



QUARTERLY PUBLICATION OF THE EUROPEAN ASSOCIATION OF ZOOS AND AQUARIA

ZOOQUARIA

SPRING 2015

ISSUE 89

BEARING UP WELL

A SUSTAINABLE POLAR BEAR POPULATION IN EAZA AND BEYOND



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One last chance

BAER'S POCHARD ON THE BRINK OF EXTINCTION
IN THE WILD



Outside the box

WELFARE SCIENCE POINTS TO BETTER ANIMAL ENRICHMENT

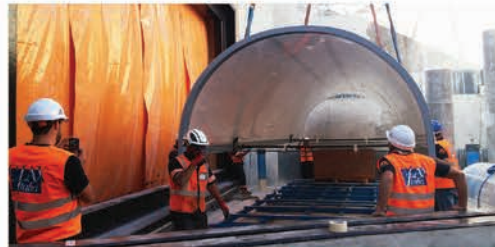


AQUARIA

UNDERWATER CAST ACRYLICS TECHNOLOGIES



South Korea '09



South Africa '15



France '14

Looking for
an Aquarium?



claxitalia.com

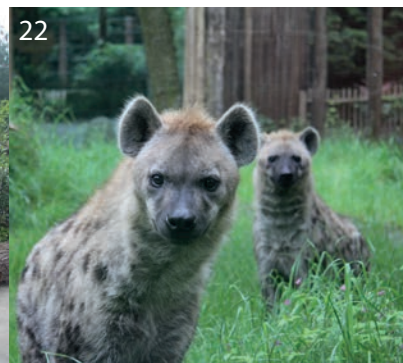
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Zooquaria

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FROM THE DIRECTOR'S CHAIR

Spring is finally here, and with it the sense of growth and bustling activity. The New Year period of reflection and resolutions for the future already feels a long time ago; for me January brought a degree of nostalgia for when I first started work as the EAZA Academy Training Officer in 2011, and excitement for the year ahead – especially for Laura Myers who took over as the Academy Manager. As we pass to spring, the Academy continues to flourish; the enthusiastic support of our community has led directly to the wealth of diverse training opportunities (see the 2014 Academy review page 10) that the Academy offers today and helps our members to remain amongst the most progressive in the world.

EAZA is increasingly effective at communicating and collaborating with organisations in Europe and beyond towards our mutual benefit and progress. I believe that our commitment to working together across diverse cultures and at all levels, from individual zookeepers through to national associations, is the key to strengthening relationships both locally and globally; it is one of our great strengths and immensely inspiring.

Already this year we have seen great examples of this cross-cultural collaboration, including the highly popular and successful EAZA Zoo Nutrition conference (see page 24) and associated Academy course on herbivorous reptile and primate nutrition, and courses for basic and advanced breeding programme management. The breeding programme management courses are valuable opportunities for our EEP and ESB managers (and those that are keen to take on these roles) to improve their population management skills and knowledge; as well as covering genetics and data analysis tools, they also enable participants to discuss the many complexities and challenges of breeding programme management and help foster that same collaborative EAZA ethos.

In a similar vein, EAZA welcomed ISIS's Chief Information Officer Doug Verduzco to Amsterdam. Doug has joined the Executive Office for six months to work with Kristine Schad, EAZA Population Biologist, on the development of the ZIMS R3 module for studbooks and population management. This is a fantastic opportunity for EAZA to provide input to ISIS to ensure the new module meets the needs of our community. With Kristine working with Doug, Elmar Fienieg has temporarily rejoined the EAZA office as an Assistant Population Biologist to assist with Quick Population Assessments (QPAs) and Long-term Population Management Plans. These collaboratively produced documents require multifaceted input from stakeholders and their commitment to follow the guidance produced. For example, the meeting to develop the Long-term Population Management Plan for Polar bears involved

14 people from 10 different institutions, representing the EEP Coordinator and Species Committee, and EAZA Executive office staff (see page 18 for more information).

EAZA is also progressing well with its strategic aim of influencing policy and enhancing engagement at the European Union. In January I made my first visit to the European Parliament and met with an MEP to discuss issues ranging from the use of shark squalene in products to EAZA campaigns and the impact of the wildlife trade. Making good contacts like this is just one way EAZA is engaging with the European Union. Our EAZA EU Policy Manager, Daniel Nuijten, has met with individual EAZA members who are active in Brussels, as well as with animal associations who lobby there, to ensure our messages are clear and strongly supported. Our community has also been active in highlighting relevant issues to Daniel. For one person to know about everything that might influence our 351 members is an impossible task and the Executive Office values greatly input from members on EU-related issues. One instance of this is the response EAZA was able to make to 76 MEPs within the Eurogroup for animal welfare highlighting our work and credentials for leading welfare discussions in the EU.

One final example of our effective community collaboration I would like to mention (and I know I could easily detail many more) is our new National Associations Committee. I believe that this committee provides our Association with another strong way to work together towards our strategic vision to be the most dynamic, innovative and effective zoo and aquarium membership organisation in Europe and the Middle East.

As we move into spring, I conclude with the view that EAZA has many positives to reflect on, not least our commitment towards developing a strong, progressive zoo and aquarium community. My personal resolutions for the future are to continue to be open to all the different opinions and motivations within our community and to use them to communicate clearly and widely about the good work we do.

Myfanwy Griffith
Executive Director, EAZA

NOTICEBOARD

NEW EAZA ACADEMY MANAGER

THE EAZA OFFICE welcomed a new Academy Manager in January, following Myfanwy Griffith's move to the Executive Director position. Laura Myers, who joined EAZA from Chester Zoo in the UK, has extensive experience as an educator in zoos, and also brings a wealth of language skills to the position, including French, Kiswahili and Russian. Laura has an educational background in primate conservation as well as anthropology, having studied in Pennsylvania and Oxford. She will be responsible for the further development of the EAZA Academy and has already overseen Basic and Advanced Breeding Programme Management Courses. Laura will also act as the office liaison for the Education Committee.



FIRST STEPS TOWARDS RESTRICTION OF INVASIVE ALIEN SPECIES

IN JANUARY, the European Commission passed a regulation prohibiting the import, keeping, breeding, sale, exchange and release of invasive alien species. As yet, the Commission has not provided a list of species it intends to include under the definition of invasive alien species – this is expected to arrive at the end of 2015, and will necessarily represent only a very small proportion

of species which threaten European biodiversity.

Nonetheless, it is a positive move towards a definitive policy on preventing the spread of invasive species, and EU Policy Manager Daniel Nuijten will be following developments and reporting back to the membership as the terms of the policy become clearer.



TECHNICAL ASSISTANCE MANUAL TRANSLATED INTO ARABIC

CANDIDATES FOR MEMBERSHIP under the supervision of the Association's Technical Assistance Committee have been issued copies of the manual *The Modern Zoo: Foundations for Management and Development* for the past year or so. The manual has proven an important resource for taking the first steps towards meeting EAZA's exacting standards, and has so far been produced in English only. Qalqilia Zoo in the West Bank Territory of Palestine became a Candidate for Membership at the spring meeting of the Membership and Ethics Committee, under the mentorship of Jerusalem Zoo.

The zoo's Director, Dr Sami Khader (pictured here) is committed to a programme of improvement and development,

and as part of this commitment has produced the first Arabic translation of the Technical Assistance manual, aimed at providing an important resource for his staff as they implement the plan. EAZA is immensely grateful to Dr Khader for this initiative, as it not only highlights an interesting approach to including all members of a candidate's staff in the process of gaining full membership, but also provides guidance to other Arabic-speaking zoos (both candidates and non-candidates) in the measures they need to undertake in order to meet high standards of welfare, business practice, conservation, research and education. The Arabic edition will be available on the EAZA website in the near future.

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NEWS

WILDLIFE CRIME IN THE SPOTLIGHT

ON 13 FEBRUARY, a separate coalition including EAZA, TRAFFIC, IFAW, WWF and others, sent a letter to the Vice President of the European Commission, Frans Timmermans, calling for the creation of a Wildlife Crime Action Plan to supplement the body's recent initiative and consultation on the trafficking of wild animals and products derived from them. The Action Plan would essentially provide a roadmap for the European Union to tackle the issue, which fundamentally undermines conservation, threatens species and causes serious social problems in biodiverse hotspots. Recent studies and cases have shown that a significant volume of illegal trade in endangered species comes as a result of demand from European countries, and the coalition partners would like to see an increase in the commitment from member countries in eliminating this trade.



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LABELLING WIN IN THE FIGHT TO PROTECT ORANGUTANS

ON 16 DECEMBER 2014, new legislation across the EU came into force, which requires the labelling of palm oil as a separate ingredient. Partly brought about as a result of lobbying by a coalition that included EAZA, the Jane Goodall Institute, and the Sumatran Orangutan Society, the legislation will add to pressure on consumer product manufacturers to ensure that palm oil used in their products comes from RSPO-compliant sustainable sources. A factsheet produced by the coalition is available for download at <http://www.orangutans-sos.org/documents/892/892.pdf>. The factsheet provides a clear and practical approach to palm oil and habitat conservation, and recognises the importance of the product in providing a valuable source of income to the agricultural sector in Southeast Asia.

BIRTHS AND HATCHINGS



BLIIDORP BIRTHS

ROTTERDAM'S BLIIDORP ZOO has had a run of recent breeding successes including the birth of a fishing cat (*Prionailurus viverrinus*) kitten and two polar bear (*Ursus maritimus*) cubs. The fishing cat was born on 18 December, and has not as yet been sexed. The species, listed as Endangered in the IUCN Red List, is threatened by the diminution of wetland habitat across its range, from the lowlands of Nepal and India east as far as Java. EAZA's EEP for fishing cats includes 86 animals in 34 institutions. Fishing cats have a gestation period of 65-68 days, and reach sexual maturity at around 12 months. Care must be taken not to disturb the female, as stress can lead to her eating her kittens.

For the first time in 18 years, Blijdorp welcomed twin polar bear cubs, born on 2 December. Blijdorp installed webcams in the den, allowing the public rare access to cubs in the first weeks of life. The cubs, which have not yet been sexed, ventured out into the enclosure on 27 February. The sire, a 21-year-old known as Eric, sadly died of kidney failure on 5 February. The Polar bear EEP has seen significant success recently, with details from the coordinator János Szanthó on p18.





CHESTER'S TRIO OF SUCCESSES

JANUARY WAS A BUSY MONTH at Chester Zoo in the UK with three notable breeding success stories. On 2 January, three Sumatran tiger cubs (*Panthera tigris sumatrae*) were born at the zoo, providing a further boost for the species EEP following the birth last year of three cubs at ZSL London Zoo. As *Zooquaria* goes to print, the cubs still have not been sexed. The births are the result of the second successful pairing of parents Fabi and Kirana, and the zoo is still home to the two cubs born as a result of the first mating. With only 3-400 animals left in the wild, EEP participant zoos like Chester are making a substantial difference to the survival prospects of the species.

In a first for a European zoo, and for the first time globally in two years, Chester also welcomed a batch of 43 cinnamon frogs (*Nyctixalus pictus*) in mid-January. Cinnamon frogs are a secretive species and live in a highly specialised and limited environment. Listed as Near Threatened and decreasing by IUCN, relatively little is known about the cinnamon frog; the 43 offspring

represent a valuable opportunity for research which will aid *in situ* conservation projects and help develop best practice for *ex situ* protection. To encourage the frogs to breed, keepers recreated a habitat based on water-filled cavities and rotting logs surrounding ponds made acidic due to fallen leaves and bark.

Also at Chester, an eastern black rhinoceros calf (*Dicerus bicornis michaeli*) was born on 31 January as the result of the mating of the zoo's 17-year-old female and a 15-year-old male from Port Lympne, also in the UK. Chester now holds 11 eastern black rhinos, and is a major contributor to the EEP, in terms of both breeding and research – the zoo credits its research into hormone measurements from dung for identifying optimal breeding windows. Chester also works closely with *in situ* projects in Kenya and Tanzania, where numbers of this Critically Endangered subspecies are estimated to be fewer than 700 individuals.



Pole to Pole petition

JOIN THE GROWING NUMBERS
COMBATING GLOBAL WARMING



**2 DEGREES IS
THE LIMIT!**
Sign the petition!



José Kok, Campaign Chair, and Mirko Marseille, Campaign Coordinator



We need your help with collecting as many signatures as possible to present at the United Nations Framework Convention on Climate Change meeting in Paris in December this year. By signing the '2 degrees is the limit' petition we demand the commitment of our national governments and the European Union TO SUPPORT ALL MEASURES WHICH HELP KEEP GLOBAL WARMING UNDER THE 2°C LIMIT, and to work towards a binding global agreement at the intergovernmental meeting on climate change in Paris in December 2015.

The petition drive kicked off on International Polar Bear day on 27 February and will close on 27 August. During this period we ask you to collect as many signatures as possible! You can either sign the petition directly on the Pole to Pole Campaign website (also available in German, Spanish, French and Dutch) or download the petition sheet, collect signatures and send a scanned copy to info@poletopolecampaign.org.

On World Penguin Day (25 April)

HOW TO PARTICIPATE

- 1. Download petition sheets and get them signed (both sides!) by your visitors, friends and colleagues.** http://www.poletopolecampaign.org/wp-content/uploads/2014/09/Keep-global-warming-under-the-2._petition-sheetv2.pdf
- 2. Scan the sheets and return them to info@poletopolecampaign.org.**
 - The first batch of signed sheets should be in no later than 25 April
 - The second batch of signed sheets should be in no later than 5 June
 - The third batch of signed sheets should be in no later than 27 August

and World Environment Day (5 June) intermediates on collected signatures per campaign participant will be communicated via the campaign website and social media. Participating institutions that are most successful at collecting signatures will be awarded in one of the following categories:

- Platinum: at least 25,000 signatures
- Gold: at least 20,000 signatures
- Silver: at least 15,000 signatures
- Bronze: at least 10,000 signatures

Zoos that collect the most signatures in each category will be announced during the conservation plenary at the upcoming EAZA Annual conference in Wroclaw, Poland. In due time a webpage on the Pole to Pole Campaign

website will be opened up at which you can follow petition-drive scores and rankings per institution.

Participating institutions are urged to host or organise activities around the dates of World Penguin Day (25 April) and World Environment Day (5 June). The campaign website offers participating institutions lots of free resource materials that can be used for educational outreach. If you need inspiration on innovative and fun Pole to Pole campaign activities please take a look at previous issues of The Polar Times that you can download from the website.

Contact info@poletopolecampaign.org for further information.

The big trip

ZOO ANIMAL TRANSPORTER, AND EAZA CORPORATE MEMBER, EKIPA'S RECENT CHALLENGE HAS BEEN THE TRANSPORT OF A HERD OF FIVE ELEPHANTS FROM HANNOVER TO PAIRI DAIZA

Marielle Van den Brink, Director, Ekipa



When Pairi Daiza asked us last summer if it would be possible to transport five elephants in October we booked all three of our elephant trucks and went immediately to Hannover to see if all our elephant equipment would be needed for the move. Our team studied the Hannover Elephants and enclosure, while the Hannover team studied our elephant equipment, and combining our knowledge, we decided between us on the best way to move these elephants.

The group comprised two mothers with two small calves and a 4-year-old female. For the mothers and their calves our Kuiphuis family elephant truck turned out to be the best choice. This truck has two large containers and both provide enough space for a mother and calf. On route the adult females can't touch each other as they both have their own container. However, having both containers in the same truck enables the elephants to communicate during transport, which calms them down.

On board this truck is a third container with a 1,600-litre water tank and equipment to pump water through a hose, enabling our team to hose down the elephants on the journey. Food is also stored there to feed the animals during transport.



Hannover Zoo already had a crate that fitted the fifth elephant perfectly, and our smallest elephant truck could collect this female in her crate and the two trucks would drive together to Pairi Daiza. Knowing this, we were pleased that our third elephant truck would be still available to service other zoos, as October is always a very popular transport month.

A week prior to loading we delivered our two crates to Hannover Zoo for crate-training. The zoo team did a fantastic job as upon our arrival one week later all elephants entered their transport crates without any hesitation.

With a load as precious as this, traffic jams are best avoided, so loading was handled in the afternoon and our trucks drove through the night when the highways from Germany to Belgium are nearly empty. Both

trucks had a team of two experienced truck drivers who could alternate so that legal resting periods could be met without slowing the transport down.

At their destination, where the elephants were anxiously awaited, Pairi Daiza had specially constructed a ringroad from the parking lot directly to the elephant enclosure to allow a direct drive up to the elephant house. Offloading took place at first daylight, and the elephants immediately emerged from their transport, regrouping as a herd and looking very happy together. It was good to see them in their beautiful and very spacious new surroundings.

Ekipa would like to offer a big thank you to Hannover Zoo and Pairi Daiza for their wonderful cooperation before and during this elephant herd transport. A job well done!

A transitional year

2014 WAS A YEAR OF GROWTH AND CHANGE AT THE ACADEMY



Laura Myers, EAZA Academy Manager

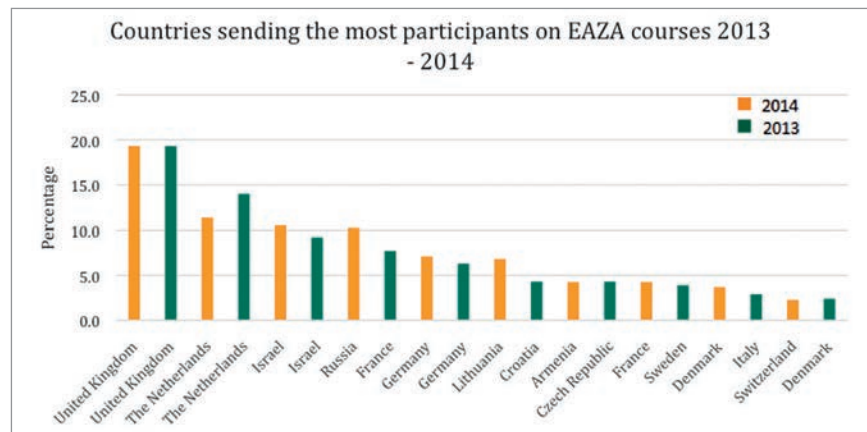
'Coming [on an EAZA Academy course] gives a toolbox and instructions to make use of it – at home you can try what fits best and also make use of the network that coming together creates!'

This comment from a course participant in 2014 shows how much value can be gained from attending an EAZA Academy course. In addition to the benefits of knowledgeable tutors, face-to-face learning provides an invaluable opportunity to network and build relationships with colleagues from other institutions.

In 2014 the EAZA Academy ran 11 highly successful core courses, ranging from the ever-popular Breeding Programme Management courses to a seminar on Social and Emotional Aspects of Learning (SEAL) that took place before the EAZA Conservation forum in May. We have also paired up with other training providers to run courses on subjects as diverse as Diseases and Surgery of Birds and Primate Nutrition, as well as several courses subsidised by Fondation Segré.

Courses continue to be popular across the EAZA membership base, with over 350 participants from more than 150 different institutions attending them in 2014. We had participants from 35 different countries, and hosting courses in a range of locations has seen a change in levels of participation. In addition to countries that have been long-time Academy supporters, Israel and some of the Eastern European nations have had high numbers of course participants in recent years. Over the last year, we have been able to expand the EAZA Academy's reach thanks to generous funding from Fondation Segré. We have developed a very successful collaboration with our Israeli members, and Fondation Segré funding has allowed us to run some of our courses in Israel, widening access for members who struggle to attend courses hosted in Europe. In 2014 we ran courses on Designing Animal Feeding Programmes and Effective Presentation Skills, and there are already plans in place for more courses in 2015.

Thanks to Fondation Segré funding



and continued support from the EAZA Technical Assistance committee we have also expanded training opportunities for staff from Candidate for Membership institutions. Sally Binding, our Animal Welfare officer, joined the EAZA Executive Office in 2014 and has been busy developing and running workshops on the theme of Animal Welfare and Enrichment. After a very successful workshop in Yerevan Zoo last December, her calendar is filling up with workshops for 2015. Her services aren't exclusively for Candidate for Membership institutions; she will be running a workshop at Ranua Wildlife Park in October which is open to everyone – book now to avoid disappointment! See http://www.eaza.net/activities/academy/Courses/Animal%20Welfare_2015_October.pdf

One of our corporate members, Clax Italia, generously agreed to fund our Scholarship programme in 2014 and 2015. Clax Italia scholarships are available for most EAZA Academy courses and help us broaden access for participants by covering the course fees and the cost of travel for one participant. These scholarships can make a real difference, as one recipient (Vlad Vancia, Animal Training course) reported to us: 'After I returned home I was able to train a female bear to open her mouth and we've seen that she has some tooth problems that need intervention. My next step is to train her to accept voluntarily a tranquilizer shot so that we can operate on her. This would be a first for Romania.' Clax Italia scholarships

will be available for 2015 courses; please contact EAZA Academy Manager Laura Myers for more information. 2014 was also the year that the EAZA Academy went global, by collaborating with San Diego Zoo Global Academy. This is an exciting development which allows us to offer online course content. There are already over 300 courses available, and in the future we plan to offer more bespoke content for EAZA subscribers. This new venture is another way for us to expand access to courses for all our members; please visit the Academy Online website at <https://collabornation.net/eaza> to explore.

STAFF TRANSITIONS FOR 2015

One of the biggest transitions for the Academy in 2014 was Myfanwy Griffith's promotion to EAZA Executive Director, which meant leaving the Academy behind. I'm delighted to have joined the team as Myfanwy's replacement, and excited to build on the success of the past few years. After several years working in zoo education, I am really looking forward to overseeing the next stages of the Academy's development. My first priorities are developing the course prospectus for 2015, and carrying out another survey to assess training needs of EAZA members. Check for updates on the Academy website and in eNews.

If you are interested in getting more involved with the Academy by hosting or teaching on a course, please contact Laura.Myers@eaza.net. Details of upcoming courses and how to apply are available on the Academy webpages.



CLOCKWISE FROM TOP LEFT: ZOO-BASED ACTIVITY ON ANIMAL BEHAVIOUR AND HUSBANDRY COURSE; DISCUSSIONS AT SOCIAL AND EMOTIONAL ASPECTS OF LEARNING (SEAL) COURSE; ANIMAL WELFARE COURSE IN CANDIDATE FOR MEMBERSHIP, YEREVAN ZOO; ACADEMY IN ISRAEL DESIGNING ANIMAL FEEDING PROGRAMMES COURSE PARTICIPANTS; BUILDING ENRICHMENT IN ARMENIA



Call of the Wild

BEHIND THE SCENES OF THE NEW PARIS ZOO'S ADVERTISING CAMPAIGN

Sophie Ferreira le Morvan, Director
Parc Zoologique de Paris

Established in 1934, the Paris Zoological Park, better known in France as Vincennes Zoo, is a subsidiary institution of the French National Natural History Museum. One of France's most august and largest publicly owned educational establishments, it has a history stretching back to the 17th century. Nearly 80 years after its establishment, the zoo closed in November 2008 for a complete overhaul of its enclosures and facilities in line with the most up-to-date principles of zoo design and management. Six years and 167 million euros later, the completely transformed zoo reopened to the public on 12 April 2014.

The level of investment in the redesign was reflected in an ambitious visitor target – two million visitors in the first year – which required some clearly defined strategic communications goals. As a result, a communications campaign was developed around four main objectives:

- to create a strong new visual identity for the zoo
- to explain clearly the new positioning
- to create a 'not-to-be-missed' buzz around the reopening event; and
- to sustain interest over the year to ensure that the zoo meets its annual visitor target.

The mission was aided and hampered by some assets and constraints; Vincennes Zoo was an iconic heritage site, which enjoyed a great reputation and significant emotional attachment among the city's public. Its reopening was eagerly awaited and the works had been followed closely by the media and our visitors. Paradoxically, however, the strong identity of the old zoo was in danger of undermining the new modern image we were aiming to communicate; as a result, the campaign needed to build our links to the National Museum of Natural History and its scientific mission (which is at the heart of the rebuilding project) while avoiding erasing the zoo's heritage as a centre of recreation for the people of Paris and beyond. Deadlines



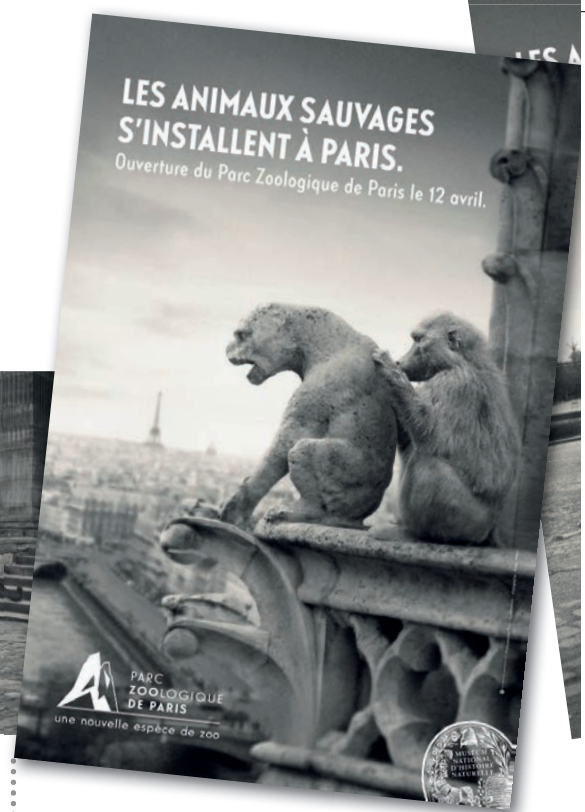
for the campaign were short and budgets were low, preventing us from producing tailored communications for each of our target audiences, including the general public, education professionals, business customers, the tourism industry, and other institutions.

We were helped immensely by the potential visibility and excitement surrounding the launch – France's leading communications agency Publicis agreed to sponsor the campaign from strategy development through to the creation of a new visual identity and the creative work and design that would speak for the zoo to our various target audiences. At the same time, the museum negotiated many media partnerships across all the major communications channels (television, cinema, press, radio and web), and non-media partnerships with local government and infrastructure such as the City of Paris, the Ile-de-France region and local urban transport networks. These partnerships combined for a total estimated advertising value equivalent (AVE) of 13 million euro from a real world investment of only one million euro.

RAISING INTEREST

The campaign highlighted five main communications opportunities aimed at creating, increasing and sustaining public desire to visit the new zoo:

1. One year before the reopening, the zoo organised a public and press event for the final run-through of the zoo's facilities and procedures. We took advantage of this opportunity to reveal the zoo's official name (moving away from Zoo de Vincennes to Parc

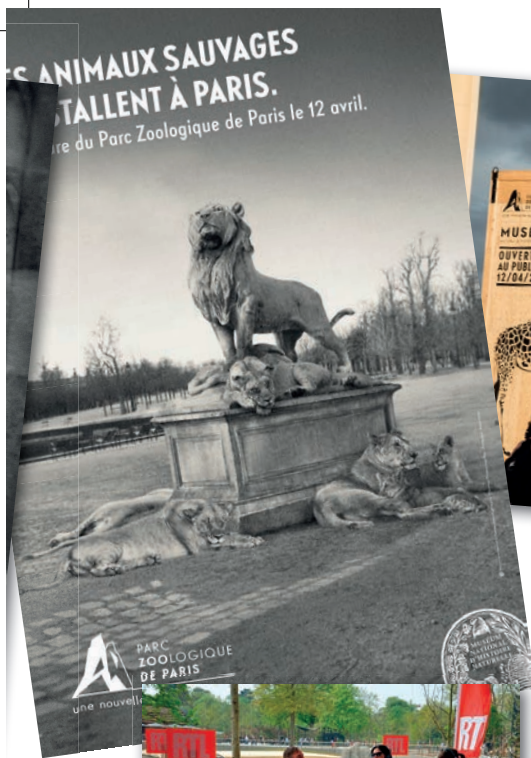


Zoologique de Paris) and the new visual identity. This included a new logotype to be used in all of our communications – a modern take on the Art Deco typefaces which epitomise the period in which the zoo originally opened – and the zoo's new website, which, like all of our communications, promotes strongly the combination of science and popular appeal defined in the campaign objectives.

2. Six months later, just before Christmas, we launched a poster campaign for the sponsorship of a selected panel of animals (29 species). Combining close-up portraits of the animals with humorous text, the posters aimed to playfully raise awareness about biodiversity conservation, to reinforce the positioning of the zoo and to build excitement about the reopening. The sponsorship was very successful and raised more than 300,000 euro from nearly 5,000 patrons in less than a month. To date, more than 10,000 patrons have donated 610,000 euro for the biodiversity preservation.

At the same time, we launched a new Facebook page for the zoo, which now has more than 11,500 fans.

3. From the beginning of 2014, we started the pre-opening phase in earnest with sustained communications up until the opening date in April. Pre-sales were released three months in advance to create excitement, with press advertising support in February and March in the monthly and weekly titles. Media engagement led to interviews explaining the architectural and landscape redesign and the zoo's mission



to raise awareness of conservation, as well as publicising the visitor offers being presented in the launch period.

4. The opening was designed to be the year's unmissable event, and the supporting phase of the campaign focused entirely on wildlife coming back to the City of Paris. Our communications presented the Paris Zoological Park as not only the proprietary zoo of the capital, but of France as a whole. The four advertising visuals for the campaign built on the instantly recognisable heritage of the city, combining animal carvings of famous Parisian monuments with their real life counterparts. These great images were used in outdoor advertising and print media insertions.

Meanwhile, we held a series of street marketing events one week before the opening: giant replica transport crates were placed in five of Paris's most visited open air sites including the Trocadero in front of the Eiffel Tower, the Place de la République and Montmartre. Installed during the night, they were discovered in the early morning by Parisians and created a huge amount of buzz across all channels.

We established a Twitter account for Adeline the giraffe, one of the zoo's more emblematic animals, relaying the arrival of the park's animals and the final preparations for the opening. Radio spots were aired and video clips were displayed in theatres and

on digital media of urban transport networks. During the last week before D-Day, several pre-opening visits were organised for employees and their family, press, media and non-media partners and institutions. The official unveiling happened in the presence of representatives of two ministries in charge of the National Museum of Natural History.

During the opening weekend, many radio, newspaper and TV channels interviewed staff and visitors, and generated massive media coverage.

5. Media partners continued to promote the zoo until the end of 2014, especially before the summer holidays and all along the autumn holidays. The main TV partner broadcast a 52-minute film in the opening month, and five 26-minute films later in the year, while other partners provided coverage through articles and advertising space.

THE OUTCOME

The results of this communication campaign have been very satisfying. Media coverage was very important: 33 newscasts including 18 live on-site broadcasts, 73 TV programmes, 95 radio shows, and 1,519 press articles in nearly 700 different media, appeared within 15 days of the opening. The posters created for the opening won 28 international and professional awards and, most importantly, nearly 1.6 million tickets were sold in 2014, in only eight months.

A public survey, performed six months after opening, revealed that 81% of French people know that the zoo reopened and 80% cited media reports as their source. The same study showed that most people understood the new positioning of the zoo and that they believe it to be a new, modern way to discover more about wildlife and conservation. On the other hand, most people interviewed still referred to Paris Zoological Park as 'Vincennes Zoo', so penetration of the new name is still not strong enough.

2015 is a key year for the zoo, as we must follow up on the momentum of success established in 2014. The name 'Parc Zoologique de Paris' needs to gain traction among a wider cross section of visitors (including international tourists) in order to link the name of the zoo explicitly to the tourist heritage of the city. We are aiming to attract 1.7 million visitors in 2015, an ambitious target which will require a communication campaign almost as successful as that of 2014. The pressures of public ownership and the zoo's status as one of the city's premier attractions do mean that the demands of our communications strategy are unusual, however, we believe that we have demonstrated a model of strategic thinking and partnership building which can contribute to the success of all EAZA members if properly adapted – scales may vary, but the principles remain sound.

Kira Husher

ZOOQUARIA INTERVIEWED IUCN SSC DIRECTOR OF SPECIALIST GROUP PARTNERSHIPS KIRA HUSHER WHEN SHE VISITED THE EAZA OFFICES IN FEBRUARY. KIRA SHARES HER VIEWS ON HOW ZOOS AND AQUARIUMS CAN PLAY AN IMPORTANT ROLE IN SUPPORTING SSC SPECIALIST GROUPS'

Zooquaria Kira, you joined IUCN in November. Can you tell us about your background and how this led to your appointment as Director of Specialist Group Partnerships?

Kira Husher My background is in Environmental Science and Public Relations and I'm very passionate about helping different players to work together for conservation. I was previously the Community Conservation Manager at Taronga Zoo in Sydney, specialising in human behaviour change initiatives and field conservation support. The Building Bridges Initiative was a natural fit for me, in that it recognises the role that zoos, aquariums and botanic gardens can play alongside the IUCN in holistic conservation from the point of view of resources, expertise, and awareness. My PhD was about behaviour change and what prevents or motivates people from taking action; this is especially useful in providing people with simple and effective actions they can take in their daily lives, and this area is very important to conservation in this day and age.

ZQ What exactly are IUCN Specialist Groups looking for in a relationship with zoos and aquariums?

KH Zoos and aquariums have a range of skills that are essential for conservation: your experience of small population management, captive husbandry, research and joint strategic thinking is becoming increasingly important to Specialist Groups. In addition, zoos and aquariums worldwide have access to 700 million visitors annually, which helps raise awareness and change behaviours of the public as a whole; IUCN does not have this kind of public access, so working together on public messaging would be a major asset.

ZQ What goals does the SSC have for the initiative and for Specialist Groups as a whole?

KH IUCN's 130 Species Specialist Groups (SG) are made up of almost 10,000 world-leading experts who inform and advise efforts globally for conservation of species. Many relationships already exist between specialist groups and zoos, aquariums and botanic gardens and many specialist group members work in these organisations. By working even more deliberately and closely with EAZA members these SGs would play the role of facilitators in a 'joined-up' process that works across the whole conservation spectrum including *in situ* and *ex situ* conservation and community engagement – which is the essence of the One Plan Approach. Together, we can work more strategically with all stakeholders, from members of the public through to policy makers both in biodiversity hotspots and further afield. Protecting species needs worldwide involvement from the widest possible stakeholder network and IUCN Specialist Groups; working closely with the zoo, aquarium and botanic garden communities would go a long way towards achieving this.

ZQ How can zoos encourage their visitors to help conservation?

KH The public can actually contribute a great deal, and without their involvement conservation would be far more difficult. Zoos, working with SGs and other organisations, can help provide avenues for direct participation. For example, Taronga worked with TRAFFIC on the development of the Wildlife Witness app for mobile phones, which helps tourists to Southeast Asia to report wildlife crime – conservationists and the authorities can't be everywhere at once, and input from the public can help make a real difference. Zoos are starting to realise their potential for behaviour change – take the example of palm oil: zoos help inform the public of the issues, which leads to pressure from them on legislators and corporations to use certified

sustainable palm oil, while influencing their purchasing decisions.

ZQ Some zoos and aquariums may feel that they are too small to assist a huge organisation like IUCN in these activities. What would you say to change their mind?

KH The Specialist Group network is global, and can use expertise from zoos all over the world, whatever their size. SGs can act as the first port of call for getting involved in the conservation of a species which may be dear to the heart of a zoo, big or small; they can advise on how a zoo can put the resources they have in the right place to make a difference that goes beyond what a zoo might be able to do on their own.

ZQ Should EAZA members hold more species from the endangered categories of the Red List?

KH The Red List is a starting point for conservation, and helps identify and highlight the most desperate species, and in some cases it highlights species that may rely on *ex situ* conservation measures to survive. EAZA members and TAGs have an imperative role to play in the conservation of these species in particular. Having said this, engagement of visitors through flagship species which may not be in those categories also has a role to play in raising the issues that affect less charismatic species.

Zoos and aquariums have also proven that less charismatic species can also be highly popular with the public – it's a matter of choice and will on the part of the curator; look for example how EAZA zoos have raised to prominence the saola, a species that isn't even held in zoos! We feel that increasing close cooperation with the Specialist Groups can help guide the priorities of curators in terms of which species should be highlighted. Working together will get the best results in terms of conservation

KIRA (RIGHT) WITH EAZA'S DANNY DE MAN



breeding, awareness, behaviour change, fundraising and support in the field.

ZQ What do you think are the main challenges for Specialist Groups, and indeed conservationists at large?

KH I think conservationists can be their own worst enemy sometimes! We are all pushing up against modern life and growing conservation threats but too often we work in silos, concentrating very much on the issue at hand without thinking about how wider collaboration might be helpful.

In my experience, collaboration is rarely a bad thing, and we can take a more holistic approach to a wider array of threats if we address them with a wider vision. While the SSC and zoos are a natural fit for obvious reasons, there are also opportunities to engage in a measured and

informed way with some of the big players who affect conservation efforts – corporations for example, who can assist by prioritising good practice in their relationship with nature, raising funds for conservation, and so on.

ZQ Conservation can be disheartening at times when we look at how the modern world is going. Do you feel that we will only achieve sustainability after a life-changing catastrophe, or are there grounds to be optimistic?

KH I truly believe that despite the challenges, we can be optimistic about this. We'll never get everyone to act sustainably and it's true that people need to have a strong reason for making changes in their lifestyle. If we all work together to influence people, governments and corporations, I feel that while we won't be able to change everything, we can

make a big difference. In addition, developed economies in particular have somewhat of a moral obligation to poorer areas to make sure that whatever it is we do, we don't make their situation worse – and where people can't change for whatever reason, we need to bear this in mind. In short, let's fight together in the many battles we can win!

ZQ On a lighter note, can you tell us what you do in your very limited spare time?

KH I don't really make much of a distinction between work and leisure! I am still settling in to my new role, and my new home in Bath, but when I get the chance, I love to go out wildlife-watching, visiting zoos, and scuba diving. I also play dodgeball when I get the chance, and am taking guitar lessons – I guess these are the areas which make the difference from work!



Baer necessities

BAER'S POCHARD IS ONE OF THE MOST THREATENED WILDFOWL SPECIES IN THE WORLD. A NEW ACTION PLAN MAY REPRESENT ITS LAST CHANCE FOR SURVIVAL IN THE WILD

Richard Hearn, Wildfowl and Wetlands Trust

Wildfowl are among the most threatened of bird families. Of 172 currently recognised species, one in four is either extinct or threatened. The Wetlands International / IUCN SSC Threatened Waterfowl Specialist Group (TWSG), established in 1990 and coordinated by the Wildfowl & Wetlands Trust (WWT), is a network of over 250 people working on the conservation of threatened wildfowl. TWSG members focus on *in situ* action for species conservation – identifying which Anseriformes taxa are globally threatened, monitoring their status, producing and implementing action plans, and carrying out and exchanging information on conservation projects.

Currently, a high priority for the TWSG is Baer's pochard (*Aythya baeri*). This understated diving duck was once relatively common and widespread in Asia, migrating from breeding grounds in northeast China and neighbouring parts of Russia to wintering quarters stretching across southern Asia from eastern India to Vietnam and southern China. However, it has undergone a catastrophic decline in recent years and is now on the brink of extinction in the wild. It was first recognised as being in decline in the late 1980s, when it was thought to number no more than 25,000 individuals, and was added to the IUCN Red List in 1994, classified as Vulnerable. In 2008 it was reclassified as Endangered, and in 2012, following an

assessment by Wang et al. (2012) that probably fewer than 1,000 individuals remained, it was uplisted to Critically Endangered.

Despite its listing as Vulnerable in 1994, the species did not attract fresh attention and little new information came to light, except a fairly wide acceptance that it had largely disappeared from the south of its wintering range. Only since 2008 has the level of concern been raised and since 2010 improved efforts have been made to evaluate the status of the species. Very worryingly, it appears that numbers have declined still further. Since 2010/11 there have been no large counts and the best current estimate we have is from winter 2014/15 when just over 200 individuals were known to be wintering in China, suggesting that there is likely to be a minimum of 250-300 birds currently in the population, with the possibility that there are more in areas where the species could occur undetected (it had a large former range and, to date, comprehensive surveys have not been carried out).

Breeding records are even sparser. The most important known site is Hengshui Hu, in central Hebei province, where about 25 birds were seen in spring 2014. This site is far to the south of the recognised breeding range and this may reflect the lack of suitable habitat remaining in its core range in northeast China. Breeding there has not been

proven but it is likely at least to have been attempted. There are also a few other sites in this region, though they hold fewer birds and do not seem to be used as consistently. In the core breeding range there have been no recent confirmed breeding records, but birds have been located at a few sites, the most significant of which is in Primorye, Russia where about five birds have been present in the past two years.

WHAT ARE THE THREATS?

The reasons for the apparent rapid decline of Baer's pochard are not well understood, but there are two key factors that seem most likely to explain it. Of greatest significance is likely to be habitat loss and degradation, primarily in the breeding range as a result of agricultural development. In northeast China wetland loss has been extensive; since the 1950s some areas have lost up to 85% of their natural wetlands and since the mid 1970s agriculture has become the principal land use, replacing natural wetlands. During 1990-2000, over 57,000km² was lost in Heilongjiang, Inner Mongolia and Jilin (the provinces encompassing the majority of the breeding range in China).

Wintering sites are also under threat from habitat loss and degradation. Large-scale habitat alteration has taken place in the Yangtze floodplain due to conversion of wetlands for agriculture,

with an estimated 62% lost between the 1950s and the 1980s. More than 1,100 lakes have been totally drained. Furthermore, around 7,000 sluice gates have been built between the floodplain lakes and the main channel of the Yangtze River to facilitate flood control and agricultural expansion. These changes have significantly impacted the ecological health of the Yangtze River and surrounding lakes. Further south habitat degradation appears less significant and of less importance to the decline of Baer's pochard.

Another major threat faced by many Asian ducks is unsustainable harvesting; although the scale and relative importance of this is hard to quantify, it could be significant, particularly in China, where illegal poisoning and trapping of waterbirds is widespread, indiscriminate and continuing to worsen. In addition, egg collection is thought to be widespread and highly organised, and concentrated in northeast China within the core breeding range of Baer's pochard. As a result, the breeding success of waterbirds may be significantly impacted and localised species such as Baer's pochard are at particular risk if egg collection efforts occur at their few remaining breeding locations.

No other freshwater duck in Asia appears to be declining as fast as Baer's pochard – although population trend data on more numerous ducks are limited and some other species may also be undergoing as yet undetected

declines, it seems there is something specific about Baer's pochard that is contributing to the scale of its decline.

WHAT CAN WE DO ABOUT IT?

Due to the small and declining population size, and the significant uncertainty surrounding the threats it faces, urgent action to stabilise the population size is needed. An Action Plan was approved by the East Asian-Australasian Flyway Partnership (EAAFP) at its Meeting of Parties in January 2015. This Action Plan sets out eight goals:

- 1 The impact of habitat loss and degradation is understood and significantly reduced.
- 2 The impact of harvesting of birds and eggs from the wild is understood and significantly reduced.
- 3 Knowledge of the ecological requirements of Baer's pochard is significantly improved.
- 4 The understanding of population status, distribution, key sites and demography is significantly improved.
- 5 A flyway-wide network of protected and well-managed sites is established and maintained.
- 6 A global management strategy for the captive population is developed and implemented.
- 7 Awareness of Baer's pochard and its conservation needs is significantly enhanced, particularly among decision-makers.
- 8 Appropriate policy for the international conservation of Baer's

pochard is in place.

The implementation of most of these goals has yet to begin, but this will be initiated in 2015 by the newly formed EAAFP Baer's Pochard Task Force. In addition, the need for a well-managed captive population is crucial. The global captive population of Baer's pochard appears relatively healthy, thus we are not starting from scratch as with Madagascar pochard *Aythya innotata*. However, there are concerns about the genetic purity of this population and this must be checked before a captive breeding programme can begin in earnest.

Clearly the outlook for Baer's pochard is very bleak indeed, but with effective implementation of the Action Plan it has a chance. It is also important to note that this story is another strong warning about the health of Asian waterbird populations and the wetlands that support them. In recent years much has been made of the parlous state of shorebird populations and intertidal habitats in East Asia. However, what the Baer's pochard situation tells us is that the future may be just as serious for inland freshwater species in Asia, particularly many other ducks. As conservationists, we ignore this warning at our peril.

Reference

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KEEPING POCHARDS *Peter Smallbones, Studbook Keeper*

Given the species' status in the wild, the Waterfowl TAG established an ESB for Baer's Pochard in 2012, with the first studbook published in 2013, at which time there was a population of 26. 20. 01 in EAZA collections, in addition to 29. 27. 12 at the Wildfowl and Wetlands Trust (WWT).

In captivity it isn't recommended to keep Baer's pochard with other *Aythya* species as they do hybridise freely and there are a lot of hybrid Baer's pochard out there, especially in the private sector. Thankfully, WWT has begun genetic testing of its captive birds in order to establish a safety net population which contains only pure *Aythya baeri*. WWT is supervising an analysis of DNA microsatellites of *Aythya* ducks to establish species identification through location of fixed differences, or very large differences in allele frequencies between *Aythya* species. This will enable zoo-collection managers to assign individuals as pure *A. baeri* or potential hybrids and estimate degree of inbreeding and genetic diversity within and among captive collections. The results of the analyses will guide studbook management in future. The

aim is to eventually screen all captive Baer's pochards in public collections.

Nearly all zoos have waterfowl in their collections. While many species are held just for display purposes, having a Critically Endangered species in your waterfowl exhibits could easily be incorporated into most institutional collection plans. One hundred years after the extinction of the passenger pigeon, there is also an important conservation message concerning a widespread continental species on its way to being lost for ever. 16. 15. 2 Baer's pochard have been bred by three EAZA institutions in 2014. Koln and Ostrava have bred one apiece while 15. 15. 1 were bred by Chester. Birds are bred every season so new holders are required for this extremely important captive population to grow. This Critically Endangered, non-aggressive, hardy, sexually dimorphic duck needs help.

For more information about WWT's genetic study, population demographics and further initiatives in in and ex situ conservation, contact studbook keeper Peter Smallbones at peter.smallbones@paigntonzoo.org.uk.



The spirit of the polar bear

A SEVEN YEAR ODYSSEY IN *EX SITU* CONSERVATION

Janos Szánthó, General Curator & Warren Spencer, Strategic Curator Artis Royal Zoo, Amsterdam

2015 marks the 30th anniversary of the initiation of the European Endangered Species Programmes (EEP). In these 30 years we have established a history and tradition of continuous improvement in species management through cooperation across the European network of zoos and aquariums, and by now it is impossible to imagine collections being run in any other way. Despite this long tradition it is still apparent that there is a long way to go to meet some outstanding challenges – but meet them we must.

In comparison to other programmes the Polar bear EEP is relatively young, established in 2006, with an unmanaged and declining population. Early development of the EEP was based on establishing the groundwork for sustainability – a consideration that was not really on the radar prior to 2006. This meant adapting to

the many agreements that already existed between institutions, and honouring those agreements wherever possible. It was clear, however, that these historical agreements did not meet the sustainability needs of the population and that the EEP needed to draw a line under existing practices as soon as possible, to enable us to take scientifically sound decisions based on genetic and demographic data.

It was promising to see the majority of the participating institutions rallying around the new EEP system and demonstrating a clear willingness to cooperate for the benefit of the species. Initial discussions of the species committee and the institutions led to the establishment of the EEP's goals to maximise the educational and conservation roles of polar bears within the EAZA framework by:

- presenting polar bears as a charismatic

ambassador for the wild population,

- engaging the public with a conservation education story about climate change,
- encouraging funding and research for the conservation of polar bears in the wild,
- maintaining a demographically and genetically stable and behaviourally competent insurance population,
- using this population if necessary for future reintroductions,
- and housing rescued (wild) polar bears in the future.

The polar bear has always been an emblematic animal in the world of zoological gardens, however in recent years it has garnered further focus due to the well documented effects of climate change on the species habitat. Additionally we must accept that polar bears were, in previous times, kept in conditions of welfare standards

ranging from 'extremely poor' to 'could be better', and so were the subject of significant and valid attention from visitors, authorities, the media and animal protection organisations. While it is on the one hand reassuring from a conservation point of view that so many people are interested in the future of this species, the spread of information via new channels left us – for a long time – playing catch-up in the quest to overcome the legacy of these times past, and promote the best possible welfare for polar bears in zoos.

As a result, it was important that in parallel to the improvement of the genetic and demographic health of the populations, the development of both husbandry and facilities for polar bears in our institutions should be pursued with the utmost urgency.

NEW GUIDELINES

The development of effective polar bear husbandry came about as a result of the collection of the many years' experience of species-experts globally which was published in 1998 in the EAZA Ursid guidelines, revised in 2007. Following the publication of the guidelines, zoos rapidly began to renew, improve and build new polar bear facilities. It is indicative that prior to 2000 many zoos had relatively small enclosures at approximately 150–500m², with a reassuring increase since then in space dedicated to enclosures; the majority of new enclosures being created were between 1,000 and 5,000m². Since 2010, EAZA institutions have accepted that small facilities are inappropriate for polar bears and have begun to provide much more space, sometimes many hectares.

As a result of this, the species is now being considered by many new potential holders and regions, and where the facilities are appropriate to modern welfare science standards, the EEP has made every effort to ensure that polar bears are available to institutions that have made the necessary investments into new or renewed facilities.

With essential advice and contribution from the EAZA Bear TAG, improvements in the quality of den design have been observed. High tech den cameras and audio systems provide good information and allow for observation without disturbance, as well as illustrating for the public the

'The polar bear population is at quite a critical phase'

life cycles of the bears. Thanks to these developments, cub management has improved vastly with a commensurate drop in the high mortality of times past and a much higher survival rate. This is indeed a consequence of the crucial advice from the EAZA Bear TAG in the guidance document 'Critical criteria for breeding and rearing polar bears in captivity'.

The Polar bear EEP also took the step of forming a husbandry advisory group, tasked with the role of providing husbandry and exhibit advice to institutions that want to improve, renew or create new facilities. Indeed, the EEP has stipulated that institutions must seek husbandry advisor support, without which they will not receive breeding recommendations or programme animals. Without doubt this consultancy can even reduce development and operational costs of the project and prevent the construction of high priced but inadequate facilities.

Following the election of the new Polar bear EEP species committee it was decided to develop a masterplan for the EEP. This would provide a transparent plan for the species and give value to the many important programme decisions that were to be made for the benefit of the species in our zoos. This process was made possible by the expertise provided by the EAZA Population Biologist Kristine Schad, Collections Coordination and Conservation Manager Danny de Man and the EEP species committee. This was an entirely democratic process, in that the EEP participating institutions were given masterplan drafts to review prior to final publication at the EAZA conference in Budapest 2014.

SENSITIVE MATTERS

We have heard many times and from many sources the following expression: 'the polar bear is a very politically sensitive species'! Far be it from us to second-guess the politics of a polar bear, but in reality it only becomes politically sensitive when we make it so. We find

that some polar bear managers are far more politically sensitive creatures. It is clear that the keeping of polar bears in practically all aspects is an extremely sensitive issue, requiring the Polar bear EEP to positively adjust the management of this species in an atmosphere of constant pressure and attention. This is a massive challenge with consequences that need trust, serious devotion, responsibility and cooperation among EAZA members.

Like many species, the polar bear population is at quite a critical phase and to reach the programme's goals and continue with the positive progress it is important to have clear and meticulously followed EEP milestones. Making this happen requires strict management of the EEP and ever-improving communication between participants; it is due to the hard work of everyone in these areas that previous challenges including late requests to the EEP (which come too late for us to be able to help) are gradually being overcome.

It's not just in the field of communications that we are improving. Unilateral decisions by species holders to operate outside the recommendations of the EEP are also decreasing, which is a very positive step in eliminating the domino effect on the population as a whole. We are all working hard to establish the polar bear population in conservation terms rather than as an old-fashioned 'commodity' species, and these efforts will continue until the population is fully managed according to the deeply considered principles established by the programme. Nine years into the management of the species as an EEP, we can say that despite some difficult politics, and some unfinished business, the programme is on the right track and we are getting ever closer to our goal of a strong genetically and demographically diverse population – and a model programme for managing so-called 'political' species and the strong characters and opinions that come with them.

Ursus maritimus will continue to be a flagship species for climate change and for the changing mission of zoos. It is incumbent on us to foster respect for the EEP spirit – which must not be underestimated or ignored – and continue this great 30-year tradition of species management into the future.

Pecking order

CAPTIVE BREEDING AND RELEASE SUPPORTS THE RECOVERY OF THE WHITE-BACKED WOODPECKER'S WILD POPULATION

Leif Blomqvist (leif.blomqvist@nordensark.se) & Christer Larsson, Nordens Ark Foundation, Hunnebostrand, Sweden

Woodpeckers play an important role in bird communities by providing cavities for secondary cavity-nesting birds. As a result of their specialised habitat needs, they are considered excellent indicators of the health status of forests and their fauna. Population trends among woodpeckers and their abundance therefore reflect the dynamics of other species using the same habitats. As woodpeckers are dependent on dying trees for excavating their cavities and foraging, modern forestry has created unsuitable habitats for a number of woodpeckers that are often considered umbrella species for old and mixed forests. Despite their importance to the biodiversity in forest landscapes, they are rarely seen in zoo collections and of the 11 species native to Europe, only four are kept in zoos.

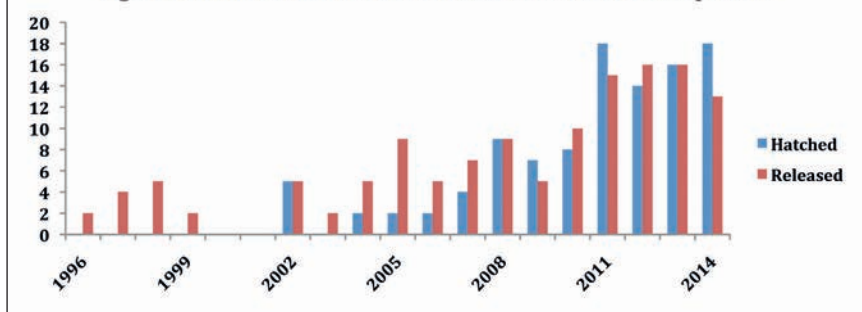
Of eight woodpecker species currently existing in Sweden, three are listed as Near Threatened (NT) in the Swedish Red Data Book. The middle spotted woodpecker (*Dendrocopus medius*) became Regionally Extinct (RE) in the 1980s, and the white-backed woodpecker (*Dendrocopus leucotos*) is currently listed as Critically Endangered (CR). The remaining species are all listed as Least concern (LC).

The white-backed woodpecker is the rarest among the European woodpeckers and is highly specialised for old-growth deciduous forest. Over the past century, its range and numbers have declined dramatically and the species has disappeared from several parts of continental Europe. In the early 1900s, the white-backed woodpecker was documented in 71% of the counties in Sweden. Since then their numbers have dwindled by more than 90% and only a handful of breeding pairs are known to exist.

The primary cause of the species' rapid decline is associated principally with the large-scale changes in forest landscapes that have accelerated in recent decades. The habitat needs



Figure 1. Number of hatched and released white-backed woodpeckers



of white-backed woodpeckers are in glaring conflict with modern forestry's practices and its requirements for profitable production of coniferous trees.

Due to the Critically Endangered status of the white-backed woodpecker, the taxon is listed in the Birds Directive's Annex 1, and all measures to protect the species are of great importance. Initiated by the Swedish Environmental Protection Agency (SEPA) and the Swedish Society for Nature Conservation (SCN), an Action Plan was established for the taxon in 2005 with the goal of achieving environmentally sustainable forests. It is worth mentioning that, among the proposed measures to save the white-backed woodpecker, captive breeding and restocking are also mentioned in the Action Plan. A minimum of 350 birds are thus

suggested to be released in restored and re-created habitats over the next two decades. The Action Plan is, however, not a plan only for white-backed woodpeckers, but also designed to protect the almost 170 Red-Listed species of lichens, bryophytes, fungi, beetles and other birds with similar range and habitat requirements.

Nordens Ark was chosen to be responsible for the hand-rearing and breeding process in Sweden. In the mid-1990s, a series of 11 outdoor enclosures connected to a service building were built at the Nordens Ark off-exhibit area in order to maintain white-backed woodpeckers. Because of the low number of birds in Sweden, pairs were established from individuals caught on the west coast of Norway where the species is still common and the population considered viable. In 1995, four chicks were taken from



different clutches in Norway and transferred to Nordens Ark for hand-rearing.

To be able to establish a breeding pool with a large amount of gene diversity, additional chicks were later collected from nests in Norway. Between 1995 and 2012, 119 (59.58.2) nestlings were transferred to Nordens Ark for hand-rearing. Most of the woodpeckers are kept in the non-public part of the zoo, but four pairs are also kept in the public park, where they serve as educational examples of the zoo's efforts to save endangered species and to promote biodiversity. Two pairs in the public park have bred successfully on several occasions.

HAND-REARING STRATEGY

When the programme was initiated, no prior experience in husbandry and breeding was available. Of the wild-caught chicks that arrived for hand-rearing, 21% did not survive. The age of the chicks on arrival was considered crucial for successful hand-rearing and the prime reason for their survival: some of the chicks were either too young or too old and were therefore difficult to hand-rear. Birds that were only a few days old when they arrived were often too weak and their survival rate was low. If the chicks were older than two weeks when they were brought to the zoo, they refused to beg for food when not fed by the parents. The optimal age when chicks should be taken from wild nests for hand-rearing was therefore estimated to be seven to ten days. At that age the chicks immediately begged for food when they were approached by the keepers and the survival rate was higher.

The hand-rearing process is time-consuming. The chicks are fed from 7am to 8pm at two-hourly intervals

and are offered a mixture of balanced live food of crickets, mealworms and zophobas. Of the surviving hand-reared birds, 38% have been released once they reached the age of five to eight weeks and were fully fledged. The rest of the chicks have been kept as a breeding pool at Nordens Ark.

In 2014, 16 pairs were kept at the facility of which 85% are wild-caught individuals. The birds are kept in pairs and fed twice per day with a mixture of commercially produced avian insect food, mealworms, zophobas and/or crickets and apples.

BREEDING AND RESTOCKING RESULTS

No breeding was recorded prior to 2002, and the 13 woodpeckers released for restocking purposes during this period (see left) were all wild-caught birds that had been hand-raised by Nordens Ark staff. The lack of breeding success was thought to be partly due to too close auditory contact when pairs are kept in near-by enclosures. Separation of breeding pairs by only a wire-mesh net causes stress and has negative impacts on breeding. A separate aviary 500m from the main breeding facility was therefore constructed.

It did not take long before the relocated pair started to display courtship behaviour with intensive drumming and nest-hole construction and, in 2002, their first clutch was hatched. Encouraged by the success, eight new separate enclosures were built. From 2002 to 2014, ten pairs have reproduced in these enclosures and reared a total of 105 (47.50.8) chicks in 44 clutches.

After more than a decade of breeding success and observations, it can be concluded that the males invest more time in nest-hole construction

and guarding than do the females. Males also defend their territories but both parents take an active role in brood care with the males mostly incubating and brooding at night. The clutch size has varied from one to five with a mean of 2.4, corresponding to the average number of chicks found in wild nests in Norway.

Of all surviving fledglings, including the wild-caught chicks that have been hand-reared, 130 (64.60.6) woodpeckers have been used for restocking purposes, while the remaining birds have been kept at the breeding facility.

During the release process, hand- and parent-reared fledglings are transferred to hacking enclosures in restored forest habitats to offer them possibilities for acclimatisation for a minimum of one week. All birds are ID-marked with coloured leg bands (see above). Night boxes and feeding places are provided both in and outside the hacking enclosures. Human contact is limited to those who, during several weeks after release, provide the woodpeckers with food ad lib on a daily basis. Step by step, the young birds become more independent until they are able to find food by themselves.

In recent years, the number of breeding pairs, as well as the number of hatched nestlings in the wild, has increased slightly and the fact that the species has not disappeared from the country may well be attributed to continuous supply of birds through the restocking attempts. Since 2005, reproduction in the wild has been observed mainly among woodpeckers released from Nordens Ark.

This is a great example of how zoos can support wild population recovery and share best practice in husbandry techniques for endangered species.

In the spotlight

THE POPULARITY OF SPOTTED HYENAS IN ZOOS HAS GROWN IN RECENT YEARS, LEADING TO THE FIRST-EVER WORKSHOP ON THEIR MANAGEMENT

Raymond Van der Meer, Curator, Amersfoort Zoo

In January this year, a one-and-a-half-day husbandry workshop for spotted hyenas (*Crocuta crocuta*) was organised at Amersfoort Zoo (Netherlands). It was the first spotted hyena husbandry workshop ever organised, with the aim of improving the management of this species in our zoos. Twenty people from across Europe and one colleague from North America came together to discuss relevant topics including social management, minimum intervention protocols and enclosure design.

Since the launch of the European Studbook for spotted hyena in 1999, the popularity of the species in EAZA zoos has grown as has the number of animals in the population. When the studbook started a total of 44 animals were living in 19 zoos. Today, the programme has more than 100 animals in 28 zoos, meaning a strong increase in numbers, participants and in the average number of animals per zoo. The latter is an important figure because it was a driving force for the workshop. Hyenas are the most social carnivores, highly intelligent and living in complex societies. Combine that with the fact that they have very strong powerful jaws and teeth, and the work of a species coordinator or collection manager becomes very challenging. There was therefore a strong need to combine all the knowledge and experience about the species so we can share that with current holders and potential holders.

After the EAZA annual conference in Budapest 2014, an email was sent to all holders to ask if they would be willing to participate in this workshop and what they could contribute to it. Many holders responded enthusiastically and it was decided to organise the workshop for early 2015. As the studbook holder and a zoo with a long history of keeping hyenas, Amersfoort Zoo was the most logical place to hold it. A nearby hotel was found to look after the attendees and the zoo took care of all the catering. Luckily, we had good weather most of the time and a short tour during lunch was very much appreciated.

THREE THEMES

As husbandry was the central focus of the meeting it was decided to concentrate on three main topics: social management, housing and daily husbandry, training and enrichment. The first speaker was Dr Marion East who has studied spotted hyena in the Serengeti since the late 1980s and is now based at Leipzig Institute for Zoo and Wildlife Research (IZW) in Berlin. Marion is a long-respected member of the IUCN Hyena Specialist Group and since last year she has been an official advisor to the EAZA Canid and Hyaenid TAG on behaviour, ecology and conservation of the spotted hyena. Marion shared her enormous amount of knowledge and experience of working with this remarkable species in the wild. This presentation was for most of us very refreshing and gave us many new

insights to the species. Following up on this were a few presentations from the attendees on their experience with the species in relation to social management. After this we scheduled some time to discuss topics in more detail such as the possibility and practicality of having a minimum intervention strategy or protocol. Hyenas can be very aggressive but they can also recover pretty well from the wounds they receive in fights. There was a strong feeling from the group that in order to keep hyenas in social groups you have to accept some level of aggression, as fighting is a way of keeping stability in the group. However, having some sort of protocol to describe what is normal and what is not, could help participants decide on intervention strategies, while considering other ways to lessen the aggression.

Other topics discussed under social management were: how to start a new group, how to keep a group stable over longer periods of time, when to move animals around, and the ways of keeping stability in male groups.

The second invited speaker was Heather Genter from Denver Zoo (US). Heather is the SSP Coordinator for spotted hyena in North America, and has a long experience of working and training with the animal. The North American AZA population is smaller than the EAZA population with 65 animals in 27 zoos. There is, however, more interest in the species and they encounter the same questions as we do in Europe. The attendance of Heather was therefore very much appreciated and we used the time together to exchange husbandry experiences and share solutions to common problems.

Heather's presentation was on a training and enrichment programme in Denver Zoo. It showed how you could use training as a husbandry tool to, for example, check and treat wounds. But it could also be used for educational programmes, to help hyenas gain a better image. Although the ideas and motivations for training are different in North America and Europe, more and more European zoos do see advantages of husbandry training when working with their animals, and want to work with training protocols. This was also demonstrated by a short presentation from Borås Zoo (Sweden) which has started training with its spotted hyena, and already had some very promising results.

All in all, we had a very fruitful workshop and thanks to the invited speakers and active participants we made a large step towards a better understanding of how to work with spotted hyenas in our zoos. The next step is to write this all down in Best Practice Guidelines by following the new EAZA template, and I would like to thank Katharina Herrmann from the EAZA office who provided helpful guidance in setting up the guidelines following the template.



Food for thought

THE SUCCESSFUL EIGHTH EUROPEAN ZOO NUTRITION CONFERENCE OFFERED PLENTY TO CHEW UPON

Andrea Fidgett, Chester Zoo and Tjalling Huisman, VHL University of Applied Sciences

Animal experts from around the world were able to share ideas at the eighth European Zoo Nutrition Conference organised jointly by the Van Hall Larenstein University of Applied Sciences, the EAZA Nutrition Group, and Royal Burgers' Zoo.

Our setting was a rather wintry Royal Burgers' Zoo and the gathering brought together speakers and, in total, more than 140 participants from 27 countries. The nutrition of zoo animals remains a fascinating and challenging area. Although the past 20 years have shown a lot of progress in the development of scientifically based knowledge there are still many questions left unanswered, and specialists in this field remain scarce. However, conferences like this, where experiences from practice and new scientific insights are shared, the organisation of workshops and courses, and the availability of an increasing number of publications all help progress zoo animal nutrition.

The EAZA Nutrition Group (ENG) seeks 'to promote and support nutrition in zoological institutions as an essential component of their conservation mission'. As with previous meetings, we aimed for a mixture of (applied) science and presentations based on practical experiences. Scheduling an EAZA Academy workshop before the conference and having activities during the zoo visit help satisfy the demand for basic and practical applicable information.

Our theme this year was 'Feeding zoo animals for health, welfare and conservation' – in fact you could say this was always the underlying theme of previous conferences. Nutrition is probably the most important factor for establishing healthy and viable captive populations, a huge responsibility for every person or institute that keeps animals: even more so since the results of our combined efforts are visible to the millions of people visiting zoos.

The programme included six invited speakers on mammal, bird and fish nutrition. Dr Kibby Treiber (Fort Worth Zoo) kicked off the conference and an entire session focused on elephants, describing measures of elephant obesity in captivity. Covering the many, many species of sharks and rays (Dr Max Janse, Royal Burgers' Zoo) and bony fish (Dr Johan Schrama, Wageningen University), both speakers highlighted the challenges of feeding diverse groups of animals based on limited data.

Heavy overnight snowfall almost stopped play on the second full conference day, which started with the zoo visit. Thankfully, expert volunteer guides from Royal Burgers' Zoo were on hand to navigate groups of participants and ensure they visited all the available stations demonstrating production of browse silage, design of UV lighting for reptile enclosures, body condition scoring of primates, behind the scenes at 'Ocean' and the commissary, plus the use of nutrition in public education programmes at Royal Burgers' Zoo.

'Feeding strategies, digestive morphology and metabolic capabilities are diverse and interrelated' was the take-home message from the presentation on avian digestion by Dr Mark Edwards (California Polytechnic State University). Jonathon Clayton described his doctoral research at the University of Minnesota, investigating associations between nutrition, gut microbial communities, and health in nonhuman primates, inviting participants to contribute to the Primate Microbiome Project.

A historical perspective of zoo animal nutrition by Dr Marcus Clauss (University of Zurich) drew the conference to a close, but not before Dr Joeke Nijboer presented his personal perspective on being a zoo nutritionist at Rotterdam Zoo for 37 years and received a standing ovation in recognition of his tremendous



contribution made to zoo nutrition in Europe.

LEARN FROM THE WILD

Previously presented issues of obesity and lack of fibre in zoo diets are still present but less prominent. Researchers highlighted the need for information from the wild to: define what elephant body condition should be, determine the feeding behaviour of fish, establish what amphibians eat, how dental health of herbivores can be maintained, which prey parts are eaten and used by birds of prey... the list goes on. Also, as concerns about diet basics are being addressed, there is renewed focus on other nutrients, such as minerals, including requirements of calcium for elephants, iodine for sharks, selenium for dolphins and manganese for ratites. In summary, the programme was diverse, stimulating and informative.

Attendees of previous conferences emphasised that low conference costs are very important, quite understandable given the present economic situation and financial status of many zoos. Costs were kept to an absolute minimum with considerable support from our hosts, Royal Burgers' Zoo, who provided the final congress meal which, for all those interested in feeding animals, was a unique combination of discussing nutrition



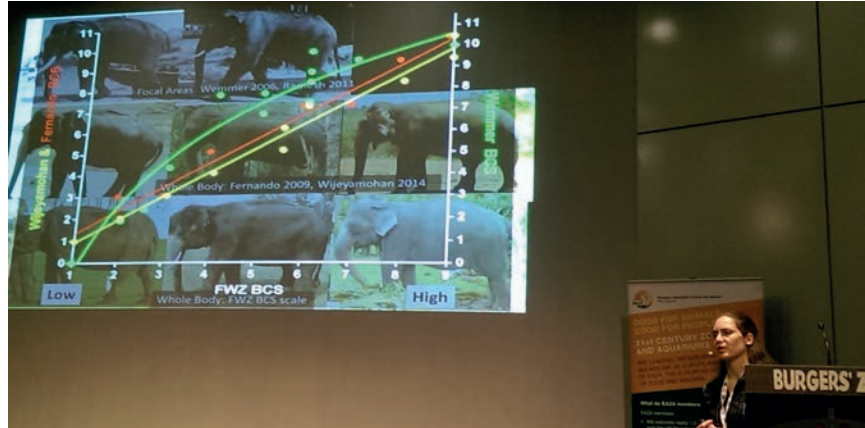
while cooking their own dinner!

Additionally, significant financial support was provided via sponsorship from Arie Blok Animal Nutrition, Avian Bird Food Products, Cargill Feed & Nutrition Switzerland, Gendika, Kiezebrink International, Kreca, Masters Diervoeders, Mazuri Zoo Foods, Metazoa Diervoeders, Nijssen Fourages, Ocean Nutrition Europe, Ruto Frozen Fishfood, St. Laurent, VHL University of Applied Sciences.

We are currently hard at work on special 'nutrition' issues of the *Journal of Zoo and Aquarium Research (JZAR)* and *Zooquaria* based on materials presented during the conference and once everything has been gathered and published we will share the details with everyone who attended. Copies of presentation abstracts can be downloaded from www.eaza.net 'nutrition'.

The European Zoo Nutrition Conference is held approximately every two years. Previous zoo hosts include Rotterdam, Antwerp, Leipzig, Chester and the University of Zurich; discussions about our next destination are underway for January 2017.

A huge thank you to Alex van Hooff, Kim van de Put and everyone at Royal Burgers' Zoo for making us feel so welcome and for another wonderful conference!





Fitting the bill

A LARGE WALKTHROUGH AVIARY IN THE NETHERLANDS PAYS PARTICULAR ATTENTION TO BIRDS' BEAKS AND THEIR FUNCTIONS

Raymond Van der Meer, Curator, Amersfoort Zoo

Amersfoort Zoo, based in the middle of The Netherlands and founded in 1948, is a medium-sized zoo of about 21 hectares and with an average of 750,000 visitors per year. The zoo has a history of keeping a wide range of mammals, mainly different primate species, hoofstock and carnivores. As part of a long term project called 'The Great Wilderness', we want to give new and existing species more space in an environment that suggests a walk or adventure in the wild with a chance to encounter animals. With a strong desire to enlarge our bird collection, the first part of this project is the construction of a large walkthrough aviary with free-flying birds of different species. As an educational theme for the aviary it was decided to focus on the different types, forms and functions of beaks. As a result, the aviary gained the Dutch name 'SnavelRijk' which translates into English as 'Beak Kingdom'.

Children and their experiences play a central role in our zoo and we believe that a child at play is open to learning about and enjoying animals. This belief is expressed in the design of our projects where we combine animal encounters with play elements, in the form of adventure routes. Visitors have a choice of interacting in a relaxed way or in a more energetic manner with flying, swimming, roosting and wandering birds of different species. The free-flying birds and the enormous space (3,000m², 15m height) gives the visitor a true feeling of wilderness, while the birds have plenty of places where they can rest from any disturbance by the visitors. The children can enjoy rafting across water, going through a tunnel listening to bird sounds and even looking into the carcass of an Ankole longhorn where marabous are fed during the day. It's very exciting when a marabou flies right over your head and you can feel how the air moves.

Having beaks in general as a theme, makes the life of a

collection manager simpler. Nonetheless, it was a challenge to find bird species that could live together in the habitat that we wanted to create. We had to think carefully about which species would work and which would not, but the fact that we have a walkthrough aviary motivated us to house bird species that could be shown during winter times.

One of the starting points for new projects is that we try to improve the housing of a species that already exists in our collection. In this case we wanted to give our griffon vultures a better place and so they were a candidate for this new aviary. Marabous and pelicans were once in our collection and high on the wish list for a return. These three species formed our initial choices and all the other species were added during the process. The population currently consists of:

Common name	Scientific name	No. of animals
Marabou stork	<i>Leptoptilos crumeniferus</i>	3.4
Griffon vulture	<i>Gyps fulvus</i>	3.3
Dalmatian pelican	<i>Pelecanus crispus</i>	5.4
Yellow-billed stork	<i>Mycteria ibis</i>	4.0
Glossy ibis	<i>Plegadis falcinellus</i>	7.8
Hamerkop	<i>Scopus umbretta</i>	5.0
Mandarin duck	<i>Aix galericulata</i>	4.3

Due to the short timeframe it was a big challenge to gather all these species from different zoos, but with the help of our colleagues and the studbook coordinators we managed to gather enough birds for the opening.

After finishing the collection plan we started to work on the housing requirements for all the different species. With the visitor routing in mind we tried to locate different zones



Numbers game

Size: 3,000m² and 15m high
 Largest pond: 800m², depth 30-150cm
 Larger indoor enclosure: 140m², height 5m
 Smaller indoor enclosure: 60m², height 5m with pond 50m², depth 30-70 cm
 Construction: large cones, 50x50mm nylon netting, roof 10x10mm nylon netting. Work started at the end of February 2014 and the aviary was opened on 5 July 2014.



that could serve as a resting area, swimming area, feeding area, nesting area etc. The specific needs per species were used to furnish the enclosure in a way that all species could express naturalistic behaviour.

When the visitors enter the aviary they find a large wall on the left side with nesting sites for the griffon vultures. The wall is 30m long and consists of nine artificial nesting cavities at different heights varying from 2.45 to 4.50m high. This is also the area where we feed the vultures, and the visitors can have a close look at this process. The vultures also use several higher trees to rest and sunbathe.

There are three connected water areas in the aviary, the largest being in the centre. This pond is about 800m² with an island in the middle which is used by the Dalmatian pelicans to rest, sunbathe and, hopefully in the future, breed. All water from the three separated ponds go through a wetland filter that is situated near the aviary's exit. During the design process it was decided to create some higher areas, giving some of the birds, such as the storks and vultures, an opportunity to create distance between them and the visitors. This worked very well and provides good views of the birds.

Halfway along the route the visitors find a path leading to the indoor enclosures. This is only opened to the visitors during winter when the marabou and yellow-billed stork are housed inside. The indoor housing is separated into two areas. The largest section (140m²) is for the marabou and yellow-billed storks, and it contains a smaller separation area that could be used for sick birds or for future introductions. Within the room several screens function as viewing barriers, and are also used by the birds to rest upon. In the middle of the room a rectangular water pond can be used by the birds to drink, bathe or clean food.

The smaller section (60m²) of the indoor house can be used by the pelicans, ibises and hamerkop. Much of the floor area consists of a large pond of 50m². For the smaller birds there are many perching sites.

OPENING DAY

Last summer the first visitors were able to enjoy all the different bird species, once the aviary was opened with a big party. The day before opening was an exciting moment for us, because for some birds it was the first time they could start to explore the new area. We were very careful and excited to see how the birds would react to visitors, which we only let in in small groups for a while so that the birds could concentrate on getting used to their new environment.

It was very special to see the interaction between birds and visitors. Sometimes the visitors literally have to walk around the birds or step aside when a vulture passes by. They can really get close to the birds, but most of the birds keep their distance. The marabous are the exception, as they can be very bold and extremely curious. We knew that this could be a problem so we monitor this closely and observe interactions between visitors and the storks. We also realised that we need to better educate our visitors in keeping their distance from the birds.

The griffon vultures needed some more time to relax and did not behave in the way we had expected. But this has since changed and they show completely different behaviour now. Contrary to our expectations the intact vultures (the ones that are not traffic victims) really started to use the aviary much better, even flying over the heads of the visitors – an incredible sight. And, as the icing on the cake, all three pairs started to make nests and breed. Not long ago in early spring the first egg was laid in the aviary... and we hope for many more.



Beach life

A REVIEW OF THE FIRST 20 YEARS OF SUCCESSFUL SEA TURTLE CONSERVATION BY THE UNIVERSITY OF VIENNA AND SCHÖNBRUNN ZOO, VIENNA



ABOVE: THE LOGGERHEAD INFORMATION DESK; BELOW: TURTLE CONSERVATION TEAM (FROM LEFT): CHRISTINE FELLHOFER-MIHČIOĞLU, HARALD SCHWAMMER, MICHAEL STACHOWITSCH, EVELYN RAMEDER; BOTTOM LEFT: PROTECTING A NEST AT THE BEACH.



Harald M. Schwammer, Zoological Curator, Vienna Zoo

The University of Vienna has just celebrated its 20th anniversary of species conservation and habitat protection work on sea turtle nesting beaches in the Mediterranean Sea. Schönbrunn Zoo in Vienna – under the aegis of its Society of the Friends of Schönbrunn Zoo – has accompanied this project as a major sponsor for much of its history. The Austrian student teams and researchers have been working every summer since the early 1990s, alongside Turkish colleagues, in a cooperative effort to improve the nesting and hatching status of the loggerhead turtle *Caretta caretta* on two beaches near Fethiye, Turkey. This effort is anchored as a practical field course at the university, but as with most conservation-related projects it is a classical mix of student courses, species protection, habitat and nature conservation, public relations efforts, and international cooperation.

During each ca. three-month-long summer nesting season, about 20 students walk a total of nearly 12,000km on their daily early morning and late night shifts. Over 20 years this totals nearly 240,000km or five times around the globe! Translated into work hours, this adds up to over 200,000 ‘man/woman-hours’, including operating an information booth on the promenade at one of the tourist beaches.

The Austrian effort has helped to measure and tag several

hundred adult female turtles, protected nests with cages, and accompanied nearly 100,000 hatchlings to the sea, many of which would never have made it otherwise due to light pollution, barriers of beach furniture and a range of other threats that signal the deterioration of sandy beaches here and elsewhere due to human activities. The work has helped increase on-site awareness that beaches are a highly valuable, ‘living’ habitat worthy of protection. More sea turtle-friendly lamps have been installed at some sites, the beach furniture has been repositioned along some stretches, and new information signs have been erected to inform local residents and vacationers from around the world. The Austrian effort is supported by, in addition to the Vienna Zoo, several firms and organisations. The work has given rise to scientific publications in peer-reviewed journals and a series of Diploma, Bachelor and Master theses. Through this project, Austria is living the motto: ‘species protection and nature conservation efforts cannot stop at one’s own national borders’.

For more information visit www.seaturtlecourse.jimdo.com.

Reference Triessnig P, Roetzer A and Stachowitsch M; Beach condition and Marine Debris: New Hurdles for Sea Turtle Hatchling Survival. *Chelonian Conservation and Biology*, 2012, 11(1): 68-77.

How enriching is our enrichment?

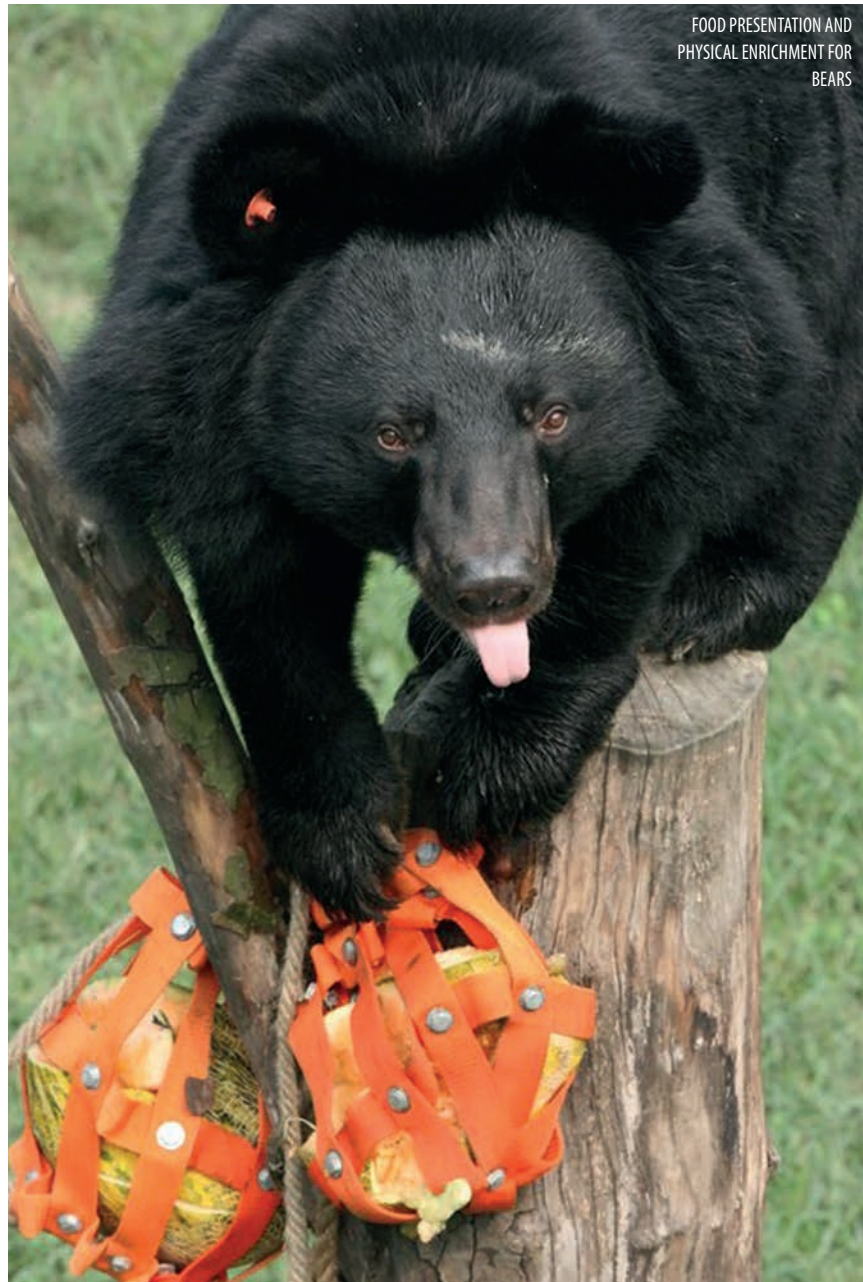
IT'S NOT ENOUGH SIMPLY TO GIVE AN ANIMAL SOMETHING TO DO; THAT 'SOMETHING' HAS TO STIMULATE, AS WELL AS PASS THE TIME

Sally Binding, Animal Welfare Training Officer, EAZA

By now, it is safe to say that all EAZA members are aware of the need for enrichment for the animals in our collections, and that it is becoming increasingly integrated into our daily management practices as a core value of good husbandry. However, with the increasing adoption of the word 'enrichment' into zoo vocabulary, has its true meaning been lost and is our 'enrichment' actually performing its namesake? Modern welfare and behavioural science can help understand what role a good enrichment programme fulfils, and can help us to move towards an approach that genuinely reflects the needs of species and individuals.

The cardboard box has a lot to answer for when it comes to enrichment. Along with the classic ball and the ice-block, the box has, in many cases, become synonymous with enrichment to the extent that these tools are often seen as a 'one-size-fits-all' solution to meeting the behavioural needs of our animals. These items may indeed have their place within the enrichment programmes for many animals and should by no means be discounted, however their limitations need to be identified. These items alone cannot come close to meeting the full behavioural needs of an animal, and in some cases may have no value at all. At best, they should only ever been viewed as one contributory element of a holistic enrichment programme.

In order to identify if our animals' behavioural needs are being met, and therefore how life-enhancing is the 'enrichment' we provide, we need to continually relate back to a concrete definition of the word. Enrichment is a process, a concept, and not a physical object. The process is to continually engage the animals in our care with behavioural opportunities typical of their species in the wild in order to move towards an improvement in their welfare. The manifestations of this concept – enrichment items – may



FOOD PRESENTATION AND
PHYSICAL ENRICHMENT FOR
BEARS

be considered to be facilitators of the process if they provide an animal with behavioural opportunities that are appropriate to the species. However, as all keepers know, there is no set formula for all animals of a species, and a thorough understanding of the needs of each individual is as essential as species-specific behavioural knowledge in moving towards optimal welfare.

So what role could the cardboard box play? For some animals it may test their exploratory behaviours, nesting,

play and foraging, or provide security so it can often justify its presence.

However, as with all enrichment items, it cannot in itself provide for all the behavioural needs of an animal, and must be seen as part of a wider programme. A holistic enrichment programme needs to build layers of enrichment, with each layer providing different behavioural opportunities until it reflects as closely as possible the full dynamic behavioural repertoire of the animal.

QUALITY, NOT QUANTITY

The effectiveness of enrichment programmes is often discussed in quantitative terms, for example, in both our input – ‘We spread food around the enclosure twice per day’ – and the output – ‘The bear forages for 3 hours per day’. Evidence suggests, however, that we should view the success of enrichment in terms of the quality of the behaviours that the animals exhibit, rather than the length of time they are performing them or the number of sessions we provide. Consideration for the quality of behaviours performed is utilised by Dr Francoise Wemelsfelder from Scotland’s Rural College, as part of her work on Qualitative Behaviour Assessment (QBA) – a practical tool for animal welfare

assessments. For example, the quality of a bear’s foraging behaviour will be higher if he is turning logs, digging, climbing and so on without being sure of a reward than if he is simply collecting food from ‘hiding’ spots he knows well and returns to daily. Both may be considered foraging, but the quality of the behavioural output from these two enrichment methods is notably different. The first example evokes the animal’s true foraging behaviours and produces a suite of associated physical and emotional benefits, while the second serves only to occupy his time and arguably reduces all physical and emotional benefits to practically nil. Therefore, when assessing how enriching our enrichment is, we must consider the quality of the behavioural output and

not simply whether the behaviour occurred or not.

MEASURING SUCCESS

The degree to which ‘enrichment’ meets its goal moves constantly on the qualitative scale and, to measure its success, we need to understand the full behavioural repertoire of the species in the wild, (including consideration of the role played by time of day, season and life stage) and take into account the individual personalities of each animal.

What may be considered as an enrichment item today may simply become ‘an item’ tomorrow but ‘an enrichment item’ again a week later. What is enriching to one individual may not be to another. Consequently, it is important that we are aware of the dynamic nature of our animals’ behavioural needs and monitor their behavioural output in response to the ‘enrichment’ we provide. Past experience may lead us to believe that certain inputs are ideal to meet the needs of the animal; however, past experience cannot substitute for observation of the animals’ reactions to that input. In short, when assessing the effectiveness of enrichment, it is the quality of the current behavioural output which must take priority over all other considerations.

In summary:

- 1 Ensure you have a holistic understanding of the behavioural needs of the species and the individual.
- 2 Re-evaluate the ‘enrichment’ currently in use – what is the behavioural output and does it reflect your knowledge of the species and the animal? Be honest and critical – identify both benefits and limitations.
- 3 Design your enrichment programme – the input – to meet the animal’s full, dynamic, behavioural needs.
- 4 Monitor the output – how does the animal respond and does this reflect what you know about the species and the individual? Remember that the enrichment value will change (constantly!).
- 5 Build layers of enriching opportunities into one holistic enrichment programme.

INTO PRACTICE: SOME DOs AND DON'Ts

- **Enrichment is not about occupying an animal’s time.** An animal can be occupied with ‘enrichment’ all day but still experience behavioural frustration due to the lack of other opportunities. For example, once an animal has discovered how a puzzle feeder works it stops being a cognitive challenge and simply occupies the animal’s time. We can be both bored and behaviourally frustrated but occupied with a task at the same time.
- **Enrichment does not always have to be novel.** The innate behavioural repertoire for all species will entail a degree of novel experiences due to the ever-changing nature of the wild environment. However, consistently performing certain behaviours, such as dust-bathing, is equally important. Your plan should ask what kind of behavioural opportunity the animal needs now, and reflect it through the choice of an experience that is either new and unfamiliar or well-established and consistently accessible.
- **If the animal ignores the enrichment they have still been enriched.** All animals, including humans, are constantly assessing risk in their surroundings to ensure that they are safe. This is an extremely important wild behaviour and cognitively challenging: ‘What is it? Can it hurt me? What do I do with it? Is it of value to me?’ Based on this, both humans and animals will explore an item and make a choice as to how to proceed. Offering novel experiences (for example, a new item or scent) is a highly effective way of stimulating these highly important risk assessment cognitive processes and exploratory behaviours; and providing animals with choice and control, which are core values in positive welfare. Ignoring an item is also a choice. It is important to consider that the animal may be neophobic, so place the enrichment somewhere where they can avoid it; allow them time to cognitively process the potential risks and explore it at their own pace.
- **Consider enrichment that the animal won’t like.** Obviously it is not positive for welfare to engender a high level of fear, but animals can benefit from (for example), foods that they do not like. In captivity many animals become accustomed to their daily diet and will generally eat it, but in the wild every potential meal comes with risk that needs to be assessed. Including a small amount of safe but unpalatable food into their enrichment programme (foods not necessary for nutritional health or satiation) will provide opportunities for risk assessment and therefore cognitive enrichment.



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- Sheep (Locush)
- Vitamin E Cubes
- White Rhino Concentrate
- Zebra

AQUATICS

- Aquatic Diets 3 and 4
- Fish Eater Tablets
- Aquatic Gels (Herbivore and Omnivore)

MILK REPLACERS

- Flamingo Crop Milk Replacer
- Milk Replacers
- Rhino Milk Replacer

SPECIAL DIETS

- 4% Vitamin E Supplement
- Exotic Leaf Eater
- High Fibre Red Panda
- Kinkajou Cake
- LowFe
- Zooplement GP and ZM

Leading the way



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