membership to Full Membership and Accreditation: Zoo Duisburg, Germany; Ústí nad Labem Zoo, Czechia; Cabárceno Zoo, Spain

SANCTIONS
Restricted Status (effective immediately): Hai Park, Israel

CORPORATE MEMBERSHIP RECOMMENDATIONS
Corporate Membership: InstoneAir; Dinosauriosmexico; Wild Immersion; Petjes World; Ray Hole Architects (reinstatement)

Withdrawing Corporate Members: Imagine Exhibition; Nautilus

Terminated Corporate Members: Beresford (effective immediately); Wisbroek (will remain a Member until 1 January 2023)

SAVE THE DATE – EVENTS IN 2023

- 19–22 January: [European Zoo Nutrition Conference](#), hosted by Riga Zoo, Latvia
- 13–17 March: [EAZA Education Conference](#), hosted by Wrocław Zoo,

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- 25–28 April: EAZA Directors' Days, hosted by Bergen Aquarium, Norway
- 12–16 September: EAZA Annual Conference 2023, hosted by Helsinki Zoo, Finland

Find out more about these conferences on the Events page of our website.

MEMBER NEWS

Bristol Zoo Gardens, UK closed its doors on 3 September 2022 after 186 years in Clifton. The Zoological Society will continue its activities at Wild Place Project, which will have conservation and education at its heart and where 80% of the species will be linked to conservation programmes around the world. We wish them all the best for this new adventure!

NEW ARRIVALS

RAREST MAMMAL ARRIVES AT ALPENZOO INNSBRUCK



© ANDRÉ STADLER

THE BAVARIAN PINE VOLE (*Microtus bavaricus*) is one of the rarest mammals in Europe, if not the world. In the IUCN Red List, it is classified as Critically Endangered. The only currently existing and known occurrence of the species is in Tyrol, Austria right around the corner from Alpenzoo Innsbruck. Bavarian pine voles were only discovered in 1962 near to the German city Garmisch-Partenkirchen. Unfortunately, the original site is now occupied by a hospital and the Bavarian pine voles no longer live there; they have disappeared from other places in the

Alps as well. As a result, the species was considered to be lost or extinct. Fortunately in 2000 some animals were sighted in Tyrol and have been subsequently identified as Bavarian pine voles. Since 2014 there has been regular monitoring (search cycles) and some basic botanical surveys at the site in the Rofan Mountains where the animals were found.

Alpenzoo Innsbruck has been keeping individuals of this species since September 2021. On 13 June 2022, there was a sensation in the zoo when two offspring were seen in the enclosure. 'We are as happy as small



children about these offspring, because this vole is more endangered than a tiger, snow leopard or panda,' said zoo director André Stadler, proudly. After 21 days the young animals were separated from their parents and the sex was checked. Happily they turned out to be two females and so the zoo was able to establish another breeding pair.

Alpenzoo Innsbruck sees itself in a leading role for the protection of this species, since these young were the world's first offspring born in human care. This is a very important step for species protection and for building up

OSTRAVA ZOO CELEBRATES WORLD'S LARGEST GROUP OF ONAGERS

IN JUNE 2022, ONAGERS (*Equus hemionus onager*) at Ostrava Zoo gave birth to eight foals, seven of which have survived at the time of writing. This increased the group to 18 individuals in total, which represents the biggest group in any zoo worldwide, based on the ZIMS data.

The onager is one of the four extant subspecies of Asiatic wild ass. It inhabits semi-desert and desert areas in Iran. Currently two autochthonous (Touran National Park, Bahram-e-goor Protected Area) populations and one reintroduced (Kalmand Protected Area) population, representing no more than 1,000 individuals in total, are known to exist in the wild. This makes the onager the most endangered subspecies of Asiatic wild ass, and it is clear that conservation breeding could be very important for the subspecies' survival. Yet the populations in human care remain quite small; currently there are 86

individuals in 13 EAZA zoos and 36 in five AZA zoos.

Ostrava Zoo has been caring for onagers since 2014. Based on the EEP transfer recommendations, one male (from Stuttgart) and four females (from Augsburg, Cologne and Hamburg) were brought to the zoo. The male came with a poor reputation for bothering mares, but the transfer brought about a positive change in his behaviour. In our new two-hectare enclosure he behaved very well towards all the females as well as to the keepers. He mated with all the females successfully and the group increased in size until it reached its current total of nine adult females. To prevent inbreeding, the stallion was replaced by an unrelated new stallion from the Sigean African Reserve, as recommended by the EEP, resulting in the seven healthy foals we have today.

It should be stressed that the



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Onager EEP, coordinated by Hagenbeck Zoo, has been doing a great job in the last few years. This was not easy, because, despite critical conservation status in the wild, interest in this subspecies has declined across EAZA Members. Yet the EEP succeeds in keeping the population size stable. It is likely that without the work of the EEP, the EAZA population would already have gone.

In order to manage such a small population of endangered species effectively, especially when interest

SAND CATS THRIVING AT ZOOLOGICAL CENTER RAMAT GAN

a conservation population in zoos. The threats to the animals, however, are far from over. Together with many other partners, we are doing our utmost to protect this vole under the slogan: 'We are saving an unknown species'. To date, there have been three successful births, with seven animals raised in total. The zoo now holds roughly 10% of the world population, as the data shows that there are probably no more than 100 animals left in the Rofan Mountains.

The animals are currently housed in their own area behind the scenes because the species has never been kept in any zoo in the world. The animals are therefore being observed ethologically for the first time and basic data such as gestation periods are for being collected, also for the first time. They also undergo veterinary examinations. Later in the year, the voles will be put on display in the new 'Untertierisch' enclosure.

A special thanks goes to Aufwind, a non-profit organisation for nature (GmbH), for supporting this project.



among zoos is lacking, Ostrava Zoo, in close cooperation with the EEP and in line with the EAZA Culling Statement, is implementing a case-by-case breed-and-cull policy. For example, the original stallion was culled after he produced a sufficient number of offspring to represent his genes well. This policy has resulted in the largest herd within the EEP, regular breeding of all adult females, opportunities for new male genes to be added and several additional animals available for new holders.

THE SAND CAT (*Felis margarita*) is a good example of a native species that has paid the price of the growing human population in Israel. The species was discovered in the Arava Valley in the 1980s, but the conversion of sand dunes to agricultural fields drove the cat to local extinction within about 15 years. As an Israeli zoo, it is therefore extremely important for us to care for sand cats, which are housed in the 'Israeli Trail' area of the zoo.

In an attempt to start reintroducing the species back to its remaining native habitat, two sand cats from Jerusalem Zoo were released to the wild in the Arava Valley in 2007. Unfortunately, the cats did not survive and the project was terminated. We now know that the increased populations of bigger predators such as foxes and wolves, which cope well with human encroachment, make it difficult for the small sand cats to reestablish.

The Zoological Center Ramat Gan has exhibited sand cats since 2002. To date, we have imported four females and four males, and a total of 29 kittens have been born over the years. Nine of them survived their first year. Today, three females that were born in our zoo live in other EAZA zoos: Le Parc des Félines (France), Jihlava Zoo (Czechia) and Ree Park Safari (Denmark).

After our pair of sand cats Rotem and Kalahari died, we asked for a recommendation for a new couple to continue the legacy. The male Marib arrived from Eskilstuna Zoo, Sweden, in November 2020. Almost a year later, in August 2021, the female Sabbhia – daughter of a female born in our zoo – arrived from Ree Park Safari when she was less than a year old.

The young couple got along well and we were very hopeful that there would be kittens. Unfortunately, our wish came a bit too early. Just about a month after Sabbhia arrived she gave birth to three kittens. As sometimes happens in first parturitions, the kittens survived for only a few days.

The next litter came in March 2022 and the keepers were happy to find five tiny kittens in the exhibit. To our



surprise and delight, the young and inexperienced mother did a great job of raising them. They grew bigger and stronger by the day.

As we are building a new enclosure for the sand cats, they are currently living in a temporary old exhibit with no option to separate the male from the others. Therefore, dad Marib had to stay in the indoor facility for a while. We let him join the rest of the family when the kittens were a month old. After a bit of tension with the female, things quickly calmed down.

We usually vaccinate kittens with two doses of Felocell 4 – attenuated strains of feline herpesvirus type 1, calicivirus, panleukopenia virus (Johnson Snow Leopard strain), and Chlamydophila – at the ages of eight and 12 weeks. This litter was first vaccinated at 10 weeks old and on 18 June we found one dead male (without clinical signs) and a second one with nose and eyes secretions. The sick kitten was found positive to Calicivirus, was treated with Doxycycline and healed a week later. The dead kitten was found negative to Calicivirus in necropsy. The second dose of the vaccine was given to the kittens 28 days after the first one.

The whole family will soon move to their new exhibit. We are looking forward to sending them to their new homes, according to the EEP recommendations, and are very happy to be contributing to the conservation of this special species.



Tira o cavalinho da chuva*

UNLIKE THE PORTUGUESE SAYING, EAZA DIDN'T GIVE UP AND WAS FINALLY ABLE TO HOLD THE 2022 ANNUAL CONFERENCE IN PERSON, AFTER TWO YEARS OF ONLINE EDITIONS

Sandrine Camus, Communications Coordinator, EAZA Executive Office

What a joy it was to welcome the 919 delegates from 102 institutions and 71 countries in Albufeira in Portugal and to see the smiles on their faces as they greeted colleagues they had not seen for months – or even years! The EAZA Annual Conference 2022 took place at the Salgados Palace Hotel from 27 September to 1 October and was beautifully hosted by ZooMarine Algarve. Even the few cases of COVID-19 that developed during the week were not enough to ruin the joyful atmosphere.

The event started with an icebreaker where the delegates could enjoy a demonstration of traditional folk dances in addition to delicious food and some long-awaited catching-up.

On 28 September, local representatives welcomed the delegates during the opening plenary. Tiago Pierotti (ZooMarine) spoke on behalf of the zoo's President Pedro Lavia (unfortunately home with COVID-19) to remind us of our collective strength. He announced the zoo's conservation motto 'Together we protect', and illustrated his words by announcing that 1,838 trees – double the number of delegates – would be planted in the region in November. Alexandra Teodósio, Vice Rector at the Universidade do Algarve, emphasised the importance of collaborations between zoos and universities and the necessity of showing the positive impact of our work, which would not be as strong without the support of the

community. José Carlos Rolo, Mayor of Albufeira, expressed his gratitude for the great conservation education activities provided by zoos in Albufeira and in Europe. Endre Papp (Sóstó Zoo) then officially opened his first Conference as EAZA Chair and talked of his wish to inspire and represent smaller institutions, so that all voices can be heard (pictured above, far left).

Keynote speaker, Edith Coron, executive coach and an expert in bridging cultural differences, used brilliant examples to highlight how our ethnocentrism (putting our own culture at the centre of our perceptions), cultural representations and cultural relativism (what we take for granted in one culture does not necessarily translate to another) can impair communication. After presenting the eight behavioural dimensions of professional interactions, she provided four pillars for communicating more successfully as a community of 48 countries: use explicit clear messages, build behaviour-based trust, establish common purposes and spend time with each other.

Myfanwy Griffith, EAZA Executive Director, summarised the latest activities of the Executive Office, while Volodymyr Topchy, President of the Association of the Zoos of Ukraine, gave an update on the dramatic situation in Ukraine and thanked our community for the generous support provided so far.

The afternoon was devoted to seeing the Bigger Picture – the EAZA21+

campaign plenary moderated enthusiastically by Tomasz Rusek (EAZA Executive Office) and Simon Bruslund (Marlow Birdpark).

While Hugo-Maria Schally, the EU's lead negotiator of the post-2020 Global Biodiversity Framework (GBF) at the European Commission, dived deep into this new plan about 'the survival of life on our planet' – as summarised by Simon – Campaign Chair Eric Bairrão-Ruivo (Beauval Zoo) reassured the audience that 'there was no need to invent new ways to do what zoos and aquariums do, we just need to be more efficient at it by harmonising our actions and voices.'

Different experts then provided practical ideas for how EAZA Members can increase their impact in the most relevant (for our community) areas of the GBF. Christina Hvilsom (Copenhagen Zoo) reminded us how zoos can help fight biodiversity loss by sending biological samples to the EAZA Biobank, assessing the molecular genetic diversity in the EEPs or by getting involved with IUCN or other relevant initiatives to raise awareness of our work. Kirsten Pullen, EAZA Vice Chair (Wild Planet Trust), encouraged Members to participate in the discussion to clarify the definition of what is ethical, sustainable and legal trade in wildlife so that we can be sure to be part of the solution and not of the problem. Marjo Priha (Helsinki Zoo) provided a list of actions to use our Conservation Education



‘superpower’ so that all members of staff learn about the targets of the GBF, feel confident raising awareness of the work of zoos and are able to inspire behaviour change onsite, offsite and online. Finally, because ‘good science isn’t sufficient to convince the political world’, Simon showed examples of engagement with the frameworks at the international level, from submitting an IUCN motion against songbird trafficking to participating in the CITES COP19 in November in Panama.

The day ended with the showing of ‘Escape from Extinction’, a documentary produced by American Humane to showcase the critical efforts of our community to preserve species on the verge of extinction through a mix of conservation, breeding and environmental awareness activities.

Thursday was an intense day of workshops, working groups, committee meetings and TAG sessions where delegates could learn about various topics, from post-Brexit challenges to future changes in accreditation processes or animal training. Everyone was then invited to relax at ZooMarine, who welcomed us with a friendly fanfare and a refreshing shower – despite the organisers assuring us it never rains in Albufeira! The busy programme included a demonstration of impressive dolphin voluntary behaviours facilitating veterinary processes, a ceremony for the 30th anniversary of EAZA, backstage visits to different areas and a dance party to the frenzied tunes of a wild band!

Despite the accumulated fatigue, the meetings on Friday were well attended and gave rise to inspiring discussions. For instance, the afternoon plenary focused on a much-debated subject both within and outside our

community: the management and care of marine mammals. In the first part, experts gave insights from their fields. Claudia Gili (Parco Natura Viva) talked about a few conservation initiatives supported by EEP participants, while Lorenzo von Fersen (Nuremberg Zoo) emphasised the importance of integrated approaches in conservation strategies. Daniel Garcia (Oceanogràfic Valencia) presented the new welfare strategy of his aquarium and João Neves (ZooMarine Algarve) provided food for thought to consider when building our education strategies. In the second part, journalist Ana Daniela Soares Ferreira (Radio and Television of Portugal) moderated an interesting panel discussion exploring the future of zoos and aquariums, and the challenges and opportunities for the EAZA community.

On the last day, our five-year Memorandum of Understanding with the European Association for Aquatic Mammals was renewed, continuing a long-term partnership started in 2009. In addition to emphasising conservation education and research projects, it highlights a strengthening of population management for marine mammals. You can find a summary of the other important decisions taken during the Annual General Meeting and the Council meeting on the Noticeboard (page 5).

Later, the research plenary moderated by Zjef Pereboom (Antwerp Zoo) highlighted how zoo research can contribute to community debate and policy-making. After touching upon the new EAZA Research Standards, Volker Homes (Association of German-speaking Zoological Gardens, VdZ) introduced the Zoo Science Library, which will be launched by the end

of the year to make peer-reviewed scientific articles more accessible to all. Christina Hvilsom presented a few initiatives that help to bridge the gap between scientists and policy-makers, while Dalia Conde (Species360) and Martin Boye (Planète Sauvage) talked about their experience with politics and how good data, good analyses and good communication were able to influence policies in France.

As usual the Conference ended with the Lifetime Achievement Awards, honouring retired key figures – who also never gave up – for their significant contribution to our association and to safeguarding species. We congratulate Radosław Ratajszczak (Wrocław Zoo), Jon Ballou (Smithsonian Institute), Amelia Terkel (Zoological Center Ramat Gan), Clemens Becker (Karlsruhe Zoo) and Marjo Hoedemaker (Amersfoort Zoo) for their life-long dedication to biodiversity. Double congratulations go to Simon Tonge (Wild Planet Trust, pictured above, far right, with Myfanwy Griffith, Endre Papp and Lesley Dickie) who also received the EAZA Honorary Membership. Watch the emotional ceremony on our [YouTube channel](#) (EAZAvideo) alongside the other plenary recordings.

After passing the EAZA flag to the host of the next EAZA Annual Conference (Helsinki Zoo, represented by Sanna Hellström, pictured above), there were only two things left to do: thank the hosts, speakers, delegates and sponsors for making this first post-pandemic, in-person edition of the conference so memorable and productive; and get ready for the gala dinner!

** This Portuguese saying translates literally as ‘take the little horse away from the rain’ but means ‘You should give up.’*

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Thank you for your solidarity

AS THE WAR IN UKRAINE RAGES ON, THE PRESIDENT OF ITS ZOO ASSOCIATION HAS A HEARTFELT MESSAGE FOR EAZA MEMBERS

Volodymyr Topchy, President of the Association of Zoos of Ukraine (AZU) and Director of Mikolaiv Zoo

Eight long months have passed since Russia invaded my country. To all of you who have supported us during this dramatic period, I would like to extend sincere thanks from the Ukrainian zoo community, and especially the eight zoos united in the Association of Zoos of Ukraine (AZU), which transformed earlier this year from the Ukrainian Association of Zoos and Aquariums (UAZA). They are: Mikolaiv Zoo, Cherkasy City Zoo 'Roshen', Lutsk Zoo, Odesa Zoo, Rivne Zoo, Kharkov Zoo, Limpopo Zoo (Drohobych), and BION Terrarium Center (Kyiv).

When the war broke out, EAZA assumed the coordinating role for financial aid, while a number of EAZA Members swiftly began organising shipments of humanitarian assistance and direct payments of aid. We are particularly grateful to colleagues in the Polish zoos in Łódź and Warsaw, in Prague in Czechia and in Berlin in Germany, as well as to the dozens of employees in many other EAZA institutions. Your selfless support has helped us to survive.

The Russian occupiers have caused massive damage. We still don't know the exact number of dead civilians in Kyiv, Kharkov, Mariupol, Volnovakha, Izium and other cities and towns. Russian troops have levelled cities and villages and destroyed critical infrastructure as well as the economy, depriving our citizens of a roof over their heads, of employment and of the prospect of a safe tomorrow. However, we are not giving up!

The first month was the toughest for everyone, with massive shelling and bombing, shortage of supplies and disrupted logistics. Our infrastructure was destroyed, and we all faced – and feared – the unknown. The economy struggled with inflation. People were fleeing in huge numbers, to other parts of Ukraine and further abroad. Those who stayed had to cope with freezing temperatures at least until the end of March.

Despite all these hardships, the war has united us and got us organised. It literally gave us a 'baptism of fire'. Each of our zoos now has its own

military history, as well as a history of perseverance and of mutual solidarity and help.

All AZU members have participated in animal evacuations. They took care of animals from zoos, pet centres and other holders from affected regions. Animals were rehomed, for example, from Feldman Eco-Park in the suburbs of Kharkov, and from the Twelve Months Zoo near Kyiv. AZU also distributed the financial assistance that you have been sending to our account, directly or through external collections such as the EAZA Emergency Fund for Ukraine (www.eaza.net/emergency-appeal-for-ukrainian-zoos).

UKRAINE'S ZOOS THROUGH THE WAR

I would like to give you a short account of how the invasion has affected AZU members.

In the winter of 2022, just as during the Second World War, **Mikolaiv Zoo** (founded in 1901) had to refuse to evacuate. Moving the elephants, giraffes, hippos, and polar bears would

have been extremely difficult and risky. Since then, we have been fighting together. During the aggression, eight rockets fell on the zoo's territory. Fortunately, none exploded.

In February, Mikolaiv Zoo began receiving domestic animals from people who were fleeing the city: from aquarium fish to ponies, from lizards to parrots and from guinea pigs to snakes. Children kindly asked us to take care of their pets, promising to pick them up once the war was over. To quote one of my favourite books, Antoine de Saint-Exupery's *The Little Prince*: 'We become responsible, forever, for what we have tamed.'

As the city struggled to keep its utilities funded, we turned to the international public for help. Ordinary people from all over the world began buying tickets online. With the onset of spring, the animals began to breed, including Amur leopards, servals, European lynx and otters, macaw, Steller's sea eagles, swan geese and many others.

Today, Mikolaiv is very close to the front line, but the zoo remains a refuge where people can find calm and forget about the war at least for a while.

Cherkasy City Zoo 'Roshen' (founded in 1979) has the largest collection of poisonous snakes in Ukraine, runs innovative projects such as 'Land of Wolves and Bears' and 'Deer and Bison', as well as original thematic expositions such as 'Angkor Wat', 'Madagascar' and others. Since mid-March, the zoo has offered free visits to 26,000 migrants who came to Cherkasy from the war-stricken regions. The institution also offered a home to 70 animals from other zoos.

Lutsk Zoo (founded in 1979) is a young and promising zoo with an interesting landscaping project and solid management. When the war broke out, the citizens of Lutsk woke up to the sound of bombs destroying their airfield. The war has critically affected the work of the zoo, forcing it to close and lose 50% of its funding. Nonetheless, the zoo has offered

shelter to animals from Twelve Months, as well as to more than 50 animals from private owners who had left the country. The management is making heroic efforts to support the staff and preserve the collection.

Odesa Zoo (founded in 1922) marked its centenary this year. It is the only zoo in Ukraine where Indian elephants are being bred. The zoo pays great attention to educational work and puts much emphasis on the conservation of birds of prey. After the outbreak of the war, the zoo offered a home to two white lions from the destroyed Feldman Eco-Park, building a separate pavilion for them. Volunteers provide invaluable assistance to the zoo.

Rivne Zoo (founded in 1982) celebrated its 40th anniversary this year. It is an interesting forest-type zoo with a vast territory, original concept and unique animal collection. During the war, the zoo took care of a record number of animals, from Feldman Eco-Park, Twelve Months and the Yasnogorodka Eco-Park, as well as from a raccoon breeding centre in Dnipro. The director has been working tirelessly with Western donors to organise and redistribute the deliveries of humanitarian aid for other Ukrainian zoos.

Kharkov Zoo (founded in 1895) is one of the largest and oldest zoos in Ukraine. A year before the war, the zoo underwent complete reconstruction. Unfortunately, it is located near the war zone. When the invasion began, many employees bravely decided to live in the zoo to be closer to the animals. The zoo was powered by diesel generators, and various emergency plans had to be put in place.

Limpopo Zoo (Drohobych) (founded in 2008) is the most westerly zoo in Ukraine. This young organisation is actively developing and has acquired a rich collection of animals. At the beginning of the war, it took part in the rescue of animals from other zoos that were under occupation or in a war zone.

BION Terrarium Center, Kyiv

(founded in 1993) has participated in international breeding of more than 120 reptile and amphibian species. The facility contains the Ekzoland Zoo and the educational centre Responsible Zooculture. It conducts an international online project on herpetoculture. During the war, BION took in about 1,000 reptiles, which were rescued by soldiers of the Armed Forces of Ukraine from a destroyed breeding centre near Kharkov.

WE NEED YOUR HELP!

Over the past eight months, the world has become used to the fact that Russia invaded Ukraine. Meanwhile, the war keeps straining our economy, damaging critical infrastructure and endangering millions of people. Since February 2022, our zoos have been in a permanent high-risk sector.

Yet, given that priority must be given to supporting the Ukrainian army, the wounded soldiers, the homeless and unemployed people and the orphaned children, it is understandable that the funding of other needs – such as zoos – is reduced to a bare minimum. When 10 million of our compatriots have fled abroad, and people's incomes have fallen sharply, zoo revenues from ticket sales have plummeted.

With the help and support of zoos in Europe, the USA, Canada, Australia, New Zealand and Japan, we have managed to hold out until the return of the cold weather. Today we urgently need your help to purchase fuel, generators, insulation materials, animal feed and many other essentials. All our needs have a specific focus: surviving the winter when temperatures can drop below -20°C. AZU will continue distributing the received funds not only to its members, but also to other institutions that are in urgent need of help.

We sincerely hope that next year will bring us victory and relief, and we thank you wholeheartedly for standing with us. Glory to Ukraine!



Bienvenido WAZA!

THE WORLD ASSOCIATION OF ZOOS AND AQUARIUMS HEADED TO TENERIFE IN OCTOBER IN A WELCOME RETURN TO A FULL-STRENGTH, FACE-TO-FACE ANNUAL CONFERENCE

Tania Kahlon, Communications Coordinator, World Association of Zoos and Aquariums (WAZA) Executive Office

The 77th WAZA Annual Conference was hosted by Loro Parque from 23–27 October 2022 in Tenerife, Spain, after two years of virtual conferences. We welcomed 186 members and 32 non-members, representing 41 regions and countries from all over the world.

Ángel Torres Pérez, President of the Canary Islands, Gustavo Matos, President of the Parliament of the Canary Islands, Wolfgang Kiessling, President of Loro Parque, and WAZA President Clément Lanthier shared their opening remarks. Hugo Morán, Secretary of State for the Environment, then made an inspiring speech about the urgent need to reconcile the environment and economic and social challenges, so as to restore the balance between nature and civilisation.

Keynote speaker Francesc Carreras Comes, Digital Marketing Professor at the Spanish business school ESADE and co-founder of MamisDigitales.org, provided insights into effective communication and reputation management and highlighted the importance of branding and the use of different kinds of media.

Trang Nguyen, founder and executive director of Vietnam-based NGO WildAct, shared her incredible work in combating illegal wildlife trade between Africa and Asia, and presented WildAct, which focuses on three main programmes: education, creating a better and safer work environment for women and gender minorities, and empowering local communities.

David Ainsworth, Head of Communications of the Secretariat of the Convention of Biological Diversity, discussed the post-2020 Global Biodiversity Framework and the role of zoos and aquariums in supporting the implementation of the Framework, touching on how they can raise awareness and contribute to pro-conservation behaviour and social change.

Among many insightful presentations, the key work on environmental sustainability undertaken in our community was highlighted with the launch of the [WAZA Carbon Guide on Reducing, Measuring and Offsetting Carbon in Zoos and Aquariums](#) by Karen Fifield (Wellington Zoo) and Elaine Bensted (Zoos South Australia). This guide helps members to measure and reduce their greenhouse gas emissions and outlines various steps that zoos can take across their operations. The WAZA PalmOil Scan mobile app (currently only available in the US, Canada and UK) was also introduced. It allows the user to scan a product's barcode and learn if its producer is committed to sourcing Certified Sustainable Palm Oil. Some organisations also shared their key initiatives in promoting diversity and inclusion. During the Reverse the Red (RtR) in Evolution session, RtR Executive Committee members and guest panellists from various zoos and aquariums discussed the Plus One approach and the growing Centres for Species Survival and National Networks

and gave examples of empowering communities and amplifying success. Another session, moderated by David Field, WAZA Committee for Population Management Chair, built bridges between population management and the need for zoo directors to support it at institutional and regional levels alike.

In 2022, WAZA undertook a strategic planning process to re-evaluate its role in the zoo and aquarium community, its vision and core principles. The progress made on this process, on our new code of ethics, our proposed 2024 membership fee model and on the 2023 Animal Welfare Goal – with its potential meaning beyond our community – were also presented.

The Annual Conference celebrated the achievements of WAZA members in conservation, sustainability and contribution to research. Saint Louis Zoo's WildCare Institute Center for Avian Health in the Galapagos Islands received the Conservation Award for its work on habitat conservation and disease management, the integrated One Health approach, and the use of training and legislative or policy actions with the local conservation agencies.

Marwell Wildlife received the Environment Sustainability Award for their innovative and consistent approach towards sustainability management, for having clear long-term targets and commitments to waste management and for reducing their use of carbon and water.

Radosław Ratajszcak, Director Emeritus of Wrocław Zoo, received the Heini Hediger Award for his tremendous contributions to WAZA, to Polish zoos, and to the global zoo and aquarium community, including his work in modernising and improving the standards of zoos and his involvement in *in situ* conservation of endangered species in Vietnam, Indonesia and the Philippines.

We thank everyone who contributed to the success of the conference, all attendees and the host, and look forward to the 78th edition in San Diego.



From ideas to action

HOW THE EAZA21+ CAMPAIGN CAN HELP YOU TO MEET YOUR GOALS AND AMBITIONS

Alice Albertini and Tomasz Rusek, EAZA21+ Campaign Coordinators, EAZA Executive Office

A lack of time. A lack of resources, acknowledgement and influence. No matter how big or small your zoo is, these challenges are probably well known to you. Overcoming them while making a positive impact in conservation requires a realistic plan and a clever set of priorities. EAZA21+ is here to guide you through the process of discovery and planning.

USE THE 'HOLISTIC LENS'

Holistic thinking allows you to see the whole picture and how its parts are interconnected rather than just focusing on isolated pieces. We explored this concept in July's online workshop.* The question was: how can you be more holistic and embrace all the levels of biological diversity while engaging with different stakeholders? For some practical tips, see the box below.

BOOST GENETIC DIVERSITY

In the current biodiversity crisis, we are losing not only species, but also genetic diversity *within* species. In September we dived into this challenge with another online workshop*, anchoring it to the upcoming post-2020 Global Biodiversity Framework (GBF), where the safeguarding of genetic diversity of wild and domesticated species will be one of the main targets. From EEP management to sending samples to



the EAZA Biobank, from education to lobbying governments, you can make plans and activities in the appropriate style for your zoo to boost the conservation of genetic diversity.

JUMPSTART YOUR INTERNAL DISCUSSION

The EAZA21+ journey unfolds across many themes. One of the first steps can be discussing with your colleagues what your zoo's priorities are for maximising your impact in conservation, while taking into account the policy framework: the GBF, the EU Biodiversity Strategy or the EU Action Plan against Wildlife Trafficking. Why is there growing attention being paid to EU-native species? How can our visitors both enjoy a great day at the zoo and leave more conservation-minded? As a community of progressive zoos and aquariums, what

are our responsibilities when acquiring and transferring animals?

At the EAZA Annual Conference in Albufeira, the EAZA21+ sessions provided ample food for thought. The Campaign plenary addressed the three main themes: species and genetic diversity, conservation education and wildlife trade. How to ensure that wildlife is only traded *legally, sustainably and ethically* was the focus of the lively Acquisition and Disposition workshop. And because it may be difficult to walk in your colleagues' shoes and understand their perspectives, no matter how simple or complex a topic is, we added a role-playing session to help you figure out how to approach your zoo's challenges from all angles.

SEIZE THE DAY

Never before has biodiversity been so much in the spotlight for policy-makers and society. Your discussions within your institution, with your peers in your country and throughout EAZA will help you to define your strategic choices so that you can leave your mark on nature protection and position your zoo in the global context. EAZA21+ is also meant to support your preparation for the international calls to action. The momentum for it has never been stronger.

*If you missed the workshops and are looking for answers, video recordings are available in the [Member Area](#) of the EAZA website and in the closed [EAZA21+ group on Facebook](#).

TIPS FOR THINKING AND ACTING HOLISTICALLY

- Involve all your staff when writing and implementing your zoo or aquarium's conservation strategy.
- Instead of focusing on single species, focus on the relationships between species (and all the levels of biodiversity) and the causes of biodiversity loss: for example, overexploitation or climate change.
- Join the dots! Create connections between disciplines and aspects of your conservation work: between your fieldwork and your lab activities, conservation planning and education, and so on.
- Engage with different stakeholders, inside and outside your institution; this will show you different valuable perspectives and will amplify the success of your efforts.
- Remember about the One Plan Approach, and synergies between *in situ* and *ex situ* conservation, when engaging with local communities and authorities.
- Join the EAZA21+ activities to find new inspirations!

A genetic strategy for groups

THANKS TO MANY YEARS OF WORK, THE GROUP MANAGEMENT INITIATIVE HAS DEVELOPED A PROCESS TO ENSURE THAT EVERY POPULATION CAN BE GENETICALLY MANAGED, EVEN AT GROUP LEVEL

Elmar Fienieg, Population Biologist, EAZA Executive Office, and Philippe Helsen, Researcher, Antwerp Zoo

Whatever part of the animal kingdom you look at, many species live in groups. This has for a long time posed a challenge for genetic management, because our default Mean Kinship (MK) based strategies seem to fail when it is not possible to track individuals and their pedigrees. Therefore, the development of group-based population management strategies has for a long time been a research priority for EAZA and the wider zoo community (Leus, K., 2011*). In 2022, we can at last say that we have developed a process to design a group-based population management strategy that can cater for almost every species and situation. This is worth celebrating.

This is thanks to the huge amount of work done in the last decade, involving, among other partners, Antwerp Zoo, the University of Edinburgh, the Zoological Society of London, Bristol Zoo and Wageningen University. In recent years these were organised into a more global working group called the Group Management Initiative. Despite the progress made, the group won't get bored; they will be kept busy with further research, testing, fine-tuning and tool development, including a suitable record-keeping system.

THE STRATEGY THAT FITS ALL

Not every species that is kept in groups should be managed at a group level. If the pedigree of the population can be kept, typically it is better to manage a population at the individual level, using MK. This includes many amphibian and spider species. It is no use trying to identify individual tadpoles or spiderlings. However, adults can often be tracked, so individual (MK) management is still possible.

For EEPs like the Partula snail (*Partula ssp.*), Seychelles giant millipede (*Sechelleptus seychellarum*) and Asian killifish (*Aplocheilidae*), management needs to happen on the group level.

There is no one-size-fits-all strategy. Strategies need to be tailored to the species or, more specifically, to the population. Nonetheless, the process to come up with a strategy is the same for most. During this process, there are three main steps (see the box below).

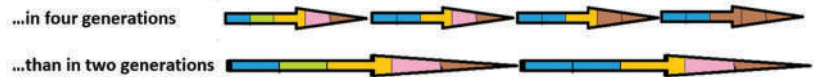
Developing these strategies is not straightforward. Are you managing

a population at group level (entirely or partially)? Then contact the EAZA Population Management Centre and work out the best strategy together.

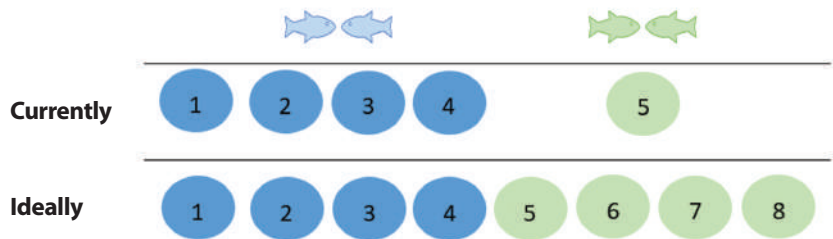
* Leus, K., Traylor-Holzer, K., and Lacy, R. C. (2011). *Genetic and demographic population management in zoos and aquariums: recent developments, future challenges and opportunities for scientific research*. International Zoo Yearbook, 45(1): 213-225

Step 1: Optimise the basic parameters of the population. Basic changes can make a big difference for the maintenance of genetic diversity. For example, there is often an inclination to produce a new generation as soon as possible. However, if it is possible for animals to breed later in life, without risking that they do not breed at all, this can help a lot with the maintenance of genetic diversity.

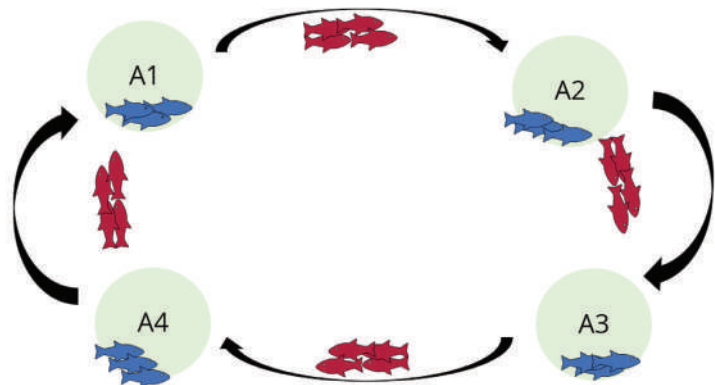
There is a higher loss of genetic diversity...

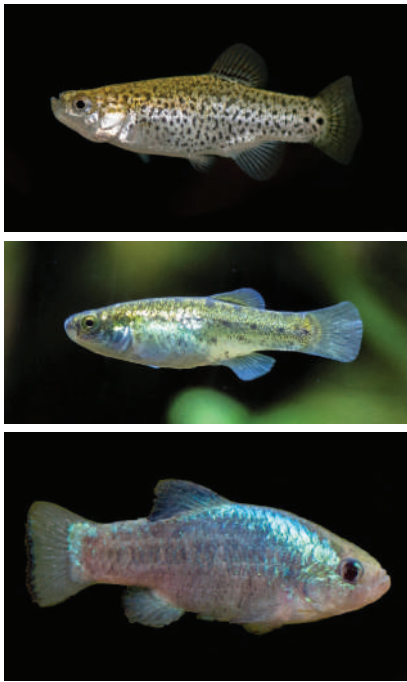


Step 2: Look more closely at the history of the population. Due to the random nature of groups, we cannot always draw any conclusions on the genetic parameters of groups. But sometimes there is a good reason to assume that one of the groups is more genetically valuable than the rest (as in the current situation scenario below), and we can use that to inform management. In the case below, we would try to expand the underrepresented lineage to achieve a more equal situation.



Step 3: Develop a transfer strategy. An effective transfer strategy reduces the risks of inbreeding and helps to maintain genetic diversity. These are often very simple round-robin breeding circles, but more complex options are possible, too.





ANTI-CLOCKWISE FROM TOP LEFT: FEMALE *ANATOLICHTHYS DANFORDII*; FEMALE *ANATOLICHTHYS TRANSGREDIENS*; MALE *CYPRINODON MEEKI*; MALE *ANATOLICHTHYS TRANSGREDIENS*; MALE *ANATOLICHTHYS DANFORDII* © ALEX CLIFFE



The pupfish plan

Elmar Fienieg, Population Biologist, EAZA Executive Office; Brian Zimmerman, EAZA Freshwater Teleost TAG Chair, Bristol Zoo; Alex Cliffe, Pupfishes EEP Coordinator, ZSL Whipsnade Zoo

SAVING SPECIES

The Pupfishes EEP manages not one, but an impressive 11 freshwater fish species. Most of these are likely to go extinct in the wild soon, or already are. This was not the only reason why this programme was prioritised for a Long-term Management Plan; it has also functioned as a model for the development of group management strategies (see previous page). The Pupfishes EEP can do important conservation work, not because it manages the last remaining animals of otherwise extinct species, but because it can bring them back to the wild. Release projects are not decades away as for some other EEPs, conversations are already ongoing to plan the first projects. The EEP Coordinator therefore tries to divide his attention between managing the population and facilitating these projects.

Putting all your eggs in one basket comes with a high risk. Unfortunately, many species are currently kept by only one or a few institutions (see table). A single technical failure can now wipe out a species. As a community, it is not so hard for us to improve this situation; keeping a group of pupfishes is relatively inexpensive. Running costs for a large

group are estimated at only €1,000 to €2,000 per year and takes up relatively little space.

FRESHWATER FISH AND GENETIC DIVERSITY

Another challenge is a genetic one. Most pupfish species have a very restricted range, such as a single spring, lake or small river, which means that genetic diversity was probably already limited to begin with. It is important to maintain as much of it as possible, so that the species still has some evolutionary potential left. The species will need to be able to adapt when reintroduced in a wild environment that is impacted

by climate change and many other anthropogenic factors.

Simple changes can make a large difference in this respect. For species originally from areas of seasonal change, rest periods in the winter induced by lower water temperatures seem to significantly improve longevity. In this way, the generation time can be lengthened and the loss of genetic diversity slowed down.

Inbreeding also needs to be managed, which requires periodic exchange of animals with other groups. Different schemes will be used for different situations. For example, within an institution, it is sometimes easy to transfer all females between two groups, each generation. This is easy indeed and a great way to avoid mating between siblings. However, such a strategy would not be considered for a transfer between institutions, as this would be very risky. Between institutions, the main strategy typically focuses on keeping the number of transfers to the minimum needed for a healthy population.

ALL HANDS ON DECK

Finally, a challenge for this programme is the high number of species involved. The EEP (and in fact the Freshwater Teleost TAG in general) is looking for species champions that can support the programme by leading on one of the species. Positively, the day-to-day management of one specific species is not intensive once a strategy is in place. So help is especially needed to get active management started. For anyone interested in saving a species, please contact the EEP Coordinator and find out how you can help.

Species	Conservation status	EAZA population size	Holding Institutions
La Palma pupfish (<i>Cyprinodon longidorsalis</i>)	Extinct in the wild	>385	>5
Charco pupfish (<i>C. veronicae</i>)	Extinct in the wild	>113	>2
Potosi pupfish (<i>C. alvarezii</i>)	Extinct in the wild	167	2
Mezquital pupfish (<i>C. meeki</i>)	Endangered	133	2
Julimes Pupfish (<i>A. julimes</i>)	Critically Endangered	Unknown	1
San Ignacio (<i>C. bobmilleri</i>)	Vulnerable	43	1
Anatolian killifish (<i>Anatolichthys transgrediens</i>)	Critically Endangered	150	2
Danford's killifish (<i>A. danfordii</i>)	Critically Endangered	43	2
Lake Salda killifish (<i>A. saldae</i>)	Not Evaluated	102	1
Sirhani killifish (<i>A. sirhani</i>)	Critically Endangered	10	1
Apodus killifish (<i>A. apodus</i>)	Data Deficient	30	1

A workshop for wildlife

THE NEW PIGEON AND DOVE TAG RCP INCLUDES SOME SIGNIFICANT CONSERVATION SPECIES AS WELL AS A UNIQUE EXTINCT PIGEON EEP



Nigel Simpson, EAZA Pigeon and Dove TAG Vice Chair, Bristol Zoological Society, and David Aparici Plaza, Animal Programmes and Conservation Coordinator, EAZA Executive Office

The publication of the EAZA Pigeon and Dove RCP in August 2022 followed a successful online workshop that took place in July 2021. The online format allowed a wide range of attendees from around the world to join in, including several who are working on wild populations of our most threatened columbiformes. This taxon includes one of the few avian species that is extinct in the wild and exists only in EAZA zoos. The EEP for the Socorro dove (*Zenaida graysoni*) has played a pivotal role in the conservation of this species and we were fortunate to be able to include in the workshop a participant from this important *in situ* project.

With a taxonomic group comprising 370 species, it took several months of preplanning meetings with the EAZA Executive Office (EEO) to refine this to a manageable number of species and make the workshop practical. This effort in preplanning resulted in a smoothly executed workshop and couldn't have been achieved without the close cooperation between the TAG and EEO.

The TAG decided to cover the species geographically using five areas: Asia, Americas, Oceania, Europe and

Africa. Online participation allowed time zones to be selected to make participation from these regions easier to achieve.

The mission statement of the TAG is not only to support the sustainable and diverse *ex situ* populations of columbids, but also to facilitate support for *in situ* conservation through collaboration and research with all relevant stakeholders. The TAG would like to encourage all EEP participants to consider how they can support *in situ* efforts with these species.

A total of 46 species were assessed, including 17 threatened (Extinct in Wild, Critically Endangered, Endangered and Vulnerable) according to the IUCN Red List. The previous 10 species that were managed as programmes – either as old-style EEPs or European Studbooks (ESBs) – were all included in this workshop. From the 46 species assessed, 15 new-style EEPs were proposed, comprising 23 species in total. The Santa Cruz ground dove (*Alopecoenas sanctaecrucis*) already existed as a new-style EEP formulated prior to this workshop, but also provided an excellent example species to use.

To encourage more collaboration and to simplify some programmes, grouping species together under one EEP was proposed. For instance, the *Gallicolumba* bleeding-heart doves from the Philippines were previously managed as separate ESBs (for the Luzon and Mindanao bleeding-heart doves, *Gallicolumba luzonica* and *G. crinigera*) and now form a larger new-style EEP with all five bleeding-heart doves, including the Negros bleeding-heart dove (*G. keayi*) which recently bred successfully in Singapore – a first breeding outside its natural range area.

Other groupings include the Large frugivorous pigeon EEP, comprising Spotted imperial pigeon (*Ducula carola*), Pied imperial pigeon (*D. bicolor*), Green imperial pigeon (*D. aenea*) and African olive pigeon (*Columba arquatrix*). The fruit doves comprising Black-naped fruit dove (*Ptilinopus melanospilus*) and Eastern superb fruit dove (*P. superbus*) are also grouped together under one EEP, the former previously being an ESB.

A special EEP for the well-known extinct Dodo (*Raphus cucullatus*) and Passenger pigeon (*Ectopistes migratorius*) raised a healthy discussion among the workshop participants.

Planned as an educational EEP, this programme will look at species where lessons can still be learned from these extinctions and, it is hoped, prevent others from following a similar pathway.

Illegal international trade has been seen in many different taxa over recent years and two species of columbids have especially been highlighted for being traded. These raised lots of discussions within the TAG. The silvery pigeon (*Columba argentina*), a Critically Endangered species from Indonesia, has been seen in trade in bird markets and being offered for sale online. The blue-headed quail dove (*Stanoenas cyanocephala*), a Cuban endemic, has recently been traded in Europe. It was decided after the workshop, when these birds started to appear in EAZA zoos, that this should be an EEP with a Do Not Obtain recommendation until further investigations could be carried out into the origins of these birds from Cuba. This species began to show up in trade and was offered to EAZA zoos from non-EAZA holders. As a Cuban endemic, this species should not have been exported from Cuba and investigations as to the origin and relatedness is required before implementing a full EEP for this species.

The TAG has been fortunate that several of the original programme Coordinators are willing to continue with the new-style EEPs, but there are also several vacant programmes. Find the list of vacancies on the EAZA Member Area or in Table 1. If anyone is interested in becoming a Coordinator for these vacant programmes, please get in touch with TAG Vice Chair, Nigel Simpson (nsimpson@wildplace.org.uk).



BLUE-HEADED QUAIL DOVE © BASIL VON AH - ZURICH ZOO



SOCORRO DOVE © STEFAN STADLER – FRANKFURT ZOO

Table 1: The proposed 15 new-style EEPs and current Santa Cruz dove EEP from the workshop in July 2021

COMMON NAME	SCIENTIFIC NAME	IUCN STATUS	RCP CATEGORY
Mindanao bleeding-heart dove	<i>Gallucolumba crinigera</i>	VU	
Luzon bleeding-heart dove	<i>Gallucolumba luzonica</i>	NT	EEP (to include all five bleeding-heart species)
Negros bleeding-heart dove	<i>Gallucolumba keayi</i>	CR	
Black-naped fruit dove	<i>Ptilinopus melanospilus</i>	LC	
Eastern superb fruit dove	<i>Ptilinopus superbus</i>	LC	EEP (representing fruit-doves) *
Nicobar pigeon	<i>Caloenas nicobarica</i>	NT	EEP *
Spotted imperial pigeon	<i>Ducula carola</i>	VU	EEP (large frugivore pigeons) *
Pied imperial pigeon	<i>Ducula bicolor</i>	LC	
Green imperial pigeon	<i>Ducula aenea</i>	NT	
African olive pigeon	<i>Columba arquatrix</i>	LC	
Santa Cruz ground dove	<i>Alopecoenas sanctaecrucis</i>	EN	EEP **
White-naped pheasant pigeon	<i>Otidiphaps aruensis</i>	VU	EEP (at genus level)
Scalters crowned pigeon	<i>Goura sclaterii</i>	NT	EEP
Western crowned pigeon	<i>Goura cristata</i>	VU	EEP
Victoria crowned pigeon	<i>Goura victoria</i>	NT	EEP
Socorro dove	<i>Zenaida graysoni</i>	EiW	EEP
Crested quail dove	<i>Geotrygon versicolor</i>	NT	EEP *
Tuxtla quail dove	<i>Zentrygon carrikeri</i>	EN	EEP *
Blue-headed quail dove	<i>Stanoenas cyanocephala</i>	EN	EEP DNO (do not obtain this species until population status is clarified)
European turtle dove	<i>Streptopelia turtur</i>	VU	EEP
Pink pigeon	<i>Nesoenas mayeri</i>	VU	EEP
Passenger pigeon	<i>Ectopstes migratorius</i>	EX	EEP (Extinct pigeons & doves)
Dodo	<i>Raphus cucullatus</i>	EX	

* Current vacant EEPs looking for new Coordinators ** Already established new-style EEP



Join the antelope movement

INTRODUCING THE ANTELOPE AND GIRAFFID TAG'S TOP PRIORITIES FOR THE CONSERVATION OF THESE VALUABLE ANIMALS IN EAZA INSTITUTIONS

Sander Hofman, EAZA Antelope and Giraffid TAG Chair, Antwerp Zoo, and Kim Skalborg Simonsen, EAZA Antelope and Giraffid TAG Vice Chair, Givskud Zoo

With the RCP process done and dusted last August, we find ourselves at the start of a new era where we intensify EAZA institutions' contribution to the One Plan Approach for the conservation of antelopes and giraffids.

With almost 150 taxa to consider, of which 45 are currently in EAZA institutions, prioritisation is the key. On the one hand, we must maximise our impact as one of the major *ex situ* partners in antelope and giraffid conservation. On the other hand, we must have long-term sustainable populations to amaze our visitors and show there is much more to these species than being a food source for charismatic predators, or a 'cute goat' to fill up your Africa mixed exhibit. We want to highlight variation in size, colour, morphology, behaviour, and so on. This comes together nicely in the TAG's new mission: '*The EAZA Antelope and Giraffid TAG aims to work towards the conservation of antelopes and giraffids and instil wonder for these species.*'

A GLOBAL ROLE

Threatened species can either be globally or locally threatened. In locally threatened species the role

of EAZA is more significant than you might expect. This can be because we hold a specific subspecies and/or because it is logistically more obvious to bring in animals from EAZA than from neighbouring countries in the original range. An example is the sitatunga (*Tragelaphus spekii*). The sitatunga is assessed as Least Concern in the IUCN Red List, but it is now rare and locally extinct in West Africa. The conservation value of the EAZA population lies in the fact that it is of known origin, namely Western sitatunga (*Tragelaphus spekii gratus*) and has been managed for a long time. It potentially carries specific genes that have become rare or lost in the *in situ* population. The TAG will therefore manage the population as an EEP to maintain as much genetic diversity as possible and remain available for various potential requests. At the same time, the sitatunga makes a great display because of its specific morphology in swamp-themed exhibits. Like the sitatunga, there is a range of species available that can carry both roles simultaneously: taxa with conservation insurance and, as we speak, restoration roles that also make great display animals.

The RCP is an ambitious and robust plan. The key takeaway is that without the commitment of EAZA institutions, it is just a document collecting dust on a shelf. We need to execute the plan together. So, what are the main messages of the plan?

SMALL POPULATIONS

Some of the species are highly threatened and/or only managed in EAZA institutions. Even though the small founder base of some of these populations may influence the feasibility of the programme, the TAG recognises that the management of these species is an essential part of its responsibility and needs to optimise their *ex situ* management. We will give these populations an extra push!

SPACE

Antelopes form an important component of many mixed-species exhibits across the EAZA membership. The TAG has accounted for this while ensuring that a variety of different antelope species will remain available for the community in the future and at the same time monitoring competition for space. The TAG will create an additional

selection tool for institutions that want guidance in their collection planning for antelopes and giraffids. It will highlight the recommended species of different sizes and natural habitats.

Like many other ungulates, most antelope and giraffid species are kept in one-male, multi-female breeding groups, which leads to a surplus of males at potentially both the institutional and programme-wide level, and thus presents a management challenge. Possible solutions include reproductive management, management euthanasia and the keeping of single-sex groups. For biological and welfare reasons the TAG views management euthanasia and the keeping of single-sex groups as preferred solutions. If an institution chooses to adopt management euthanasia as part of their antelope collection management, they must remember that it should follow European, national and regional legislation, as well as the EAZA regulations and the recommendations of the EEP Coordinator.

All-male groups are immensely helpful for appropriate genetic and demographic management and allow males to mature, demonstrating the species-specific male characteristics such as larger size, bigger horns or darker colour, as well as providing Coordinators with time to find alternative homes. These animals allow the Coordinators to replace breeding males periodically with other genetically valuable males and avoid losing the reproductive

potential of females in the absence of regular breeding.

FUNDRAISING

The TAG has strong links with the IUCN Species Survival Commission (SSC) Antelope Specialist Group and IUCN SSC Giraffe and Okapi Specialist Group. Fundraising efforts for the species under the TAG's remit focus on and are guided by the recommendations and needs identified by these established partners. Every EEP will endorse one or more *in situ* projects. The TAG will be able to direct institutions towards *in situ* projects for species that are not covered by an EEP. The TAG urges all EAZA Members to follow the recommendations to ensure funds are targeted to where they can generate the biggest conservation impact and to use information materials on topics provided by our partners, when available. EAZA Members are encouraged to commit to long-term support of conservation projects.

SUPPORTING IN-RANGE EX SITU CONSERVATION EFFORTS

Some existing *ex situ* conservation efforts for species, e.g. slender-horned gazelle (*Gazella leptoceros*), can benefit from the TAG's expertise, but it is not feasible at this time to establish breeding programmes for them in the EAZA region. The TAG will establish a 'Task Force' to coordinate responses to requests for short- or long-term support for within-range *ex situ* centres through the IUCN SSC Antelope Specialist Group. This Task Force will be responsible for aiding

projects in range states with typical *ex situ* management expertise, including husbandry, small population management, enclosure design, nutrition and so on.

WHO MADE THE CUT?

After carefully considering every taxon held in the EAZA region, some failed to make the cut. Species like springbok (*Antidorcas marsupialis*) and Thomson's gazelle (*Gazella thomsonii*) do not have a sustainable population in our region, face husbandry challenges and are categorised 'Least Concern'. The TAG will thus not focus its resources on these species and these programmes were downgraded. At the same time, other taxa were upgraded to EEP level. At the end of the exercise, we ended up with an increase in workload. We will not only increase our conservation, research and education output, but we also went from 12 ESBs and 11 EEPs to 26 EEPs and some additional Task Force species.

JOIN THE MOVEMENT

Exciting times lie ahead! Small, large, cute, rare, even extinct in the wild... you name it, we have it. More than ever there is a chance to make a difference to these species. Are you as enthusiastic as we are and feel you can contribute as an educator, population manager, husbandry expert? Or do you feel you can contribute to our research and conservation ambitions? This is the ideal moment to join our movement. Please reach out to Kim or Sander. We would love to have you on board and discover what would be the best way for you to contribute!



KORDOFAN GIRAFFE (*GIRAFFA CAMELOPARDALIS ANTIQUORUM*) AND MHORR GAZELLE (*NANGER DAMA*) IN A MIXED EXHIBIT IN PLANCKENDAEL ZOO © JONAS VERHULST - PLANCKENDAEL ZOO

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The enormous value of tiny data points

WHY EVERY PIECE OF ANIMAL DATA, FROM ROUTINE WEIGHT CHECKS TO FEEDING HABITS, CONTRIBUTES TO THE INCOMPARABLE AND INVALUABLE ZIMS DATABASE

Liz Ball, Chester Zoo, and Laura Graham, Bristol Zoological Society, members of the EAZA Records Working Group

For a records keeper suddenly confronted by a 276g okapi on ZIMS, the impact of an individual data point might seem abundantly clear. However, what really makes our data points powerful is that they connect to tell stories. Each speck of data contributes to an enormous picture on an individual, institutional, regional and even global level, an image that grows more salient with every piece of relevant, standardised information that we record. Think of it as an artistic masterpiece in the making; a painting is not created without hundreds, even thousands, of almost imperceptible brushstrokes. It's just that in EAZA's case, our masterpiece is the conservation of species on the brink of extinction.

START WITH THE HUMBLEST DATA

In isolation, an animal's weight is a singular point. But extrapolate out to a year's, or lifetime's, worth of data, and suddenly that weight indicates the birth of offspring (Asian elephants, *Elephas maximus*, can lose 100–200kg around parturition), the onset of illness or food competition in a social group. In the case of our pocket-sized okapi, it could be a reminder to check your units of measurement – which, while amusing, could skew the species' data, push out average figures and potentially complicate weight comparisons and drug dose calculations!

At Wild Place Project, keepers have been using weight data to work towards better welfare for nesting Sumatran laughingthrushes (*Garrulax bicolor*). To minimise the disruption caused by checking for eggs, keepers voluntarily weigh the female away from the nest during breeding season. With regular recordings, they have noticed patterns emerging in the weight fluctuations that might allow them to pinpoint the date of egg lay. Alongside other data, such as when the birds start sitting and when they start collecting live food, conservationists can build a fuller picture of the reproductive behaviour of this endangered species, even if the nest fails.



SUMATRAN LAUGHINGTHRUSH BEING WEIGHED VOLUNTARILY
© NATALIE KENT – BRISTOL ZOOLOGICAL SOCIETY

And that is just the enormous value of weighing things! The cumulative effect of each weight, feed and observation can inform institutional management decisions, be that in animal care, husbandry or breeding – for instance, supplementing feeds, or separating a suspected pregnant female from its mate if necessary. Or the value could be economic; some zoos use ZIMS feed logs to observe seasonal appetite variations, remaining sensitive to small changes that could signify a wider pattern of change in order to better budget for food orders and reduce wastage.

PAINTING THE BIGGER PICTURE

Zooming out to the regional level, individual data points add paint to a larger conservation canvas. TAGs and Studbook keepers place huge importance on recording rearing information, accurate birth dates, parentage and contraception. What is occasionally disregarded as 'optional' data can better inform breeding programmes. Take rearing methods; if every collection recorded the rearing type of newly accessioned offspring, TAGs could build an entire picture of methods used for a species, their frequency and what

has been historically successful when comparing consequent viable offspring production and longevity.

The contribution doesn't stop at EAZA. Together, more than 1,200 institutions are collecting information on more than 22,000 species and 10 million individuals using global records software, such as ZIMS. Through the ongoing activities of conservationists worldwide, from research into life expectancies to cooperation with CITES to help combat illegal wildlife trade, the global value of modern zoological data knows no limits.

Zoos also reap what we sow with ZIMS global resources, such as weight comparison reports – did your keeper realise that uploading a routine weight could help an institution on the other side of the world ensure that a hand-reared animal is gaining a healthy amount of weight compared to conspecifics?

There are 95,697 data points in the Western lowland gorilla (*Gorilla gorilla gorilla*) weight comparison report, 167 in a kea (*Nestor notabilis*) haemoglobin reference interval, and 144 individuals in the Sumatran laughingthrush Studbook. Alone, each record may seem insignificant, but together they form a conservation work of art. So next time you're adding weights to ZIMS, counting fish for the 80th time, or collating your Studbook, marvel in the knowledge that every bit of information committed to our shared global database is part of the masterpiece of zoo records that will inform husbandry, enhance animal welfare and research and, ultimately, improve species survival. Because without each of those tiny data points, the bigger picture of conservation fades from view.

Have you got a data success story to share? Join the EAZA Records Working Group's Google Group at <https://forms.office.com/r/N56NhReXyz>, and let's keep talking about the enormous value of tiny data points.



SOCIAL MEDIA POSTS ON SHARING LARGE HISTORIC COLLECTIONS, HERE FROM CERZA, ARE WIDELY PICKED UP © CERZA

From samples to science

WHY THE EAZA BIOBANK IS GOING FROM STRENGTH TO STRENGTH AND CONTRIBUTING TO A WIDE RANGE OF VITAL CONSERVATION RESEARCH

Christina Hvilsom, EAZA Biobank Working Group Chair, Copenhagen Zoo; Philippe Helsen, EAZA Biobank Working Group member, Antwerp Zoo; and Anna Mekarska, Biobank Coordinator, EAZA Executive Office

The crux of EAZA's population management is securing long-term healthy populations. Our expertise in building and preserving such populations hasn't gone unnoticed by the conservation community at large and we are increasingly recognised as a valuable partner in species conservation. As the world is losing species and their habitat at an alarming rate, we, as a community, need to take biodiversity conservation to yet another level.

Many of the species held in EAZA institutions are exotic, rare and elusive and, as such, poorly known to science, which has proven to be a problematic combination, as many are listed as Endangered or worse on the IUCN Red List. Fortunately, researchers are increasingly applying for samples from the EAZA Biobank in order to look into understudied species. Concurrently, EEP Coordinators, TAGs and veterinarians are identifying issues and triggering studies of uncertainties (e.g. on taxonomic position or realised relatedness) affecting populations in our care, which need orchestrated sampling drives among EAZA zoos and aquariums.

There is an underused opportunity in our care for the populations. A recent survey highlighted how EAZA veterinarians collect samples during health checks and, every so often, preserve leftovers in reference collections

for potential follow-up screenings or retrospective analyses. Such historic collections might even go back to the original founders of our current populations. However, with space limitations and energy prices rising, freezer space has become an increasingly precious asset and poses a potential threat to these collections. It was this combination of demand and the preciousness of these samples, along with the wish to increase the overview and accessibility of the treasure trove we hold as a community, that led to the creation of the EAZA Biobank in 2016. It services the entire EAZA community by providing dedicated long-term sample storage and back-up storage, organising sample drives and increasing transparency and access to information and samples to EAZA and the wider community.

The EAZA Biobank is a community-based sample depository that is unique in the world. EAZA zoos and aquariums are home to 2.4 million animals, representing 10,000 species, and, according to the newly adopted EAZA Research Standards, these animals can and should be made available to improve our knowledge and understanding of animal genetics, biology and health. Due to the strong support and sample contribution from the community, the EAZA Biobank already stores tens of thousands of samples from more than 800 species, contributed by more

than 250 EAZA Members. The majority of these samples were collected in recent years, but the valuable historical collections are increasingly being transferred to the Biobank, securing many thousands of samples ready to be used to benefit species conservation.

In practice, sharing such large historic collections follows a simple co-planning process between the institution, the designated hub and the Biobank Coordinator, to facilitate a tailored transfer process. The simple step-by-step process starts with the institution sharing sample datasheet(s) and completing, if necessary, their registration into the EAZA Biobank database. Then we discuss the most appropriate sample transfer strategy allowing for sample storage at -80°C in two EAZA Biobank hubs, one designated and one back-up hub. These hubs are located in Copenhagen Zoo, Edinburgh Zoo (Royal Zoological Society of Scotland), Antwerp Zoo (Royal Zoological Society of Antwerp) and IZW in Berlin (Leibniz Institute for Zoo and Wildlife Research). The ease with which individual samples and even entire historic collections are integrated into the Biobank is thanks to the structure of the EAZA Biobank Institution in ZIMS, which allows Members sending samples to use the existing 'Medical module' to share sample data electronically with the Biobank with a simple click of a button. Within this new feature, samples are connected to the individuals they were collected from, assuring a direct link to data available in ZIMS for husbandry (e.g. age, gender and relatedness); equally importantly, once shared, the samples are physically integrated into one of the hubs, going directly to precise storage locations.

As the number of samples in the EAZA Biobank grows, so does the number of scientific studies conducted using collected samples. Even when samples are not yet stored, the EEP and Biobank Coordinators can jointly arrange directed sample drives. The use of the samples stored in the EAZA Biobank is overseen by the Biobank Working Group (WG) – zoo experts including scientists, EEP Coordinators, geneticists and veterinarians – which jointly safeguards and ensures optimal use of the samples for conservation-related research. Often, several research studies can be conducted from a single sample, or data being generated can be of use in follow-up studies; both of these examples need careful curation of samples and data. At a time of increasing public concern and requests for documentation of research into the conservation impact of zoos and aquariums, the Biobank WG is focused on supporting the EAZA Biobank-contributing Members. The WG is developing strategies for informing EAZA Members of samples that become part of a research study, not by simply referring to resulting publications, but also working with all partners involved to disseminate research outcomes and how those will impact species conservation. Communicating the importance of samples, historic collections and data sharing to the wider public is yet another way of showing how individual institutions, and our community, are directly and indirectly contributing to research and biodiversity conservation.

The EAZA Biobank WG has already approved the release of samples for more than 30 research projects, most of which were initiated by or related to EEPs. These research projects involve several disciplines, from molecular genetic studies aiming to resolve the problem of hybridisation (e.g. in the



African penguin *Spheniscus demersus* EEP) or extend the genetic assessments of EEP populations (e.g. for Chimpanzee *Pan troglodytes*, Red panda *Ailurus fulgens*, Great green macaw *Ara ambiguus* and Roti Island snake-necked turtle *Chelodina mccordi*) to studies trying to understand and evaluate an EEP population's potential to fulfil *ex situ* conservation roles, including insurance, source and other roles as recognised in the IUCN SSC *Ex situ* Guidelines (e.g. European wildcat *Felis silvestris*, Asian elephant *Elephas maximus*, Vietnam pheasant *Lophura edwardsi*). These projects are initiated by the EEP Coordinators, who cooperate with the Biobank, scientists and animal holders to optimise sample selection, collection and data analysis.

The EAZA Biobank encourages sample contributions from all species, small and large, managed in groups or as individuals, as an EEP or not. As an example, a single sample obtained from the North American beaver (*Castor canadensis*) proved to be very valuable for a research project studying the evolution of the Pleistocene fauna. Obtaining samples from zoo and aquarium animals is undoubtedly much easier than from their wild peers, and can serve as a first step in the genetic study of a species. For instance, genetic analysis on samples from crested macaques (*Macaca nigra*) living in European zoos and currently stored in the Biobank, will serve as a reference for the study of wild and introduced populations on the islands of Sulawesi and Bacan. Finally, samples from zoo animals stored in the EAZA Biobank are also used for veterinary research, such as the analyses of vitamin D levels in zoo and sanctuary chimpanzees, the role of endogenous retroviruses in the development of the primate placenta, or research on the markers of host resistance/susceptibility of suid species to African swine fever.

If we, as a community, hope to further increase our impact on species conservation, it is clear that we should bank whatever we have before it is lost. The EAZA Biobank is more than ever at your service, to receive and secure samples that will empower current and future research to eventually slow down, or even halt, the biodiversity crisis the world is currently facing.

To help grow this invaluable community resource, please visit the EAZA website for more information and documents on www.eaza.net/conservation/research/eaza-biobank. For any questions, contact Anna Mekarska, EAZA Biobank Coordinator at biobank@eaza.net.

A green light for conservation

HOW EAZA MEMBERS CAN USE THE IUCN GREEN STATUS OF SPECIES TO MEASURE CONSERVATION IMPACT

Molly Grace, Co-Chair of the IUCN SSC Green Status Working Group, University of Oxford

When members of the public are asked about the role that zoos and aquariums play in species conservation, they tend to think of these institutions as arks: places to preserve species that are faring poorly in the wild. Of course, this only scratches the surface of the conservation contributions made by EAZA Members; between careful maintenance of healthy *ex situ* populations, studies of individuals in human care that inform *in situ* programmes, and tireless work to cultivate an educated public that cares about nature conservation, the effects extend well beyond the ticket gate. The challenge is, how to communicate this impact?

In 2021, the IUCN introduced a new way of thinking about and measuring species conservation impact: The Green Status of Species. Given the EAZA21+ initiative to encourage Members to measure the impacts of their projects, the Green Status could be a useful tool in their kits to help engage in this important initiative.

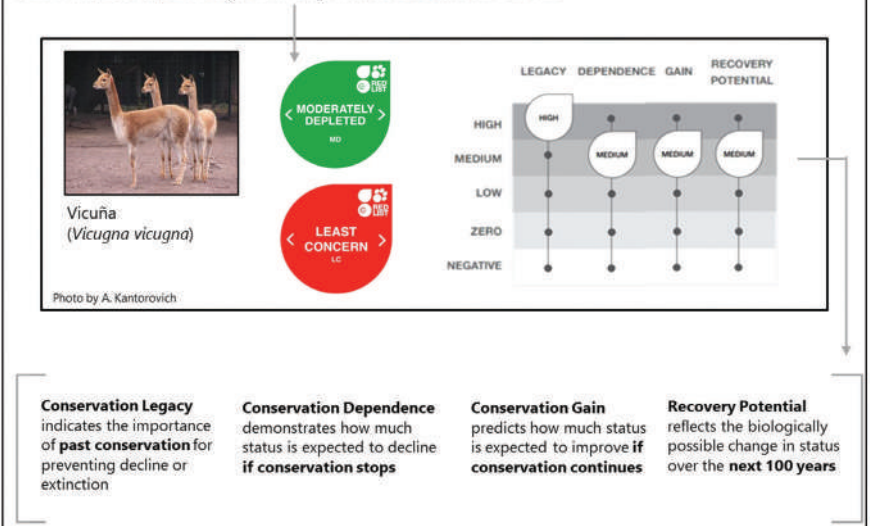
WHAT IS THE GREEN STATUS OF SPECIES?

The IUCN Green Status of Species is the first standardised method for assessing species' progress toward recovery. Historically, the IUCN Red List of Threatened Species has told the story of species' conservation by cataloguing the risk of extinction. The Green Status recognises that although preventing extinction is the first critical step toward successful conservation, it is not the end goal. Rather, the true mark of success would be to recover species to the point where they are not just surviving, but also thriving, and fulfilling their ecological roles. The Green Status of Species is therefore a new component of the Red List of Threatened Species, working to tell a more complete conservation story of an individual species.

HOW DOES THE GREEN STATUS OF SPECIES WORK?

The Green Status brings new metrics

The **Species Recovery Category** reflects depletion in abundance, distribution, and/or function relative to pre-human-impact state, and ranges from Fully Recovered to Extinct in the Wild



to the Red List. Species are assigned categories documenting their recovery status and the past and future impact of conservation, complementing the traditional extinction risk category. See the example of the Vicuña (*Vicugna vicugna*), a species present in many EAZA institutions, in the illustration above.

HOW CAN THE GREEN STATUS BE USED BY EAZA MEMBERS?

Communicating a more optimistic story

Many exhibits display the Red List category of a species – why not the Green Status categories, too? Even if a species is Critically Endangered, it may have a high Conservation Legacy or Recovery Potential. This can help reassure visitors that not everything is doom and gloom.

Measuring EAZA Members' impact

Engage with the assessment process to estimate how conservation actions, including EAZA actions, impact species' progress toward recovery. Now that the global guidelines for Green Status assessments have been endorsed by the IUCN, we are working to develop guidelines for how to assess the impact of specific conservation programmes

on Species Recovery Scores. If you are interested in exploring this for your EAZA institution, please get in touch!

Fundraising

Many species only have Recovery Potential due to *ex situ* collections. Also, conservation work on the ground takes time to yield results. The Green Status creates a framework for estimating future impacts, showing donors where the programme is heading.

WANT TO KNOW MORE?

How exactly does the Green Status of Species define and measure recovery? Check out this overview and these technical documents on the IUCN Red List website.

- <https://www.iucnredlist.org/assessment/measuring-recovery-green-status-species>
- <https://www.iucnredlist.org/resources/green-status-assessment-materials>

Want to delve deeper? Check out the [Green Status online training course](#).

- <https://www.conservationtraining.org/login/index.php>

Questions? Want to get involved?

Contact Molly Grace at

molly.grace@biology.ox.ac.uk

A lighter footprint

HOW JERUSALEM ZOO IS SETTING AN EXAMPLE BY REDUCING ITS ENVIRONMENTAL FOOTPRINT ACROSS EVERY PART OF THE ZOO

Nili Avni-Magen, Zoological Director and Head Veterinarian, Jerusalem Zoo

Zoos around the globe attract millions of visitors every year. This offers us both a challenge and an opportunity. The challenge is to try to reduce the zoo's environmental footprint in a wide variety of areas such as water, waste recycling, clean energy, light pollution and CO₂ emissions. The opportunity is, of course, to use environmental initiatives implemented at the zoo as a tool for educating the public about the importance not only of wildlife conservation but also of environmental conservation and the inherent relationship between the two.

Jerusalem Zoo has formed a 'Green Team' of employees from a wide variety of different departments who volunteer to promote environmental issues, nature conservation, earth conservation, resource conservation and environmental protection at the zoo. The Green Team promotes initiatives under three main headlines: Recycle, Reduce, Reuse.

In our region, water is a scarce and prized resource, making it a challenge to maintain the zoo's extensive gardens. To address our needs on the one hand and conserve on the other, we built a new and advanced water purification facility, which allows for irrigation of garden areas, significantly decreasing water consumption. In our recently built exhibitions, we use 'wet land' for internal purification of water by vegetation and natural means. We also use water-saving filters on taps and have changed our cleaning practices to include high-pressure hoses.

Together with an educational programme that raises awareness of this important subject among our employees and the public, our water reuse strategy has had a profound effect, reducing our yearly fresh water use by 30%.

In addition, the waste collected at the zoo – plastic bottles, other packaging and organic waste – is sorted for recycling. The organic waste is combined with all of our collected



animal faeces and manure, as well as our vegetable waste and gardening trimmings, to produce a rich compost, making excellent fertiliser for our gardens.

As part of our carbon reduction efforts, the zoo has purchased electric vehicles and electric bicycles to improve the air quality for visitors and animals alike, while also lowering our use of fossil fuels.

Most buildings in the zoo have different power demands, such as lights, heating, air conditioning, medical facilities and so on. We chose to address these issues and reduce our reliance on fossil fuel energy sources by making use of our roofs. We have installed solar panels on some and green roofs on others. The latter absorb pollutants and carbon dioxide and have been proven to reduce building energy consumption compared to conventional roofs by reducing the roof and ambient temperatures.

We encouraged our staff to decrease the use of non-environmentally friendly materials (such as disposable tools and plastic bags) and to increase the reuse of various materials.

The animal exhibits use recycled products such as plastic and other materials, and in the landscaped areas, an effort has been made to plant vegetation that is also used for feeding the animals, such as olive, carob and date-palm trees.

Nearly every day we distribute

trimmings for animal enrichment, food and play and unused pruning is chopped and shredded and used to cover the soil in plant beds. Soil cover helps to maintain moisture and prevents weed germination.

We also started a 'green education' programme to promote environmental awareness among our visitors. This includes signs and educational materials and interesting exhibits such as a bio-gas machine, which converts vegetable scraps to methane cooking gas.

In November, our 'white night' exhibit was equipped with light sensors aimed at the night sky, as part of an international effort to track light pollution. Although we maintain a no-light policy at night-time, urban development and changes in lighting technologies are causing an alarming increase in rates of light pollution, and we seek to raise awareness of its harmful effects on both natural and human populations.

Jerusalem Zoo is a green and well-maintained site in the heart of a growing city of nearly one million inhabitants, providing a green lung in a heavily urbanised environment. It attracts local wildlife, runs wildlife conservation efforts for local and international endangered species and is a leader in educating the next generation in Jerusalem and Israel about the importance of the conservation of animals and environment alike.

DISCOVER THE ORIENTARIUM

© ŁÓDŹ ZOO

ŁÓDŹ ZOO INVITES EVERYONE TO JOIN THEM IN A FANTASTIC ASIAN ADVENTURE AT THE STUNNING ORIENTARIUM EXHIBIT, FEATURING THE BIGGEST ASIAN ELEPHANT IN EUROPE, CRITICALLY ENDANGERED SUMATRAN ORANGUTANS AND GIGANTIC FALSE GHARIALS

Paulina Klimas Stasiak, former Public Relations Manager; Michał Gołędowski, Head of Education; and Natalia Albińska, Educator, all from Łódź Zoo

On 29 April 2022, Łódź Zoo opened the Orientarium, our new facility for Southeast Asian animals. The construction started in September 2018 to raise awareness of the many threats these species face in the wild. At the zoo, we put a huge effort into conservation education and the breeding of endangered animals. More than 1,300 fish inhabit our oceanic area, which features the longest underwater tunnel in Poland, and 33 species of land animals can be observed in the Orientarium.

WHAT ANIMALS LIVE IN THE ORIENTARIUM?

The exhibition section has been divided into four parts. In the **elephant house**, you can see the biggest Asian elephant (*Elephas maximus*) in Europe, with his youngest son and another young male. This area also has a free-flight zone where visitors will be able to see cattle egrets (*Bubulcus ibis*), among other species, flying above their heads.

The second part, called **Celebes**, is divided into two areas. The first is inhabited by Asian small-clawed otters (*Aonyx cinereus*) – a pair and their two young daughters – red junglefowls (*Gallus gallus*) and lowland anoas (*Bubalus depressicornis*). The second area is a home to a family of lion-tailed macaques (*Macaca silenus*).

In the **oceanic part**, there are more than 1,300 fish, including sandbar sharks (*Carcharhinus plumbeus*), rarely seen bowmouth guitarfish (*Rhina ancylostoma*), zebra sharks (*Stegostoma tigrinum*), blacktip reef sharks (*Carcharhinus melanopterus*) and rays – ocellated eagle rays (*Aetobatus ocellatus*) and *Himantura* stingrays. Visitors can admire all these species from the 26-meter-long underwater tunnel. The smaller tanks contain, among others, seahorses, triggerfish, pufferfish and cardinalfish.

The fourth and warmest part of the Orientarium, is called **Sunda Islands**. Here, you can meet two gigantic false gharials (*Tomistoma schlegelii*), Sumatran orangutans (*Pongo abelii*), gibbons, Javan langurs (*Trachypithecus auratus*), binturongs (*Arctictis binturong*), Javan mouse-deer

(*Tragulus javanicus*), sun bears (*Helarctos malayanus*) and many Asian birds.

THE ONLY ONE OF ITS KIND IN POLAND!

Łódź Zoo proudly takes care of many animal species that cannot be found in other zoos in Poland. These include the false gharials, Sumatran orangutans, sun bears and bowmouth guitarfish (*Rhina ancylostoma*).

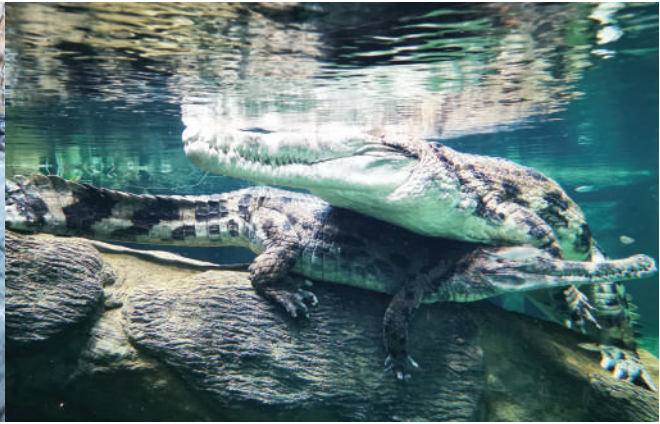
The Orientarium occupies an area equal to approximately 10 full-sized football pitches. It is the biggest facility of its kind in Poland and one of the largest and most modern in Europe. In addition to the animal habitats, it includes a conference centre of over 5,200m² with six rooms and modern equipment. It is a perfect space for organising events, business meetings, conferences and other celebrations.

The premises of the Orientarium and the entire zoo, in partnership with the Łódź Events Centre, have been decorated with unique beautiful murals showing a variety of animals that live in Southeast Asia. There are 14 murals painted by nine artists from Łódź and Wrocław. The paintings on the walls of the Orientarium are an excellent complement for this facility, perfectly matching it in tone and feeling.

MODERN SUSTAINABLE DESIGN

In the Orientarium, we managed to incorporate many modern sustainable solutions into the architecture. The roof is covered by houseleeks and sedum. Under the green fields, there is a capillary system that collects rainwater, which is stored in huge underground tanks and used to water our plants. The transparent part of the roof is made of a special plastic pouch, which is totally transparent to the whole spectrum of sunlight, so that even during winter our animals can feel as if they are outside and the vitamin D cycle is preserved. All along the building are green walls and artificial rocks, which make you feel as if you are in a Southeast Asian jungle. There are also some architectural details reminiscent

CLOCKWISE FROM TOP LEFT: THE IMMERSIVE UNDERWATER TUNNEL; INSIDE THE ELEPHANT HOUSE; FALSE GHARIALS; SUMATRAN ORANG UTAN



of ancient temples. The building is fully adapted to the needs of disabled people and you can use elevators, ramps or slides to move between the floors.

A new feature allows visitors to look behind the scenes of our marine department by peeking through a special porthole window, accessible from the visitors' route, to observe the coral nursery, quarantine tanks and part of the filtration system.

LEARNING THROUGH PLAY

While discovering incredible animals, the youngest visitors can also expect many other attractions. In the Orientarium, children will find several interactive towers and tables, which offer different games and activities related to animals. There is an interactive floor in the underwater tunnel and children will also find special toys, which offer interesting facts about the species living in the Orientarium. You can also visit the great jaw of the megalodon – the extinct king of the ocean. It is the perfect place to take a photo and make a memory of your visit to Łódź.

The zoo has attractions for adults, too. While the kids are playing, you can enjoy a moment of self-care by placing your hands – after washing them carefully – in the special tanks inhabited by red garras (*Garra rufa*), small fish that feed on dead skin cells. They are used in skincare and medical treatments because they perfectly cleanse and exfoliate the skin. Visitors can also take photos of themselves in one of our photo booths located in the Orientarium. And when hunger strikes, children and adults will find everything they like in the catering area, offering sushi and ramen, a pancake house, a candy shop, a bubble tea parlour and a pizzeria.

PERFECT PLACE FOR CONSERVATION EDUCATION

The mission of zoological gardens is to provide the best

possible conditions for animal species in human care, which are often on the brink of extinction. Animals need special food, professional veterinary care and regular rearrangements of their enclosures – and these are only a few of the items on the long list of things that we have to pay for. Every visitor can make a contribution and help to protect nature.

Our brand new building is also the perfect place to meet nature face to face by taking part in conservation classes, as dozens of organised groups do every day. We make a huge effort not only to talk about the biology of the animals, but also to give simple tips about how to protect wildlife with our daily choices. The session is full of photos and interesting facts about the animals. All species are described in Polish and in English so that visitors from abroad can also learn something about them. All around the building are screens showing videos about palm oil, overfishing, ivory poaching and other important conservation issues. We have also joined a few conservation programmes. On the screens, there are QR codes that lead to more information and to a donation page for programmes such as the northern ground hornbill (*Bucorvus abyssinicus*). There is also a permanent exhibition about the Marine Stewardship Council and World Wide Fund for Nature. We want to educate people on how to protect animals all around the world and about the many collaborations and initiatives that exist to achieve this important mission.

COME AND VISIT US!

We hope that the article has piqued your curiosity and that you will come and see the Orientarium for yourself. Modern design, unique species, inspiring exhibits and information... you can find all of this in Łódź Zoo, right in the centre of Poland. We look forward to seeing you there.

Setting the standards

THE RENEWED EAZA RESEARCH STANDARDS AIM TO ENCOURAGE AND SUPPORT EVERY MEMBER AS THEY CARRY OUT INVALUABLE RESEARCH

Raymond van der Meer, Population Management Centre Manager, EAZA Executive Office, and Zjef Pereboom, EAZA Research Committee Chair, Antwerp Zoo Centre for Research and Conservation

This spring, EAZA Council approved the renewed [EAZA Research Standards](#), available on the Documents section of the EAZA website. These Standards outline what is expected from EAZA Members in relation to research, and they help to guide, inform and provide a coordinated approach to research in zoos and aquariums.

EAZA believes that zoos and aquariums are considerably more effective at conservation and education if their activities are scientifically based and backed by evidence. The integration of research is encouraged as a component of management decisions across all fields within the institution to inform and facilitate evidence-based practice. Every EAZA Member should become involved in research activities, and the Research Standards aim to increase this involvement and the output by defining what is minimally expected from them. Whether you are a small or a large zoo, research activities should be part of your daily operations. The scale of research activities will obviously be diverse among the membership and proportional to the size of the Members' operations.

WHAT IS REQUIRED?

The Standards list nine points, each followed by a brief elaboration that will help to guide EAZA Members in achieving each of the standards. The first of these is about **identifying and documenting your research activities and priorities** in a policy document. While the product and format can differ between institutions, each institution should have a formal document that describes the plan for their contribution to research. To ensure implementation of the research plan, zoos need to have financial and staff resources in place.

An **expenditure plan** must describe how the zoo wants to support research activities and at least **one member of staff** with the necessary experience and qualification should be responsible for leading and implementing the research plan. Again, the diversity among the



COLLECTING FAECES TO STUDY GUT MICROBIA IN THE SEYCHELLES GIANT TORTOISE (*ALDABRACHELYS GIGANIA HOLOLISSA*) AT PARCO NATURA VIVA © CATERINA SPIEZIO

membership means that some zoos may have a scientific department with full-time staff, whereas others may have a few dedicated keepers or one staff member with a scientific background who will lead research activities as part of their job description. Activities can be supported entirely through an annual budget or, in other cases, are supported by allocating time and facilities for collecting samples and/or behavioural data. To develop a thriving scientific culture, **resources and facilities must be made available** not only internally, but also externally through cooperation with universities and academic institutions.

As with all specialised roles, it is important to provide **professional training** of staff and create opportunities to **keep staff informed about recent scientific developments**. The latter can be organised through staff meetings where everyone can be made aware of all the free resources available. Additionally, a virtual or physical in-house library that can be easily accessed by all staff members will help to promote the reading of relevant books, scientific journals and/or publications.

The dissemination of scientific research done in zoos is extremely important for several reasons. It helps to inform the community, increasing knowledge and building further research activities without duplicating

work. In addition, sharing research outputs will clearly showcase the value of zoo research to our own community and to external stakeholders and society. **Peer-reviewed publications** have considerable value, but dissemination at all levels (e.g. institutional, national, international) using different means including **talks, presentations and social media** will help to contribute to education, training and wider communication exercises. Building and maintaining **collaborative partnerships** with other zoological facilities and academic institutions, as well as other organisations with research resources and facilities will lead to a significant increase in research potential and the opportunity to acquire sufficient critical mass to undertake studies with representative sample sizes. EAZA Members will need to invest in the development of these partnerships and provide staff with the opportunity to visit and meet collaborating organisations.

The EAZA Research Standards will apply to all EAZA Members. Some Members have already developed a clear research strategy, while others need to start working on it. Wherever you are on this journey, the EAZA Research Committee is here to help and guide as well as facilitate and support the transition of all Members as they become an institution for applied and academic research.

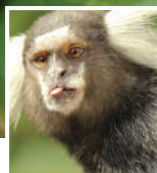
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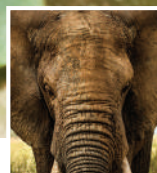
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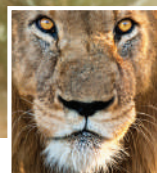
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