

QUARTERLY PUBLICATION OF THE EUROPEAN ASSOCIATION OF ZOOS AND AQUARIA

# ZOOQUARIA

WINTER 2017

ISSUE 99

## SAVE OUR SONGBIRDS

INTRODUCING 'SILENT FOREST'  
EAZA'S NEW CAMPAIGN



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Zooquaria

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## FROM THE DIRECTOR'S CHAIR

As we draw to the end of what feels like another busy year, I decided to look back at my Director's Chair article from the start of the year to see how close my forecasting came to the truth. That article included thoughts on the political changes that happened in countries around the world and how these changes and others might affect EAZA. We are still in a period of uncertainty about how Brexit might affect our community; however, the increased activities of our National Association Committee, the strong engagement of Members in political processes, and the recruitment of a second EAZA Policy staff member in Brussels from 2018 all make me feel confident that we are well positioned to make sure there is minimal negative impact. On the subject of engagement with political processes, this year also saw the development of EAZA Position Statements relating to the EU Zoos Directive evaluation/REFIT process and the EU Invasive Alien Species (IAS) Regulation. I'd like to thank everyone who gave their time and knowledge to draft these Statements about legislation that has the potential to strongly influence our conservation remit. We should find out the result of the EU Zoos Directive REFIT, and whether this legislation will be retained or changed, by the end of 2017. The high levels of input from EAZA and our Members into this evaluation was noted by the European Commission.

This was also the year that saw the roll-out of the EAZA Strategy 2017–2020. The previous paragraph provides strong examples of how we have been addressing Focal Area 3: Representing the EAZA community at the EU and with appropriate stakeholders to influence relevant policy and good practice – and we have been no less active in relation to the other Focal Areas. Under Focal Area 1: Maximising the conservation impact of EAZA and our Members, I'm sure many of you will have seen the summary infographics of EAZA contributions to conservation that have been presented on page 12 of our Annual Report and across social media. These use information from our Conservation Database to show that EAZA Members are carrying out conservation activities in all regions of the world and across a wide range of taxa. The previous issue of *Zooquaria* was a special issue devoted to highlighting the threats facing invertebrates, and showcasing the conservation activities that EAZA Members and their partners are carrying out in order to mitigate them. In this issue, Merel Zimmerman discusses the EAZA Guidelines on the definition of a direct contribution to conservation and how these can be applied to conservation activities, and we also introduce the EAZA Conservation Campaign, Silent Forest, which is being run in partnership with TRAFFIC, Birdlife and the Asian Songbird Trade Specialist Group. All in all, I think you'll agree that our strategic activities around conservation are as diverse as the species in need.

Many activities have also been carried out under Strategic Focal Area 2: Leading in zoo and aquarium animal management and care by maintaining healthy populations and individuals with positive animal welfare; however, undoubtedly the most noteworthy was the approval and launch of our new population management structure. The move to having a single EAZA Ex situ Programme (still retaining the EEP acronym) concept whereby each programme will have defined roles and goals as appropriate to the holistic requirements of species marks a significant turning point in the history of EAZA. These EAZA Ex situ Programmes will be developed within a revised Regional Collection Plan process, supported by an EAZA Population Management Centre, to ensure that EAZA truly is leading the way in maintaining healthy populations and individuals as part of an integrated One Plan Approach.

Our last strategic Focal Area 4: Communicating the values and scientific work of progressive zoos and aquariums both internally and externally has seen developments in engagement with both internal and external communications, as well as in their style, content and delivery. To provide some examples, we have seen a 10 per cent increase in subscribers to our internal eNews and a 33 per cent increase in followers on the EAZA Facebook page, and our posts highlighting publication of EAZA Best Practice Guidelines are those with the greatest reach. I also would like to think I have played a small part in achieving this Focal Area by being able to proudly share all the wonderful work of EAZA and our Members in articles such as this, via the presentations I give at conferences, and in the many opportunities I get to speak to people about our work. Thanks to the dedication and commitment of all involved in the EAZA community, 2017 has indeed been a busy and productive year; I can't wait to see what 2018 (and beyond) brings!

**Myfanwy Griffith**  
Executive Director, EAZA

## NOTICEBOARD

### EAZA AND VDZ SUPPORT THE ZOOS DIRECTIVE IN BRUSSELS

On 28 November, EAZA and German zoo association VdZ held a joint event hosted by the German Permanent Representation at the European Union. The event attracted around 50 participants, including Directors of EAZA Member institutions, Members of the European Parliament and senior civil servants, all bringing a strong message of support for the keystone European legislation regulating the zoo community.

The European Union Zoos Directive has at its heart the requirements to educate the public about nature, conduct zoological research and contribute strongly to the conservation of species, and is currently the subject of a REFIT review for the European Commission. Both EAZA and VdZ feel strongly that this central requirement of the Directive encourages zoos to strive for continual improvement and is reflected in the mission statements of both associations.

The event programme included keynote speeches from Humberto Delgado Rosa, Director Natural Capital DG Environment, Dr Elsa Nickel, Director General of Nature Conservation of the German Federal Ministry of the Environment, and Pilar Ayuso MEP. Mr Delgado Rosa supported the claim that zoos make an important contribution to conservation and public education, and that the Zoos Directive encouraged continual development of good practice. Dr Nickel paid tribute to the research and conservation commitments that have led to the assessment of species for CITES and CMS appendices. EAZA Chair Dr Thomas Kauffels expressed the association's determination to press for the continual improvement of all areas of zoo practice, supported by a commitment to capacity building with national authorities and zoos needing development, and through the active encouragement of zoos to be accredited by their national association and EAZA.

EAZA and VdZ were encouraged by these distinguished guests' support for the community and the Zoos Directive.

Following on from this, Kira Mileham, Director of Strategic Partnerships at the IUCN SSC, led a panel discussion with the speakers, which concluded that zoos need to do better individually and in partnership to let the public and their representatives know of the effectiveness of zoos and aquariums in the conservation of species, research and education.

The results of the REFIT review of the Zoos Directive will be released by the European Commission early in 2018, according to reports.

### SILENT FOREST CAMPAIGN OFF TO A FLYING START

14 December 2017: Since the official launch of the EAZA/TRAFFIC/BirdLife International/IUCN SSC Silent Forest Campaign in September, the campaign has already started accumulating milestones. So far it has 88 participant institutions from 20 countries, and eight of these participants are non-EAZA institutions.

Thirty-three institutions have pledged to raise funds for the campaign including:

- 19 Bronze donors (more than €2,000)
- 2 Silver donors (more than €3,000)
- 7 Gold donors (more than €5,000)
- 4 Platinum donors (more than €10,000)

Woodland Park zoo in the US has also pledged €1,000.

The distribution of pledged and earmarked funds (#15) is currently as follows:

- Prigen Conservation Breeding Ark: songbird breeding facilities  
*Raised: €20,000 of €30,000 – 67% funded*
- Bali Myna Fieldwork: improving the introduction and monitoring methods  
*Raised: €21,000 of €44,000 – 48% funded*
- Sumatran Songbird Sanctuary  
*Raised: €10,000 of €69,000 – 14% funded*
- Searching for the birds: field surveys to locate two of Java's rarest songbirds  
*Raised: €2,000 of €36,000 – 6% funded*
- Treasure Island: aving the hidden avian treasures  
*Raised: €2,000 of €35,000 – 6% funded*

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<b>Zooprofit</b>	www.zooprofit.com

- Save Magiao: Nias Hill Myna Conservation Breeding Center  
*Raised: €1,000 of €25,000 – 4% funded*

**To join the campaign visit the website [www.silentforest.eu](http://www.silentforest.eu).**

### JOINT TAG CHAIRS MEETING 2018

Following on from successful meetings in 2014 and 2016, EAZA is proud to announce that the 2018 Joint TAG Chairs meeting will take place in Budapest, Hungary from 30 April to 4 May. Registration is by invitation only and is open to TAG Chairs from regional zoo associations. Early registration rates will apply until 28 February 2018.

If you are a TAG Chair and have not received an invitation to register for the meeting, please contact Mirko Marseille in the EAZA Office (Mirko.Marseille@eaza.net).

## NEW ARRIVALS

### BEST YEAR EVER FOR FOSSA AT ZOO DUISBURG



THE ACQUISITION of the first male fossa (*Cryptoprocta ferax*) in 1975 marked the beginning of an era in Zoo Duisburg's history. The world-first zoo-bred female of this unique Madagascan carnivore followed from Montpellier Zoo in 1978. In 1980 Duisburg became the second zoo in the world to achieve a breeding

success, which was repeated in the years that followed. Over the next decades until 2012 a total of 57 fossas were reared. In 1994 the Fossa EEP was established, and has been coordinated by Zoo Duisburg ever since.

After a period without any offspring, the first litters in five years were born in

late May and early June 2017. Eight youngsters were born to three dams, two of them from the zoo's previous litter in 2012. These and the third female, which had been imported from Omaha Zoo in 2015, all had their first litter, yet managed to rear their cubs during the critical first two months. The father of two litters descends from a San Diego-born sire and was born at Wildkatzenzentrum Felidae, a non-EAZA carnivore park near Berlin, which participates in the EEP and provided several valuable individuals for the programme's population. The second sire was born at Zoo Duisburg in 2007. Both males reproduced for the first time.

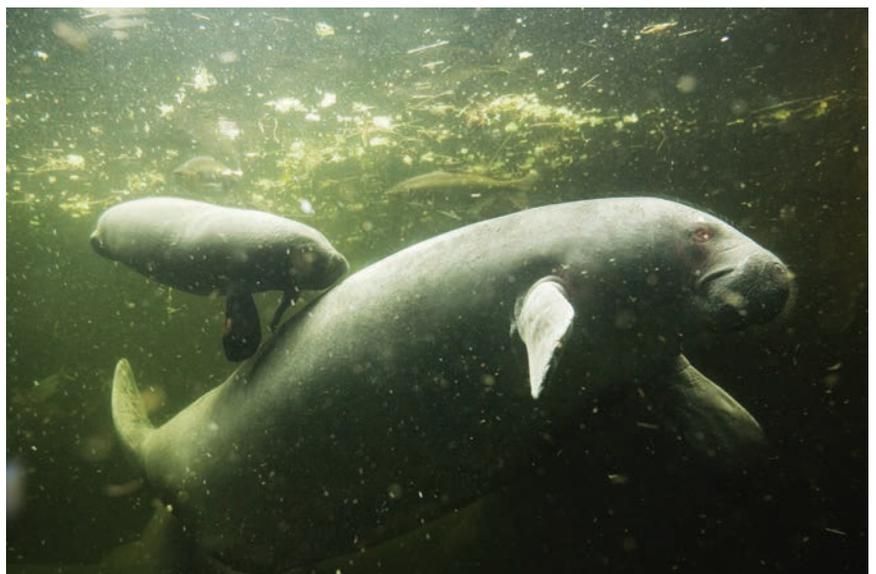
This year's breeding result beats the previous record of a total of seven surviving offspring in 2010, and for the first time in one year three dams successfully reared their litters. In total 69 fossas presently live in the European zoo population. The recent breeding success will allow an expansion of the programme, and several institutions have already expressed their interest. In the long term, more holders are needed to further expand and stabilise the *ex situ* population.

### MORE MANATEES FOR ODENSE ZOO

IN ODENSE ZOO we have had manatees (*Trichechus manatus*) since May 2001 when we opened a large South America enclosure. We began with one female acquired from Nürnberg and kept her alone in the 600m<sup>3</sup> large pool. Then in November 2001, we imported 2.2 manatees from Georgetown Zoo in Guyana. One of the males died in 2003 and one of the females was moved and lives in Randers Regnskov, Denmark.

Since then we have had seven live-born young and two stillborn from Femmer, the Guyanan female. In addition, Henriette, the Nürnberg female, produced one live-born young and five stillborn. At the time of writing, the number of manatees at Odense ZOO is 1.2 adults and the young male from this year.

The pool in the tropical South America house is constructed with different depths, ranging from 1.6m in the shallow area to 3m in the underwater-view part. Visitors can see



the manatees from above as well as watch them swimming underwater. The low-water part of the pool can be separated with underwater fences, and we have installed a crane to lift manatees during transportation or

vet-search. We have also built two islands in the pool so the manatees can swim around and hide from each other. The pool is also home to many different fish, such as *Arapaima gigas* and *Colossoma macropomum* among others.

## RARE BIRDS FLOURISHING AT PRAGUE ZOO



TWO RARE BIRD SPECIES, the black palm cockatoo (*Probosciger atterimus*), pictured above, and the Javan rhinoceros hornbill (*Buceros rhinoceros sylvestris*) were successfully parent-reared this year at Prague Zoo. Both species are coordinated by EEPs, but breeding success rates remain poor.

Prague Zoo has had Javan rhinoceros hornbill in its collection since 2003 when both former parents arrived from private breeders. The former pair was very successful, producing eight parent-reared chicks in seven years, but in 2015 the proven male died. Because the species is declining in European captivity, it was difficult to find a new potential breeding male. In cooperation with the EEP Coordinator we chose an old male from Avifauna Alphen, owned and imported by Weltvogelpark Walsrode 27 years ago from Indonesia. The male arrived in December 2016 and stayed in quarantine for one month. We then moved the male to the inside aviary next to the female's aviary, so the potential partners could hear but not see each other; this mimics conditions in the wild, where birds hear other birds before they can see them. It was nice to hear the increasing vocalisation used during

pair-bonding. After three weeks the keepers were sure it would be safe to put the birds together. They started to feed each other almost immediately, and after one hour the female occupied the nest box. The female was sealed in the nest box in March and two healthy chicks fledged in July. The female, named Marketa, is one of the most successful breeders in the world. In the last three years no other rhinoceros hornbills have been bred in human care in Europe.

The other species, the black palm cockatoos, came from a seized consignment in 2008 and is kept in an off-show breeding centre. One pair bred in 2013 and the young hatched in an incubator, but they died after hand-rearing at three months old like most young of the same age recorded in the studbook. In the following year we successfully hand-reared two chicks, and although it was a great success, our main goal was still to breed one parent-reared chick. After three years of intensive work looking for a balanced diet in the first days of parent-rearing, the pair successfully reared their first chick, which was also the first black palm cockatoo to be parent-reared in the Union of Czech and Slovak zoos.

## ROCK WALLABIES THRIVING IN DORTMUND

THE YELLOW-FOOTED ROCK WALLABY (*Petrogale xanthopus*) is a relatively new species at Dortmund Zoo writes *Stephanie Zech*; our first wallaby arrived in August 2015.

To keep these pretty animals we had to build a new enclosure and house, so one of the zoo's sponsoring societies, Förderverein Kinder und Zoo Dortmund e.V., organised the fundraising and financed the construction of the walk-through enclosure. Colleagues of Dortmund Zoo managed the gardening work as well as the carpentry. The new enclosure, pictured below, was officially opened in spring 2016, and in 2017 it received a nomination for the BDZ-Biber, an award for outstanding enclosure design and concept.

A male was the first animal to arrive in our zoo. He was born in Tierpark Berlin in 2013. In 2016 we acquired two females, both born at Bristol Zoo in 2014 and 2015 respectively. We introduced the wallabies to each other with no difficulties, and they produced their first offspring in July 2016, followed by a second in September (a male and female). More offspring followed in March 2017, creating a group of seven animals in total. All of the youngsters were raised by their mothers.

The greatest threat to yellow-footed rock wallabies in the wild is, according to the IUCN, predation from introduced foxes as well as competition for food with introduced and domestic herbivores (goats, rabbits, sheep). So this species is categorised as Near Threatened by IUCN. In Germany there are only two holders for this interesting species, Tierpark Berlin and us, so we are pleased to be able to contribute to the EEP by keeping and breeding them.



# Leading the way

FORTY-FIVE YEARS AFTER IT WAS ESTABLISHED, THE EUAC IS STILL SETTING THE AGENDA FOR AQUARIUMS

William van Lint, EAZA Assistant Manager Collection Coordination and Conservation, and David Williams-Mitchell, EAZA Communications and Membership Manager

This year, the European Union of Aquarium Curators held its annual conference at Royal Burgers' Zoo in Arnhem, the Netherlands. The conference attracted more than 200 delegates from all over Europe, the Middle East and the Far East, and even from Africa. The sheer number of people attending is proof of the relevance of aquariums in today's world and the growing interest that aquarists have in working together and learning from each other.

It was 45 years ago that a group of like-minded aquarists decided at a meeting in Basel, Switzerland to form EUAC. Their principal aim was to organise conferences and symposiums to discuss issues of importance to them and their colleagues, and to have working groups prepare topics for discussion among the community. Needless to say, the issues have developed as pressure on aquatic ecosystems has mounted, and the conference began with a review by Antwerp Zoo's Paul van den Sande – one of the founders of the Union – of the achievements of the last four and a half decades. Speakers Mark Smith of the New England Aquarium and Isabel Koch of the Wilhelma Zoo aquarium followed the opening speech with addresses that considered two major issues for aquariums: how to stay relevant as a sector, and how older aquariums can still participate in this process.

So what are the threats to the relevance of aquariums, and where will the community go from here? The issues are clear: as speaker Nadia Ounais of the Oceanographic Museum of Monaco pointed out while introducing the 'World Aquariums against Marine Litter' campaign, the marine environment is rapidly becoming a dumping-ground for human activity: by 2050, it is estimated that there will be more weight of plastic in the ocean than weight of fish,

and this plastic will find itself firmly embedded in a food chain that includes us. Moreover, coral colonies are under extreme threat; a recent estimate pointed to a 90 per cent extinction of coral species by 2030. Conservation is therefore at the very top of the list of priorities for aquariums; and working out how to optimise the conservation contribution of aquariums is not a simple task.

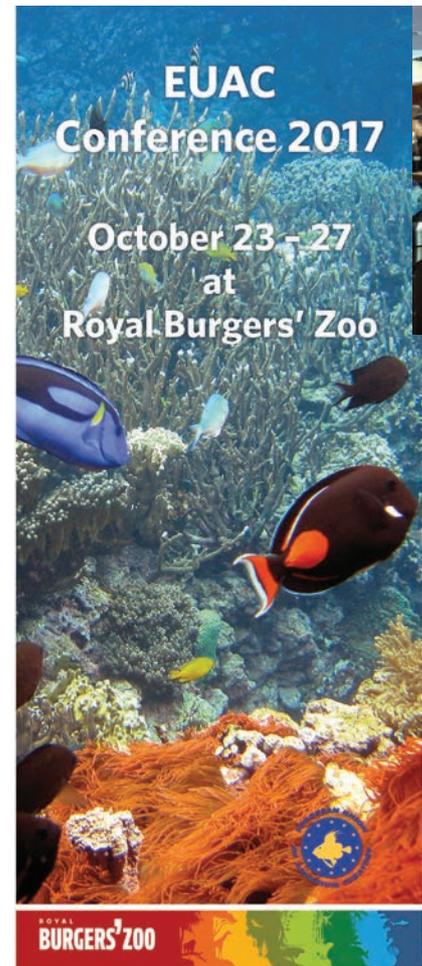
Effective *ex situ* conservation relies on a cyclic process comprised of three main tasks, as identified by IUCN SSC Chair Jon Paul Rodriguez: assessment, planning and action.

## ASSESSMENT

IUCN SSC Director of Strategic Partnerships Kira Mileham and Rob Bullock, Red List Officer for The Deep in Hull, UK, called for a large expansion in the involvement of aquariums in assessing species for the IUCN Red List. At the time of writing, around 10,000 marine species from a total of nearly 90,000 have Red List assessments; it is plain that more assessments are needed, and aquariums and their staff are particularly well placed to assist with this process. Conservation needs may be less localised in marine environments, but it is clear that the overall picture of the oceanic and riverine habitats is not a happy one. Decades of overfishing, pollution, climate change (which acidifies the ocean as it absorbs CO<sup>2</sup> and restricts ranges of water species) are leading to an unprecedented crisis. Better assessment of what these pressures mean for individual species and taxonomic groups can provide guidance for the next step: planning.

## PLANNING

There are a number of effective ways to implement conservation planning, but with the expansion in the remit of IUCN's Conservation Planning Specialist Group, the tools and



CLOCKWISE FROM ABOVE: CONFERENCE BANNER; COFFEE BREAK; GALA DINNER; CONFERENCE; THE DELEGATES; WORKSHOP

expertise to identify needs and actions and how to go about executing them are now being built. These plans lead to actions that can be taken by aquariums, and conference speakers, including ZSL London Zoo's Brian Zimmermann, presented a number of relevant examples of how public aquariums are contributing materially to the protection of species.

There are many other pressures on aquariums, including the fostering of a sustainable model of animal acquisitions, the need to improve husbandry and welfare, the establishment of breeding programmes and more collective population management and record-keeping, and the need to incorporate new technologies into aquarium infrastructure.

## ACTION

Phillippe de Lacaze of Clear Reef in Dubai provided a worrying picture for aquariums based on ageing populations,



a cult of instant gratification that aquariums struggle to cater for, and an increase in online and other activism. His talk included a '10 commandments' list for aquariums to follow in order to adapt to these new pressures. Amongst these, an increase in sustainability through reducing an institution's biological and ecological footprint, an increasing commitment to investment in education and conservation, and working to include new technologies to assist with these missions were particularly noteworthy. The latter point was taken up by Phillippe Vallette of Nausicaa in France, who outlined how the aquarium is developing a highly interactive set of new zones to highlight to visitors the conservation challenges implicit in marine conservation and to foster a sense of ownership of the oceans, without which humans will continue to treat the sensitive ecology of these habitats with indifference.

Jean-Denis Hibbitt and Ben Spinks of SeaLife Weymouth, UK, looked in detail at the implementation of EUAC's Guidelines for Acquisition (published last year), and how the

centre is working to improve its understanding of supply chains for animals coming to aquariums. With European Studbooks (ESB) for eight species of sharks and rays within the EAZA structure, initial work and assessment is being done to establish alternative sourcing strategies that do not rely on wild catch or potentially questionable private breeding of animals; however, these species represent only the tip of the iceberg and EUAC's strategy points clearly to a large expansion in the capability of its Members to build networks that will facilitate new breeding programmes across a wide range of species.

After these presentations, which provided clear food for thought for the future roles of aquariums, there was a half-day workshop session, at which the delegates were encouraged to think about the future EUAC strategy. The three main questions were 'EUAC: how to stay relevant', 'How are we going to achieve these goals?' and 'What should change within EUAC to fulfil this role?' The results are now collated and will be used as input for the further strategy discussion.

From EAZA's point of view, the inclusion of Danny de Man, Manager, Collection Coordination and Conservation at the Association, was an honour and a sign of deepening ties between EAZA and EUAC. Danny outlined the principal focal areas of the EAZA 2017–2020 Strategy, and showed how these four elements (maximising conservation action, healthy populations with positive welfare, representation with external stakeholders, and good communications) are as applicable to aquariums as to zoos. Indeed, as he pointed out, the pressures on and roles required of aquariums are very similar, and our two associations can work closely together to ensure that we do not only what the public expects of us, but also what we expect of ourselves.

Dr Rob Jones, a consulting veterinarian who specialises in aquarium species, looked at the welfare of fish in human care. Animal welfare science has grown dramatically as a discipline in recent years, and it is only relatively recently that the psychological and behavioural needs of fish have started to become integrated into husbandry and enrichment practice. Dr Jones showed some examples of what causes stress in fish, and the devastating effect it can have on their health, including the development of mycobacterial infection. Wibke Jansen and Pete McLean of the SeaLife centres in Munich and Scheveningen showed how a structured programme of enrichment and assessment could lead to material improvements in the health and welfare of species in their care.

Royal Burgers' Zoo was, as ever, a gracious and effective host; a visit to the new Mangrove exhibit (see pages 26–7) and a half day spent at Blijdorp Zoo in Rotterdam also provided opportunities for EUAC Members to see some examples of good exhibit planning.

In summary, it is evident that much has changed over the last 45 years since the foundation of EUAC. It is equally evident that Members are rising to the challenge with an ambition that looks sure to secure a sustainable and highly contributive future for aquariums over the next half century and beyond. We look forward to attending the next conference in 2019.

CLOCKWISE FROM THIS PAGE: BEE IN INSECT HOTEL AT NORDENS ARK; BIO-BLITZBCN 2017; BUILDING OF THE HEDGEHOG SHELTER AT ZOO BOISSIÈRE; EXPLORE AND LOVE EVENT AT GDANSK ZOO; LET IT GROW 3 AT JÁSZBERÉNY ZOO; ZOO INSECT HOTEL AT PLOCK ZOO

# IT'S A WRAP

AS THE LET IT GROW CAMPAIGN DRAWS TO A CLOSE, WE LOOK AT WHAT IT HAS ACHIEVED

Danielle de Jong, EAZA Biodiversity Communications Coordinator

Almost two years ago EAZA joined forces with BGCI (Botanical Gardens Conservation International) and Ecsite (the European Science Centres Network) to work together to improve the situation for biodiversity throughout Europe. Since the Let It Grow campaign launched in January 2016, the past two years have been an invigorating blend of cooperation, challenges, insect hotels and bio-blitzes.

The campaign's aim was to raise awareness of local biodiversity and encourage citizens to get involved in its valorisation and protection. Biodiversity in Europe is under threat mostly from the pressures that humans put on it, and as most of us do not pay enough attention to the needs of nature and the services it provides, the Let It Grow campaign attempted to turn around the fortunes of nature on three different levels:

1. Raising citizens' awareness of what biodiversity is and why having a full range of native species can help keep

ecosystems healthy for all forms of life, including humans.

2. Getting people involved by helping them set up 'left spaces' on balconies, terraces, gardens and community spaces to give native species the chance to recover and thrive, and by getting citizens involved in experiencing and measuring biodiversity.
3. Showing world leaders the value and reach that the Let It Grow coalition has as an implementing partner for various political targets and strategies.

## GLOBAL CHALLENGE

It was clear from the start that there would be many challenges to face during this campaign. If we are honest with each other, we know that it isn't easy to get people interested in the consequences of biodiversity loss, or even to explain what it is. Creatures found in our own backyard often do not have the appeal of exotic mammals,

especially when local biodiversity is made up mostly of invertebrates. This proved to be true, as some participants reported that their audiences were less enthusiastic than they had been about activities for previous campaigns. Also, organising a campaign that spans the globe and involves participants from three different associations offers quite a logistical challenge. It was also a challenge for zoos to dream up new and creative activities for the campaign, as many institutions already have local biodiversity included in their annual curriculums. Whilst this may have put the creative minds of participants to the test, as organisers it is very heartening to realise that your Members are already doing such great work.

For great work was most definitely done! The campaign was drawn to a close during the EAZA Annual Conference in Emmen in 2017, and the organising associations can now look back at a successful campaign despite the aforementioned



challenges. In total, 239 institutions in 43 different countries joined the campaign, displaying the reach of the collaborating parties. And despite the creative challenges, many participants rose to the occasion and came up with beautiful, outside-the-box approaches to engaging their audiences. Many inspiring cases have been presented in previous issues of *Zooquaria* and in the GrassRoots newsletters. One of the highlights for citizen involvement was the Bio-Blitz. Several participants hosted one or more of these activities throughout the course of the campaign. At its core, a Bio-Blitz is nothing more than the measuring of species found in an allotted time and area. It is also, however, a fantastic way of engaging people with the biodiversity of their local area. Seeing and interacting with local species is perhaps one of the most active ways in which people can learn about native species and biodiversity. As well as engaging visitors, these Bio-Blitzes provided participating

institutions with vital information about the current state of biodiversity in their area and gave them the chance to keep track of this for much longer than the lifespan of the Let It Grow campaign.

Another campaign highlight was 22 May 2017, the International Day for Biological Diversity. For IDB 2017, campaign participants were encouraged to do what they could to celebrate this day with their visitors and community. The results were inspiring! Many participants across the world held special activities and events to celebrate biodiversity and what it means to us.

By collectively taking action on a specific day in the year, the Let It Grow campaign was able to demonstrate the range and impact that these collaborations can have. And even looking at the entire lifespan of the campaign proves how effective our Members are. Thousands of birdhouses and insect hotels were built and placed, hundreds of bat boxes were created, and

thousands of seeds for local plants were sown, both literally and figuratively. Visitors were educated, challenged and inspired to do what they can for their own backyards.

#### LOOKING TO THE FUTURE

The Let It Grow campaign has officially come to an end, but despite all the amazing work done, there is still a long way to go towards improving the state of biodiversity in Europe and the rest of the world. Therefore, the resources created for this campaign will remain available online and can provide a toolkit for any institution that wants to continue working on improving biodiversity, or simply for those looking for a new idea to expand on what they already do.

A huge thank you goes out to everyone who worked on and participated in this campaign. The stories, enthusiasm and creativity were fantastic and the results inspiring. Please continue to LET IT GROW!

# Saving Asia's songbirds

EAZA'S NEW SILENT FOREST CAMPAIGN IS ADDRESSING THE URGENT NEED TO PROTECT THE THREATENED SONGBIRDS OF SOUTHEAST ASIA

JAVAN GREEN MAGPIE (*CISSA THALASSINA*)

Tomas Ouhel, Liberec Zoo, campaign team Chair; Simon Bruslund, Heidelberg Zoo, campaign team Vice-chair; and William van Lint, EAZA Office, campaign liaison

The new EAZA Conservation campaign 'Silent Forest, Asian Songbird Crisis' was officially launched at the EAZA Annual Conference in Emmen in September 2017. The Silent Forest Campaign will run for two years and will focus on raising awareness and collecting funding for conservation projects in the range countries.

EAZA colleagues, working under the umbrella of the Passeriformes TAG and alongside a number of important partners such as TRAFFIC, BirdLife International and the recently established IUCN Asian Songbird Trade Specialist Group, have been working on the topic of Asian songbirds over the last couple of years. However, as the plight of the songbirds of Southeast Asia became more acute, Liberec Zoo and Heidelberg Zoo took on the challenge of leading this campaign.

## CULTURAL PRESSURES

Passerine birds in Southeast Asia have been the subject of an excessive but culturally deep-rooted consumption for many reasons, including trade, singing competitions, pets, status symbols, export and import and traditional medicine and food. The demand for

live songbirds in Southeast Asia is extremely high, affecting hundreds of species and involving millions of individual birds annually. The trade is often illegal and evidently unsustainable; thus it has been recognised as a primary threat for many species in Southeast Asia, particularly the Greater Sunda region. Comprising Brunei, western Indonesia (Bali, Java, Kalimantan and Sumatra), Singapore, Malaysia, southern Myanmar and southern Thailand, the Greater Sundas are an ecologically diverse region, home to more than 850 bird species, and globally recognised as a biodiversity hotspot with high levels of endemism. Currently, Indonesia has one of the highest numbers of bird species assessed by IUCN as threatened with global extinction worldwide, and the highest in Asia.

The problem is that there is too much appreciation for songbirds. In Southeast Asia, and particularly in western Indonesia, caged songbirds have long been favourite family pets. Bird ownership is a celebrated custom



and everyone can buy some kind of bird in the market, regardless of their social status. However, it is not simply about pets. Songbird competitions are also economically important and may provide income if the entrants are successful. While the tradition

may have evolved and altered over time, the culture of keeping songbirds has endured and become a pastime, spawning a massive industry that includes all sub-suppliers for cages, food and supplements. There are countless numbers of bird clubs, and songbird competitions have become major 'sporting' events, making the business surrounding them even more lucrative. Although there are legitimate captive breeders in Indonesia, there are still an alarming number of trappers, wholesalers and shops illegally trading in wild-caught birds. This is mainly because there is too little enforcement of the laws that protect the native songbirds and other wildlife; but it is also because some people believe that birds caught in the wild are stronger and better singers than those bred in an

aviary. Moreover, it is often much easier to catch rather than breed a songbird. Sadly, many wild-caught birds do not survive the first few days in captivity.

### CAMPAIGN FOCUS

The Silent Forest campaign will focus on the following activities within the EAZA region:

- increasing awareness amongst the general public and particularly within the zoo and conservation communities;
- fundraising for conservation efforts to prevent extinctions;
- providing ideas and information to enable environmental education in zoos; and
- providing expertise, mentorship and manpower to support conservation breeding programmes and related *ex situ* research activities.

The campaign team selected six representative flagship species, namely: Bali myna (*Leucopsar rothschildi*), Nias Hill myna (*Gracula robusta*), Javan green magpie (*Cissa thalassina*), Sumatran laughingthrush (*Garrulax bicolor*), straw-headed bulbul (*Pycnonotus zeylanicus*) and white-rumped shama (*Copsychus malabaricus*). These species illustrate the threats and challenges but also the opportunities to support threatened songbirds. Campaign projects that will help these six species were selected by the campaign team with advice from the Passerine TAG. The campaign projects vary from such things as building a breeding centre in the range country and setting up a back-up population to conducting field surveys, searching for remaining populations in the wild in order to assess potential future release sites for their security and feasibility.

Take, for example, the Javan green magpie, the symbol of this campaign. This Javan endemic with special habitat requirements was only recently recognised to be a separate species. It is consequently not yet formally protected under Indonesian law. It is now near extinction in the wild due to habitat loss and excessive trapping, with no confirmed records since 2007. The ever smaller numbers found for sale and in



the markets demonstrates its demise, as it is not the demand that is dropping. Field surveys are urgently required to ascertain the presence of any remnant wild populations and to facilitate their protection. Additional birds to supplement existing captive breeding programmes could be acquired through confiscated birds from trade if the species are given legal protected status.

The campaign project 'Searching for the birds' aims to conduct just such field surveys in an attempt to locate two of Java's rarest songbirds, the Javan green magpie and the Rufous-fronted laughingthrush, in line with the conservation actions proposed for these species. Several suitable forests have not been surveyed thoroughly in the past half-century, although recent analysis of satellite images at Manchester Metropolitan University shows that forests still exist (in varying degrees of condition). Further analysis also shows other forest sites that need to be surveyed. There are many other threatened species in West Java's forests, including three primates, which will also benefit from this important mission.

Within the range countries the campaign will also focus on:

- increasing regional awareness and implementing environmental education strategies in cooperation with local and international stakeholders;
- developing regionally relevant husbandry guidelines for all focus species, and supporting their legal and

scientifically managed breeding in-region;

- building awareness and capacity for law enforcement within the region;
- initiating, developing and supporting in-region conservation breeding centres where deemed necessary; and
- supporting research initiatives designed to improve the scientific basis of reintroduction programmes and identifying key partners and stakeholders within the regions.

### JOIN THE CAMPAIGN

You can find more information about the songbird crisis, flagship species and campaign partners and projects on the campaign website ([www.silentforest.eu](http://www.silentforest.eu)). We would like to encourage you and your institution to sign up for the Silent Forest campaign and get actively involved. There are many ways to help make this campaign successful, including educating the public, collecting binoculars, organising fundraising activities, and pledging money for the campaign projects or the general grants scheme. All the resources for the campaign will be available as soon as you officially sign up at [www.silentforest.eu](http://www.silentforest.eu). We also encourage all zoos to review their institutional collection plan and include some Asian Songbird Crisis priority species in their collection or add them to their future strategic collection planning. The Passerine TAG will be happy to help if you have any questions. Please contact Mirko Marseille at [mirko.marseille@eza.net](mailto:mirko.marseille@eza.net)

# Our time is now

THE 72ND WAZA ANNUAL CONFERENCE EMBRACED A WIDE-RANGING AND AMBITIOUS GLOBAL AGENDA

Doug Cress, WAZA Executive Director

More than 250 leading zoo and aquarium officials from 42 countries gathered in Berlin from 15–19 October to discuss key issues such as conservation, animal welfare, marine litter, illegal wildlife trade, endangered species and palm oil at the 72nd World Association of Zoos and Aquariums (WAZA) Annual Conference.

The WAZA Conference was hosted by Zoo Berlin, and included events at the Aquarium Berlin and the Tierpark Berlin animal park.

Delegates came together under the theme ‘Our Time Is Now’, determined to solidify the pivotal roles that zoos and aquariums play in confronting crises of global concern. The four-day conference also examined the social, cultural and physical benefits of zoos and aquariums.

‘We are proud to be able to gather leading animal experts from around the world for our annual conference,’ said WAZA Chief Executive Officer, Doug Cress. ‘Zoos and aquariums already comprise a powerful conservation network, and it is time for this community to move to the forefront of global conservation and environmental efforts. This conference examined the importance of zoos and aquariums, as well as how they can work collaboratively with other international conservation organisations.’

## GLOBAL VISION

Keynote speakers at the WAZA Conference brought international perspectives that challenged the WAZA community. UN Environment Executive Director Erik Solheim made it clear that zoos and aquariums reach a worldwide audience that needs to be educated and informed, while IUCN Species Survival Commission Chairman Jon Paul Rodriguez looked critically at whether the conservation efforts of WAZA members were making the desired impact. CITES Secretary-General John Scanlon challenged the zoo and aquarium community to become more engaged

in policy or risk being left behind.

Darrel Webber, Chief Executive Officer of the Roundtable on Sustainable Palm Oil (RSPO), said that zoos and aquariums were needed to ensure that consumer demand drives decisions that could help to achieve the Sustainable Development Goals.

## NEW FACES, NEW FOCUS

The WAZA Conference marked a new era on many fronts for the organisation, which underwent a dramatic overhaul of its Secretariat in 2017. Cress, who was hired on 1 April, and the international staff he has employed, worked to establish a more inclusive, collegiate tone in Berlin. Meanwhile, WAZA welcomed four new Council members: Thomas Kauffels from the Opel Zoo in Germany, Mike Barclay from the Singapore Zoo, John Frawley from the Minnesota Zoo in the USA, and James Cretney from Marwell Wildlife in the UK. In addition, Jenny Gray of Zoos Victoria in Australia presided over her first conference since assuming the WAZA Presidency in June.

WAZA also introduced new chairs and members for many of the committees that manage its key issues, including animal welfare, conservation and environmental sustainability, membership and ethics, and aquariums.

The WAZA Conference featured several high-level agreements that resulted in Memorandums of Understanding (MoU) that emphasised the global perspective. WAZA and UN Environment agreed on a five-year MoU that focused on issues of illegal wildlife trade, coral reef protection and marine litter, and a supporting document committed 50 per cent of WAZA members to eliminating single-use plastic from their consumer chains by 2023.

WAZA also signed an MoU with RSPO that focused on issues of green economy and sustainable development. WAZA agreed to have 50 per cent of its membership committed to

certified sustainable palm oil in both its consumer items and feedstocks by 2023, while RSPO agreed that its members would increase their consumption of certified sustainable palm oil by 20 per cent within five years.

The WAZA Conference also staged a signing ceremony on behalf of Persian leopard reintroduction programmes in the Caucasus that brought together EAZA, the IUCN and the Russian Ministry of Natural Resources.

WAZA sought to differentiate itself from other global wildlife conferences by breaking with tradition in key areas, including the distribution of ‘goody bags’ to delegates. Instead, WAZA and Zoo Berlin officials agreed to donate funds that would have otherwise supplied those goody bags to global conservation efforts on behalf of the vaquita porpoise in Latin America and the saola antelope in Southeast Asia, two species that are on the brink of extinction and require emergency support.

The WAZA Conference marked the occasion by handing out two important awards: the WAZA Heini Hediger Award, which was given to Anna Croukamp, the founder of the Parque das Aves facility in Brazil, and the WAZA Conservation Award, which was given to the Monterey Bay Aquarium in the United States.

WAZA was founded in 1946 as the International Union of Directors of Zoological Gardens (IUDZG), and adopted its current name in 2000. WAZA is comprised of more than 400 regional associations, national federations, private companies, and zoos and aquariums in 53 countries, and works to ensure that the zoo and aquarium community is engaged on global issues of conservation, environment and sustainability.

The 73rd WAZA Annual Conference will be held from 21–25 October 2018 in Bangkok, Thailand. For more information, please visit [www.waza.org](http://www.waza.org) or contact [communication@waza.org](mailto:communication@waza.org).

# Sharing our expertise

THE SHARED EXPERIENCE THAT GOES INTO EAZA'S BEST PRACTICE GUIDELINES ENSURES THE BEST WELFARE OUTCOME FOR THE CREATURES IN OUR CARE

Merel Zimmermann, EAZA Coordinator, Collection Coordination and Conservation

Good animal husbandry is a prerequisite for good population management. EAZA Members therefore always strive to house animals adequately for their needs and to give advice where needed to help further animal welfare. The various Taxon Advisory Groups (TAGs) are collating this expert husbandry knowledge to make it widely available within and outside the borders of the EAZA community by producing EAZA Best Practice Guidelines (BPG). In this task TAGs sometimes seek additional assistance and input from other experts or regions that may have already prepared guidelines.

Since 2014, 16 EAZA Best Practice Guidelines have been published on the EAZA public website (Conservation>Programmes>Best Practice Guidelines), covering three amphibian species, three bird species, six mammal species and one entire taxon. In addition, the collaboration with the Latin American Zoo and Aquaria Association (ALPZA) has resulted in the publication of Spanish translations for BPG on both Callitrichidae and the Ecuadorian Amazon parrots (*Amazona lilacina*). The Falconiformes and Strigiformes TAG published their specific response on the more general EAZA guidelines on the use of animals in public demonstrations (2014) in the EAZA Best Practice Guidelines for Demonstration Birds. It provides detailed information for optimising the welfare of birds of prey involved in demonstrations, as well as the wellbeing of the broader animal collection and native wildlife in surrounding areas.

A BPG template, including recommended topics and information, is used to ensure consistency across the publications and to facilitate reading and the finding of necessary information (available in the EAZA Population Management Manual). The BPG include chapters with a description of the general biology of the species based

## How Best Practice Guidelines are created

A TAG compiles and endorses EAZA Best Practice Guidelines using a template. TAG-approved Best Practice Guidelines are sent to the EAZA Executive Office, who will seek EEP Committee approval based on the publication procedure and process. After approval, the Best Practice Guidelines are made publicly available through the EAZA public website (Conservation>Programmes>Best Practice Guidelines) and communicated through EAZA eNews.

on information collated from the field and/or from expert holders, as well as chapters focused on the management of the species in zoos or aquariums. A BPG is particularly useful when building new enclosures, deciding upon the nutrition of animals, seeking information on veterinary care or the biology of the species or exploring guidance on becoming involved in species-related conservation activities.

The BPG template leaves room for identifying key husbandry challenges as well as very species-specific topics. For instance, information can be found on the monitoring and managing of water quality for tadpoles of Lake Oku frogs (*Xenopus longipes*), use of hormones in breeding with midwife toads (*Alytes sp.*), seasonal temperature regimes for Sardinian brook salamanders (*Euproctus platycephalus*), body

scoring in Sumatran laughingthrushes (*Garrulax bicolor*), guidance on the forming of bachelor groups in gorillas (*Gorilla gorilla gorilla*), dealing with aggressive or dominant behaviours in Indian rhino (*Rhinoceros unicornis*) or dhole (*Cuon alpinus*), heat sensitivity in European otters (*Lutra lutra*), training of red pandas (*Ailurus fulgens*) and foster-rearing of red-crested turaco chicks (*Tauraco erythrolophus*). Some TAGs go further and publish additional materials, such as videos to accompany the guidelines for Callitrichidae and black rhino (*Diceros bicornis*), on the EAZA Member Area or a separate website (<http://www.blackrhinohusbandry.org/>).

Currently there are a number of new BPG in development within various TAGs or in the approval procedure, so keep an eye out for new publications!

## EAZA Best Practice Guidelines currently available

- Midwife toad (*Alytes sp.*)
- Lake Oku frog (*Xenopus longipes*)
- Sardinian brook salamander (*Euproctus platycephalus*)
- Ecuadorian Amazon parrot (*Amazona lilacina*)
- Guía de Buenas Prácticas de EAZA para Lora Amazona Ecuatoriana (*Amazona lilacina*)
- Red-crested turaco (*Tauraco erythrolophus*)
- Sumatran laughingthrush (*Garrulax bicolor*)
- Red panda (*Ailurus fulgens*)
- Callitrichidae
- Guía de buenas prácticas de EAZA para Callitrichidae
- European otter (*Lutra lutra*)
- Greater one-horned rhinoceros (*Rhinoceros unicornis*)
- Black rhinoceros (*Diceros bicornis*)
- Gorilla (*Gorilla gorilla gorilla*)
- Dhole (*Cuon alpinus*)
- Demonstration Birds of Prey





# Managing the capuchin monkey

A RECENT SURVEY AMONGST HOLDERS OF CAPUCHIN MONKEYS HAS INCREASED OUR KNOWLEDGE OF THE BEST WAY TO CARE FOR THEM

Tony Souvignet, Assistant Curator, Zoo Mulhouse, and Benoit Quintard, Deputy Director, Zoo Mulhouse

Thanks to a collaborative project being carried out with Jean-Pascal Guéry, studbook keeper for the white-throated capuchin (*Cebus imitator*), and the EAZA Larger New World Monkeys TAG, a set of Best Practice Guidelines (BPG) has now been produced for capuchin monkeys.

The guidelines were written after the completion of a survey at the end of 2017. Exhaustive questionnaires on general husbandry and health issues were sent to the 85 European zoos holding capuchin monkeys. The aim was to have a full and current understanding of the management of capuchins in zoos. Fifty-four European

institutions took part in this survey and provided valuable information concerning enclosure design, diet, welfare, veterinary care and other important issues.

## THE IDEA

Bibliography and specialist advice are used to write Best Practice Guidelines, but a precise evidence-based knowledge of the general husbandry is also required, and questionnaires are one of the best ways to acquire this knowledge. Capuchin husbandry within EAZA zoos differs from one zoo to another, so the questionnaire was very important, as it revealed the purpose of husbandry

improvement and gave rise to solutions that can be used to improve welfare and safety.

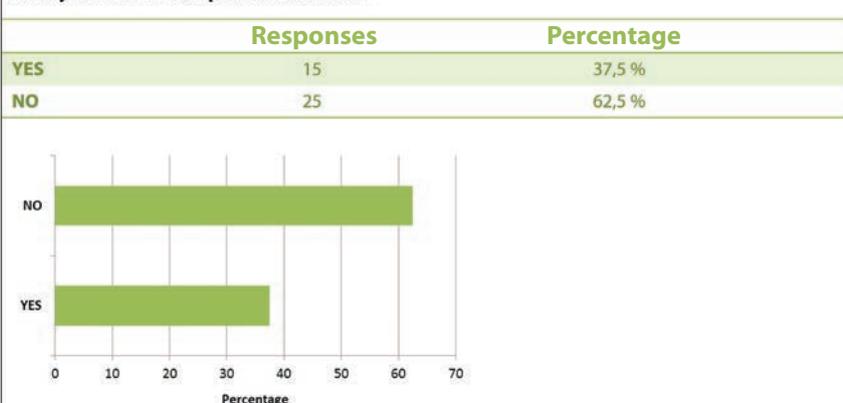
## THE PROCESS

The EAZA Larger New World Monkeys TAG endorsed the questions that we wanted to ask the capuchin holders. We then divided our 150 questions into two different questionnaires, one on general husbandry and the other on health matters, and sent an email invitation to all EAZA Members holding capuchins to participate in the online survey ([www.survio.com](http://www.survio.com)). We sent out two reminders, and were rewarded with a 63 per cent response rate: 45 per cent participation for the husbandry questionnaire and 49 per cent for the health questionnaire, a very good representative sample. The data were from almost 400 capuchins living in 14 different countries. The results of the questionnaire analysis were then sent to the participating zoos.

## METHODOLOGY AND RESULTS

For the questionnaires we used a classic methodology. Zoos were asked to describe all capuchins' habitat characteristics (dimensions of the enclosures, type of substrate, size and type of vegetation, type of fence, monitoring of abiotic parameters including T°C and humidity, and so on). The questionnaires enabled also the acquisition of important data concerning feeding, group management (conflicts, introduction of a new individual, mixing with other species),

Have you tried mixed-species enclosures ?



### Some examples of success:

Capybaras (*Hydrochoerus hydrochaeris*)  
Common squirrel monkeys (*Saimiri sciureus*)  
White faced-saki (*Pithecia pithecia*) and Red-bellied Tamarin (*Saguinus labiatus*)  
Collared peccary (*Pecari tajacu*)  
Coatis (*Nasua nasua*)

### Some examples of failure :

Woolly monkeys (*Lagothrix sp.*)  
Spider monkeys (*Ateles sp.*)



### Which tools do you use to catch your capuchins?

	Responses	Percentage
Net	28	51 %
Directly by hand	2	4 %
With blow dart	11	20 %
With training	6	11 %
Squeeze cage	8	15 %

restraint techniques, behavioural management (enrichment of the environment, medical training) and veterinary considerations.

In order to build the BPG, the questionnaires were useful in three different ways: self-evaluation, identifying how techniques could be improved, and providing new ideas.

#### SELF-EVALUATION

The husbandry questionnaire gave capuchin holders an opportunity to share their opinions about space requirements and was a good tool for improving the BPG. For example, in response to the question 'What do you think about your own capuchins' outside enclosure?' 74 per cent of respondents described their enclosure dimensions as 'sufficient' whereas 26 per cent estimated their enclosure to be 'too small'. The surprising thing was that those who felt their enclosures were 'too small' in fact had larger enclosures than those who put themselves in the 'sufficient' category. The BPG must not be based only on the evidence given by the majority, but should also support improvements to achieve better welfare for the animals.

A second example came in the responses to the question 'In your opinion, what is the minimum (and the optimum) number of inside compartments for a group of 10 to 15 capuchins?' Institutions estimated that on average a capuchin group of this size

needs from three (minimum) to five (optimum) inside compartments, and yet 60 per cent have only one or two compartments. So there is often some difference between what is thought to be optimal for the animal and what is actually the case.

#### IDENTIFY AND IMPROVE

In other cases, the questionnaire helped to identify techniques that can be improved. For example, one question asked the zoos which tools they used to catch their capuchins. Fifty-one per cent of the zoos answered that they used a net, and 20 per cent put them to sleep with a blow dart. However, catching a capuchin using a net can be stressful for the animal and using a blow dart is considered dangerous for primates weighing less than 5kg. In order to improve animal welfare, the Best Practice Guidelines suggest using an induction box or squeeze cage (used by 15 per cent of the responding zoos at the time of the survey).

#### SHARING NEW IDEAS

Some questions provided new ideas, thanks to the feedback of the different participants: for example, questions about the creation of mixed enclosures revealed the existence of previously little-known cohabitations. Some of them seem to work quite well, including collared peccary (*Pecari tajacu*), coatis (*Nasua nasua*), white-faced sakis (*Pithecia pithecia*) and labiated tamarinds

(*Saguinus labiatus*); whereas others had failed, including woolly monkey (*Lagothrix sp.*) and spider monkeys (*Ateles sp.*). Mixed enclosures are highly recommended in zoos to increase stimulus but had been implemented only a few years before our survey, and only 37.5 per cent of the zoos that responded had tried mixed enclosures; therefore it is important to gather as much evidence-based information as possible about this in order to share the results, both good and bad, of each zoo's experiments.

This process was adopted throughout the drafting of the document to try to be as fair as possible. The survey was of great help and added real value to the Best Practice Guidelines. To conclude, this type of survey takes a long time for both the coordinators and the participants; nevertheless, it can be used for the other species of the LNWM TAG and probably for a wide variety of species exhibited in EAZA zoos.

#### ACKNOWLEDGEMENTS

We would like to thank all the zoos that participated in our survey. In addition we would like to address a huge thanks to Jan Vermeer, TAG Chair of the Larger New World Monkeys, Adrian Baumeyer, TAG Vice-chair of the Larger New World Monkeys and Jean-Pascal Guéry, ESB Studbook Keeper for white-throated capuchin (*Cebus imitator*). Finally, we warmly thank Sabrina Brando, Gustavo Canale, Stephen Nash, Camille Fiore and Francis Cabana who provided us with extremely valuable information in order for us to write the 'Management in Zoos' section of the BPG.

#### New holders needed!

The Golden-bellied capuchin (*Sapajus xanthosternos*) EEP is looking for new holders!

This species is:

- critically endangered
- an emblematic ambassador of the endangered Mata Atlantica forest
- highly active in zoo displays
- easily mixed with other species (primates and others)

Please help us to conserve this wonderful species! For more information, please contact the EEP via the EAZA Members website.

# A life-saving toolkit

THE SPECIES CONSERVATION TOOLKIT INITIATIVE (SCTI) COULD TRANSFORM OUR ABILITY TO PRACTISE EFFECTIVE CONSERVATION

Robert Lacy, Chicago Zoological Society, USA and Danny de Man, EAZA Manager, Collection Coordination and Conservation

Near the Arctic Circle, polar bears are in peril. In the United States' southwest, Mexican gray wolf numbers are recovering – but slowly. Panamanian golden frogs are extinct in the wild. In Australia, experts are desperately trying to save Tasmanian devils from a contagious cancer. In Europe, a range of species managed in EAZA Ex situ Programmes (EEPs) are bred for release into the wild, including European bison, European mink, European otter, bearded vultures, European black vultures, Persian leopards and European hamster.

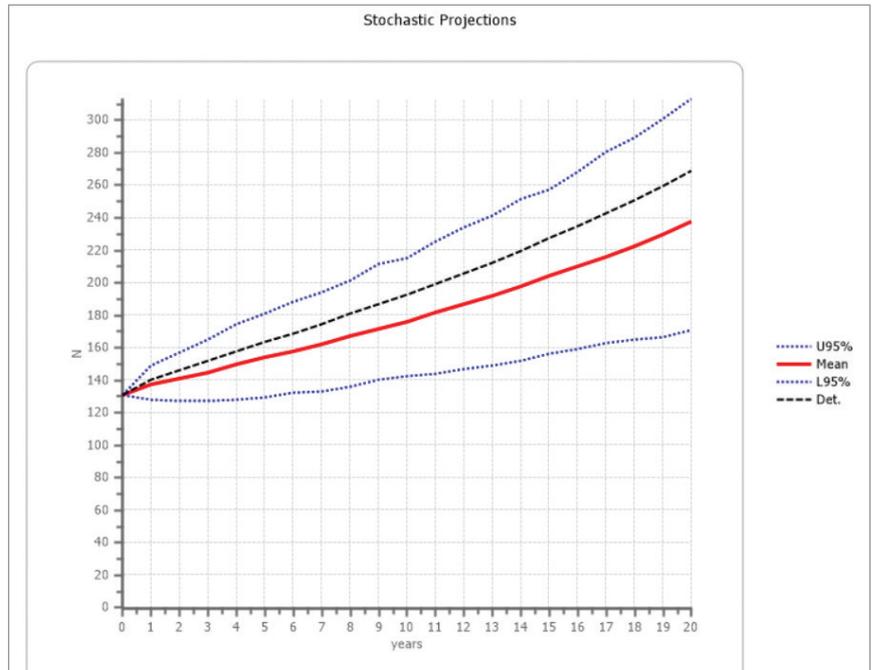
Animal species on every continent and in every ocean are fighting for survival due to threats such as disease, poaching and loss of habitats and food. Because the natural world is highly interconnected – animals rely on plants, other animals and myriad environmental factors to thrive – conservation problems are complicated, often requiring complex solutions.

Fortunately, a powerful and advanced toolkit is up to the task. The Species Conservation Toolkit Initiative (SCTI) is a suite of very advanced software

## VORTEX

**What it is:** Software that simulates the extinction process for a particular species. It factors in potential environmental changes, habitat alterations, food sources, human threats, genetic diversity and more to determine how populations are likely to change – negatively or positively – over time.

**How it's being used:** Across the western United States, Vortex software is being used to assess strategies to manage bison herds in national parks and on other federal lands. Vortex enables conservationists to use molecular genetic data to find out how isolating herds will impact genetic diversity and to determine the best strategies for coordinating exchanges among bison herds to counter these genetic threats.



programmes that guide conservationists, including EAZA population management programme leaders, as they try to manage populations of these species, helping to ensure the future of wildlife in an ever-changing world. The four boxes on this page provide a brief explanation of each of these tools and give an example of how each one contributes to combating species declines and extinctions.

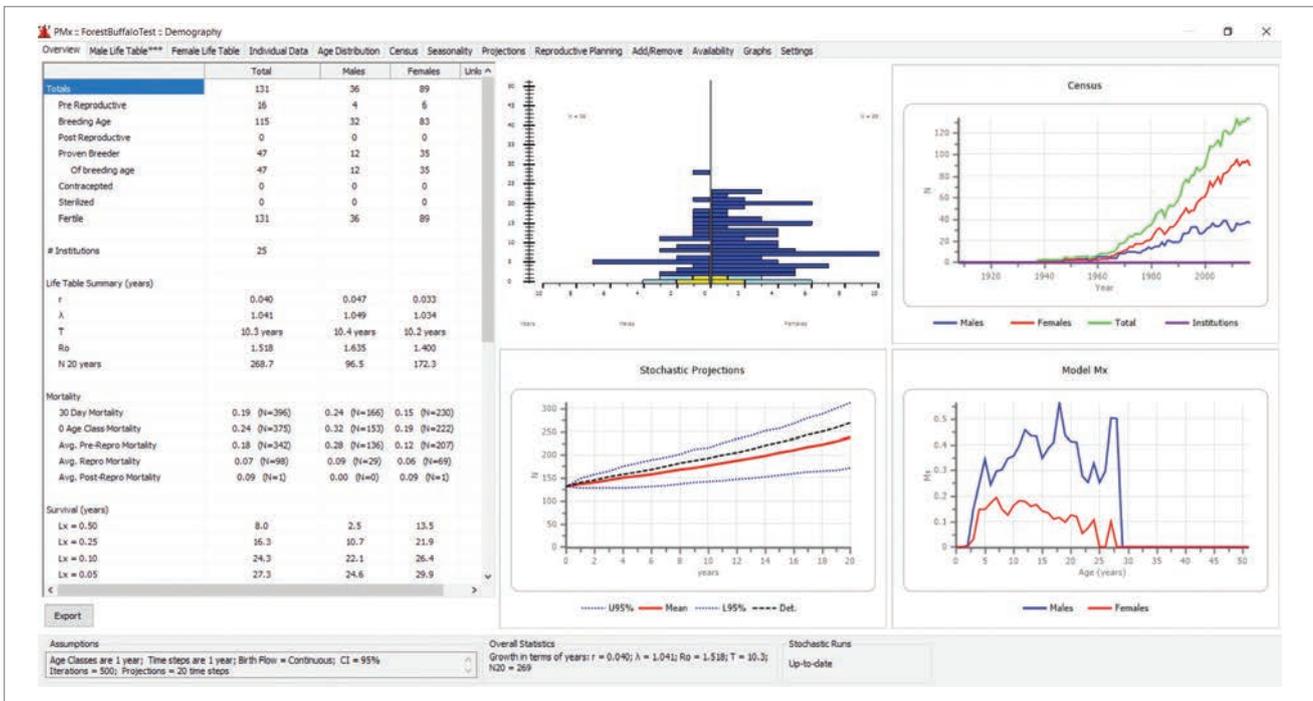
Over decades, the development of the SCTI software has been led by the Chicago Zoological Society's senior conservation scientist, Robert Lacy, PhD, along with Jonathan Ballou, PhD, scientist emeritus at the Smithsonian Conservation Biology Institute. With

the upcoming retirement of these two leaders, both rewarded with the Ulysses S. Seal award for Innovation in Conservation, came the realisation that the community relies heavily on not even a handful of people for its conservation tools. Over a thousand *ex situ* population management programmes use PMx for their analyses, including some 400 programmes run under the umbrella of EAZA. With an ever-increasing need for conservation tools across the world, there is clearly a need to continue improving the existing tools while also developing new tools to meet new needs and allow effective conservation of a wider array of species. However, it is also important to avoid

## OUTBREAK

**What it is:** A simulation focused on infectious diseases affecting wildlife populations. Scientists use this software to assess risk and to explore management options such as surveillance, vaccination, or removal of infected animals.

**How it's being used:** Chytrid disease is an epidemic that has decimated many frog species and wiped out Panamanian golden frogs in the wild. Outbreak software has helped predict the rate at which the disease would wipe out species, as well as under what conditions – including disease-resistant frogs and reinforcement from managed colonies – a re-established population might be able to not only withstand chytrid disease, but also recover from it.

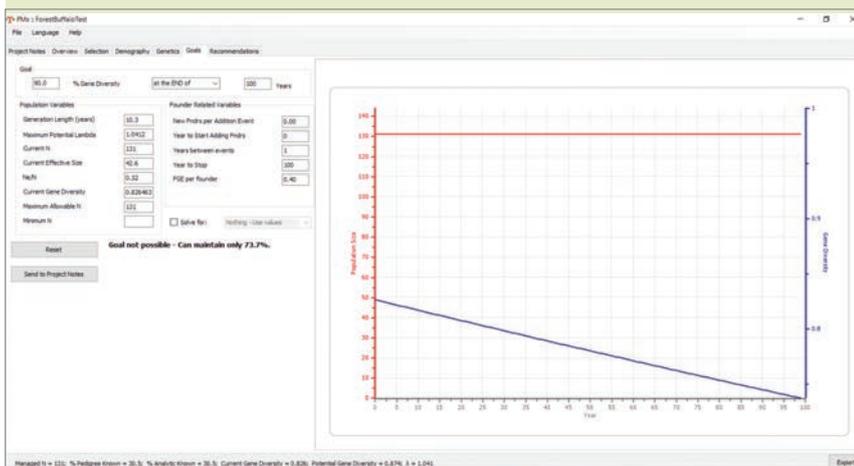


### METAMODEL MANAGER

**What it is:** A programme that enables Vortex, Outbreak, and other tools to link so the consequences of interactions among species or many environmental factors can be assessed. For example, the Vortex model of one species can be yoked with another upon which the first species is dependent. MetaModel Manager works like a team leader who manages the tasks of individual team members so they perform together in an efficient way.

**How it's being used:** The Barents Sea near Svalbard, Norway, has long been home to a large breeding population of polar bears, but that region is warming more quickly than other Arctic locations.

Lacy and his team assessed warming trends, along with habitat and food loss, and found that the greatest threat to polar bears there will be dwindling populations of ringed seals, the bears' primary food source. They used Vortex to understand each species, and used MetaModel Manager to explain how the species interact and how the interactions all depend on ice conditions. Findings may help to predict the Arctic regions where species will be most resistant to the effects of a warming climate. This information could direct the location of wildlife refuges where the fragile Arctic fauna can be protected.



spreading our resources too thinly in the future, with separate and duplicate development of tools by different organisations and regions.

To be able to sustain a long and prosperous future for our conservation tools, it was recognised that increased resources and continuation planning are

of key importance. A number of leading zoos across the world, including EAZA Members ZSL London and Copenhagen Zoo, supported the initiation of what is now called the Species Conservation Toolkit Initiative (SCTI).

The SCTI partnership is managed by Robert Lacy, Jonathan Ballou and Dr

### PMX

**What it is:** A tool for guiding and tracking complicated breeding and genetic management. Zoo breeding programmes do not function simply as a matchmaking app. Managers of zoo populations must compile and analyse extensive pedigree data to recommend the best breeding pairs for a given species, to coordinate transfer of animals from one animal-holding institution to another, and to track offspring. Today, PMx is running behind the scenes of many conservation breeding programmes, including in over 400 EAZA population management programmes.

**How it's being used:** EEP Coordinators, trained and supported by EAZA's Population Biologist, use PMx to determine which animals should be paired or moved to other facilities. For species such as, for example, European otter, Persian leopard and European hamster, our scientists are relying on PMx to determine also which animals should be released to the wild.

Onnie Byers, chair of the Conservation Planning Specialist Group of the International Union for Conservation of Nature (IUCN). Dr Taylor Callicrate (primary software programmer) and Sara Sullivan (training) recently joined the team.

Recognising the importance of the SCTI, the EAZA Council decided that EAZA would become a proud partner of SCTI from 2018 onwards.

# Defining our contribution

TWO MEMBERS EXPLAIN HOW EAZA GUIDELINES ON DEFINING DIRECT CONTRIBUTIONS TO CONSERVATION HAVE HELPED THEM TO EVALUATE THEIR ACTIVITIES AND EXPENDITURE

Merel Zimmerman, EAZA Coordinator, Collection Coordination and Conservation

The EAZA Guidelines on the definition of a direct contribution to conservation were approved by EAZA Council and published on the EAZA public website in April 2015. Their aim was to provide EAZA Members with a tool to determine how and how much we can and are contributing to conservation as individual EAZA Members and as a community. Is having endangered species in our care considered conservation? Or is financially supporting an *in situ* project the only way for EAZA Members to contribute to conservation? We can discuss and communicate our conservation efforts more accurately if we have a description of the conservation activities that directly contribute to the long-term survival of species in natural ecosystems and habitats.

The Guidelines include a broader spectrum of conservation activities than just financially supporting *in situ* projects, such as *ex situ* management, which brings conservation benefits to that specific species, lobbying for ways to combat wildlife trade or providing legal advice. On the other hand, not all the activities of our Members will be considered conservation by default.

Conservation activities can be divided into six categories: habitats, species and populations, conservation, research, conservation education and capacity building, advocacy, and fundraising/direct grants. All contributions to conservation are expected to be entered into the EAZA Conservation Database ([www.eazaconservation.org](http://www.eazaconservation.org)) on a yearly basis to ensure we can access and use the information.

These Guidelines informed the development of the EAZA Conservation Standards (2016), the purpose of which is to outline what is expected from EAZA Members in relation to the conservation of species and biodiversity. Both the Guidelines and the Standards are intended for



use by directors, field conservation staff, educators, curators, researchers and others who have a responsibility for conservation activities both inside and outside their zoo and aquarium premises. Since publication, EAZA Members have been gaining experience in using the Guidelines within their institutions. As it is considered to be a living document, having our community feed back their experiences and questions is vital if we are to adapt and progress this tool to its full potential.

Two EAZA Members have shared their experiences in using the guidelines within their institution; here we discover what they have used it for, what challenges they encountered and how they think fellow EAZA Members can use it to their advantage.

## PARCO NATURA VIVA, ITALY

*Giorgio Ottolini (Assistant Animal Collection Director), Caterina Spiezio (Head of Research and Conservation Department) and Cesare Avesani Zaborra (Director)*

Making a valuable contribution to the conservation of endangered species and natural habitats is widely recognised as one of the main aims of modern zoos and aquariums. Nevertheless, planning and carrying

out an effective conservation programme can be a difficult job due to the intricacy of this topic. Moreover, the effectiveness of many of the actions that are actually significant for conservation is often underestimated, especially when considering the costs that they represent. Over the years, Parco Natura Viva has been supporting many different projects thanks to the integrated strategy of *in situ* and *ex situ* conservation. All of these projects have required different actions and involved the park in different ways. Using the EAZA Guidelines on the definition of a direct contribution to conservation has helped us to evaluate the real economic effort that a facility can provide for conservation and the effectiveness of the different strategies employed.

The Guidelines helped us to calculate and accurately define the economic effort employed for each conservation programme, including the costs of the personnel and the tools used for public engagement. Similarly, any effort that was put into educational projects to increase public awareness of a certain conservation issue has a cost, which is covered by the institution and has important outcomes for conservation. As an example, we've been involved in the



Find out more about our field conservation projects here >>



Conservation research



Higher education opportunities



Meet our Conservation Science Team

reintroduction of European bison since 2004, providing animals that were born in our facility for release in the wild. The costs of the transfer of the animals apparently represented most of our economic effort. Conversely, considering the various other actions that we put in place to support the project, the overall financing tripled the costs of the transfer of the animals. Actions such as the design of specific education programmes and the provision of veterinary expertise during the application of tracking collars to the released animals, as well as the active support of the research on the ecology of the bison and the work with local communities, were equally important for successful projects and they have their own costs. The evaluation of the costs compared with the results was helpful in the decision-making process, guiding us to keep supporting the projects that provide conservation benefits for species and habitats, such as the Madagascar project that finally led to the forest of Maromizaha becoming a New Protected Area. The use of EAZA Guidelines on the definition of a direct contribution to conservation has therefore been a great help to us in planning, realising, continuing or simply supporting conservation. Moreover, the Guidelines can help other institutions to realise that they can support conservation in many different ways and have excellent outcomes for the

protection of threatened species and natural habitats.

### BRISTOL ZOOLOGICAL SOCIETY, UNITED KINGDOM

*Christoph Schwitzer (Director of Conservation) & Bryan Carroll (Chief Executive Officer)*

We have used the EAZA Guidelines on the definition of a direct contribution to conservation to calculate Bristol Zoological Society's conservation expenditure for three consecutive years now. Carrying out this exercise for the first time was very useful indeed. We knew, of course, how much we were spending on field conservation and science per annum, but the guidelines made us think about which activities in particular at our two zoos (Bristol Zoological Gardens and Wildplace) did and did not constitute a direct contribution to conservation.

The Guidelines were clear in most parts, but when it came to defining which species and programmes were making a direct contribution, we were faced with considerable room for interpretation. We needed a relatively simple measure that would work with our departmental budgets, so that percentages of budgets could be allocated to conservation. We thought that it would be helpful for Heads of Department and staff to understand what percentages of their own departmental budgets contributed directly to conservation, so that we

could eventually set targets for each area of the operation. After trying out different measures for calculating our *ex situ* conservation contribution, we finally agreed to count the number of species in our two collections that had mandates for *ex situ* reserve populations, either from the IUCN or from relevant national bodies (e.g. from habitat country governments), and use this to define percentage contributions of departmental budgets. It was not quite as straightforward as one might think, as we then had to define what we meant by 'mandates'. We made this a community effort, and all our curators trawled through IUCN action plans, Red List entries and other relevant documents to come up with an agreed list of species. Once we had established this, the rest was relatively easy. Our calculations showed that we were spending about seven per cent of our annual turnover on field conservation and science, and another seven per cent on *ex situ* conservation. While this sounds rather substantial when compared to, for example, the AZA target of three per cent (AZA FCC, 2012), it is of course always a question of definition. It would hence be helpful if more EAZA zoos and aquariums used the Guidelines to calculate their direct conservation expenditure so that we have a direct comparison. Nevertheless, having a definition agreed by EAZA and a guiding calculation method\* has helped us show our staff, our board and our supporters what zoos and aquariums can do for conservation, which is invaluable in itself.

**The EAZA Guidelines on the definition of a direct contribution to conservation** can be found on the EAZA public website under Governing Documents, Standards and Guidelines. For questions, please contact [merel.zimmermann@eza.net](mailto:merel.zimmermann@eza.net).

### REFERENCES

AZA Field Conservation Committee. 2012. 'Toolkit for increasing AZA-accredited zoo and aquarium contributions to field conservation'. Association of Zoos and Aquariums, Silver Spring, MD. 36 pp.

\* These will be published in January 2018 on the EAZA Member Area/ Conservation Committee.

# A shared journey

HOW THE LITTLE-KNOWN SAOLA CAME TO REPRESENT EAZA'S SOUTHEAST ASIA CAMPAIGN

William Robichaud, Coordinator, Saola Working Group, IUCN SSC Asian Wild Cattle Specialist Group

When EAZA was planning its two-year Southeast Asia Campaign (which ran from 2011 to 2013), the question arose of which animal to use as the campaign's logo. An early suggestion was the Clouded Leopard (*Neofelis nebulosa*), a species held in many EAZA institutions, widespread in Southeast Asia, and reasonably well-known to zoo visitors. There was just one problem; the purpose of the campaign was to support the conservation of highly threatened species in Southeast Asia, and the Clouded Leopard didn't quite fit that profile – its status on the IUCN Red List is only Vulnerable.

Will Duckworth, who at the time was an IUCN consultant liaising with EAZA, quietly suggested the saola as an alternative. The initial reaction from some on the campaign committee was 'What's that?' And even for those who knew the animal, saola (*Pseudoryx nghetinhensis*) seemed an illogical choice for the campaign. Not held in any zoo in Europe (or in the world, for that matter), it is found in only a small part of Southeast Asia (endemic to the Annamite Mountains of Laos and Vietnam), is little-known to the public and to biologists, and very few images of it exist that could be used in campaign communications. But three things tipped the balance in saola's

favour, and rightly so. First, it is one of the most endangered species in Southeast Asia (listed as Critically Endangered on the IUCN Red List); second, as the goal of the campaign was to raise awareness of threatened species, what better animal to use than one in desperate need of more attention; and, finally, there seemed no better way to demonstrate to zoo visitors that EAZA institutions are committed to the conservation of animals in the wild than to support the conservation of an animal that occurs *only* in the wild.

Once the saola was chosen for the campaign logo, the Saola Working Group (SWG)\* was selected as a campaign beneficiary. In response, at EAZA's invitation, as Coordinator of the SWG, I attended the EAZA annual conference in Innsbruck in 2012 to introduce the SWG and saola conservation to the EAZA. At the time, the SWG was still assessing the needs, risks and feasibility of beginning a conservation breeding programme for saola; we were moving towards the decision to incorporate conservation breeding, but had not yet made it. A passionate discussion in Innsbruck during the EAZA Cattle and Camelid Taxon Advisory Group (TAG) meeting helped to advance the decision to

## A partnership for success

The challenges and risks dictate that any effort must be carried out to the highest standards of best practice, and be sufficiently funded. For this, the SWG has assembled an international consortium and partnership to save the saola (to learn how you can help, please see box, right).

EAZA and its Members play a central role, and have contributed much in the five years since the 2012 Innsbruck meeting. For example, the IMSAG quickly drafted a comprehensive *Action Plan for the Conservation Breeding of Saola*. The SWG added staff from several EAZA member institutions to its membership: Terry Hornsey leads the SWG's Captive Management Task Team, and Douglas Richardson, of Scotland's Highland Wildlife Park, sits on the SWG's Steering Committee. Whipsnade Zoo's Nick Lindsay (who led the organisation of the SWG's 2017 meeting in Vietnam), Eric Barrão Ruivo of ZooParc de Beauval, and Radoslaw Ratajszczak, Director of Wrocław Zoo, are also now members of the SWG.

In 2013, Terry and EAZA's then Executive Director, Lesley Dickie, travelled to Laos and Vietnam for high-level meetings with the two range governments to pledge EAZA's technical support to a saola conservation breeding programme. Both governments agreed with the need for such a programme, and they subsequently chose Vietnam as the site for the first centre. Wrocław Zoo then stepped forward and offered to provide long-term, day-to-day technical management of a centre in Vietnam, and in 2016, Radoslaw and partners in the Vietnamese government toured several potential centre sites in the country.

In early 2017, a decision was reached to establish the breeding centre at Vietnam's Bach Ma National Park, where the government of Vietnam has since allocated about 40 ha of land in the park's administration zone for the centre. Julia Hanuliakova, of Zoo Design, Inc., is graciously providing pro bono assistance with the centre's architectural design. Both the SWG and the Vietnamese government have decided and agreed that the centre should add value by, in addition, initiating the world's first conservation breeding programme for large-antlered muntjac (*Muntiacus vuquangensis*), another Critically Endangered ungulate endemic in the saola's range, and a species suffering a similarly high threat from poaching.

Finally, this necessary sequence of meetings, consultations and surveys would not have been possible without funding support organised by David Field of ZSL London. For the past few years, EAZA has been present without pause in the difficult yet inspiring journey to save the saola from extinction and thereby advance the conservation of other threatened species in the attempt.

The adoption of the saola as the Southeast Asia Campaign's logo, and EAZA's continued support of and partnership with the SWG, mark a milestone not only in saola conservation, but also in the emergence of zoos as conservation organisations. By working together, in partnership with the governments of Vietnam and Laos, we are giving the saola its best chance for survival. While the path ahead will not be easy, the only guarantee of failure is not to try.



### Joining together to save the saola

Twenty-five years after its remarkable discovery in the Annamite Mountains of Vietnam, the elusive saola is threatened with extinction. Zoos around the world have been among the most consistent supporters to make sure this doesn't happen – even more inspirational given that no zoo holds saola in its collection. In 2018, the Saola Working Group will build and open in Vietnam the world's first conservation breeding centre for saola, giving the species its best hope for a future. Additional financial support will be essential to the success of the programme, and in response the SWG has launched a zoo fundraising campaign. Our goal is to raise €500,000 from zoos in Europe (and \$500,000 from zoos in North America) by 31 July 2018. In addition, the first \$250,000 received by 31 December 2017 will be generously matched by Global Wildlife Conservation. If your institution would like to be part of this historic effort, please contact the SWG's Campaign Director for Europe, Douglas Richardson: [drichardson@rzs.org.uk](mailto:drichardson@rzs.org.uk).

proceed. Particularly important to the SWG was an EAZA commitment of technical assistance, in particular from the Cattle and Camelid TAG. Before the conference closed, Terry Hornsey, the TAG's Chair, had recruited and formed within EAZA an 'Intensive Management of Saola Advisory Group' (IMSAG). The goal of the group is to assist the establishment of a best-practice saola conservation breeding programme in one of the species' range countries, Laos or Vietnam.

### THE TASK WE FACE

Without doubt, establishing a successful conservation breeding programme for a species so little known, and with no captive founders in hand, is a significant challenge. Yet we lack the luxury of an easier option. The saola's rarity and elusiveness make precise population estimates difficult, but the SWG has concluded that there may be fewer than 100 left, and we are certain that the total population is not in the several hundreds. It is without doubt one of the world's most endangered large mammals.

The primary threat to the saola is intensive commercial hunting to supply Asia's thriving wildlife trade. The saola is seldom targeted for the trade, but a favoured tool of poachers is wire snares, which they set in the thousands along the forest floor. Because snares are indiscriminate, species such as saola have been caught up in the general slaughter.

Efforts by the SWG and its partners, with the support of several EAZA institutions, have made substantial progress in improving protection in the saola's range. Since the Southeast Asia campaign began, in five protected areas in which the SWG and its partners have focused protection efforts, rangers have removed more than 150,000 wire snares from the forest. This effort also benefits, of course, many other forest-dwelling species, such as Owston's civet (*Chrotogale owstoni*, IUCN Red List Endangered). Nonetheless, while progress on the ground has slowed the

saola's slide toward extinction, it has not halted it. Nowhere in the species' range is any saola subpopulation yet secure from poaching. And even if all poaching could be stopped today, the effects of small population sizes would still imperil the last wild saolas, and likely soon propel the species to extinction.

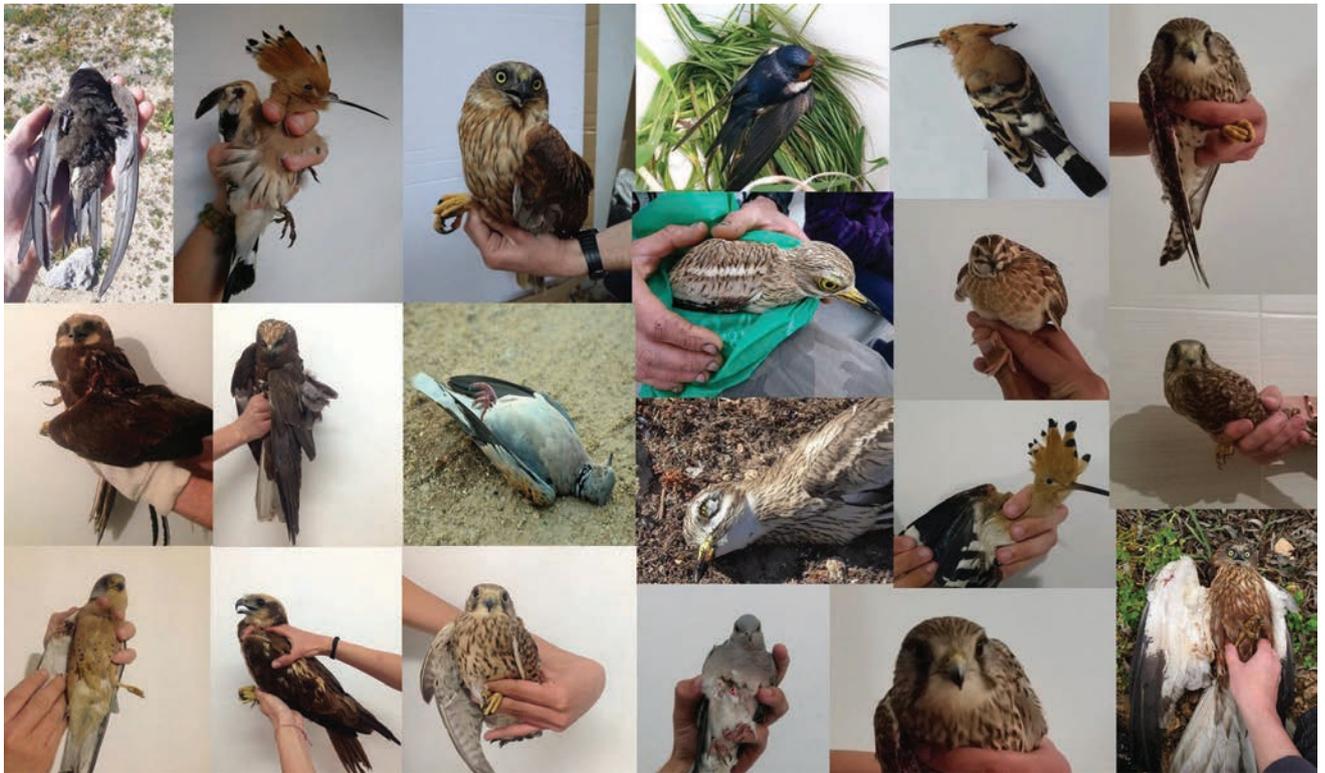
Nonetheless, it is important to note that conservation breeding has added to, and not replaced, the SWG's ongoing efforts to improve *in situ* protection of Saola. In any case, a successful conservation breeding programme is not just about *ex situ* management; wild places need to be secured into which the progeny bred in human care can be released. This dual effort, coordinated as one programme, is what the IUCN Species Survival Commission calls the One Plan approach to endangered species conservation, and is the one adopted by the SWG.

### STEERING TOWARDS THE RISK

A saola conservation breeding programme carries significant risk; animals could die during capture or confinement, they may not breed, and there could be a backlash if the effort does not succeed. We are attempting to keep and breed a genus of large mammal that has never been successfully kept before. Yet not attempting this now, choosing to not act, would pose a far higher risk to the survival of this beautiful animal.

Time has run out for Baiji and for Kouprey – not because action was taken, but because it wasn't taken soon enough. We have a chance to do something different for the saola, and that is to embrace the conservation breeding challenge rather than shy away from it. And in partnership with the SWG, this is what EAZA has done, with courage, professionalism and enthusiasm.

*\*The Saola Working Group is part of the Asian Wild Cattle Specialist Group of the IUCN Species Survival Commission.*



# Flyway to the danger zone

A CHILLING EYEWITNESS ACCOUNT PROVES THAT EU LEGISLATION IS FAILING TO HALT THE DEVASTATING ANNUAL MALTESE BIRD HUNTS

Hannah Clarke, Bird Keeper, Jersey Zoo

We in Europe pride ourselves on our environmental stewardship, yet every year there is a wanton destruction of bird life on our doorstep in Malta. In spring 2017 I took some time out of my day job, as a keeper in the bird section at Jersey Zoo, and set out to understand what was happening and how international NGOs are attempting to gather the evidence needed to bring it to a halt.

Malta has been part of the European Union since 2004, and as such is legally obliged to comply with EU regulations and implement corresponding legislation nationally, including the important Birds Directive. This states that while there are 82 species that can be hunted, this is restricted to certain times of year to avoid a decrease in populations when they are vulnerable during migration and breeding. In addition, all hunting is limited. Each year Malta applies for an exemption to the Directive, as the spring hunt is a long-standing cultural practice in the country. The EU asks Malta to keep hunting numbers to a minimum and to strictly supervise the proceedings, and the European Commission has in

the past referred Malta to the EU Court of Justice because of its failure to apply the exemption rules.

There are around 13,000 registered hunters in Malta, a small proportion of the 437,000 strong population. Many Maltese are against hunting, as shown in the 2015 hunting referendum, where 49.6 per cent of voters were against the continuation of spring hunting. A mere 2,000 more votes could have put a stop to the practice; however with political parties supporting the hunters, favour swung their way.

Malta is a direct flyover for an estimated 170 species, providing a refuge for these birds during rough weather and offering overnight roost sites. Ringed birds from 38 different countries have been discovered shot in Malta; some of these are endangered species that are part of extensive conservation efforts such as the osprey and great skua. A large proportion of these are juvenile birds making their first migration, which can have a huge knock-on effect for a bird population.

Each spring Malta has an open

hunting season, allowing 5,000 quail and 11,000 turtle doves, the fastest declining bird species in Europe, to be hunted.

However, after the IUCN Red List upgraded the turtle dove's conservation status from Least Concern to Vulnerable, it was agreed that during the 2016 spring hunt the limit would be reduced to 5,000. Further pressure from NGOs resulted in a complete ban of turtle dove hunting for the 2017 spring hunt.

In 2017, the spring open hunting season was from 25 March to 14 April, with a limit of 5,000 quail to be hunted. For the first time BirdLife Malta's annual Spring Watch was after the open season. Now that the turtle dove is a protected species, their aim is to monitor for any illegal hunting of this species over the peak migration period at the end of April. Any shot that the team hears would be illegal, and evidence would be collected that the hunting ban is not being enforced.

Each year BirdLife Malta invites international volunteers to join them in their efforts in protecting birds that migrate through the island, and I joined

the team in 2017. Twice a day the team would monitor for illegal activity. A morning shift, 05.00 to 09.00, and the evening shift, 16.00 to 21.00, were chosen as these times see the greatest amount of activity when birds are leaving and entering roost sites. During the shift the team would scan the area for any activity, looking out for any movement near a hunting hide or for anybody that appeared to be scanning for birds or anybody with a visible gun. The moment any suspicious activity was seen, filming began, so that if illegal hunting occurred, evidence could be given to the police. If at any time a shot was heard, the time and distance of the shot was recorded, and if it was nearby the team would try to locate the shooter to obtain further evidence.

It could be frustrating at times; often shots were heard in the distance that were too far away to pinpoint, or at times a team would end up chasing shots coming from several directions. The countryside of Malta involves narrow roads that were difficult to navigate, and stone walls above head height made scanning difficult. The team would try and hide their presence, but that could be difficult when entering a small village as the locals would get their phones out and follow the team around. The hunters all knew that BirdLife teams were around the island monitoring them; at that point it was not worth staying as no illegal activity would happen.

During my time with the team, two major incidents occurred. We got into the car after a quiet evening shift and five barn swallows flew past, so close in front of us that we could see the flash of blue as they went past. Seconds later three shots were heard. The shooter was easy to find; he was in the field right next to us still holding a gun, and while we have video footage of this, we were not able to get face footage for the police to use to identify the man, as he was wearing a helmet. This incident was also an example of how close a village community can be. We later filmed the same person on a motorbike driving past three times, and as we did so, someone got out of their car and watched us and someone else confronted us, demanding to know what we were doing and why we were filming. It was clear that we were not going to get any other evidence, so we left the area. However, the police now have evidence



ABOVE: MALTA'S COUNTRYSIDE IS COVERED WITH HUNTER HIDES; BELOW: A COMMON SCENE FOR BIRD WATCHERS BUT INSTEAD WE ARE HUNTER WATCHING



that someone is using that property for hunting and can investigate further.

Another incident happened over two afternoon shifts. In the first shift the team watched from a vantage point as a group of five hen harriers came down to roost in the fields. From a nearby road, two men were also watching the harriers. We monitored them, but as no further suspicious behaviour occurred we left at the end of the shift. The next morning the team were there before dawn and unfortunately no birds left the fields. In the afternoon we went back and this time we had three Montagu's harriers in the area. We weren't the only ones back; the same two men we had seen the night before were also watching. When it became clear that the harriers were coming down to roost, we called in a second team so that there were more eyes watching the situation. We had two cameras on the men and two cameras on the harriers. We stood for hours watching these men watching these harriers, as something didn't feel right about it. As dusk fell, one man suddenly ran into the fields and into a hunting hide, emerging several minutes later with a gun. It was difficult to see clearly at this point as we were losing light quickly. When we have someone with a gun around a protected species, we have reason to call the police out; however,

in this case, they were busy with an incident on the other side of the island and reassured us that they would check the area out in a few hours.

All we could do at that point was wait; it was too dark to see anything, but the cameras were still running for sound. When you have been standing in the silent, dark countryside for a quarter of an hour, the suddenness of a gunshot is jarring. Knowing that a Montagu's harrier I had watched for hours was now most certainly dead is a feeling I can't begin to put in to words. BirdLife Malta are hopeful that we collected enough evidence to push for an investigation.

During the spring migration BirdLife Malta dealt with 22 birds with gunshot wounds, but that only represents a tiny portion of illegal hunting. At the peak period of monitoring, BirdLife Malta had 25 volunteers, nowhere near enough people to cover the whole island: to give an idea of the amount of hunting happening, the highest number of shots heard in one shift was 133. Hunting is a Maltese tradition, a sport to provide unnecessary food or another trophy for the collection. It's a massacre for migrating birds – a massacre that needs to be stopped.

For more information, please visit <http://www.birdlife.org/campaign/stop-illegal-bird-killing>.

# Inspired by nature

BURGERS' MANGROVE AIMS TO RECREATE A BELIZE NATURE RESERVE WITHIN THE GROUNDS OF A ZOO



Willeke Huizinga, Curator, Burgers' Zoo

On 12 July 2017, Royal Burgers' Zoo opened an extraordinary new ecosystem: Burgers' Mangrove. In an area covering 3000m<sup>2</sup>, visitors can discover the largest indoor mangrove in the world, just like real explorers. The mangrove is the natural habitat of charismatic species such as manatees, fiddler crabs, butterflies, birds, turtles and fish. The landscape at Burgers' Mangrove is covered by a domed structure towering 16 metres above the ground at its tallest point. The inspiration for Burgers' Mangrove was the 235 sq km of nature reserve in Belize, in Central America, which Burgers' Zoo has been protecting together with Swiss butterfly park Papiliorama for the past 28 years.

## JOIN US ON AN ADVENTURE!

From the beach bordering a Belezian town square, a wooden boardwalk carries visitors deep into the mangrove forest. Winding through the landscape, the path leads across the manatee creek, passing wondrous species such as fiddler crabs and horseshoe crabs along the way. While wandering through the mangrove, adventurers will slowly descend through the natural-looking landscape, which allows them to admire the fiddler crabs in the mud flats during low tide at eye-height. The saltwater creeks are home to extraordinary animal species such as horseshoe crabs and upside-down jellyfish. While still recovering from these wonderful encounters, visitors suddenly find themselves face-to-face with the manatees, which regularly swim past the 12m by 1.8m window in a huge pool containing one million litres of water. The path then leads back up to the edge of a tropical dry forest, where hundreds of butterflies can be found in all sizes, shapes and colours. This is a really beautiful place to visit and gives you a sense of the wonderful nature that exists in Belize.

## INSPIRED BY THE NATURE RESERVE IN BELIZE

Together with Swiss butterfly park Papiliorama, Burgers' Zoo has been protecting 235km<sup>2</sup> of nature reserve in the Central American country of Belize for 28 years. The mangrove forest is an important part of the nature reserve.

Burgers' Mangrove serves as an ambassador for the beauty and diversity of the plants and animals that live in the nature reserve in Belize. Through the adventures that have been created in Burgers' Mangrove, Burgers' Zoo hopes to help visitors understand just how extraordinary and valuable the nature reserve is. We hope that they will feel compelled to take an active part in helping us to preserve the nature reserve. For more information on the project in Belize, please visit [www.csf.bz](http://www.csf.bz).

## MANGROVE PLANTS ARE AMAZING!

Mangroves are extreme habitats for plants: they are situated along tropical coasts, where exceptional amounts of sunlight can burn leaves, and where plant roots are flooded with salt water at high tide. When the water recedes during low tide, small pools of water are left behind. As the water evaporates, the salt concentration in these pools can reach up to twice the levels found in sea water. It is not hard to imagine that there are few plant species that can thrive in these harsh conditions. Only 110 plant species are found in mangroves worldwide, out of approximately 380,000 plant species. Only 40 of those are found exclusively in mangroves, making them truly special.

As mangrove plants are really slow growers, we used some plants of the old small mangrove we used to have in Burgers' Zoo. Quite an operation! The 'new' plants are still rather small and we hope that they will develop in a few years into a real mangrove forest.



### DOMED ROOF STRUCTURE

To maximise the experience for our visitors, Burgers' Zoo's designers opted for a domed structure. The German organisation Vector Foiltec GmbH, which is based in Bremen, has worked with Burgers' Zoo for years. Their uniquely designed air cushions were first used in a zoo for the construction of the roof structure in Burgers' Bush, a 1.5-hectare indoor tropical rainforest. The opening of the Bush in 1988 triggered a global revolution in the zoo industry. The air cushions are installed on a structure of steel arches. Each of the arches is unique in shape and curvature and required an individual mould to properly connect the cross sections between them. The air cushions are extremely transparent, allowing the UV radiation in sunlight necessary for animal and plant life to pass through. The cushions are also extremely strong, and are designed to bear up to one metre of snow.

### GEOTHERMAL CLIMATE CONTROL

The temperature in the Mangrove is kept between 24–26°C. The Mangrove is connected to Burgers' Zoo's geothermal heating and cooling system, which is also used to heat and/or cool the Bush, the Ocean, the Safari Meeting Centre and the stalls in the Safari. In the summer, a natural surplus of heat is stored in a subterranean water reservoir and can be pumped up for heating in the winter. In the winter, a natural surplus of cold is stored in another subterranean reservoir and used for cooling in the summer. Not only is the system very energy efficient, it also drastically reduces costs. It is with good reason that Burgers' Zoo is proud to have held the gold-level certification from international eco-label Green Key for environmentally friendly, sustainable and energy efficient entrepreneurship since Green Key's foundation.

### REMARKABLE FILTRATION SYSTEM

Burgers' Mangrove makes use of the latest technology wherever possible. One example is the filtration system, which makes use of the knowledge and experience gained from Burgers' Bush, the tropical rainforest, and Burgers' Ocean, the tropical coral reef aquarium, which uses eight million litres of water. The biologist from the Ocean and specialists from Technical Support also constantly stay abreast of the latest developments in technology and methods in their field. Harnessing the power of gravity, the water is moved to the basements of the Life Support System, the building which houses the filtration system. To save even more energy, the water is only pumped up once.

The filtration system uses drum filters, drip filters, protein skimmers, and a helophyte filter, among others. Helophyte filters use the natural filtration processes of aquatic plants (during which the plants extract polluting nutrients such as nitrates and phosphates from the water), making them popular for use in ponds. A helophyte filter using mangrove plants has never been used in a zoo before, and certainly not at this scale. Burgers' Mangrove also features ebb and flood tides, just like in a real mangrove.

### A LITTLE HELP FROM OUR FRIENDS

Of course creating a new ecosystem is difficult, but is a great challenge for biologists and technicians. At the zoo, we have built up a lot of knowledge over the years, but we still benefit from others' help. A great many zoos, aquariums and botanical gardens throughout Europe have helped us to create this delicate ecosystem not only by sharing their knowledge, but also by growing plants and breeding animals for this new ecosystem. This shows how important it is to have the EAZA network, and how exciting it is to share our combined knowledge as much as possible so we can create wonderful, future-proof zoos.

### AN ECOSYSTEM IS NEVER FINISHED

Burgers' Mangrove was officially opened in July 2017. The plants will be given ample time to grow into a natural mangrove forest. The section of the Mangrove where the butterflies will mainly stay will become a tropical dry forest, with nectar plants as a food source for the adult butterflies and host plants as a food source for the caterpillars, playing a significant role in the bigger picture. The populations of animals such as horseshoe crabs, upside-down jellyfish and hermit crabs will also be given all the necessary room to grow naturally. The same goes for the variety of bird and fish species we are introducing. This ecosystem also has a vulnerable natural balance between all the animal and plant species.

The biologists and animal caretakers will need to anticipate and respond to every new development to grow closer to a natural ecosystem. More animal species will be gradually added to the system in the next few years, and a variety of plant species will be cultivated behind the scenes. As was the case for the opening of the Bush (tropical rainforest), the Desert (rocky desert), the Ocean (tropical coral reef), and the Rimba (Malaysian jungle), Burgers' Zoo has opted to give the Mangrove plenty of time to further develop itself naturally. The Mangrove will become more beautiful, more complex and more fascinating every year.

# Training the keepers

HOW THE EUROPEAN PROFESSIONAL ZOOKEEPER QUALIFICATION FRAMEWORK CAN HELP TO CLOSE THE SKILLS GAP ACROSS OUR COMMUNITY

Laura Myers, EAZA Academy Manager, and Joni Hut, EAZA Zoo Capacity Building Coordinator

Zookeepers; where would a zoo be without them? It is probably the most recognised zoo profession, but when you look closer, you can find a huge diversity between zookeepers in different regions – even within Europe.

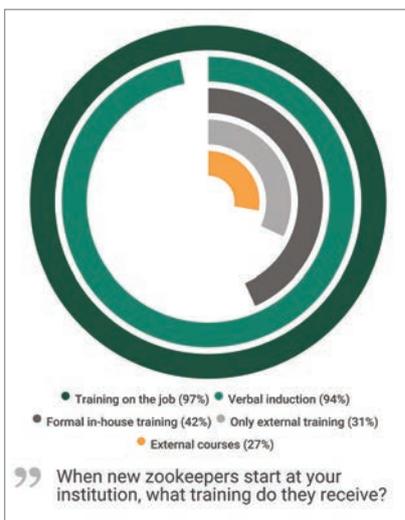
It all starts with the training and qualification of zookeepers. Zookeeper training opportunities vary greatly across Europe. While in certain countries, such as the United Kingdom, Denmark and the Netherlands, there are educational institutions offering well-developed study programmes for future zookeepers, these training opportunities are lacking in many other countries where zookeepers do not have a specific degree or professional qualification and are only trained on the job. On-the-job training is essential even for zookeepers with a university degree, but without a clear framework for training there is a risk of passing on outdated or inadequate knowledge and skills to new zookeepers. This has resulted in a significant skills gap in professional zookeeping in many European countries.

Opportunities for education are not the only things that differ considerably. The reputation of the profession of zookeeper also varies greatly across our region. In some European countries the role of a zookeeper is highly desirable: aspiring zookeepers need to attend college for several years, and may even choose elective courses to specialise in specific areas, and acquire experience by volunteering or taking unpaid internships before having a chance of being hired by a zoo. In other parts of Europe, the profession of zookeeper is somewhat less prestigious and may even be mostly seen as merely a technical or cleaning job. Of course, there is a direct relationship here; fewer training possibilities and standardised qualifications result in a lower status for the job of zookeeper

## The zookeeper's changing role

'The evolution of the keeper's role, however, is almost always accompanied by perceived and often increased expectations from within the zoo or aquarium institution. This is especially true since zoos are facing the increasingly diverse demands of our time. As the "torchbearers" of the zoo or aquarium's essential component, animal care, keepers are also required to take up a broader range of activities beyond the traditional care for the animal collection. In order to meet the challenges of our time, keepers must develop diversified skills in broader areas by arming themselves with knowledge, both academic and practical, for duties such as assisting researchers, public speaking and helping children to learn.'

**Zoo's Print, the magazine of the Zoo Outreach Organization, Volume XXIX, 3, March 2014**



and substantial restrictions to the professional mobility of zookeepers.

In an effort to reduce this skills gap, a diverse group of zoos, educational institutions and regional associations joined forces and obtained funding from the EU for a very special project. Coordinated by EAZA, the aim of this project was to develop the European Professional Zookeeper Qualification Framework (EPZQF). This framework identifies the skills and competencies needed to be a professional zookeeper working in an EU zoo.

The project started in November 2015, and now, more than two years later, with help and input from a wide range of experts and stakeholders, the first version of the EPZQF has arrived, and can be seen at [www.zookeepers.eu](http://www.zookeepers.eu). But what does that mean for you?

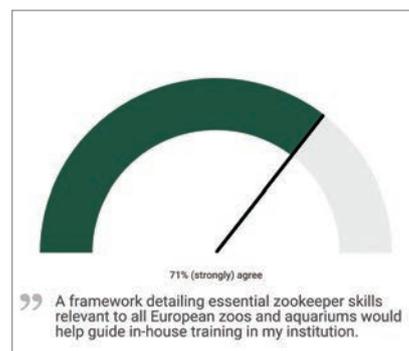
The EPZQF is not just there for

zookeepers. Whether you work at a zoo or aquarium, an educational institution, or, for example, the national or regional government, the EPZQF has a lot to offer.

## WHAT CAN THE EPZQF DO FOR YOU?

The framework is structured around four skill areas: Transversal Skills, Animal Management, Environmental Management, and The Role and Operation of a Modern Zoo. These areas comprise a wide range of topics, which in turn are subdivided into more than 80 different competencies. Each of these competencies is described across three cumulative levels. In order to work competently in all areas, a zookeeper would need to be able to perform according to the first level. The two additional levels can be achieved by specialising or becoming an expert in specific areas or topics.

The framework aims to be ambitious but achievable. Zookeepers or aspiring zookeepers can use the framework





# EUROPEAN PROFESSIONAL ZOOKEEPER QUALIFICATION FRAMEWORK

## EPZQF Project Events – past and future 25-29 APRIL 2016 – WROCLAW ZOO, POLAND

Workshop for zookeepers exploring the barriers and benefits of zookeeper professional development

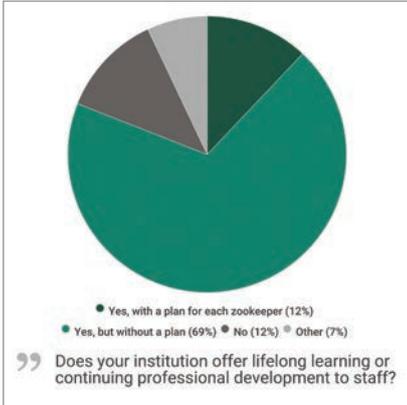
## 19-23 JUNE 2017 – CHESTER ZOO, UK

Workshop for managers exploring how the EPZQF can be used to underpin the training of zookeepers

### Coming soon:

## 25 APRIL 2018 – ZAGREB ZOO, CROATIA

Symposium with the objective of sharing the results of the EPZQF project with a wider audience



to quickly see in which areas they might still be lacking some knowledge or skills. For each topic, the team is working on identifying resources and training opportunities to help zookeepers fill gaps in their skillset. This also makes the framework a useful tool for HR and management staff responsible for the hiring and professional development of zookeepers. The framework can help with assessing the knowledge and skills of potential new recruits, who may be very experienced but do not have an official zookeeping qualification. The project team is also working on benchmarking existing qualifications against the framework for easy comparison in the future. Used on an individual level, the framework can also assist with identifying areas for potential future learning and development or specialisation.

The EPZQF can be even more useful when applied at an institutional level. One of the earliest goals of the project was to assist zoos and aquariums in countries without standardised zookeeper training opportunities to

### Project partners

- Zagreb Zoo, Croatia
- Romanian Zoo and Aquaria Federation, Romania
- Sparsholt College, United Kingdom
- Wrocław Zoo, Poland
- Kaunas Zoo, Lithuania
- Aeres Groep, The Netherlands
- Chester Zoo, United Kingdom
- EAZA, Europe (project coordinator)

develop their own training programmes. A survey conducted in 2014 and 2017 shows that 71% of Members who responded to the survey believe that a framework detailing essential zookeeper skills would help guide their in-house training. (See illustrations for more results from this survey.) The EPZQF can be used to create robust in-house training, or by educational institutions or government agencies to develop zookeeper courses and qualifications where there are currently none. This will be one of the topics discussed at Zagreb Zoo in April 2018.

### WHAT'S NEXT?

The framework is a living document and will be reviewed and updated on a regular basis. The project team is also working on the second phase of the project, three educational modules based on topics in the framework. These modules will be available online at no charge, and can be used as examples of how zookeeper training opportunities can be developed using the framework – whether for in-house training or, for example, a course offered by a college.

In addition to these modules, the project team also aims to develop a toolkit for the assessment of practical skills. Many of the daily tasks and activities of a zookeeper are of a practical nature, and a keeper's proficiency and confidence in performing these tasks can therefore be hard to assess – especially remotely. The assessment toolkit will offer advice and examples of how to deal with this.

### WHAT COULD YOU DO TO CONTRIBUTE?

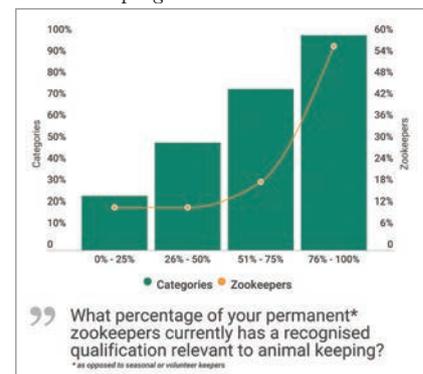
The EPZQF is very much a product of the EAZA community – it draws on a wide range of expertise and disciplines. Many people have already contributed

to the creation of the framework, from the zookeepers who attended the project's first workshop to various working groups and members of the project's reflection panel. You can still contribute by providing feedback, volunteering to review the framework to make sure it stays up to date, or by offering to translate the framework into your native language (limited English language skills still represent a significant barrier to lifelong learning for many European zookeepers).

The project team would also like to hear from users of the framework who are willing to give a brief report of their experiences. This could be, for example, zookeepers who have already used the framework to identify potential gaps in their knowledge and skillset, or zoos using the framework to develop their in-house zookeeper training. These shared experiences will help improve the framework and assist aspiring and current zookeepers with their professional development and lifelong learning.

If you can contribute in any way, have any feedback, or would like to receive more information, please get in touch via [info@zookeepers.eu](mailto:info@zookeepers.eu) or the contact form on the EPZQF website.

*The European Professional Zookeeper Qualification Framework project is co-funded by the European Union under the Erasmus+ programme.*



# Action for amphibians

HOW THE AMPHIBIAN SURVIVAL ALLIANCE IS COORDINATING CONSERVATION ACTION ACROSS THE WORLD

Elyssa Scheck, Anne Baker, Ariadne Angulo & Candace Hansen-Hendrikx of the Amphibian Survival Alliance

Amphibians are the most threatened vertebrate class on the planet, suffering decline and extinctions across the globe. There are more than 6,700 known amphibian species, and of the 6,533 whose extinction risk has been assessed, nearly one-third are threatened with extinction, making the amphibian extinction crisis one of this century's most pressing conservation issues. Primary drivers of amphibian declines include habitat loss, disease, pollution, invasive species, trade and over-exploitation. Given the scale and scope of this crisis, there is an urgent need to coordinate international conservation action.

Formally launched in 2011, the Amphibian Survival Alliance (ASA) is addressing this crisis by building partnerships, coordinating conservation action, communication and education, and fundraising for amphibian conservation. Comprising a global network of over 120 partners, ASA is well placed to advance amphibian conservation through strategic alliances with zoos, universities, conservation organisations, amphibian enthusiasts, companies and other entities.

ASA works closely with two key partners and amphibian-focused global networks: the IUCN SSC Amphibian Specialist Group (ASG) and Amphibian Ark (AArk). ASG represents IUCN's network of volunteer amphibian experts, whose mission is to provide the scientific foundation that will inform effective amphibian conservation action around the world. AArk works with the *ex situ* community with the mission of ensuring the survival and diversity of amphibian species, focusing on those that cannot currently be safeguarded in their natural environments and emphasising *ex situ* breeding rescue programmes that support population augmentation and reintroduction in the range country of the species. AArk's Conservation Needs Assessment process assists countries or regions in prioritising species with respect to both *in situ* and *ex situ* conservation efforts, and its training programmes build capacity in husbandry knowledge.

ASA, ASG and AArk share a common vision of 'amphibians thriving in nature' and work together to develop, coordinate and implement the Amphibian Conservation Action Plan (ACAP). ACAP acts as a road map and identifies challenges and priorities for amphibian conservation based on a foundation of science. The most current version of ACAP is a web-based living document (<http://www.amphibians.org/asg/workinggroups/>).

Using the action priorities outlined in ACAP, ASA's goal is to mobilise, support and coordinate an active partner network to implement ACAP globally, increasing coverage of ACAP themes and ASG regions, and increasing investment and communications for amphibian conservation. Furthermore, ASA facilitates collaborations among partners working on common and/or related challenges.

ASA's 2017–2021 Strategic Plan (<http://www.amphibians.org/strategic/asa-plan/>) lays the groundwork for its organisational development and thematic focus for the next



MOUNTAIN CHICKEN FROG  
(LEPTODACTYLUS FALLAX)

years, during which ASA will be actively and strategically recruiting partners that can fill thematic and regional gaps. ASA's thematic priorities for 2017–2021 are as follows:

- 1) conservation information and planning (key information resources underpinning conservation actions);
- 2) habitat protection;
- 3) emerging infectious diseases;
- 4) trade and policy; and
- 5) communication and education.

## JOINT EFFORTS

AArk members, comprising zoological societies, aquariums and museums, are natural partners for ASA, as they already support amphibian conservation through, for example, managing *ex situ* 'assurance' populations, running rapid response rescues, managing and breeding animals for release programmes and research, running conservation education endeavours, providing fundraising opportunities and developing species recovery plans. Several zoos are already active ASA partners, addressing the amphibian crisis on multiple fronts. Chester Zoo, ZSL London, Durrell Wildlife Conservation Trust and Nordens Ark, for example, are working together with the governments of Montserrat and Dominica to conserve the Mountain Chicken (*Leptodactylus fallax*). With their support, a breeding centre has recently been established in Dominica, and a species recovery plan that includes reducing hunting and habitat loss is being implemented. Nordens Ark has also bred and reintroduced approximately 10,000 amphibians into its natural Swedish habitats, including Sweden's rarest amphibian, the Green Toad (*Bufo viridis*). The Detroit Zoo assists with population surveys and chytrid monitoring in the Peruvian Amazon, while research on the efficacy of probiotics is ongoing at the Smithsonian's Amphibian Research and Conservation Center in Gamboa, Panama.

We invite EAZA Members to consider joining the ASA and advancing the implementation of ACAP. Please contact Director of Operations Candace Hansen-Hendrikx at [cmhansen@amphibians.org](mailto:cmhansen@amphibians.org) to learn more.

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