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ZOOQUARIA

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ISSUE 112



THE SONG WILL GO ON

HOW A DEDICATED NEW
GROUP IS CONTINUING
THE FIGHT TO SAVE OUR
SONGBIRDS



ACTION FOR OWLS

ANNOUNCING THE FIRST EVER RCP FOR THESE PRECIOUS BIRDS

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4 From the Director's chair

Why resilience is essential in the current crisis

5 Noticeboard

The latest news from the EAZA community

6 Births & hatchings

All the new arrivals at EAZA's zoos and aquariums

8 Defining our future

How EAZA's Strategy 2021–2025 will ramp up our efforts to combat biodiversity loss

10 Ending the silence

A new action group plans to continue the vital work of the Silent Forest Campaign

11 Battle of the species

How a STEM event in Ireland highlighted the issues of the Which Fish? Campaign

12 Amphibian action plan

Announcing five new EEPs to protect our amphibians

14 Saving our owls

As the first RCP for owls is created, we examine how it will help these exceptional birds

16 Collecting for the common good

The importance of institutional collection plans

18 Kunming soon

What can we expect from the CBC COP15?

20 Contributions to conservation

Our Members' support for conservation in 2020

21 Mapping the world

Introducing the interactive EAZA Conservation Map

22 For the good of the Goodeids

The arrival of a new working group will help to protect the intriguing splitfin

24 Putting policy into practice

A guide to implementing the new Animal Health Law

25 Saving for the future

An update on the positive progress of EAZA's Biobank

26 Welcome to Aralandia

Inside the new free-flight aviary at Wuppertal

28 Firm foundations

What is the secret to a successful education session?

30 Reducing our footprint

A new survey shows the many ways in which EAZA Members are increasing their sustainability

KEY: a quick guide to frequently used acronyms

EEP: EAZA Ex situ Programme

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

Those of you who read my piece in the last *Zooquaria* will remember that I finished on a teaser about the release of our EAZA Strategy 2021–2025. I am delighted that we have been able to collectively agree on the diverse and ambitious activities that will lead us towards attaining our new vision of *progressive zoos and aquariums saving species together with you*. You can read more about the Strategy on page 8; the narrative version of the Strategy will be available to read and download soon on the EAZA website. Members will also be able to access the more detailed log frame in the EAZA Member Area. In order to be successful, this Strategy will need all Members to be involved. I realise that the world has shifted greatly since March 2020 and many zoos and aquariums are focusing on their own individual recovery; however, if the Covid-19 crisis has taught us anything, it is that we are all connected and we make better progress when we all work together. I very much look forward to working with you all to achieve our vision.

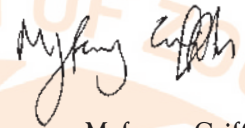
During the pandemic there has been a lot of talk about resilience and the ability to adapt in the face of adversity. This made me think a lot about what 'being resilient' means for myself as an individual, my staff and, indeed, EAZA as an association. When I started investigating the topic, I found a wealth of information available – dare I say an overwhelming amount that made me feel I wasn't resilient enough to deal with! However, I was encouraged to see regular mention of the importance of self-awareness. Hurrah, I thought, I am already thinking about being resilient and so that is one tick for me. I then read a different article that said there isn't a simple tick list to work through adversity – I suppose the good thing is that I am self-aware enough to know I love a list, even if they are not the answer to everything! The main message I discovered is that being resilient involves a combination of inner strengths and outer resources, and this combination is likely to be different for everyone.

On a personal level, I particularly embraced the advice to spend regular quality time with people who inspire you. This involved taking advantage of the increased online opportunities to connect with family and friends and making sure there were chances to meet with colleagues (not least involving some in our first ever Women in Leadership session at EAZA Directors' Days), as well as expanding my reading and documentary-watching to gain inspiration from those I might never get to meet.

When it came to thinking about supporting resilience amongst my staff, I noted the importance of being empathetic and recognising that most people will struggle at some stage and cope with this in their own way. As a leader I needed to be authentic and open myself up to showing vulnerability so that staff felt safe to do this same. It was also

important to communicate well about decisions that were being made so that people had confidence in where we are going and the level of control that was possible.

This then brings me to what it means for EAZA to be resilient as an association. My takeaways here were the importance of social support (including that provided by community, friends and organisations) and realistic planning. This nicely links back to where I started, our EAZA Strategy 2021–2025. We have taken the time to have a realistic look at our strategic plans, be understanding of our community and the struggles they are facing, and make sure that there is strong social support to bringing an agreed strategy to fruition. These have been tough times and there will no doubt be more to come; however, I have full confidence in the resilience of individuals and our community so that we will survive and thrive going forwards together.



Myfanwy Griffith
Executive Director, EAZA



NOTICEBOARD

ANNUAL CONFERENCE 2021

The EAZA Annual Conference 2021 will be held online from 20–24 September, using a virtual platform that will allow us to present five streams of content to Members, including Committee, Working Group and TAG meetings, while a sixth stream will be available for delegates both from within and outside the Membership. This stream will include plenary and thematic sessions to allow for a wide range of presentations on topics of interest to the community and its partners.

EAZA will also provide a virtual networking facility to allow delegates to meet up and join conversations, or to arrange private conversations in virtual rooms.

Posters will be displayed online, with a dedicated session to allow delegates to interact with authors. Additional meeting facilities for small *ad hoc* meetings of up to 20 will also be available on the Supreme Stage platform. While the platform is very clear and intuitive to use, EAZA aims to open the site prior to the Conference to allow delegates to familiarise themselves with its workings – which should take only a few minutes.

Registration will open from 14 July (go to <https://eaza.supremestage.com/registration.aspx>) with discounted Member rates for both full Conference and daily attendance. These fees pay for use of the online platform and technical support and have been formulated to provide the best possible service at the lowest possible cost. Non-Members invited to attend specific TAG or other meetings for Members should contact the EAZA Executive Office (info@eaza.net) and provide a letter of reference from the Full Member inviting them.

The full programme is also available on the event website – small changes may be necessary, but the overall structure has now been finalised. If you have any questions, please contact the Executive Office at info@eaza.net. We look forward to seeing as many of you as possible for what promises to be a full and interesting programme.

EAZA MEMBERS CONTRIBUTE TO IUCN SSC CAMPAIGN

In the run-up to the World Conservation Congress, taking place in Marseille and online from 3-10 September, EAZA has been active in contributing to the IUCN Species Survival Commission (SSC) Reverse the Red campaign. Reverse the Red aims to unite a wide range of partners, working to ambitious targets under a common set of methodologies, to contribute to the end of species loss under the post-2020 CBD Framework. Partners, including EAZA and its Members, are encouraged to submit case studies that show significant success in halting and reversing the decline of wild populations of endangered species, especially those that show a clear methodology that is applicable to other conservation challenges and clearly understandable to audiences including governmental authorities responsible for species conservation.

To date, EAZA Members have been featured in four case studies: Vienna Zoo's Batagur project for northern river terrapin (*Batagur baska*), Loro Parque's grey-breasted parakeet (*Pyrrhura griseipectus*) stakeholder engagement and population monitoring project, and multi-Member projects for the conservation of tequila splitfin (*Zoogoneticus tequila*) and scimitar-horned oryx (*Oryx dammah*). A further partnership case study with the Vulture Conservation Foundation has also been accepted for publication. EAZA is strongly committed to the campaign, which aims to use highly positive narratives to show the possibilities for species recovery that can act as examples in the post-2020 Framework. EAZA will also be present at the campaign pavilion in Marseille.

UNITED FOR BIODIVERSITY COALITION UPDATE

More than 100 EAZA Members are now signed-up participants in the European Commission-led United for Biodiversity Coalition, which is designed to harness the public engagement resources of institutions including zoos and aquariums, museums, botanical gardens and many others. The coalition's short-term aim is to

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increase public pressure on legislators at local, national, regional and global levels to approve an ambitious set of goals at the CBD Conference of the Parties in Kunming later in the autumn (see page 18). Given that the coalition unites major players in public science engagement, the organisers and EAZA believe that it also has a role to play in ensuring that these goals are met and that the threat of biodiversity loss is kept firmly in the public and legislative consciousness until it no longer exists.

EAZA encourages any Member who has not yet joined the Coalition to do so – for details, please contact the EAZA Executive Office (info@eaza.net).

NEW ARRIVALS

HORN SHARKS HATCHED AT BASEL VIVARIUM



DUE TO ITS RELATIVELY SMALL TANKS, Basel Vivarium focuses on small, benthic shark species, one of which is the California horn shark (*Heterodontus francisci*). There is an ESB for this species, managed by Alex Huiberse at Artis Amsterdam. This shark grows to around 1m long and lives off the Californian and Mexican Pacific coast in relatively shallow waters. It seems to be very site-confident over many years in home ranges usually not larger than 1,000m².

On 19 March 2020 we found an egg deposited in a crevice in the tank at Basel, which had a temperature of 17°C. The

female had died 16 days before, so we were fortunate that she left us an egg. After egg-laying it is normal for this species to deposit the eggs into crevices to protect them from predators and prevent them from drifting away. The eggs have a convoluted shape and are about 15cm long. The egg was moved to a 2,600-litre round tank off-exhibit, where the temperature was 18°C. This was decreased to 17°C on 10 September and to 16°C on 30 September. On 5 June another egg was laid by another female and taken to the same tank for incubation. The first egg hatched on 20

October 2020 after at least seven months and 17 days at water temperatures of 16–18°C. The hatchling is a male and has a total length of 14cm. The second egg needed longer and hatched on 15 March 2021 after exactly nine months and 10 days. It needed longer because it was exposed to a water temperature of 18°C for 78 days fewer than the first egg. The second hatchling is female with a total length of 13.7 cm. Both hatchlings are being raised in the same tank in which they hatched. It is the first breeding success that we have had for this species at Basel since 2014.

BLACK CRESTED MANGABEY BORN AT SAFARIPARK BEEKSE BERGEN



SAFARIPARK BEEKSE BERGEN is happy to report the birth of a black crested mangabey (*Lophocebus aterrimus*), which was born on 6 April this year. This is the third offspring from this female, and the first offspring from this new EEP pairing recommendation, as the father only arrived on 1 October last year. The two previous living offspring, both females, are still in the group and are also unrelated to this new male. Recent matings have been observed between the breeding male and the oldest daughter of the breeding female, so we are hopefully anticipating another birth in 2021 within this group. The mangabeys share their exhibit with the breeding group of Western lowland gorilla (*Gorilla gorilla gorilla*) and there is continuous interspecific affiliative behaviour seen, especially between the young animals; the bond between the oldest of the two gorilla young and the two mangabey daughters seems especially strong.

The population of this species is not very large within the EEP (around 40 animals), and demographically many challenges need to be solved. The hope is that with this newly established breeding nucleus, the number of births within the population will rise, resulting in more demographic stability.

Listed as Vulnerable, this species suffers from the bushmeat crisis, illegal wildlife trade and habitat loss. A 30% population loss has been estimated, but remains unclear because of its distribution range (DRC and northern Angola).

MARWELL ZOO WELCOMES THE ARRIVAL OF A RARE MOUSE DEER

MARWELL ZOO HAVE WELCOMED a new arrival, a rare Javan chevrotain or mouse deer (*Tragulus javanicus*). The tiny youngster – one of the smallest hoofed animals in the world – was born to parents Gus and Gwen at the zoo's Energy for Life: Tropical House, weighing approximately 370g at birth. The keepers say that the youngster, named Gizmo, is doing well, although their interactions are minimal due to the sensitivity of the species.

Tim Rowlands, Marwell Zoo's Hoofstock Team Leader, explained: 'We separated the male and female two weeks before she gave birth so she would not be disturbed, mimicking the natural behaviour of the female taking herself away to find a quiet and secure spot to give birth in the wild. All deer species will hide their young until they are older, so they will only really come out to feed then hide again. They are all

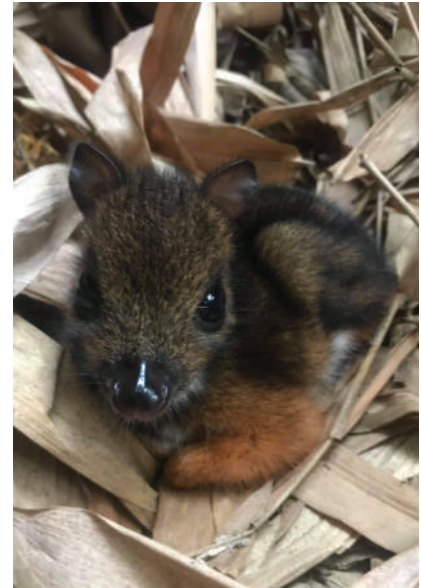
back together now and the youngster is really thriving.

'There are very few zoos that care for any of the mouse deer species, as they are so small in size, very secretive and nocturnal, so any youngster born is great news for the EEP. It's vitally important that we work to ensure these wonderful animals do not disappear for good.'

In the wild, this nocturnal species is found on the island of Java in Indonesia. They are hunted and traded both as pets and as wild meat. The species is classified as data deficient, partly because there is a lack of information about how many species of chevrotain there are on Java.

When born, the young are the size of a rat and can run and jump soon after birth. The young suckle only occasionally, and only at night.

Marwell Zoo, home to more than 140



species, is owned by Marwell Wildlife, a global conservation charity leading programmes in the UK, Africa and across the world.

SUCCESS FOR CRITICALLY ENDANGERED VULTURES AT BANHAM ZOO

BANHAM ZOO IN ENGLAND, part of the Zoological Society of East Anglia, has long championed the importance of vultures as integral parts of a healthy ecosystem and we were delighted to again produce another successful hatch of a Rüppell's griffon vulture chick (*Gyps rueppelli*), our sixth successful breeding of this critically endangered species.

The worrying and continuing decline in vulture species throughout the world, mainly due to deliberate poisonings by

poachers, only seeks to highlight the importance of conservation and education programmes *in* and *ex situ*, to support the declining wild populations of this important keystone species.

At Banham Zoo we have free-flown our vultures in our Birds of the World displays for many years and use these flights to highlight how critical vultures are to the structure and functioning balance of ecosystems throughout the world. Our aim is to challenge the often-

encountered negative mindsets towards these niche-adapted scavengers and recyclers, and affect a behavioural change in our visitors. In 2018 it was decided that a purpose-built breeding aviary was required to further improve the vulture's breeding success and this was constructed next to the main vulture aviary. The two aviaries can be joined together to allow all the birds to have access, but during the breeding season this aviary is separated off to give our Rüppell's griffon vulture pairs the quiet, uninterrupted space they need to concentrate on incubating their eggs without unwanted attention and interference from the other vultures.

Our latest chick hatched on 10 May 2021 and both parents were attentive and took turns to sit and feed the chick. At the time of writing the chick is nearly three months old and has full feathers and the unmistakable looks of a Rüppell's griffon vulture! As it is now visible in the aviary, it gives us the opportunity to highlight to our visitors the importance of the EEP, and we hope that this new addition to our vultures will be able to take part in our displays when it is ready.



Defining our future

THE NEW EAZA STRATEGY CLARIFIES OUR VISION AND OUR MISSION FOR THE NEXT THREE YEARS

Thomas Kauffels, EAZA Chair, and Myfanwy Griffith, EAZA Executive Director

It is a terrifying truth that species loss at current rates will eliminate the vital ecological and societal roles that all species fulfil. If 2020 has taught us anything, it is that now is the time for transformative change and an increasing focus on joining up the roles that everyone needs to fulfil in order to save species and live in a healthy and fully functioning world. The coordinated activities of zoos and aquariums are a vital contribution to species recovery, and by strategically working together and with others, we can have an even greater impact than ever before.

The EAZA Strategy 2017–2020, which had 175 sub-objectives covering four focal areas, was forward-thinking and ambitious, and expanded the strong foundations of EAZA's opportunities to save species. Especially given the challenges of 2020, it is a testament to the focus and dedication of our Committees, Working Groups, TAGs, EEPs, individual Members and Executive Office staff that 80% of the sub-objectives were achieved – something we can all agree is a great success. Some of the significant achievements from the 2017–2020 strategic period were: further embedding and recording conservation activities, implementing the new population management programme structures and the associated expansion of the Population Management Centre, developing the EAZA Biobank, strengthening and increasing our activities at national, EU and global level, including with IUCN and at CITES, and vastly expanding our communications about our work and scientific expertise.

The success of the previous Strategies truly consolidated EAZA's leading position and demonstrated that our vision *'To be the most dynamic, innovative and effective zoo and aquarium membership organisation in Europe and Western Asia'* has been achieved. To continue our forward momentum and redefine how we

contribute to conservation, it was important to agree a new vision and mission that would guide our strategic development for 2021 to 2025 and beyond. Consultations with Committees and Members resulted in EAZA Council approving the following to be enacted from 2021:

Vision: Progressive zoos and aquariums saving species together with you

Mission Statement

EAZA is the membership organisation that sets the standard for progressive zoos and aquariums and other partners across Europe, Western Asia and beyond. We strive continuously to define and demonstrate excellence in integrated species conservation through a transparent and collaborative approach to population management, wild animal care and welfare, representation with international organisations, conservation education, and scientific research.

The new vision clearly focuses on our strengths in species conservation and the knowledge that to halt species loss and be on the road to recovery we need to work together and with others. Our progressive ethos and desire for continual improvement means that together we can achieve far more than any individual Member would working alone.

To underpin the new vision, we agreed upon five focal areas to guide our 2021–2025 strategic development (see box).

The five focal areas provided the foundation and structure for the Committee and Working Group action plans, which were then integrated into an overarching detailed strategic action plan of objectives, responsibilities and performance indicators; this plan will soon be available on the Member Area of the EAZA website. The strategic action plan is also aligned

with other key documents such as the WAZA Strategies, EU Biodiversity Strategy, IUCN Strategies and UN Sustainability Development Goals (SDGs). The internal-facing strategic action plan is accompanied by an outward-facing narrative strategy document, which is also available on the EAZA website. We urge you to read both of these documents in detail and familiarise yourself with objectives relating to areas of joint work. The success of the 2021–2025 EAZA Strategy depends on the willingness of each and every EAZA Member to become involved and active in achieving these objectives. What follows is a brief overview of the focal areas, key developments, and how they apply to you.

Leading in zoo and aquarium animal management and care by maintaining healthy populations and individuals with positive animal welfare

By their very nature, zoos and aquariums are defined by the animals in our care. We recognise that as progressive zoo and aquarium leaders we must strive to maintain healthy populations of species and provide positive animal welfare for individuals. Our EEP coordinators and TAGs are at the heart of EAZA; without their tireless dedication and institutional support to carry out their work, we would not have the strong and successful population management programmes that lie at the very foundation of our association. However, the threats to wildlife change constantly and with them the decisions we need to make regarding which programmes to run and their appropriate roles and goals.

The objectives covered by this focal area aim to:

- engage *everyone* in making our programmes effective;
- support the people that manage them;
- proactively contribute to the population management structure

and institutional collections that reflect EAZA RCPs; and

- coordinate our work and contribute towards effective record-keeping, reproductive management and the EAZA Biobank.

Maintaining Standards that reflect the latest advances in scientific zoo and aquarium management, the continued effectiveness of the EAZA Accreditation Programme, and supporting developing zoos and aquariums also come under the activities of this focal area.

Maximising the conservation impact and engagement of EAZA and our Members

EAZA zoos and aquariums are amongst the world leaders in holistic conservation practices. We support *ex situ* and *in situ* conservation activities and strive to be a driving force for both native and global conservation. Combatting illegal trade in wildlife and showing leadership in sustainable and ethical trade will be a particular focus during this strategic period. Our ongoing conservation activities will coordinate and contribute towards building the capacity, skills and resources to save species. We can clearly demonstrate our collective conservation input through your increased use of the conservation database, so please continue to add your data. Our aim is to break down barriers to conservation action and investigate benchmarks and revised Standards for the level of activities and measurement of impact. We will continue to provide a range of resources and training to help Members meet the Conservation Education Standards and evaluate this support.

Representing the EAZA community alongside appropriate stakeholders at the national, EU and international levels to influence policy and good practice

Our new vision includes the phrase ‘saving species together with you’, and this focal area includes a wide range of actions aimed at building and maintaining the strongest possible coalitions to make it a reality. We will use every part of our combined expertise to help save species, from maintaining healthy populations and individuals with positive

The five focal areas of the EAZA Strategy 2021–2025 are:

1. Leading in zoo and aquarium animal management and care by maintaining healthy populations and individuals with positive animal welfare
2. Maximising the conservation impact and engagement of EAZA and our Members
3. Representing the EAZA community alongside appropriate stakeholders at the national, EU and international levels to influence policy and good practice
4. Facilitating, guiding and promoting the values and scientific work of accredited zoos and aquariums both internally and externally
5. Managing our operations to reduce environmental impacts

animal welfare, to conservation and conservation education. Legislation at the national, EU or global level can impact activities in many ways, and we need to continue to build capacity at all levels to be able to influence policy proactively. This will involve allocating time and resources to understanding advocacy processes and raising the profile of EAZA so that relevant bodies are aware of our existence and consider it necessary and useful to consult with individual Members, national associations and EAZA. Our activities will range from increasing awareness and preparedness regarding the implementation of existing and new legislative and other frameworks to aligning national political stances, from representing our community at the EU to strengthening our voice within IUCN, CITES and other global forums.

Facilitating, guiding and promoting the values and scientific work of accredited zoos and aquariums both internally and externally

The previous strategy saw us increase our communications activities. Over the next five years we will focus on harmonising our communications expectations and messaging so that we are all increasingly speaking with one voice about the EAZA community, its values and its scientific work. This will involve engaging Members and external stakeholders via new and established channels with a view to redefining progressive zoos and aquariums. We will be encouraging and supporting Members to do even more to conduct or actively support scientific research in the fields of animal health, welfare, population management and species biology as well as providing excellence in husbandry care. The results of such studies will guide best practice in animal welfare and animal husbandry training to

evidence the EAZA community as a leading organisation in these fields. Coordinating efforts and increasing Member capacity to establish research activities and set priorities for research is also integral to this focal area. To circle back to communication, we will also ensure the continued effectiveness of the Journal of Zoo and Aquarium Research (JZAR) and promote it as a high-quality journal.

Managing our operations to reduce environmental impacts

It is important that all of our work is underpinned by sustainable operations. This applies to both EAZA as an association and our individual Members. The sustainability survey carried out in 2020 showed that many are already managing their operations to reduce environmental impacts; we need to share these examples and build on best practice so that it is an integrated part of everyday working throughout EAZA and the membership. Developing internal sustainability actions and evidencing how these align to external ones, such as the UN Sustainability Development Goals (SDGs), will be an important aspect of work under this focal area.

Biodiversity is under threat now more than ever. EAZA zoos, aquariums and other Members have worked together to adapt and innovate in response to the Covid-19 crisis. We have demonstrated that we are committed to caring for and saving species, despite the challenges that occur. As each and every Member, their forward-thinking directors and dedicated staff in every role from keepers to educators to researchers (and all those in between) identifies the part they can play in delivering the 2021–2025 Strategy, we will be well on our way of achieving our vision of progressive zoos and aquariums saving species together with you!

Ending the silence



ALTHOUGH THE EAZA SONGBIRD CAMPAIGN HAS OFFICIALLY ENDED, THE NEWLY NAMED SILENT FOREST GROUP WILL ENSURE THAT THIS VITAL WORK WILL GO ON

David Jeggo, Chair, and Simon Bruslund, Vice-Chair, EAZA Songbird TAG

The EAZA Silent Forest Group (SFG) is the new name for the subgroup of the Songbird TAG that is working on the trade-related conservation issues that gave rise to the Silent Forest Campaign. Using the momentum created by this EAZA conservation campaign, which ran from 2017–2019, it is continuing the urgent work to save songbird species.

It is also building on the achievements of the campaign by putting songbirds firmly onto the EAZA conservation agenda and engaging closely with the IUCN-SSC (Species Survival Commission) Asian Songbird Trade Specialist Group (ASTSG). It is currently strengthening links with further strategic partners who share the objectives, and will continue developing close relationships with project partners.

The Silent Forest Group vision of ‘a world where people live in appreciation and respect of songbirds with awareness not to engage in unsustainable practices’ is achieved through three pillars:

PROJECTS – consistent and high-quality long-term technical and financial support for in-range conservation breeding, research and *in situ* conservation, welfare and education projects

PROGRAMMES – enhanced cooperation between EEPs, enabling networking and communication with other regions, research, relevant conservation entities and the public

ACTIVITIES – jointly carried-out supportive activities on education, advocacy, awareness, fundraising and publications on songbirds

PROJECTS

In addition to the six preselected projects funded during the campaign, funds have been secured for eight additional projects, which were externally vetted by the ASTSG before approval. These projects cover a wide range of endeavours to address the conservation needs of some of Asia’s most threatened songbirds.

Overall, three major conservation

breeding centres are now being supported through funding, and smaller breeding facilities are also integrated in other projects, allowing usage of the strongest expertise within the SFG.

Field projects surveying wild songbird populations have been completed or are underway in more remote areas such as mountain ranges on isolated islands. Follow-up projects are related to these results in the form of more integrated work involving local community engagement; for example, support for the Javan green magpie (*Cissa thalassina*) is among the new projects.

SFG helps facilitate expert discussion, work contribution and third-party funding. One example is supporting our project partner Ecosystems Impact to carry out urgent conservation activities in the Simeulue Islands off Sumatra. These seek to avert the risk of the imminent extinction due to trapping of their endemic shama (*Kittacincla spp.*) and hill myna (*Gracula spp.*) taxa.

Covid-19 has not been without effect, causing severe delays for some of the projects, in particular around the planned community engagement in support of Bali mynas (*Leucopsar rothschildi*) in the fringes of the Bali Barat National Park.

PROGRAMMES

Since the campaign, several new EEPs for relevant species have been approved and have started work. Applications for more, including the Javan pied starling (*Gracupica jalla*) and the white-rumped shama (*Kittacincla malabarica*), are due to be submitted soon. In all, 14 active EEPs are currently linked to the SFG.

Several EEPs have direct links or even practical involvement with the projects. For example, the orange-headed thrush EEP approved in 2020 is in close communication with the Prigen Conservation Breeding Ark, which recently had the first breeding success of the threatened subspecies (*Geokichla citrina rubecula*) from Java and Bali.

Another effect of the campaign is that

EAZA institutions have become more interested in and prepared to participate in EEPs for Asian songbirds, particularly the long-established EEPs for Bali myna and blue-crowned laughingthrush (*Garrulax courtoisi*), which have come a big step closer to achieving the population goals, and for which the new Best Practice Guidelines have been well received.

ACTIVITIES

The activities in many ways overlap with both projects and programmes; and recent research in cooperation with the Species360 Conservation Science Alliance, the University of Southern Denmark, and the Monitor Conservation Research Society, in which the SFG have been involved, have even pushed the scope beyond just Asian species. The research has resulted in comprehensive information resources on global songbird trade, primarily aiming to support CITES.

A further boost to conservation funding was the selection of the hill myna as ‘Zoo Animal of the Year’ in 2020. This annual conservation campaign in German-speaking zoos ensured much-needed additional funding for some projects also supported by the SFG, despite the current pandemic.

To learn more and to follow the updates of individual projects, programmes and activities, we encourage everyone to follow the regular updates on the SFG website www.silentforest.eu and on social media.

The projects require continued funding and engagement, and SFG will continue fundraising, with contributions from EAZA institutions being the strongest asset. The SFG management is on a zero-budget, allowing 100% of financial contributions to go to the project partners.

If your institution is considering adopting individual projects or is interested in using our extensive education resources for fundraising and advocacy to keep the birdsong going, please get in touch.



Battle of the species

A LIVELY EDUCATIONAL EVENT SHOWCASED STEM IN IRELAND IN THE SEA AND ON LAND, AND INCLUDED A COMPETITION FOR THE MOST INTRIGUING SPECIES IN THE PARTICIPANTS' CARE

David Williams-Mitchell, EAZA Director of Communications and Membership; Dr Noirin Burke, Director of Education, Galway Atlantaquaria, Ireland; and Lynda McSweeney, Education Manager, Fota Wildlife Park, Ireland

The Which Fish? Campaign experienced stormy waters in 2020 and 2021, but that does not mean that Members have been idle; instead, they have been busy spreading the word about ocean sustainability. From 15–23 May 2021, Biodiversity Week was held in Ireland and EAZA Members Fota Wildlife Park and Galway Atlantaquaria took the opportunity to showcase their work – in Galway's case through the presentation of sea creatures and the challenges they face. Biodiversity week in Ireland takes place during the same week as the International Day for Biological Diversity (22 May) and includes a full range of interesting and participatory activities for schools and the wider community. Working with the Rediscovery Centre in Dublin, Fota and Galway put together an epic battle of the species to show how STEM (Science, Technology, Education and Maths) can help us understand and conserve biodiversity. It aimed to inspire students from all over Ireland to learn more about these beautiful animals and how we can conserve and understand our natural world. This event is part of the Rediscovery Centre's STEM & Sustainability project, funded by Science Foundation Ireland's Discover Programme.

The passion of the animal care staff at both institutions was put to good use in a 'Land vs Sea Battle of the Species', presenting a range of amazing creatures that they care for, and pointing out the unique features of each, from the natterjack toad's 'go-faster' stripe to the common starfish's quite revolting habit of extruding its stomach to predigest its prey – all, of course, very exciting for the students of more than 300 schools from across the country that took part. The presentations showed a number of threats and opportunities for native species in Ireland, such as how the importing of just 12 American grey squirrels into Ireland led to a massive decline in red squirrel numbers. Another example will have particular resonance for EAZA Members: the focus of one

of Galway's presentation videos was how STEM disciplines can help in sustainable fisheries, one of the key areas of the Which Fish? Campaign.

'STEM plays a key role in a sustainable ocean for the future,' says Dr Noirin Burke from Galway Atlantaquaria, who presented the case for sealife superiority. 'We were delighted to showcase some of the amazing animals that live in the sea around Ireland as part of this event. In particular we wanted to explore the topic of fisheries. While students are often aware of the importance of the ocean for food, the types of fishery and role of STEM in designing equipment and problem-solving is generally not explored. We used props and a net sample from Bord Iascaigh Mhara [the Irish Sea Fisheries Board] to demonstrate the role of good design in maintaining sustainable wild fisheries, while also featuring some of our beautiful species, including sea bass and lumpfish, as we discussed fish farming. We hope that this video can be used to start conversations and discussions on the role of fisheries and food production, and how STEM can help create sustainable fisheries for the future.' (See below for a link to the video.)

Lynda Mc Sweeney, who was the event's champion of the land species, showed how STEM disciplines are contributing to conservation and

sustainability on land. 'Fota Wildlife Park is home to a vast array of wildlife both native and exotic,' she explains, 'and the event really helped to highlight the challenges faced by wildlife around the globe and the ways in which species have benefited from STEM advancements in recent decades.'

The highly successful event attracted a huge amount of interest and interaction from the schools that took part; many students were thoroughly taken aback by the numbers of species that are native to Ireland, their weird and wonderful shapes and colours and the ecosystem niches that drive their behaviours. It was also a great demonstration of the creativity and intelligence shown by Members in their educational output throughout the last 18 months. While we hope that next May's Battle of the Species might have an 'in person' element, 2021 showed the power of remote education when it is based on species that can be shown directly.

As to who won the Battle of the Species, EAZA is staying out of it – but as this is a Which Fish? article, this time we'll say that Galway's undersea riches probably just had the edge this time... sorry Fota, and we look forward to the rematch!

To see Dr Noirin Burke's YouTube video on STEM and Fish, go to: <https://www.youtube.com/watch?v=SmSj4UabYKA>



ONE OF THE NEW EEP SPECIES, THE MONTE ALBO CAVE SALAMANDER (*SPELEOMANTES FLAVUS*)



Amphibian action plan

WHEN FORTY PER CENT OF A SPECIES IS THREATENED BY EXTINCTION, URGENT ACTION IS NEEDED – SO A NEW PLAN FOR THE WESTERN PALEARCTIC SALAMANDERS HOPES TO REVERSE THIS DECLINE.

Gerardo Garcia, Curator of Lower Vertebrates and Invertebrates, Chester Zoo, UK; Olivier Marquis, Curator of Reptiles, Amphibians and Invertebrates, Paris Zoo, France; and Benjamin Tapley, Curator of Reptiles and Amphibians, ZSL London Zoo, UK

Today, 41% of assessed amphibian species are threatened with extinction. Whilst habitat loss is often the primary driver of declines, many amphibian declines have been caused by diseases, as pathogens such as amphibian chytrids, ranaviruses and mesomycetozoean parasites have been spread by human activity. Conservation population management programmes are considered important when the threats posed to amphibians cannot be neutralised in the short term, and the persistence of some species is dependent on *ex situ* management. In 2011 it was estimated that 943 amphibian species required *ex situ* population management programmes (Zippel *et al.*, 2011). Since then more than 1,400 new amphibian species have been described, and it is likely that the number of species requiring *ex situ* population management programmes has increased since 2011. As such we must prioritise which species to work with within EAZA institutions. As

many amphibians are threatened by infectious diseases and because many of the pathogens that are driving amphibian population declines have been detected in cosmopolitan amphibian collections including zoos, aquariums and private collections, the IUCN Amphibian Specialist Group considers it best practice to host conservation population management programmes in range states, and that only sympatric species with shared management histories are housed in dedicated facilities (Gascon *et al.*, 2007; Zippel *et al.*, 2011; Wren *et al.*, 2015). This substantially reduces the risk that novel pathogens may pose to any subsequent translocation.

In the 2000s, some *ex situ* population management programmes had been established in range states for European species as a response to the threat of the amphibian chytrid fungus *Batrachochytrium dendrobatidis* (*Bd*). However, the need for *ex situ* conservation was greater in other regions, such as the Neotropics and

Madagascar. Historically, this meant that there was a disparity between conservation need and capacity, as relatively few amphibians required conservation population management programmes in Europe, even though many EAZA institutions had the capacity to host them. As a result many EAZA institutions worked with local partners to develop *ex situ* programmes in range states (e.g. Edmonds *et al.*, 2012). This all changed in 2013 when a new amphibian chytrid (*Batrachochytrium salamandrivorans* or *Bsal*) was described (Martel *et al.*, 2013) following the catastrophic declines of fire salamander populations in north-western Europe. *Bsal* is believed to have originated in Asia via the international trade in Asian salamanders.

THE BSAI THREAT

Bsal is highly pathogenic to many European salamanders and newts (caudata) and it has been identified as a cause of mortality in wild salamander populations in three EU Member States (the Netherlands, Belgium and Germany). *Bsal* has also been detected in caudates in human care in the UK, Germany, the Netherlands and Spain. However, the current distribution of *Bsal* in Europe is unknown. In the Netherlands, where *Bsal* outbreaks were first described, the loss of individuals in a population of the fire salamander (*Salamandra salamandra terrestris*) over a seven-year period was estimated at 99.9%, with no signs of recovery so far. Whilst the fire salamander is still common in other parts of Europe, similar population crashes in other newt and salamander species with small ranges and small population sizes are likely to significantly increase the extinction risk of these species through stochastic events.

Building upon its experiences of responding to the emergence of *Bd*, the Amphibian TAG prioritised Western Palearctic caudata for its first RCP following the new process as a response to the imminent threat of *Bsal* to many Western Palearctic salamanders (Martel *et al.*, 2014). To guide the process, the TAG used the IUCN Red List, noted if species were considered a global conservation priority given their evolutionary distinctiveness and global endangerment (EDGE species),

clustered species by EAZA/*ex situ* holdings and looked at the outputs of the Amphibian Ark Conservation Needs Assessment process (Johnson *et al.*, 2020) to identify the role of each caudate amphibian occurring in the Western Palearctic region. In addition, two other salamander species were included in this RCP. These were already managed as EEPs: the Montseny brook newt (*Calotriton arnoldi*, which is already a new-style EEP) and Lake Patzcuaro salamander (*Ambystoma dumerilii*, which is not from the Western Palearctic).

All 65 Western Palearctic caudata were evaluated during a two-day workshop that was hosted by Chester Zoo in 2020. The outputs of the RCP process include the creation of five new EEP programmes, the assignment of 36 species to the Mon-T category (Monitored by TAG) and one species assigned to Mon-T DNO (Monitored by TAG, Do Not Obtain). The roles and conservation needs of many congeneric species were largely overlapping, and in such instances there was a recommendation for congeneric species to be managed within a single EEP.

New EEPs have been recommended for the Sardinian brook salamander (*Euproctus platycephalus*), an Endangered species that is endemic to Sardinia; salamanders (genus *Salamandra*), which includes one of Europe's most iconic amphibians, the fire salamander (*Salamandra Salamandra*); the Kurdistan newts (genus *Neurergus*), which are brightly coloured newts from western Asia; the cave salamanders (genus *Speleomantes*), which are lungless salamanders with limited distributions; and Lycian salamanders (genus *Lyciasalamandra*), which are viviparous salamanders restricted to Turkey and several Aegean islands in Greece. All the recommended species are either known to be, or likely to be, highly susceptible to *Bsal*. Furthermore, many of the species are range-restricted. Whilst many EAZA collections already hold *Neurergus* sp. and *Salamandra* sp., only two EAZA institutions hold *E. platycephalus*. Cave salamanders and Lycian salamanders are not currently held by any EAZA collections, highlighting a significant gap in our ability to



EX SITU FACILITIES FOR THE MONTSENY BROOK NEWT (*CALOTRITON ARNOLDI*) AT CHESTER ZOO © GERARDO GARCIA

respond to any future threat to the populations of these species.

FINDING THE KNOWLEDGE GAPS

The RCP process proved invaluable at highlighting gaps in our knowledge of conservation need and capacity. Many of the Western Palearctic salamanders have not been subject to Conservation Needs Assessments, a process that uses the knowledge of species specialists to identify appropriate conservation actions for a given species.

Furthermore, we identified that there may be gaps in amphibian husbandry in regions and/or countries where there may be island, country or regional endemics. The Amphibian TAG (ATAG) will work to address these gaps and to build capacity in-country.

In June, the ATAG launched a Massive Open Online Course (MOOC) on *Bsal*. The course has four modules and provides a solid introduction to *Bsal*, veterinary aspects, *ex situ* conservation and a call for action. The ATAG thanks the Morris Animal Foundation for their grant, which supported development of the MOOC. It is hoped that this course, in combination with the launch of the RCP for Western Palearctic salamanders, will provide the foundations of a coordinated EAZA response to this pathogen.

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Saving our owls



SNOWY OWL (*BUBO SCANDIACUS*) IS ONE OF THE EEP SPECIES INCLUDED IN THE RCP

THE FIRST REGIONAL COLLECTION PLAN FOR OWLS SETS OUT THE MANY WAYS IN WHICH WE CAN SUPPORT AND CONSERVE THESE EXCEPTIONAL BIRDS

William van Lint, EAZA Manager Animal Programmes and Conservation; Kirsi Pynnönen-Oudman, EAZA Raptor TAG Chair, Helsinki Zoo, Finland; and Simon Bruslund, Marlow Birdpark, Germany.

The EAZA Raptor TAG is excited to present the first RCP for owls. The plan provides guidance on the future direction and the TAG's ambitions for this fascinating and unique group of birds, which is represented in many collections, but so far without any cohesion from a TAG perspective. What are the priority species, what do we want to achieve from a TAG perspective and what are the most urgent areas to work on? To answer these questions the TAG decided to manage the European and the non-European owl species as two different categories.

RCP RESULTS

For the European owl species, the TAG agreed to start lobbying for species action plans on a European level for the priority species. With the One Plan Approach in mind, this will give more explicit guidance on the required

(*ex situ*) conservation actions. In preparation for such plans it was agreed to prioritise getting clarity on which species and subspecies we hold.

After reviewing the European owl species, it was decided to establish an EEP for the snowy owl (*Bubo scandiacus*) and the Ural owl (*Strix uralensis*) in order to fulfil the direct and indirect conservation roles set.

The Eurasian scops owl (*Otus scops*) will be managed as part of a wider Scops owl EEP looking at conservation and husbandry issues. The remaining European species will be monitored by the TAG.

For the non-European and especially tropical Asian species, trade was seen as an additional threat for the wild populations. The trade in owls as pets in Asian markets is also known as the 'Harry Potter Effect' (Nijman and Nekaris, 2017, and Shepherd *et al.*, 2017) due to the popular J. K. Rowling books and films; the demand for pet owls has soared to new heights in many Asian countries, but particularly in Indonesia. Japan has a large trade interest in snowy owls (Leupen *et al. in litt.*). Therefore, it was decided to link efforts on this to the EAZA Wildlife Trade Working Group and ask the Silent Forest Group to keep an eye on the issue.

Considering that there is no IUCN Species Survival Commission Specialist Group (SSC SG) for owls, zoos might have a role to play in compensating for this. There is obviously a need for species action plans for relevant threatened owls, and it was decided to review whether the *ex situ* community has a role to play in the conservation of one or more of the threatened species – for example, in establishing an insurance population (in range). The TAG assessed whether EAZA could deliver these roles (depending on species, knowledge, range, etc.) and it was determined that, in order to get the husbandry sorted, some species could function as model species. In addition, especially for the island species, EAZA might have a function in a rescue role, something to be monitored by the Raptor TAG.

With the above in mind and to fulfil

Common name / Scientific name	
Snowy owl (<i>Bubo scandiacus</i>)	EEP
Philippine eagle-owl (<i>Bubo philippensis</i>)	EEP
Burrowing owl (<i>Athene cunicularia</i>)	EEP
Luzon scops owl (<i>Otus megalotis</i>)	Scops-owl EEP
Sunda scops owl (<i>Otus lempiji</i>)	
Indian scops owl (<i>Otus bakkamoena</i>)	
Eurasian scops owl (<i>Otus scops</i>)	
Verreaux's eagle-owl (<i>Bubo lacteus</i>)	EEP
Buffy fish owl (<i>Ketupa ketupu</i>)	EEP
Ural owl (<i>Strix uralensis</i>)	EEP
Chaco owl (<i>Strix chacoensis</i>)	EEP

the direct and indirect conservation roles already agreed upon, the TAG decided to establish an EEP for, amongst others, the Philippine eagle-owl (*Bubo philippensis*) and Chaco owl (*Strix chacoensis*). For burrowing owl (*Athene cunicularia*) and scops owl, an EEP will be established to fulfil a model role for other species and subspecies.

There were concerns about whether the buffy fish owl and the Verraux's eagle-owl would remain in collections without an EEP. Both species will get a programme in order to strengthen their position as a non-conservation exhibit/educational species in EAZA collections.

The TAG is covering 243 owl species falling under Tytonidae (barn owls, 16 species) and Strigidae (typical owls, 227 species). After a structured preselection, a total of 42 taxa were the subject of this RCP and have been discussed individually, with the focus on globally or locally threatened owl species. As a result, eight EEPs were proposed (see table, left).

INTRODUCTIONS TO THE WILD AND CONSERVATION TRANSLOCATIONS

Several European owl species have been used for local introduction projects. Here the TAG wants to flag a word of caution. We have to make sure that we contribute to these projects according to the set procedures as written in the EAZA Population Management Manual (4.3 Releasing animals to the wild – see box, right) to make sure we fulfil the IUCN Guidelines for Reintroductions and Other Conservation Translocations (2013).

The TAG will try to connect better with owl conservation projects in Europe and be more engaged in ongoing projects where owls are involved. The TAG supports release projects where they meet the criteria of the IUCN SSC Guidelines for Reintroductions and Conservation Translocations.

RESEARCH AND HUSBANDRY

There is a need to sort out the taxonomy for the different species and subspecies. Visually identifying taxonomies is very hard in owls, as there is a lot of variation within populations. To be able to contribute to any introductions with the local

subspecies, this information is important. Owls of the boreal region might suffer from climate change. Research into owls kept in zoos could help to determine underlying mechanisms and to protect the owl species against the change of the biotypes and ecosystems. In particular, insect-borne diseases, such as West Nile and Usutu virus, might endanger both the *ex situ* and *in situ* populations.

For use of owls in demonstrations, please check the Best Practice Guidelines on Husbandry and Management for Demonstration Birds on the EAZA website. For EEP species, separate recommendations about use in demonstrations may apply and there is tentative supplemental guidance on other species' suitability in the RCP.

Owls are often considered as easily managed species. However, keeping them in situations with stress (wrong climate, mixed aviaries, too close to other species or visitors) might compromise their welfare, something that needs further research.

EDUCATION

The TAG is aiming to establish educational resources to highlight the important role that owls have in the ecosystem, and how they function as an indicator of their habitats. Depending on the species, certain topics can be highlighted in the educational messaging, such as the impact of climate change, habitat destruction and the pet trade. The TAG is working on an educational toolbox, to be developed with and supported by an educational advisor. If you are interested in getting involved and/or if you have any further questions, please get in touch with Kirsi Pynnönen-Oudman (Helsinki) at the EAZA Raptor TAG.

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EAZA Population Management Manual (2019) - 4.3 Releasing animals to the wild

There are a number of general principles that must apply to all Conservation Translocations where animals move from EAZA Members into the wild.

- a. There should be a document describing that the Conservation Translocation is in accordance with the IUCN Guidelines for Reintroductions and Other Conservation Translocations (IUCN, 2013), that must be prepared in advance of the project taking place. This document must follow the structure set out in the IUCN Guidelines to ensure that best practice is adhered to.
- b. The species' conservation needs, for example as defined in species or habitat conservation action plans of conservation organisations and statutory authorities, must determine if a Conservation Translocation is the most appropriate conservation intervention when considering Conservation Translocations. Lack of space for placing animals, commercial gain, PR or marketing and communication are not considered to be acceptable arguments for the release of animals from EAZA Members.
- c. Involvement of and cooperation with *in situ* partners and local authorities is of key importance.
- d. As with all destinations, the EAZA Member holds final responsibility to decide if the destination the animals is disposed to, in this case released into the wild, is appropriate.

There are two scenarios for Conservation Translocations involving animals from EAZA Members:

1. The animal(s) are part of an EAZA Ex situ Programme.
[contact program coordinator, Conservation Translocations must not proceed without the explicit approval of the TAG and EEP Species Committee (if in place)]
2. The animal(s) are not part of an EAZA Ex situ Programme.
[contact TAG chair, EAZA Members are encouraged not to proceed with the Conservation Translocation without the explicit approval of the TAG].

For further details please check page 108–113 in the Population Management Manual as available on the EAZA website.

Collecting for the common good

DAVID WILLIAMS-MITCHELL, EAZA DIRECTOR OF COMMUNICATIONS AND MEMBERSHIP, TALKS TO SANDER HOFMAN, GENERAL CURATOR, ZOO PLANCKENDAEL AND ZOO ANTWERP, ABOUT THE VITAL IMPORTANCE OF INSTITUTIONAL COLLECTION PLANNING

DWM: Sander, can you explain the purpose of an Institutional Collection Plan (ICP)?

SH: A zoo or aquarium has a lot of different factors that affect the make-up of the collection. You want to follow your mission statement, you need to check which species are available and which population management programmes are the most sustainable for you, and you need to make sure that you are also meeting the needs of other colleagues across departments as well as visitors, the Board and so on. If you don't have a written plan that is endorsed by your institution, you will be in a difficult situation; you can still have some success, but that would depend on the talent and knowledge of your director. You can't afford to have a complete change of animals or approach every 10 years or whenever a new director is appointed – which happens regularly for public and charitable zoos. In short, an ICP gives you constancy over the long term and makes your planning far more effective.

DWM: That must apply for the effectiveness of the institution as part of the wider EAZA network too.

SH: Of course; we need enough individual animals following long-term plans to make the EEP structure work. Until the 1970s, zoos used to go shopping for animals, mostly buying from dealers, and when the animals died, you bought more – of course that was not sustainable, and now the world is running out of animals. This has changed everything for zoos and aquariums; we now have a different mission, one that is based on international rules made for very good reasons. If you want to be part of a community that is helping species rather than just collecting them in one place, then you need to work together with colleagues across the network. Good institutional collection planning means that EAZA Members can progress together more quickly across every part of the work that we do.

Within the institution, making an ICP also makes the selection of species easier

because everyone is required to pitch in to do their part of the plan. For a curator, this framework makes it much easier to focus on the species and the reasons that you are looking for them. When we work with our ICP, our work is endorsed by the Royal Zoological Society of Antwerp (RZSA), and everybody knows what is in it – the planning process brings together the Zoological Director, the Curator, the Head of Research and the Head of Education in regular meetings to discuss the role of species and our capacity to manage them. We measure the species in our collection and discuss which ones to add – does the species fulfil a role and do we have the sources to manage it properly? Then we put together a summary and list of recommendations, which goes to the Board of Directors, so that everyone is on the same page.

DWM: Sounds like a big challenge – making an ICP must take ages.

SH: Well, of course, it depends where you are starting from. If you are starting a completely new zoo or aquarium, then planning for all the species will be an enormous job, but obviously, if you already have a zoo, you'll use the collection plan for every new species and new area that you're developing, but otherwise the plan won't change that much once you have put in the time to formalise it. Having said that, as an existing zoo, you also use the ICP to check the collection you already have to make sure that all the species do what you need them to do. If you can't find a role for a species, then you need to find a way to stop holding it, and for collections such as ours with hundreds of species, it really is a lot of work. In short, it helps you cut the amount of time and work you need to invest when you get new species, because you know roughly where to start looking, but it adds to your workload for existing species over the short term. Once you've done the process though, updating the ICP is a lot less work than trying to justify the species one by one without a unifying principle.

If, for example, the director says: 'We want to get polar bears because they will bring in the public,' that might be valid, but the request needs to be measured against the plan. This is also because of operational reasons – for example, do we have the proper funding to build a new enclosure that meets EAZA Standards? Do we have enough keeper staff who have experience with this species or species like it, and, if not, are you willing to employ them? What is the RCP recommendation for polar bears?

DWM: So the ICP is very much a part of the business planning process for the institution, too. Based on this and your knowledge of the RCPs and programmes, do you have an area of focus for the two sites, such as a particular concentration on conservation or education?

SH: Well, we start broad, from the mission statement of the RZSA – that is an essential starting point for any institution. It might be a bit woolly, but it sets the direction that the ICP refines. We have a specific manifesto for our animals, and another for our visitors, and these help us to set roles: in our case, the roles are Conservation, Education, Attractiveness and Research, with an additional 'no role' box to tick.

We also say clearly that we want our choice of animals to fit the goals of EAZA and the World Association of Zoos and Aquariums (WAZA) and try to make sure that we follow the respective RCPs, which work according to One Plan Approach principles and clearly flag the species that require active population management (EEPs). Because the EEPs are the result of RCPs, we can compare the roles and goals set by the TAG with our own priorities and select species where we can help, and which help us. If you have an idea, for example, for a mixed exhibit, you can contact the TAG Chair to discuss which species might be the best in terms of living together with other species, which species need new holders, what is the conservation role or what message your educators can spread.

In the past, a lot of collections had species because they were rare, or because they are unique in zoos, but it's not a good way to select species – it's not sustainable, and if you're not cooperating with the TAG in the new structure, the 'stamp collector' approach means that those species will disappear from your zoo due to a lack of breeding opportunities or because a single zoo can't make enough of a conservation difference. In addition, having rows and rows of rare birds in cages is not going to be attractive to your visitor; a walk-through aviary with fewer species is more popular with visitors and more effective in creating appreciation for nature.

DWM: Does this mean that all collections become increasingly similar, though?

SH: Honestly, it is mainly zoo people who see the similarities between collections, the public is much less likely to visit many zoos, so there shouldn't be a problem for zoos to keep species that they can manage in common.

DWM: So by choosing species in association with the TAGs and with reference to the RCPs, you are more likely to be able to fulfil your mission in all areas, rather than needing to concentrate on just one?

SH: Exactly. It's worth pointing out as well that the RCPs do so much of the work for you. As a curator, you can draw on the expertise that went into the RCP and really impress your director with your incredible knowledge of the species and its *in situ* situation and so on! That cumulative knowledge makes it much easier to plan species collections to ensure that each one meets a need both in the zoo and beyond; and knowing why each species is in the zoo means you can explain it to everyone without being defensive, and at the same time tell compelling stories about research and conservation. A good ICP is really the foundation for everything that the zoo or aquarium can do, and it makes us a powerful force in conservation, engagement, research and welfare. I can't recommend the process strongly enough to all zoos and aquariums.

If you would like more information about Institutional Collection Plans, contact william.van.lint@eaza.net.

RZSA's zoo science website (www.zooscience.be/en) is a powerful tool for communicating the stories generated by their Institutional Collection Plans both in the zoos and in the field.



Kunming soon

AS THE CONVENTION ON BIOLOGICAL DIVERSITY'S CONFERENCE OF THE PARTIES PREPARES TO GATHER IN KUNMING, CHINA, WHAT CAN EAZA MEMBERS EXPECT FROM ITS PROCEEDINGS?

David Williams-Mitchell, EAZA Director of Communications and Membership

The 15th Conference of the Parties to the UN Convention on Biological Diversity (CBD COP15) is back on, following a postponement of more than a year, and will be held on October 11–24 in Kunming, in the south of China. Self-evidently, the COP is one of the most important intergovernmental events for the zoo and aquarium community worldwide, but what exactly happens there, and what can we expect to come out of the meeting?

Parties to the Convention are the countries that have signed and ratified the treaty – in essence, every country except for the United States and the Vatican. The Parties can each vote at the COP, and the outcome of the discussions depends entirely on these votes. Observers are also permitted to attend, and these include non-governmental and intergovernmental organisations (NGO/IGO), agencies of the United Nations, businesses, youth organisations, educational institutions and indigenous peoples' groups (IPLCs).

As civil society is more welcome at CBD than at other Convention COPs, there are a larger number of accreditations, and therefore a higher number of observers to this COP than to just about any other of the major treaty organisations. This means that there is a lot of work around the COP that influences the discussions and how the outcomes are implemented. This work can broadly be separated into lobbying and advocacy, establishment of partnerships, raising visibility, and the gathering of information for organisational development.

This COP represents a turning point

for the CBD and for the international, government-led efforts to stem biodiversity loss in general. It is plain, from the ongoing and accelerating deterioration in levels of biodiversity in practically every country, that the Aichi Targets set at the COP in 2010 in Nagoya have not been met. The Decade of Biodiversity has made too little difference, despite some solid achievements by Parties and stakeholders. We have seen instead a seemingly exponential growth in the consumption of resources by humanity, something that will make the measures that will need to be taken in the CBD's Post-2020 Biodiversity Framework more urgent and more drastic by far. The proposed model looks to reverse the destruction of nature by 2050 so that humans are living in harmony with the global ecosystem by that date – a hugely ambitious goal set out in 10- and 20-year periods.

The United Nations Environment Programme (UNEP), in apparent anticipation of an agreement on the new framework, has already launched its Decade on Ecosystem Restoration. The name itself seems to recognise the need for concrete action, and in the context of a pandemic that appears to have been caused by human incursion into wild habitats, there are grounds for optimism that governments and people will finally take the necessary steps towards stabilising, restoring and protecting habitats across the globe. Nonetheless, agreement on the text of the Framework would represent a more binding form of commitment from the CBD Parties, and so the COP is understood to be vital to achieving the transformational change to human activity that the CBD's

SCENES FROM CBD COP 14



scientific advisory board has identified as essential.

The main business of the COP, then, is for Parties to vote on the text of the Framework, and propose amendments, additions or deletions as they see fit – and these changes are also voted on by them until the text is agreed by a consensus of all Parties. This is done through a series of plenary sessions that progressively refine the text of the Framework from the so-called Zero Draft previously compiled by the CBD Secretariat. The Zero Draft was developed through consultations with the Parties and other stakeholders and sets out a more general position, which includes several targets to replace the Aichi Targets from the previous framework. These targets are as follows:

- a) No net loss by 2030 in the area and integrity of freshwater, marine and terrestrial ecosystems, and increases of at least [20%] by 2050, ensuring ecosystem resilience;
- b) The percentage of species threatened with extinction is reduced by [X%] and the abundance of species has increased on average by [X%] by 2030 and by [X%] by 2050;
- c) Genetic diversity is maintained or enhanced on average by 2030, and for [90%] of species by 2050;
- d) Nature provides benefits to people contributing to:
 - i) Improvements in nutrition for at least [X million] people by 2030 and [Y million] by 2050;
 - ii) Improvements in sustainable access to safe and drinkable water for at least [X million] people, by 2030 and [Y million] by 2050;



- iii) Improvements in resilience to natural disasters for at least [X million] people by 2030 and [Y million] by 2050;
- iv) At least [30%] of efforts to achieve the targets of the Paris Agreement in 2030 and 2050.
- e) The benefits, shared fairly and equitably, from the use of genetic resources and associated traditional knowledge have increased by [X] by 2030 and reached [X] by 2050.

The square brackets and figures inside them are some of the items that will be discussed and agreed at the COP. As the Parties have historically chosen to prioritise economic growth over other considerations, there is a real danger that the Framework will be left toothless once the figures are inserted. This is where a combination of scientific input and lobbying of the Parties by NGOs and other groups becomes vital for a meaningful agreement.

The CBD Secretariat recognises the importance of this lobbying and has been encouraging NGOs to share information via a so-called Communications Flotilla that meets weekly. Both EAZA and WAZA have been attending these meetings thanks to our membership of the European Commission-led United for Biodiversity Global Coalition. While the diversity of the Flotilla (which includes NGOs covering everything from infrastructure financing to species conservation) means that in itself it cannot lobby for specific outcomes, the Secretariat's guidance is clear: all groups and institutions should be making strong recommendations to their local, national and regional legislators to

ensure that they are also pressuring the Parties to agree ambitious targets and crucially, commit to finding ways to make sure that they are implemented. We cannot afford to miss another set of targets, and the Zero Draft 'assumes that a whole-of-government and society approach is necessary to make the changes needed over the next 10 years as a stepping stone towards the achievement of the 2050 vision. As such, governments and societies need to determine priorities and allocate financial and other resources, internalise the value of nature and recognise the cost of inaction.'

EAZA Members are in an ideal position to assist with this mission: as a community, we reach well over 100 million visitors per year, and many of us have close links to legislative authorities, either directly or through National Associations. While the CBD and the Framework will be opaque abstractions to many

visitors, we have an opportunity in the run-up to the COP to educate our communities about the Kunming agreement (which can be seen in the same terms as the Paris agreement on climate change) and ask them to add their voices to the cause. The CBD has a list of commitments already made by individuals and organisations (www.cbd.int/action-agenda/contribute) to which Members and individuals can add, and there is also a petition calling for 30% of Earth's land and ocean to be protected by 2030, initiated by the Campaign for Nature (www.campaignfornature.org/petition). We would encourage Members to make every effort to engage visitors and stakeholders until the COP and beyond.

If you would like to join the United for Biodiversity Coalition or would like to learn more about the CBD COP15, please contact david.williams-mitchell@eza.net

How the Convention for Biological Diversity impacts EAZA and its work

As the main global agreement on the preservation of nature, CBD is also the principal reference framework for zoos and aquariums. Therefore, what is negotiated for the next decades in Kunming will have an impact on the opportunities, rules and activities related to our work.

The most direct relevance to the EAZA community is through the Convention's Article 9. It calls for complementing *in situ* conservation, where necessary, with *ex situ* measures, with the aim of enabling the recovery of threatened species. The obligation to set up *ex situ* measures also applies to the European Union as a party to the CBD. The EU fulfils it through the Zoos Directive, which is well known to our readers as the umbrella over all the national zoo licensing laws in Europe.

Zoos and aquariums contribute to the success of CBD in various other ways as well, besides *ex situ* management for conservation. We play a unique role in raising public awareness about biodiversity, in helping the increasingly urban human population reconnect with nature, in providing scientific outputs or in supporting fieldwork and capacity buildings in biodiversity-rich areas all over the world.

Covid-19 closed all of our Members for much of 2020, depriving them of essential income, and yet they continued to support conservation projects across the world. EAZA Members were even able to support emergency response requests from the other side of the world after the devastating bushfires in Australia.



CONTRIBUTIONS TO CONSERVATION

Total Support 2020

i Based on information available in the EAZA Conservation Database on 3 June 2021



62,626 HRS
STAFF TIME



126
MEMBERS



>600
PARTNERS



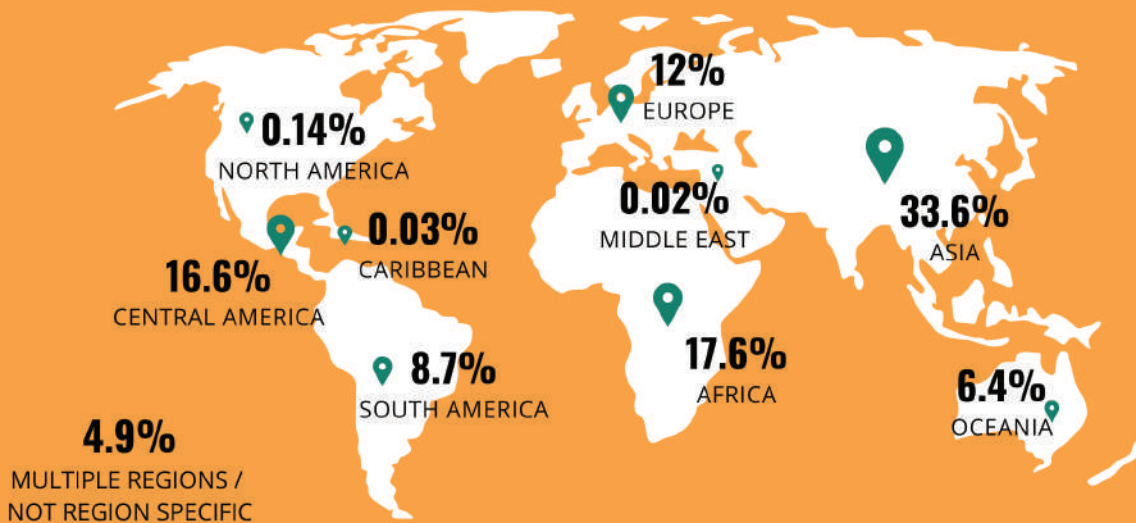
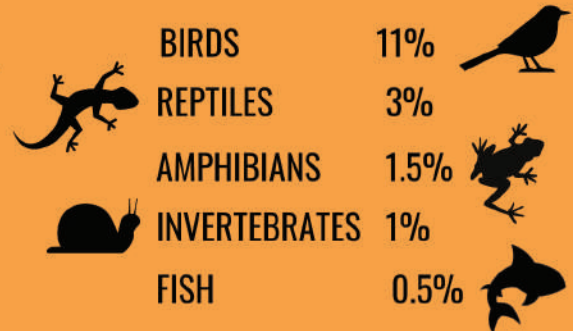
>600
SPECIES



17.8 MILLION €

Conservation Safety Net: COVID-19 closed all of our Members for much of 2020 but even without income, zoos and aquariums continued to contribute to conservation globally.

AREAS OF FINANCIAL SUPPORT



**include plant, habitat conservation, conservation tool development*



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

Mapping the World

Merel Zimmermann, EAZA Coordinator Animal Programmes and Conservation



EAZA CONSERVATION MAP

In spring 2021 the EAZA Conservation Map was launched on the public EAZA website. The map uses information from the EAZA Conservation Database to provide a bigger audience with an insight into all your wonderful work across the world. So if you are interested in what projects, species and activities have been supported by EAZA Members and where these take place, go and explore the world!

FUTURE DEVELOPMENTS

Functionalities within the EAZA Conservation Map are continually improving, and will go on doing so as long as Members keep entering their information. For instance, we are exploring how we can show more species-specific information and acknowledge the partners you work with and support. It should also be possible to look for activities that may not be bound to a geographical region or species. In addition, we are looking into having a live counter to provide insight into the total contributions made to conservation in real time. Keep a look out for these over the next few months!

WANT TO BE PART OF THE EAZA CONSERVATION MAP?

Get an account for the EAZA Conservation Database, gather your institution's contributions to conservation, check if the project is already in the Database and add your contribution. Alternatively, if you can't find it, go ahead and create a new project. It is important when creating a project that you provide as much information as possible, in particular the details of where the project or activity takes place, under which TAG the species falls (even if these are not programme species) and of course the contribution you have made, either financially or with staff time. This will ensure that your input actually shows up!

If you have any questions, feel free to contact info@eazaconservation.org and stay tuned for the upcoming tutorial on how to use the EAZA Conservation Database.



TEQUILA SPLITFIN (*ALLODONTICHTHYS POLYLEPIS*)



For the good of the Goodeids

A WORKING GROUP CREATED TO PROTECT THE INTRIGUING SPLITFIN IS MAKING EXCELLENT PROGRESS – BUT THERE IS SO MUCH MORE TO BE DONE

Michael Köck, Curator of Freshwater Fish, Birds and Mammals, Haus des Meeres, Aqua Terra Zoo, Germany

Between the two Mexican metropolises of Mexico City and Guadalajara extends the Mesa Central, an area of around 250,000km², which is characterised by great biodiversity and a high percentage of endemic freshwater fish. Approximately 70 species have been reported from here so far, almost all of them endemites, except for three that are more widely spread. At the same time, this highland, the size of Romania, is home to around 40 million people, twice as many as the European state, making it the most densely populated area in Mexico. It is also the centre of agriculture and the stronghold of Mexican industry. The water requirements of the fast-growing metropolises of this newly industrialised country – whose population more than doubled from 49 to 111 million between 1968 and 2008 – and the many agricultural areas are high. Waste water from cities and industry and large amounts of fertiliser and pesticides often end up in rivers, lakes and lagoons. An increasing number of droughts caused by climate change, over-exploitation of the country's resources and the stocking of many bodies of water with non-native fish

species for consumption, such as tilapia, carp and largemouth bass, are putting enormous pressure on the native fish that are often found only in small areas.

THE PLIGHT OF THE SPLITFIN

Among Mexico's endemic fish groups, also making up a high percentage of the fish species of the Mesa Central, are the splitfins (subfamily Goodeinae), which make up the bulk of the family Goodeidae. Of the 39 existing species, 35 have a threat status according to the IUCN, and around three quarters of them inhabit the waters of this highland. Between the early 1990s and the present day, splitfins have suffered losses of more than 70% or even 80% of their populations or habitats. For example, in a status report by US scientist and Goodeid specialist John Lyons in 2011, the finescale splitfin (*Alloodontichthys polylepis*) was listed as possibly extinct in the wild, with no records since 2000. Only 20 years earlier, the species was classified as 'not rare' in travel reports from European aquarists. Death below the water's surface comes quietly, quickly and often unnoticed.

In the early 2000s there were estimated to be fewer than 100 private keepers worldwide, keeping just 15 species of splitfins. Fewer than 10 of them were kept in European zoos, and organised *ex situ* population management of some species existed only in London and Chester. The latter institution, however, was at that time already taking part in establishing the Fish Ark Mexico at the University of Morelia in Michoacán. Against this dramatic background, and after 10 years of experience of keeping these fish, an international working group was created by myself and the Haus des Meeres in 2008, and the Goodeid Working Group (GWG) was founded in May 2009, together with representatives from ZSL London Zoo and Chester Zoo and the two hobby associations Poecilia Nederland and Poecilia Scandinavia (www.goodeidworkinggroup.com). These five founding members already reflect something that has characterised the GWG right from the beginning and has proven to be one of its great strengths: the international cooperation and strong networking of public institutions such as zoos and universities with a growing

group of dedicated private keepers interested in conservation population management. The GWG benefits from the experiences of zoos in the field of conservation, the large international network and the almost endless possibilities to create awareness amongst the general public; while hobbyists, with their decades of experience, never-ending enthusiasm and the large numbers of aquariums they can make available for *ex situ* breeding, make a different but equally important contribution. I like to refer to the public partners in the GWG as the head of the fish that sets the direction; the hobbyists are the fins and muscles that move it. Due to the abilities of a newly founded group based on volunteer work, efforts were initially limited to *ex situ* conservation breeding to counteract the disappearance of species in nature, but also of populations in aquariums.

MAKING PROGRESS

The years that followed were marked by intensive networking, the distribution and breeding of rare species, the creation of a rough global plan of where the different populations are kept, international conferences, PR work and survey trips. Today, in addition to more than 20 public partners such as zoos and universities, but also schools, the GWG encompasses around 500 hobbyists from more than 30 countries. More than 130 different populations of all species are now kept, and a recently developed international code for each population ensures that fish can be uniquely assigned to a locality. Two species, including the finescale splitfin, already thought to be extinct in the wild, have been rediscovered during survey trips, along with previously unknown populations of several species. While splitfins were still an exception and a marginal phenomenon in fishkeeping 15 years ago, they are now known to a broader public, and the work of the GWG is considered a prime example of not only what successful conservation breeding can look like, but also how people can be introduced to this sensitive subject.

Since the foundation of the GWG, the Haus des Meeres has moved more and more towards the centre of this group and its work. The latest step is the construction of a facility with around 170 aquariums dedicated to splitfins and a few other Mexican endemics. In addition to the conservation breeding

GWG members by registration of a curator or head aquarist:

Aquarium Berlin
 Aquarium - Bolton Museum
 Aquazoo-Löbbecke Museum
 Düsseldorf
 Bristol Zoo Gardens
 Chester Zoo
 Haus des Meeres – Aqua Terra Zoo
 Jászberényi Állat- és Növénykert
 Nyíregyházi Állatpark - Sóstó Zoo
 Palais de la Porte Dorée Aquarium
 Tropical de Paris
 Rīgas Zoodārzs
 Tropicarium és Oceanárium
 Budapest
 Tropiquaria Wildlife Park
 Wilhelma Zoologisch-Botanischer
 Garten Stuttgart
 Zoo Beauval
 Zoological Garden Płock
 Zoological Society of London,
 London Zoo
 Zoo Ostrava

Additional GWG partners participating in a studbook for the Critically Endangered finescale splitfin (*Allodontichthys polylepis*) run by Haus des Meeres

Kölner Zoo
 Diergaarde Blijdorp

of endangered forms, the propagation of different populations of non-endangered species is also an issue. All together they should display the diversity of the whole group in its entirety as far as possible. This 'center for conservation of biodiversity in endemic Mexican freshwater fish', or Centercon Mexico for short, hopes to make, through guided tours, the topics of biodiversity, species protection, conservation breeding and the power of the individual in fighting extinction accessible to a broader public. We hope this will serve as a model that will encourage other institutions to develop similar projects that give greater priority to the protection of freshwater fish species. Freshwater fish need a lobby, and we have the power to give them one.

BACK TO THE WILD

Another key aspect of conservation efforts for splitfins are *in situ* projects, which have become increasingly important in the last decade. In 2014, the Laboratorio de Biología Acuática of the University of Morelia representing

the Fish Ark Project started phase 1 of the reintroduction of the Tequila Splitfin (*Zoogoneticus tequila*), a species that disappeared from its habitat, the springs of the Río Teuchitlán, in the late 1990s. This project was financially supported by Chester Zoo from the beginning, but was soon joined by the Haus des Meeres and the GWG. The promotion of this project by the GWG and networking of some EAZA institutions brought in to the group of donors Wilhelma in Stuttgart, the zoos in Ostrava and Beauval and, through a project application of the Haus des Meeres, the European Union of Aquarium Curators (EUAC). All of these institutions were committed to the project until the final phase in November 2017, when the species was released into its original habitat. Since then, the species has continued to spread in the river and the population has increased in number. Without exaggeration, this is probably one of the most successful examples of reintroduction of a fish species, and a prime example of what a purposeful cooperation between zoos and hobbyists can achieve.

Immediately afterwards, the same Mexican team, led by Omar Domínguez from the Fish Ark Mexico, started another project in the same habitat: the golden skiffia (*Skiffia francesae*), which had disappeared in the late 1970s, is also to be reintroduced. In February of this year, the first 200 individuals were released into the headwaters of the Río Teuchitlán, and first results on the progress of this project are expected in September or October. Again, the aforementioned institutions are on board, but more funds are still needed, which is why we are urgently appealing for donations. For more information about conservation projects for splitfins, donation possibilities or Goodeids in general, please find my contact details at the end of this article. Besides being a biologically highly interesting group of fish, splitfins qualify perfectly for conservation population management projects or successful *in situ* projects for any zoo and aquarium, so we are confident that we will welcome more and more EAZA Members soon within the community of Goodeid lovers. For more information, please contact me at:

- michael.koeck@haus-des-meeres.at
- characodon68@gmail.com
- +43 664 76 55 408 (cellphone and WhatsApp)

Putting policy into practice

A NEW GUIDANCE HANDBOOK FROM EAZA AND THE EAZWV WILL HELP MEMBERS TO BETTER UNDERSTAND AND IMPLEMENT THE NEW EU ANIMAL HEALTH LAW.

Allan Muir, EAZA EU Policy Coordinator; Mads Frost Bertelsen, Veterinary Committee Chair, Copenhagen Zoo, Denmark; Stephanie Sanderson, EAZWV, Veterinary Committee Vice-Chair and Legislation Subgroup Chair; and Arne Lawrenz, Wuppertal Green Zoo, Germany

On 21 April this year, the new EU Animal Health Law (AHL) came into force across all 27 EU Member States. This landmark piece of legislation and its associated legal acts have been in the making for several years, and participation in this process has been a priority for EAZA and the European Association of Zoo and Wildlife Veterinarians (EAZWV). Both organisations work together on this topic through the EAZA/EAZWV Legislation subgroup, which sits under the remit of the EAZA Veterinary Committee. Currently, this subgroup brings together 59 zoo veterinarians and biologists from 17 countries across the EAZA region, all with a particular knowledge and interest in animal health policy and legislation. It is this group that is currently compiling a Guidance Handbook to aid in the implementation of the new AHL.

Prior to the AHL, the most relevant veterinary legislation for our community was the so-called 'Balai Directive', Council Directive 92/65/EC. Balai laid down a system for the approval of establishments, which permitted the movement of non-domestic animals between different EU Member States, providing that the establishments had a similarly high status for health and biosecurity.

However, in reality, some Member State competent authorities struggled to implement the legislation effectively. An investigation into Member States' implementation of 92/65 was undertaken by the European Commission in 2018, and irregularities were highlighted, which included primates being kept by non-approved establishments, the disease surveillance plan not fulfilling its intended objectives and inaccuracies relating to publicly available approval lists (European Commission, 2018).

A FRESH OPPORTUNITY

As of 21 April this year, the Balai Directive was repealed and replaced by the AHL, which meant that all previously approved bodies, institutes or centres were defined as confined establishments. In the new legislation, much of the ethos behind the Balai Directive has been maintained, including the laying down of approval requirements for confined establishments. These requirements are again linked to the ability to move animals to a confined establishment located in a different Member State – something that has been integral to the success of many EEPs within EAZA.

The AHL has been designed to be an innovative and flexible piece of legislation, where disease control and mitigation measures can be tailored to specific situations and disease circumstances. Its scope is truly massive, tackling transmissible animal diseases where action needs to be coordinated at EU level and covering multiple sectors, including agricultural livestock, pet-keeping and aquaculture as well as laboratories. Within this legislation, understanding what is applicable to our zoological ('confined establishment') sector and daily operations is key, and that is where the Guidance Handbook will provide support.

CONTRIBUTING TO POPULATION HEALTH

Effective veterinary legislation can not only assist in our conservation efforts, through the facilitation of animal moves, but also contribute to the health and welfare of the animals and their populations in our care. One central component to the AHL's approval system for confined establishments is the requirement of the disease surveillance plan, updated at least

annually and tailored to the specificities of the institution.

Within the Guidance Handbook, we will provide general advice on how to create such a plan to meet the requirements laid down in the AHL. Additionally, through close consultation with our community of EEP and TAG vet advisors, the Handbook will contain taxa-specific recommendations for disease surveillance for AHL notifiable diseases.

By providing a template for the disease surveillance plan alongside recommendations for taxa-specific disease testing, the Handbook can be a tool towards harmonising our approach towards population health across the EAZA community.

TARGET AUDIENCES

The primary audience for the Handbook will be EAZA Member institutions, to improve their understanding and implementation of the legislation. Additionally, we hope that the Handbook will be of use to competent authorities across the EU, for them to better understand what parts of the legislation are applicable, but also the high level of biosecurity and health provision in place at EAZA Member institutions.

The Directorate-General for Health and Food Safety (DG Sante) of the European Commission, the Directorate responsible for AHL, has welcomed the news of the production of this sector-specific guidance, agreeing that there is a clear need amongst stakeholders and authorities to improve understanding. We hope that through filling this knowledge gap and providing a reliable source of advice and guidance, the Handbook will help to facilitate our daily operations and missions towards species conservation under this new EU legislative framework.

If you have read this article and are interested in joining the EAZA/EAZWV Legislation subgroup, then please make contact with Allan Muir (allan.muir@eaza.net) for more information.

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• European Commission (2018). Overview report: Animal Health Controls in Zoos and Laboratories. Available: <https://op.europa.eu/en/publication-detail/-/publication/a38d9e0a-5ae4-11e7-954d-01aa75ed71a1>



Saving for the future

FIVE YEARS AFTER ITS CONCEPTION, EAZA'S BIOBANK IS GOING FROM STRENGTH TO STRENGTH, WITH EVER-INCREASING BENEFITS FOR THE EAZA COMMUNITY

Ania Brown, EAZA Biobank Coordinator

We all know it takes time for something to grow – be it a plant, an animal or even an idea. While some things may appear to transform overnight, at other times, it takes patience. In the biobanking world, logistical and legislative obstacles can be challenges to overcome, but despite these challenges, and those we've encountered since the onset of the coronavirus pandemic, we are happy to report that the EAZA Biobank is growing in leaps and bounds.

The EAZA Biobank, a vision that was conceived in 2016, has made a transformative journey over the past few years, accelerated by the implementation of foundational protocols and documents that govern how the Biobank operates, and the addition of a Coordinator position. Since its inception, we have signed up four dedicated institutions to serve as the long-term, high-quality storage facilities (or Hubs), where the physical samples are kept. These Hubs are located at Copenhagen Zoo, Antwerp Zoo, Edinburgh Zoo and IZW Berlin and are the cornerstones of the EAZA Biobank. A collection of samples is only as good as the quality in which it is maintained and the data that comes with it, and our staff work diligently to ensure that samples are managed and stored at the highest level.

The EAZA Biobank is grateful for the overall support that we have received from the community, including the many historical or legacy collections being contributed. Our holdings have grown from a little over 200 samples back in 2017 to a projected 10,000 samples by the end of 2021. In the last two years alone, we have increased the number of contributing institutions from fewer than 50 zoos and aquariums to more than 200! Similarly, we have doubled the number of species represented from less than 300 to more than 600 species held in the Biobank.

While it is still a priority to grow our sample inventory, it is equally important that these samples are used



ANAIAS CLAESSENS OF THE ANTWERP ZOO BIOBANK HUB © JONAS VERHULST

to support population management and conservation-related research. We are receiving increased numbers of requests for sample use, reviewing applications, and sending samples out for research projects, and we hope to continue to grow this aspect of the Biobank.

As the Biobank grows, we remain focused on how we can better serve the EAZA community. Whether through tailored protocols for sample collection, improving our processes and documentation or streamlining sample management, we seek to increase our inclusiveness, transparency and representation within the community, making this an accessible resource built for and by the EAZA community. As an example, recently, together with the EAZA and EUAC aquarium community, we launched an initiative to increase

sample collection from aquatic species, and therefore developed a species-specific sampling protocol and strategy document detailing the importance of this work. We are also working to establish partnerships with like-minded initiatives, like the CryoArks consortium of biobanks in the UK, which allows us to share both knowledge and samples and, ultimately, build a stronger, more robust resource.

Since March 2020 we have built and launched an EAZA Biobank Institution in ZIMS, allowing Members to utilise the existing 'sample storage module' to share sample records and data with the Biobank electronically with the push of a button. This also allows for further transparency in allowing contributing members to view their donations via this sample storage module, so our Members can have oversight of what they have already shared.

In looking to our future, we recognise the need to provide cryopreservation services for storage of live-cell samples such as gametes or cell lines. Since the EAZA Biobank does not yet have these capabilities, we have begun building a network of resources and partners who can provide such services. This 'Cryopreservation Network' will not only serve to connect our Members to specialised storage facilities and researchers, but also seek to provide guidance on a complex and multifaceted issue.

So although five years may seem like a long time to still be growing, the Biobank has had a steep learning curve. While we are all impatient to see this initiative flourish, it takes time to get it right and ultimately the success of the EAZA Biobank lies with our Members and sample contributors. In a world that has such an urgency to save species already under threat, conservation requires even more concerted efforts and intentions to succeed. We want to thank our Members, those who have already contributed, and those who have yet to do so, in your diligence and commitment to species conservation.





Welcome to Aralandia

THE NEW FREE-FLIGHT AVIARY AT THE WUPPERTAL GREEN ZOO IS NOT JUST A SUPERB EXHIBIT FOR VISITORS AND BIRDS ALIKE, BUT ALSO A SPACE WHERE BIRDS CAN CHOOSE THEIR OWN MATES IN AN INNOVATIVE NEW BREEDING FACILITY

Andreas Haeser-Kalthoff, Project Manager for Aralandia and MD of Zoo Society Wuppertal, and Dominik Fischer, Curator of Science and Birds, Reptiles, Amphibians and Fish, Wuppertal Green Zoo, Germany

After more than five years of development, planning and construction, the exceptional aviary Aralandia was completed in 2020 at Wuppertal Green Zoo. The total cost of €6.4 million was covered by the Zoo Society Wuppertal (a friends' association for the zoo). The eye-catching architecture will draw visitors from near and far; but, more importantly, this innovative facility for macaws, flamingos, sun parakeets and southern pudus sets new standards for animal husbandry and breeding in human care and aims to make a sustainable contribution to species conservation in European zoos.

THE INHABITANTS OF ARALANDIA

Aralandia is home to various representatives of South American fauna that are threatened in their natural habitat. The main inhabitants are the macaws from which the name Aralandia derives – 'ara' is the German word for macaw. Ten juvenile hyacinth macaws (*Anodorhynchus hyacinthinus*) were initially introduced to the facility. In the future, the concept envisages socialisation with other macaw species such as blue-throated macaws

(*Ara glaucogularis*) and red-fronted macaws (*Ara rubrogenys*). A group of 17 Chilean flamingos (*Phoenicopterus chilensis*) and a flock of sun parakeets (*Aratinga solstitialis*) share the habitat with the macaws, along with southern pudus (*Pudu pudu*) – Wuppertal Green Zoo has been coordinating the EEP for this small deer species for a long time. In the future, we intend to move pairs of the endangered and rarely kept Lear's macaw (*Anodorhynchus leari*) into Aralandia's breeding area in order to contribute to the population management and conservation of this special bird. Wuppertal Green Zoo is already part of the international breeding community for Lear's Macaws and received approval from the relevant Brazilian authorities. Aralandia is now part of the integrated Lear's Macaw Management Program.

A DATING CENTRE FOR MACAWS

Efforts to preserve biodiversity and endangered habitats are among the most important tasks of modern zoological gardens. Aralandia was designed as a species conservation facility and will play a valuable role in the protection of highly endangered

animal species. The central goal is to improve the efforts of the zoo community to maintain a stable reserve population of endangered macaws in human care and to strengthen the existing EEP.

Intensive research into reproduction in parrots in human care has revealed that one key component for success is the voluntary selection by the birds themselves for the best-fitting parrot partner. In the past, biologists, bird curators and collection managers decided which animals should be placed together in an aviary in order to form a breeding pair. This frequently resulted in infertile clutches, mate aggression and sometimes even injuries and death. Aralandia offers an alternative to this established method by allowing macaws to choose a mate independently from a pool of potential partners within a large free-flight aviary. In line with their natural behaviour in the wild, juvenile birds can get to know each other during playing and foraging before they reach sexual maturity. Thus they are able to form harmonious social pairs that have greater potential for successful breeding. In this way, we hope that Aralandia will help to improve the so-far unsatisfactory



offspring rate in European zoos.

Coordinated by the relevant EEP, which selects the individuals for Aralandia, young macaws from different zoos can be transferred to Wuppertal and can benefit from the large collection of possible breeding partners. As soon as a pair has been formed, it is given to a zoo with suitable breeding facilities within the framework of the EEP. After successful reproduction in these zoological institutions, the offspring can be sent back to Aralandia to enable these birds to find their own partners in the same manner as their parents.

The Wuppertal Green Zoo would like to use this concept to make an important contribution to the sustainable development of macaw populations in EAZA zoos, for which the respective EEP ultimately bears overall responsibility. This extraordinary zoological concept, which is intended to strengthen the cooperation of the European zoo community, was developed over several years and involved experts from different disciplines all over the world.

INNOVATIVE CONSERVATION TOOLS

At Aralandia, hyacinth macaws are equipped with specially developed radio collars, and a sophisticated location system was installed to allow the localisation of individuals and the identification of naturally formed

couples. A software programme was also developed especially for Aralandia. The collars are made of synthetic fibre textiles and are equipped with a UWB tracking device and a RFID transponder as key components. The collar fabric was dyed blue to match the parrots' plumage. The tracking device and the bespoke software enables us to determine which individuals spend a certain amount of time in close proximity to each other, indicating a pair bond between the two birds. If a pair has been identified, programmed traps inside the tunnels identify the birds by reading their RFID transponders and capture the individuals upon request. This management system is a unique way of managing social birds in a 'wedding aviary' and allows the trial and evaluation of radio collars in macaws in an *ex situ* environment. We hope that the *ex situ* experiences from Aralandia can be transferred to future *in situ* projects, focusing on the ecology and behaviour of birds in their natural environment by using tracking devices and bio-loggers.

A SPECIES SANCTUARY

Aralandia consists of the accessible free-flight aviary with outdoor and indoor areas, the breeding facility behind the scenes and the visitor centre; the aviary building and the breeding facility are hidden behind

artificial rocks, which appear as a natural part of the habitat.

The walk-in outdoor aviary, in which macaws, flamingos, parakeets and pudus are allowed to move freely, measures 1,100 m² and offers almost 7,200 m³ of flight space. With a mesh size of 3cm and a wire thickness of 2.5mm, the 1,700 m² net is able to withstand the powerful macaw beaks as well as prevent the escape of the sun parakeets. The net is held in place by seven steel arches up to 9 metres high, spanning the aviary with a length of up to 34 metres. The eye-catching construction, modelled on a bird's wing, is amazingly transparent. Two large maples in the enclosure penetrate the net, protrude far out of the aviary at the top and offer shade for animals and visitors. Design elements offer macaws and sun parakeets a variety of places in which to occupy themselves. As a new element, a clay wall was included as part of the artificial rock wall. Clay can be inserted between the artificial rock elements to simulate a natural 'salt lick', where macaws may obtain essential minerals and trace elements. A replaceable dead tree provides perching as well as nibbling and gnawing opportunities. The same is offered by an artificial rock fig tree, which can be equipped with real wood branches. Artificial rock palm trunks with their hollows also offer shelter and resting places.



Many more places for the birds to stay are available inside the 134m² indoor aviary behind the artificial rock wall, which is connected to the outdoor aviary through two-metre-long tunnels. These tunnels contain the technology for reading PIT (micro transponders) and for measuring the animals' body weight, and the capture of animals can be initiated automatically by activating PIT-linked traps inside the tunnels. The complex, innovative system was developed especially for Aralandia and is adapted and refined continuously. The indoor aviary contains movable walls that can be used to partition the large flight area to create smaller, separate aviaries if needed. In this way, retreat areas or separate aviaries for individual birds may be installed to allow acclimatisation of new birds.

The rich planting of the outdoor enclosure includes hardy ground covers, perennials, shrubs and trees that were selected according to the nibbling and exploratory behaviour of the parrots. Of course, all the plants brought into the enclosure were checked beforehand to exclude anything that might be toxic to the animals. A 27-metre-long watercourse, which begins with a waterfall, brings additional structure to the aviary and offers further opportunities for exploration and occupation for the animals. Indeed, the macaws like to use the waterfall as a natural shower on a regular basis.

The flamingos have an artificial pond measuring more than 100m² at their disposal, which is divided into shallow and deep water areas with a maximum water depth of 60cm. Fine sand covers the bottom of the pond to prevent diseases of the flamingos' sensitive feet. Two islands are available for the birds and may be used as feeding or breeding sites. A filter system ensures the constant cleaning of the water, and fresh water is added as needed. A 52m² indoor area with a water basin is available for the flamingos and may be used according to veterinary requirements or climatic conditions.

The pudus have the entire area of the enclosure at their disposal. The dense planting and an indoor pen offer numerous possibilities for hiding and retreat.

Aralandia and its inhabitants can be discovered by visitors by walking through a 70-metre-long, barrier-free visitor path. The aviary is entered via a sluice, the doors of which open automatically one after the other to prevent animals from getting out and to allow the visitors to enter safely. In a 'visitors' cave' adjacent to the stable building, which is hidden behind artificial rocks and vegetation, a large panoramic window offers a view into the parrots' indoor aviary. Next to it, visitors can also see into the keeper's feed kitchen. Large display boards and a monitor provide

information about the animals and the facility itself. After leaving the visitor cave, the path divides into the barrier-free main path and a 22-metre-long adventure bridge, which leads at an altitude of up to three metres through the parrots' airspace. This offers a fantastic overview of the entire facility. After the two paths reunite, the walkway leads across a final lookout over the flamingo pond to an exit sluice. There the visitors leave the aviary into the adjoining visitor centre.

Education plays a prominent role at Aralandia. During the walk through the aviary, visitors receive information about the animals, the mission and the special concept of the facility. In the visitor centre, detailed information is provided about natural threats to the displayed animals and specific conservation and protection efforts. Information about cooperation with several partner organisations (e.g. Loro Parque Fundacion) are displayed as well. Moreover, the special sustainability concept of Aralandia is explained to the public. Coffee and snacks are available at an integrated kiosk, which is run by the Zoo Society, along with souvenirs associated with South American wildlife.

The breeding centre behind the scenes is not accessible to visitors. Six aviaries with outdoor and indoor areas are located off-exhibit to host macaw breeding pairs. All parts of the aviaries can be connected if necessary. Additionally, there is a veterinary treatment room that may also be used as a laboratory room for research projects.

SUSTAINABILITY AT ARALANDIA

Aralandia, of course, follows the concept of sustainability. The heating is powered by geothermal energy, which conserves resources. Solar energy provides the necessary electricity. The roof of the stable building is greened in an insect-friendly way. Rainwater is collected in a large cistern inside the exhibit to be reused inside the sanitary facilities. Foam glass gravel provides good basement insulation. Insect-friendly plants were preferred for the planting of the enclosure and the surrounding scenery, and an insect meadow was also created in front of the aviary. This also benefits Aralandia's native fauna. The guests are informed inside the visitor centre about the various aspects of sustainable energy use and ecologically oriented architecture, and are invited to follow the examples of sustainability wherever applicable.

Aralandia has been well worth the work, time and effort that have been invested into it over the last few years. The team at the Green Zoo is looking forward to welcoming colleagues from other zoos at Aralandia. See you in Wuppertal!

Firm foundations

WHY LEARNING OUTCOMES ARE THE BUILDING BLOCKS OF AN EDUCATION SESSION – AND THE FIRST THING YOU SHOULD THINK ABOUT WHEN MAKING YOUR PLAN

Steve Nash, Curator of Birds, Lower Vertebrates and Invertebrates, Paignton Zoo, UK

People often refer to learning outcomes (sometimes known as aims and objectives) in conservation education, and they're an important part of the 2016 EAZA Conservation Education Standards, but what are they and how should we apply them to our practice? In the words of the famous song – 'When you read you begin with A,B, C...' – and when you plan conservation education, you begin with learning outcomes. Or at least you should.

If you think about your session (and session plan) as the house and the learning outcomes as the foundations on which the house is built, it may be easier to understand.

The house is made up of a number of components (your bricks):

What? This is the content you will cover in your session. What themes or topics do you want to include; sustainability, wildlife crime?

Where? Will the session be indoors, outdoors or virtual?

Who? Is the session aimed at young children, specialists, students or a wider family audience?

How? What resources will you include in your session. Will it include fur, feathers, a tour?

When? When will the session take place? Will the season affect your delivery and how long will the session last?

Each of these 'bricks' is essential, as they all impact on each other. For example, if you're preparing a session for young children, you'll probably need more interaction than talking, more resources and a shorter timescale. As with houses, however, if the foundation is not in place then the whole house will fall. A learning outcome is the foundation – it is the why?



TEACHING MATERIALS ARE JUST ONE OF THE BUILDING BLOCKS OF AN EDUCATION SESSION – BUT THINKING AHEAD TO THE OUTCOME IS THE KEY TO SUCCESS

Why are you delivering the session? What are you aiming to achieve? Do you want learners to remember facts, convert them to the value of conservation work or act for wildlife? You may have multiple learning outcomes for each session; some may be smaller, such as learning two key facts about chimps, others more substantial, such as reflecting on the relationship between farmers and chimps in the wild.

Whatever the learning outcome is, it is essential that you start your planning with an outcome. If you can't define a learning outcome, then you don't know why you are developing/delivering a session and therefore you shouldn't do it!

Other advantages to embedding learning outcomes in all your sessions include evaluation, and a means of talking to teachers in a language they understand.

If you have a learning outcome, then you instantly have something to evaluate. For example, if you want to ensure that learners have learned two new facts about chimps, you can

include some form of formative assessment in your delivery. This may be as simple as asking the learners at the beginning what they know about chimps and asking the same question at the end. Obviously, some outcomes are harder to measure and this is a challenge for conservation educators.

If your desired learning outcome is to establish the impact of your session on long-term behaviour, then you would need to consider a longer-term study of the learners. Bear this in mind when developing your learning outcomes, but don't shy away from including them just because they are harder to measure. Equally this applies to the simpler outcomes, which also shouldn't be forgotten.

Similarly, most teachers will plan their sessions around specific learning outcomes. These may come from local, national or international requirements for their delivery. If you can show that you are complementing or matching these outcomes in your session, then you are more likely to encourage teachers to book a session as it means that you are sharing the workload with them. Teachers always welcome support for achieving learning outcomes, so by using the same language, it's easier for them to identify this.

Finally, it is important to remember that learning outcomes should be set for all learning sessions, not just formal education. By setting learning outcomes for public engagement activities, volunteer-led discussions, signage and even events, you are ensuring a more rewarding experience for visitors and maximising your opportunity for engagement in important conservation messaging.

In summary, start with a learning outcome and use this to 'build' the rest of your session.

The 2016 EAZA Conservation Standards can be found at www.eaza.net/about-us/eazadocuments.

Reducing our footprint

A RECENT SURVEY HAS OFFERED THE FIRST INSIGHT INTO EAZA'S ENVIRONMENTAL FOOTPRINT AND HOW MEMBERS ARE WORKING TO REDUCE IT AND IMPROVE THEIR SUSTAINABILITY

Dalila Frasson, EAZA Funding Coordinator, and Myfanwy Griffith, EAZA Executive Director

Sustainability and sustainable development focus on treading that fine line between competing needs – our need to move forward and the need to protect the environment in which we live. Sustainability is not just about the environment, it is also about our health as a society in ensuring that no people or areas of life suffer, and it is also about examining the longer-term effects of the actions that humanity takes and asking questions about how it may be managed.

The new EAZA Strategy 2021–2025 includes sustainability under the dedicated focal area 'Managing operations to reduce the environmental footprint of EAZA and our Members'. EAZA Members have an exceptional opportunity to lead by example and engage citizens in a vital and timely dialogue. At the end of 2020, the EAZA Executive Office conducted a sustainability survey to understand Members' practices and strategies and provide a baseline for the needs of the community. This guided the development of the 2021–2025 strategic activities and ways to help zoos and aquariums meet local and global sustainability challenges. The survey was divided into three different sections:

- General operations: to understand how Members run their institution and their strategic development plans
- Public procurement practices: to look at department purchasing habits to understand the current approaches
- UN Sustainable Development Goals (SDGs): to pick up on opinions concerning SDGs, understanding the most relevant topics in different organisations and countries

The survey was completed by 127 institutions and resulted in a response rate of 31%. Respondents covered at least 27 countries of the 48 containing EAZA Members (56%). The following paragraphs highlight some key results and future actions.

Waste, energy, and water are the three topics of major focus for general operations, although some Members had active solutions in place for all sustainability topics: waste (68% of respondents), energy (57% of respondents), water (56% of respondents), chemical (54% of respondents) and travel (30% of respondents). The most common sustainable initiative is avoiding the use of harmful pesticides and chemicals in operations (77% of respondents), closely followed by reducing energy usage (73% of respondents) and reducing waste to landfills (71% of respondents).

Only 15% of respondents have a sustainability strategy in place and 38% are in the process of developing one.

As part of the Strategy 2021–2025 we will be encouraging Members to share best practice case studies about their sustainable operations to encourage even broader uptake. We will provide targeted support to Members to aid development of green/sustainability-focused teams and develop appropriate strategies.

When it came to public procurement practices, 34% of respondents have a certification, and the main advantages stated about obtaining one are that sustainability is part



WATER MANAGEMENT IS A FOCUS FOR OPERATIONAL SUSTAINABILITY IN EAZA ZOOS – ONE EXAMPLE IS THIS REED BED FILTRATION PROVIDED BY TWYCCROSS ZOO'S CONSTRUCTED WETLANDS, WHICH ALSO PROVIDE A HABITAT FOR LOCAL SPECIES

of their brand values (30% of respondents) and for ethical consideration (19% of respondents). The main barriers in obtaining certification are money (26% of respondents), time (21% of respondents) and staff (19% of respondents).

It seems that respondents prefer to focus on getting things done rather than on obtaining a label. No additional EAZA-led action on promoting certification seemed to be required.

The main criteria that were followed to assess suppliers and contractors were internal procedures developed by the individual organisation (39% of respondents). The most common sustainable trademarks used are FSC (70% of respondents), Fairtrade (67% of respondents) and MSC (49% of respondents). More will be done to make Members aware of the EAZA Guidelines for Ethical and Environmental Policies for Suppliers and Contractors and the purchasing power they have to encourage sustainable practices in suppliers and contractors.

Finally, results from the SDGs section showed that more than 70% of respondents know about the SDGs. The top three that EAZA institutions said they were focusing on were: SDG15 – Life on Land, SDG13 – Climate Change and SDG14 – Life Below Water (both scoring the same), and SDG12 – Responsible Consumption. The top three on which it is suggested EAZA should focus are: SDG4 – Quality Education, SDG14 – Life Below Water and SDG13 – Climate Action.

EAZA is truly committed to minimising the impact of the Association and encouraging Members to manage their operations to reduce their environmental footprint. This will be through a process of continual improvement and the integration of our sustainability objectives into everything we do. There is a huge range of areas where we can reduce our environmental impact, and our aims are to drive efficiency of operations, integrate sustainability into our procurements, and engage our community to do the same.



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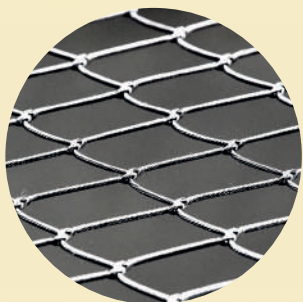
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2 mm	38 x 38 mm / 51 x 51 mm / 60 x 60 mm 76 x 76 mm / 90 x 90 mm
2,4 mm	51 x 51 mm / 60 x 60 mm / 76 x 76 mm 90 x 90 mm / 102 x 102 mm / ...
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