

QUARTERLY PUBLICATION OF THE EUROPEAN ASSOCIATION OF ZOOS AND AQUARIA

ZOOQUARIA

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CHAMPION THE CHAMPIONS

A NEW SCHEME HELPS ZOOS
SUPPORT CONSERVATIONISTS



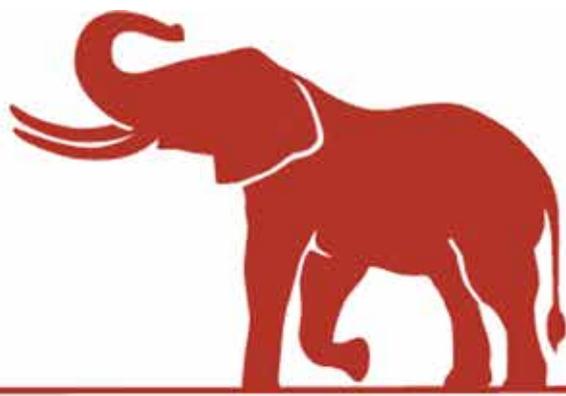
Branching out

A ONE PLAN APPROACH FOR NEW WORLD MONKEYS

Fresh approach

TURNING THE SPOTLIGHT ONTO FRESHWATER FISH SPECIES





JARDIM ZOOLOGICO

Lisboa - Portugal

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Register today on the EAZA website:
<http://www.eaza.net/News/Pages/ezeconference.aspx>

Information about the programme, accommodation
and travel can also be found here.



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FROM THE DIRECTOR'S CHAIR

It has been a busy but enjoyable first few months as the new Executive Director. Although at Annual Conference I had still not officially started in the role (my first day was 1 October), I had a great opportunity to be able to shadow Lesley Dickie and really get a feel for what the job entails. I was able to meet many of you for the first time and see a different side to the Annual Conference compared to previous years when I attended in my capacity as the EAZA Academy Manager. I am sure all will agree that the conference was a great success; from the excellent organisation and hosting to the thought-provoking plenaries delivered by a range of internal and external speakers. Where else can you listen to people speaking about topics such as successes and challenges of *in situ* conservation projects, impacts of transmissible diseases, the psychology behind pro-environmental behaviour, and how to communicate effectively to build trust in our institutions and our conservation work? Of course, the Annual Conference isn't just about good hosting and listening to plenary presentations. This year's programme of committee meetings, TAG meetings and workshops was our busiest ever and much progress was made. A very big thank you to Dr. Miklós Persányi, Director of Budapest Zoo, and everyone who was involved in making such an enjoyable and productive conference possible.

The Annual Conference also saw the launch of two new EAZA Committees: the Communications Committee (see the interview with the Chair, Columba de la Panouse Turnbull, on page 10) and the National Associations Committee. Both of these new committees reflect the ever increasing need for us to communicate about the work we do to the widest audience possible in the most effective and engaging manner. As EAZA has grown as an association we have necessarily focused on developing internal communication methods and promoting joint agreement and understanding of our work. Events earlier this year have shown us that, whilst it is still vital that this internal dialogue continues, we need to do more to ensure that both our internal and external audiences have a full understanding of the work we do and are engaged in supporting it. One of the first steps in this process is a review of the EAZA communications strategy. Development of a new EAZA website, due for launch in the next few months, is a great first step in bringing our work to a wider audience.

During my first month in the role I also had the opportunity to attend the CBSG and WAZA Annual Conferences, based in New Delhi, India. This was my first time at either of these meetings and I was impressed by the diversity of attendees. The working group format of CBSG enabled topics such as dysfunctional zoos, IUCN guidelines (on *ex situ* management, reintroduction, confiscated

animals, wildlife disease risk), and the future development of population management tools to be discussed amongst peers from all areas of the conservation community. It was also wonderful to see so many interested people attend the workshop on the Asian Species Action Partnership (ASAP), one of the pre-selected projects supported by funds from our Southeast Asia Conservation Campaign. We are all aware of the biodiversity crisis in Southeast Asia as highlighted by many of our articles in this and previous editions of *Zooquaria*. The workshop provided valuable feedback, guidance and offers of support on how best to work together to conserve the amazing species from this region.

In addition to the varied technical programme, much of the WAZA conference focused on discussions around its new strategic directions and documents. The main document currently in production is *Vision 2020: The WAZA Conservation Strategy*. The previous conservation strategy was published in 2005 and this new one focuses on the challenges zoos and aquariums face as well as the commitments we need to make to ensure our continuing conservation success into the future. It aims to be more 'user-friendly' and act as an essential reference guide and tool for zoo and aquarium managers and directors. WAZA is also developing its first Animal Welfare Strategy, which will address the topic from a range of viewpoints, and aim to provide zoos and aquariums with information on how they can best cater for the welfare needs of their animals; how they can lead and advocate for animal welfare; and how they can provide environments that improve animal-welfare knowledge and conditions, while at the same time continuing to conserve wildlife. I very much look forward to seeing the final versions of these two documents in 2015.

In summary, I am enthusiastic to have this opportunity to play a larger role in the EAZA community. My time as the EAZA Academy Manager, and these months interacting with colleagues as the Executive Director, have only strengthened my view that, although there can be challenges and conflicts at times, EAZA is a strong and vibrant conservation community. Through open communication and understanding of each other's needs and motivations we can work together collaboratively to reach the highest goals of zoos and aquariums. To close, I would also like to take this opportunity to thank everybody who has been so welcoming and supportive to me. I already know the team in the Executive Office are happy and confident in my abilities to follow in Lesley's footsteps and it is heartening to find so many of you also feel the same way. I very much look forward to meeting and working with you all to continue building on EAZA's successes.

Myfanwy Griffith
Executive Director, EAZA

NOTICEBOARD

CONFERENCES

SEPTEMBER TO NOVEMBER was a busy time in terms of conferences in the zoo and aquarium community. EAZA held a highly successful Annual Conference in Budapest in September, and details of the highlights of the meetings are in the conference summary on page 12.

In November, the World Association of Zoos and Aquaria (WAZA) held its annual conference in New Delhi with the theme of 'Biodiversity, Connection to People and Strategies', hosted by the Central Zoo Authority of India (CZA).

Altogether, 259 participants from 38 countries participated in a very productive and intense week, with an introductory keynote speech by Joel Sartore, illustrating the conference theme and the *Biodiversity is us* campaign, with stunning imagery. Prof. David Mellor introduced the Five Domains of animal welfare. Excellent examples of Indian subcontinent biodiversity conservation and education were presented and workshops were held on euthanasia, population management, the WAZA animal welfare strategy, the WAZA conservation strategy and the new proposed seven strategic directions for the WAZA corporate strategy, 2015–2020. The conference also touched on another important and increasing threat to biodiversity: the illegal trade of wildlife. The membership endorsed and approved a resolution on legal, ethical and sustainable sourcing of animals and the Federal Minister for Environment, Forests and Climate Change, Prakash Javadekar, took part in a public burning ceremony of confiscated wildlife products in Delhi zoo. The minister also announced that his Government is working to open a Centre of Zoo Sciences at New Delhi in the near future to improve standards, infuse a rigorous scientific and technical culture in the present system, make Indian zoos more visitor-friendly and provide strong professional training for CZA institution staff.

Prior to the WAZA conference, IUCN SSC's Captive Breeding Specialist Group, the IUCN body most closely related to zoo and aquarium based conservation strategies, held their own meeting, also hosted by the CZA in New Delhi.

POPULATION MANAGEMENT

THE EAZA OFFICE has been hard at work this year on population management tools designed to assist with EEP evaluations and long-term planning for species. Since the Annual Conference, Kristine Schad and Kristin Leus, with direction and assistance from the department, have conducted nine Quick Population Assessments (QPA). The department will continue to report back with the findings of the QPAs to TAG chairs and EEP coordinators.

In addition, the department has also completed its fourth Long Term Population Management Plan (LTP) for polar bears (*Ursus maritimus*). This follows on from LTPs completed this year for the Mauritius Pink Pigeon (*Columba mayeri*),

African elephant (*Loxodonta africana*), Asia elephant (*Elephas maximus*) and giraffe (*Giraffa camelopardalis*). LTPs for lion-tailed macaque and mandrill will be completed soon. The department aims to complete 5-6 long-term plans each year, with species being targeted according to EEP evaluations, and decided in December. The Polar Bear EEP long-term population management plan, which determines the genetic and demographic status of the population and defines the goal of the EEP over the next five years, including transfer and breeding recommendations, is now available on the member area of the web site on the Bear TAG page.



AB Aqua Medic GmbH	(www.aqua-medic.de)
AQUA-TEKNIK A/S	(www.aqua-teknik.com)
Base Structures Ltd	(www.basestructures.com)
Billings Productions	(www.billingsproductions.com)
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EKIPA	(www.ekipa.nl)
Fachjan Project Plants	(www.fachjan.nl)
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Instituto Bioclon	(www.bioclon.com.mx)
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Marine Nutrition	(www.marinenutrition.com)
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Pangea Rocks	(www.pangea.dk)
pricetag	(www.pricetag.nl)
Ralf Nature	(www.ralfnature.com)
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Zoolife s.l	(www.zoologicaladviser.com)
ZOOPROFIS	(www.zooprofis.de)
ZooTrend	(www.zootrend.com)
Zoos Online Services	(www.zoos.pro)

COUNCIL ELECTIONS

Elections for EAZA Council will be held in 2015, with the new Council taking their seats at the Annual Conference in Wrocław in September. The elections will be coordinated by the EAZA Office's Communications and Membership Department, who will be in touch with National Associations and Directors early in the New Year to start the process.

MEMBERSHIP

Council approved the following recommendations for membership at Annual Conference

★ **Recommendation: Full Membership:** Natur'Zoo de Mervent, France; Zoo Hodonin, Czech Republic.

★ **Recommendation: Temporary Membership (2 years):** Zoo du Bassin d'Arcachon, France; Drayton Manor Zoo, UK; Domaine du Reynou, France; Parc Animalier d'Auvergne, France.

★ **EAZA Accreditation Programme: Maintain Full Membership:**

Woburn Safari Park, UK; Kolmarden Zoo, Sweden; Danmarks Akvarium, Denmark; Espace Zoologique de la Boissiere du Dore, France; Zoologicka zahrada Olomouc, Czech Republic.

★ **EAZA Accreditation Programme: Temporary Member Two years (downgrade):** Chessington World of Adventures, UK.

EAZA Accreditation Programme (EAP) screenings are now being booked for summer and autumn 2015. Members interested in being placed on the screening calendar should contact April Adams at the Executive Office (April.Adams@eaza.net).

BIRTHS AND HATCHINGS

EASTERN BONGO AT STUTTGART

FOR THE FIRST TIME IN SIX YEARS, an eastern bongo (*Tragelaphus eurycerus isaaci*) calf has been born at Wilhelma Zoo in Stuttgart. The birth, at the end of October, follows the introduction of a male, which was transferred from Duisburg to the zoo in 2012. This is a further step forward for the EEP dedicated to this extremely rare antelope, of which only 150 or so remain in their natural habitat in a small range in eastern Kenya. The calf, known to keepers as Kaamu, was born without complication on 27 October, and has remained concealed since then, as is normal with bongos, only receiving visits from the dam for suckling.

The animals, which have spectacular markings on a vivid red-brown pelage, also feature long spiralled horns in both sexes, the only tragelaphid to exhibit this trait; the colouring, size and horns all contribute to the popularity of the bongo as a zoo species, the worldwide captive population of which is over 400 animals. These advantages are mitigated by natural behaviours which include high levels of timidity, males which live solitary lives separate from females and



young, and the tendency to be most active at night.

Approximately 170 eastern bongos are kept in EAZA collections under an active EEP. Along with animals like Rothschild's giraffe, eastern bongos are recognised as

one of the most threatened large mammals in Africa, and as a result the birth of the calf at Stuttgart will aid in the efforts to maintain the good genetic health and robust demographics of the EEP population.

ANDEAN CONDOR AT PUY DU FOU

THE INSTITUTE OF FALCONRY at Puy du Fou in France hatched a single Andean condor (*Vultur gryphus*) chick in June 2014. This is without doubt one of the most challenging vulture species to reproduce due to a number of factors which make it very difficult for captive breeding centres to achieve success. Puy's breeding pair had already produced two chicks prior to their arrival at the Institute from a private collection that was closing down. The chick was the result of a three-year process of acclimatisation to a specially adapted aviary. Regular copulations during this period were noted, but they did not produce results. This year, the pair showed a bit more enthusiasm and an egg was laid. Discussions with other breeders of this species, including Luis Jacome, resulted in taking the egg away immediately as it is very fragile and the nest not always strong enough – the chances of a natural hatching were extremely slim. The egg was placed in an incubator at 36.8°C with minimal humidity, in the same way as for other raptor eggs. A substitute egg was used but the pair quickly realised this and abandoned the nest.

After one month the chick weighed 2kg, and continues to grow well and in good health. It is currently housed in over-wintering accommodation with no direct human contact while its parents are housed in a neighboring aviary. When it achieves sufficient maturity, the condor is likely to be released in Pailleman, Argentina, at the northern border of Patagonia, under the supervision of field conservationists. The paperwork to allow the transfer and reintroduction of the bird to this spectacular mountain area in Rio Negro province has already started. The Andean condor is listed as Near Threatened on the Red List, and the EAZA's EEP is coordinated at Doué la Fontaine.





ELEVEN NEW CHEETAH CUBS

THE FIRST HALF OF 2014 was quite productive for Safari de Peaugres, with the birth of 3 litters of cheetahs, all mother-reared. Safari de Peaugres has been breeding cheetahs since 1995, with more than 50 cubs born so far, raised and then sent all over Europe, following EEP recommendations.

Visitors can only see cheetahs in two enclosures. The seven others are located in a calm, forested area, without any other predators nearby. All but one of these enclosures are connected, so, most of the time, there is no need to put the cheetahs in crates to transfer them to another enclosure.

The cheetahs' behaviour is observed every morning when the animals are released into their respective enclosures. This allows the head keeper to immediately programme a change in the composition of the pairs when needed. Two birth dens (in two separate houses) are fitted with a camera to allow the keeper to check what is currently happening before entering into the house.

Even with a well-designed facility, the breeding of this amazing cat species is only possible with good cooperation between European zoos. Thus, the sire of the litter born in January (1.4 cubs) was a male sent by Montpellier Zoo, and the two other litters, 2.2 in May and 0.4 in June, have been sired by a male loaned by Le Parc des Félines. This transfer has been very valuable, as both females were already 7 years old and had never mated before, despite having met a lot of males. Le Parc des Félines had probably taught their male how to talk to the ladies,

as he managed to succeed in less than two months, whereas all other males had failed.

Two cubs from the last litter unfortunately died a few days after birth, but the remaining 11 have been raised without any problems. The cubs were weighed every two days until they were too 'dynamic' to stay in the weighting box! Safari de Peaugres' fans were kept informed about the development of the cubs via the zoo's Facebook page. So, when the moment came to find names for the two females from the last litter starting with the letter 'W' (Safari de Peaugres use a letter per litter to easily remember the links between the animals), the names Wifi and Web were quite obvious choices.

Utopie, Ukraine, Ukulélé, Uranie, Ulysse, Virgule, Velours, Voyou, Vanille, Web and Wifi have been favourites for a lot of visitors during summer 2014 and helped the zoo to collect money. A money box linked to a mechanical soft toy of a cheetah cub has been installed just in front of the 'nursery enclosure'. When someone puts a coin into the money box, the toy cheetah moves its head and chirps, which encourages children to insert more coins. A TV permanently shows a short clip about Cheetah Conservation Fund (CCF) actions. All the collected money is doubled by the zoo and then sent to CCF.

We all hope that the cubs will continue to contribute to the conservation of their species by becoming breeding animals in different European zoos.



New Faces at the European Commission

EU POLICY MANAGER DANIEL NUIJTEN OUTLINES THE RESULTS OF THE RECENT CHANGE OF FACES AT THE EUROPEAN COMMISSION AND THE EUROPEAN MEDICINES AGENCY (EMA)'S PUBLIC CONSULTATION ON THE VETERINARY USE OF DICLOFENAC IN SPAIN AND ITALY

October and November were a very exciting period in Brussels with hearings to decide the makeup of the new European Commission and the subsequent appointment of its members. Of the new Commissioners, two are especially relevant to zoos and aquariums: Karmenu Vella from Malta, who takes over at Environment, Maritime Affairs and Fisheries, and Vytenis Andriukaitis from Lithuania, who will be responsible for Health and Food Safety. Mr. Vella's new role includes biodiversity and the European Zoos Directive, while Mr Andriukaitis will head up DG SANCO, which includes units responsible for animal health and welfare.

During the hearings to review the appointment of the new commissioners, the European Parliament expressed some concerns that sustainable development and the environment were not high enough on the political agenda, a concern which was picked up and reflected by the Commission through the appointment of Frans Timmermans from Holland as one of the vice-presidents of the European Commission. He is responsible for coordinating the work of this policy area.

The new Commissioners took their seats at the beginning of November and we await with interest signs that they are making progress in their respective policy areas. EAZA will continue to monitor the situation and actively work to ensure that any concerns in relevant policy are addressed by the Commission.

In September new legislation on horse passports was adopted and although the legislative text has not been published yet we know already the following:

- By 1 January all member states must have in place a central database with the data of all horse passports issued. This is currently the case for 25 out of 28 member states.



THE ASIAN WHITE-RUMPED VULTURE WAS ALMOST DRIVEN TO EXTINCTION BY DICLOFENAC.

- The maximum identification age for horses has been set at 12 months from birth.
- There will be some changes in the required format of the passports.

Among other developments that are being monitored is a proposal for new legislation for the import of animal sperm, which is currently being debated in the European Parliament, and a proposal to revise the Animal Health Law which, hopefully, will be moved forward in 2015.

There is also a scientific review being conducted at the request of the European Commission by the European Medicines Agency on the use of the anti-inflammatory drug diclofenac in livestock. Two EU member states, Spain and Italy, have permitted the use of the drug, despite clear warnings from India that the drug is highly toxic to vultures and reduced the population of vultures by over 90% prior to being banned in that country. EAZA has been active in supporting calls from the Vulture

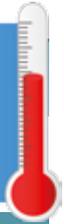
Conservation Foundation, Birdlife International and other organisations to call for a Europe-wide ban on veterinary use of diclofenac, and made its own submission to the EMA's public consultation on the issue. The review should be finished in the first half of 2015, and we are hopeful that the scientific evidence of the threat to conservation work for vultures and other carrion raptors in Europe will be compelling enough to ensure a ban before any collapse in their populations in Spain and Italy occurs.

In addition to policy formulation, the European Commission also has a number of different funding programmes, including LIFE+ which funds projects in the EU on biodiversity and sustainable development, and ERASMUS+, which provides funding for education and youth programmes, plus others. Regular updates via EAZA eNews will outline calls for proposals and deadlines: further information is available from EAZA's EU Policy Manager, Daniel.Nuijten@eaza.net

Two degrees is the limit

THE POLE TO POLE CAMPAIGN ENTERS YEAR TWO, AND YOU CAN HELP TO GET ITS SIMPLE MESSAGE ACROSS

2 DEGREES IS THE LIMIT!
Sign the petition!



Jose Kok, Campaign Chair

Year one of the Pole to Pole campaign featured a lot of activity in our member zoos, from special activities and displays to the inauguration of exhibits based around the idea of protecting polar species. Based on the campaign slogan of 'Pull the Plug', participants have been highly creative in their activities aimed at raising awareness of climate change and how individual action to reduce emissions can have a big effect. Some of the highlights include:

- Zoo Decin's Inuit Games,
- Dierenrijk's Polar Bear Marathon,
- Action of the Day at Norden's Ark,
- Blackpool Zoo's Pledge Tree,
- School posters at Zoo am Meer,
- Mulhouse Zoo's new polar exhibit featuring musk ox, polar bear and arctic fox, and
- Puy du Fou's Snowy Owl ambassador.

These form just a small part of the activities undertaken during the first year, which has been successful in making the link between animals in zoos and the personal actions of visitors to help protect the habitats of their wild cousins.

Following discussions with CBSG and others at the EAZA Conservation Forum in May, the Campaign Committee recognised the fact that personal mitigation of climate change can only ever be part of the solution: climate change is so vast and far-reaching that we also need legislation globally to ensure that governments are incentivising renewable energy and making it a core part of their energy security strategies in the very near future. With the United Nations Framework - Convention on Climate Change (UNFCCC) meeting scheduled for December 2015, the Committee made the decision to draft and launch a petition calling for concerted and global action on a resolution to restrict and reduce emissions. The petition will be handed over at UNFCCC in Paris, and we urge all members to download the petition form at the Pole to Pole website's resources page – www.poletopolecampaign.org/resources/



So what are we asking for? In common with several petitions being prepared for UNFCCC (and we are looking at how to work with these organisations to combine these petitions into a single large stack of signatures), EAZA feels that the message needs to be kept simple. While highly educated and well-informed young people have been getting involved with 350.org, a campaign to limit the level of CO₂ in the atmosphere to 350 parts per million, the consensus is that to maximise public participation, the petition should use the message that "2 degrees is the limit. The UN Sustainable Networks Solutions Network and Avaaz.org, one of the world's leading online activism websites, have both decided to instead focus on the message that the limit for global warming should be a 2 degree rise. The Campaign Committee agreed unanimously that this message, while perhaps less scientifically accurate in claiming that this limit will provide a workable solution for climate change, would be clearer to the general public, and, as a result, drafted and agreed the following petition text:

'Scientists are clear about the devastating effects on human well-being, the natural world and its biodiversity that man-made global

warming above 2 C will have. We, the undersigned, as part of the Pole to Pole Campaign of the European Association of Zoos and Aquaria, 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.'

EAZA has had great success with petitions in the past: the illegal trade in bushmeat from the EAZA campaign of 2000 provided 1.4m signatures to be delivered to the European Parliament. The current petition, while also available for signature on the campaign website, will encourage visitors to sign a paper petition as they leave the zoo or aquarium – taking advantage of the fact that people are more receptive to altruistic and planet-saving values after spending time with the animals. EAZA strongly hopes to replicate the success of the bushmeat petition, and urges all members to download the petition form from www.poletopolecampaign.org.

For further information on getting involved with this crucial activity during the last year of the campaign, please contact Mirko Marseille at the EAZA Executive Office (mirko.marseille@eaza.net).

Spreading the word

COLOMBA DE LA PANOUSE TURNBULL, OF PARC DE THOIRY, IS THE FIRST CHAIR OF EAZA'S NEW COMMUNICATIONS COMMITTEE. ZOOQUARIA CAUGHT UP WITH HER TO FIND OUT MORE ABOUT THIS ROLE, AND WHAT THE FUTURE COULD HOLD



Zooquaria You are the first chair of the new Communications Committee which officially came into being at the annual conference in Budapest. Can you tell us more about why the committee was formed?

Colomba de La Panouse Turnbull

The euthanasia of a young male giraffe at Copenhagen Zoo earlier this year was widely publicised by the social media for a couple of weeks and sparked a global debate on zoos' population management methods. EAZA members were completely unprepared for the media frenzy which occurred in some European countries and the US and, combined with a fair amount of misinformation, this led to a divided response to press, further antagonising the issue. This turn of events was discussed in depth at the EAZA Directors' Day in Doué-La-Fontaine and a general consensus was reached regarding the creation of a Communications Committee that would work on a communication strategy respectful of cultural differences in zoos whilst defending core EAZA values and principles. This would allow us to be better prepared in the future to deal with any contentious issue hitting the media but, also, to ensure that on a day-to-day basis, each EAZA member promotes a shared image of what it means to be an EAZA zoo.

ZQ You were practically born into the world of zoos. What do you see to be the main differences between zoos when you were a child and zoos as they are now? And how do you see the future of zoos and aquariums 20 years from now?

CPT I believe the majority of EAZA members are well aware that zoos have moved on tremendously since I was a child (in the 1970s) from being more commercial institutions, focused primarily on a recreational and/or 'stamp collection' approach

and with insufficient concern for the long-term viability of *ex situ* and *in situ* populations, to becoming more responsible institutions, focused on public education, raising conservation awareness and supporting *in situ* conservation. I personally believe that, although much progress has been achieved in terms of sustainable management of captive populations, there is room for much more. Furthermore, in terms of our impact on the environment at large and the sustainable management of natural resources in general, I believe we still have progress to make. Finally, the community of zoos worldwide has been slowly but surely moving towards common goals of responsible management via the creation of regional associations such as EAZA and also via WAZA and efforts need to be pursued in order to ensure that zoos around the world which are not up to par become so. Therefore, I would hope to see the future of zoos 20 years from now to be a reflection of significant advances in these aspects of zoo management and cooperation.

ZQ How do you think the public perception of zoos and aquariums across Europe differs from the view of the directors and senior staff of those institutions? And how can the communications committee help bridge that gap?

CPT I think this very much depends on the country we're in. We saw with the events in Copenhagen earlier this year that Danish people very much defended their national zoo whereas the public in some Latin countries strongly condemned it. My impression is that zoo visits in the UK and northern Europe are often not motivated purely by a need for recreation but also a need to include zoos as an integral part of the education of one's children. Certainly, in the UK, public donations are a real asset in supporting zoos' conservation work. Visitors to Latin

zoos seem to be primarily motivated by a need for recreation and the zoos' efforts in education and conservation are recognised more as an added bonus. Certainly, in France, donations from members of the public to zoos' conservation work is marginal. In this context, the public is not likely to understand or support complex issues such as population management or even animal welfare. Therein lies the gap as the view of directors and senior staff for whom following EAZA guidelines is the right course of action is completely alien to a number of our visitors. I strongly believe that communication and education is the only way forward to bridge this gap and hence the need for a Communications Committee. Indeed, this work relies first and foremost on achieving complete transparency and the ability to discuss taboo subjects among EAZA members because anything we attempt to hide will come out eventually in this world now governed by social media hype. We need to be prepared to explain everything we do and why we do it and this begins with reviewing the EAZA mission statement in order to ensure that each member feels it is its own mission statement to uphold. The Communications Committee will then pursue its goals by working on a communication strategy with the participation of EAZA members.

ZQ What do you view as being the perfect end result of an active communications strategy? Is this realistic?

CPT In my view, the perfect end result

of an active communications strategy would be that all EAZA member institutions and their staff engage in 100% transparent communication and solidarity towards EAZA. Whilst there are cultural differences on various subjects, for instance, management euthanasia, it is possible to explain in a rational and sensitive manner to the public and the media why some EAZA members resort to certain zoo management methods and why it is acceptable in some countries but not possible in one's own. Opening up the debate on certain topics with the wider community and integrating its different stakeholders in the resolution of complex issues is the only way to achieve a more global and balanced response in the long term.

I am not pretending it will be easy to achieve these objectives but I do believe it is realistic. Success will very much depend on maintaining and increasing the interest in this new committee which was apparent in Budapest with several EAZA members approaching David and myself. More to the point we will need active participation of members.

ZQ Should zoos and aquariums be getting involved in non-traditional areas of communication in order to fulfil their mission? For example, should we be engaged in politics or community action?

CPT The more we communicate about the role and mission of zoos and EAZA the better. Engagement in politics may not be realistic and achievable in some countries but community action should certainly be developed by all EAZA members. Local communities are important stakeholders of zoos and can become faithful and active promoters and supporters of their zoo if a strong relationship is built.

ZQ Are the geographic breadth of EAZA and the cultural differences across Europe too much to overcome?

CPT It certainly isn't an easy feat to overcome these. However, EAZA members have already come a long way in working together to achieve common goals and produce common strategies. As mentioned earlier, several members have expressed interest in the communication committee and

COLOMBA DE LA PANOUSE TURNBULL ADDRESSES THE COMMUNICATIONS PLENARY AT EAZA ANNUAL CONFERENCE



its mission and this in itself is surely a reflection that members are eager to make progress in bridging the gap between cultural differences and tightening the bonds within the EAZA community, let alone with the wider community.

ZQ When you are not running Thoiry and chairing the committee, what do you like to do in your time off?

CPT Currently, I'm setting up an organic farm with my husband to produce miscanthus for biomass boilers and organic fruits and vegetables for the local market and the surplus will be destined for Thoiry Zoo's animals. I really enjoy travelling and I also do acrylic and oil painting (mainly portraits and symbolic figurative painting)... when I am able to find the time.

Hungarian rhapsody

BUDAPEST PROVIDED THE PERFECT BACKDROP FOR EAZA'S SUCCESSFUL 2014 ANNUAL CONFERENCE

David Williams-Mitchell, Communications and Membership Manager

EAZA's Annual Conference is our Association's most significant event, the one opportunity for all our members to come and meet each other and discuss the most important issues that face our institutions. And again this year, come they did: with nearly 700 delegates from 47 countries, including directors, curators, veterinarians, educators and communicators (among others), the Budapest conference was testament to the importance of the opportunity, with the increase in attendance over recent years now being a permanent development. Set against the dramatic backdrop of Pest, the conference facilities at the Hilton Hotel provided an excellent ambience in which to discuss the events of the past year and plan ahead. Seamless organisation by Budapest Zoo and CongressLine meant that delegates could work efficiently during the long hours of meetings before relaxing with an excellent programme of social events.

Of course, one topic could not be entirely avoided: management euthanasia. The community showed no doubt as to the importance of retaining our Association and the breeding programmes it administers and, while cultural differences are undoubtedly a factor in the practice of managing populations, there was little disagreement with the idea that long-term planning for the conservation of species in human care requires difficult decisions to be made. The message from the membership that came through strongly was that we have a duty to explain clearly to the public the rationale for our decisions – even if they are not universally practised.

To this end, and to ensure that the Association's voice represents every cultural viewpoint within a strong representation of scientific principles, this year's Conference saw the debut of two new EAZA committees: the Communications Committee and the National Associations Committee, both of which were mandated by the

Directors attending the spring meeting at Doué La Fontaine.

The Communications Committee, which is chaired by Thoiry Zoo Director Colomba de La Panouse Turnbull, held its first meeting and organised a plenary session at the conference. Taking to heart the lessons learned in 2014, the Committee outlined a commitment to transparency in the Association's relationship with the public, as well as internally. The Committee will be working to address a need for better and clearer communications of the science behind the work done by members in population management, conservation, education and research, and brings together some of the best communications experts from across the network. The National Associations Committee also held its first meeting at the conference, at which leaders from our affiliated membership organisations discussed their role and how they and EAZA can work together for mutual benefit.

EXISTING COMMITTEES

Conference is the second chance of the year for all the Association's specialist committees and working groups to meet and discuss issues including veterinary care of animals, technical assistance to zoos in developing countries and membership, among many other topics. Highlights from their meetings included:

- The Research Committee decided to create different roles to ensure a wide base of expertise and consultation, including on matters of communication and the administration and editorial roles of the *Journal of Zoo and Aquarium Research*, EAZA's peer-reviewed journal. Committee members can now be part of the Core Group or advisory Associates.
- The Aquarium Committee discussed its role and the relevance of treating aquariums as a different entity to zoos in terms of management, best

practice, breeding programmes and other areas. A solution that will continue to be discussed is the idea that Committee members could serve on other committees to consult on common concerns and outline a different perspective where needed.

- The Reintroduction and Translocation Working Group presented the results of research conducted by the University of Southampton and Marwell Wildlife with the title 'Building the foundations of success: An assessment of successful reintroduction projects involving captive-bred animals'.
- The EAZA Population Management Advisory Group outlined plans to expand its membership to include Core Members, Corresponding Members, Advisors, or Links to Other Regions. EPMAG will be contacting curators, TAG chairs and other zoological staff at member institutions to fill these positions in the near future.

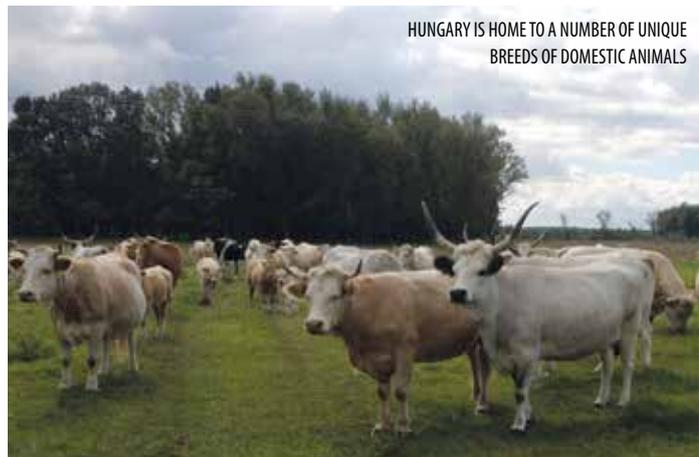
TAG MEETINGS

The TAGs built on the momentum generated at June's highly successful Joint TAG Chairs meeting and EAZA TAG Mid-Year meetings held at Avifauna at Alphen aan de Rijn in the Netherlands, increasing their discussions of international cooperation and One Plan Approach planning. Highlights included:

- The Cattle TAG held discussions with colleagues from the Indonesian Association of Zoos and Aquariums and AZA about developing global species management plans for the conservation of banteng, anoa and babirusa.
- The Chair of the Prosimian TAG attended AZA's Prosimian TAG midyear meeting to further discuss future co-operation, regional prioritisation and a global programme approach (the AZA TAG chair also attended the EAZA midyear meeting in Alphen). This cooperative



BUDAPEST ZOO ORGANISED A TRIP TO THE HORTOBAGY AREA



HUNGARY IS HOME TO A NUMBER OF UNIQUE BREEDS OF DOMESTIC ANIMALS



approach has led to an action plan which is common to both associations.

- A highly popular meeting with attendees occupying every available space, the Rhino TAG invited three inspirational external speakers from Big Life Foundation, Nino the mad mad rhino and Save the Rhino International to outline the challenges they face, and aggressive new tactics to stem the tide of poaching and population decline.
- The Antelope and Giraffe TAG started work on a new Regional Collection Plan which will fully incorporate the One Plan Approach.
- The Marine Mammal TAG discussed the final draft of its Regional Collection Plan.
- Preliminary results of the elephant husbandry survey were presented to the audience with a final report expected towards the end of the year.

PLENARIES

Following welcome speeches from our host Dr. Miklos Persanyi, EAZA Chair Simon Tonge, and the Deputy Mayor of the city of Budapest, our guest keynote speaker Dr Anna Omedes from Ecsite (the European Network of Science Centres) and Director of the Barcelona

Museums of Natural Sciences, introduced the Memorandum of Understanding recently signed between our organisations and Botanical Gardens Conservation International. The memorandum, she said, pointed to the joint organisation of a conservation campaign, the proposal for which was approved by the Conservation Committee later in the conference.

The conservation plenary introduced some of the field projects which have received funding from our previous campaigns, and set out the programme for the second year of the Pole to Pole campaign. Details of the new petition are on page 9. In addition, invited speaker Michael Sani from the UK's Bite the Ballot organisation presented the highly important role of young people in politics, making an excellent case for our institutions engaging with young voters to sign the petition and get them involved in the political process.

The veterinary plenary emphasised the importance of good veterinary practice as 'prevention being better than cure'. Building on this approach, excellent talks from Arne Lawrenz, Alexis Lecu, Stephanie Sanderson, Endre Sos and Peter Donlon pointed out that the knowledge and tools available to veterinarians and population

managers are now advanced enough to allow a wider view of the management of health issues. Sustained dialogue between stakeholders (for example between EEP coordinators and vets) – on the One Plan Approach model – will allow for better management solutions to population health, transfer of animals for conservation breeding and so on. This idea, called One Health by EAZA Collection Coordination and Conservation Manager Danny de Man in his closing remarks, recognises that the health of humans, animals and ecosystems are interconnected.

Finally, the Communications Plenary introduced Brendan Hodgson from Hill+Knowlton Strategies to outline the importance for any corporate entity in maintaining transparency in an age of mistrust, while Sarah Thomas introduced the concept of good linguistic framing in communicating and inspiring altruistic values in our audiences.

The Conference also featured a number of workshops on tuberculosis, animal welfare, the conservation database and other topics, making Budapest 2014 one of the fullest and most far-reaching agendas the Association has assembled. We look forward to Wroclaw 2015 with excitement.

A fresh approach

WITH MANY FAMILIES OF FRESHWATER FISH FACING AN EXTINCTION CRISIS, A NEW REGIONAL COLLECTION PLANNING PROGRAMME HOPES TO ENCOURAGE MORE ZOOS AND AQUARIUMS TO GET INVOLVED

Brian Zimmerman, Chair, Freshwater Fish and Aquatic Invertebrate TAG

Freshwater fishes, one of the most threatened vertebrate groups, got a boost in September when Tierpark Schönbrunn in Vienna hosted the first ever European Regional Collection Planning (RCP) workshop for this diverse and enormous group of animals. The workshop was held over two days and host Anton Weissenbacher, the curator of Vienna's collection, and co-organiser Brian Zimmerman from ZSL, knew they wouldn't have time to review all the species: with over 15,000 classified under the banner of 'freshwater fish' the task of reviewing each species is quite overwhelming. In order to ensure that there would be some progress and to make a running start, nine families were pre-selected for review. These were chosen based on existing knowledge of their prevalence in captive collections as well as having species under threat.

Another challenge was trying to attract the right people to participate in the workshop. Even though freshwater fishes contain some of the most threatened species on earth, they don't receive comparable attention from the zoo and aquarium community. The fact that there are no managed breeding programmes for freshwater fish is one example of how neglected this group is. Public aquarium collections are dominated by marine species and many zoos don't work with fish of any sort. With this in mind, the organisers enlisted the help of a diverse group of people to develop the RCP. Freshwater fish experts from universities and research centres, taxonomists and hobby groups joined the zoo and aquarium community for the workshop and started the enormous task of reviewing species.

Introductory presentations were given to familiarise participants with the tools they would need to develop the RCP. Brian Zimmerman gave a presentation on the RCP process and talked through the Decision Tree for sorting species. Kristine Schad from EAZA gave an excellent presentation



on population management for highly fecund species. Will Darwall from IUCN gave an in-depth presentation on the IUCN Red Listing process and an introduction to the Red List website, one of the main tools that the participants would use for sorting species.

Due to the urgent conservation issues that so many freshwater fish face and the enormous number of species to sort through, the workshop organisers decided in advance that the focus of this workshop would be only on species that fitted under the RCP category of 'conservation'.

The nine families pre-selected for review included: Madagascar rainbowfish, Australasian rainbowfish, cichlids, blue-eyes, pupfish, two families of live-bearers, anabantoids, and the carps (including barbs, loaches and danios). Many of these families are widely represented in the public aquarium community and popular in the hobby trade.

Some of these families contain some of the most threatened species on earth. For example the family Cyprinodontidae or pupfish has one species that will become extinct very shortly. The Catarina pupfish (*Megupsilon aporus*) has only two fish left, both males. Despite attempts to breed the last fish by colleagues at Dallas Aquarium in Texas, US, the

species suffered a series of setbacks due to disease and a small gene pool. A last-ditch attempt to hybridise the last two males with females of its formerly sympatric species, the Potosi pupfish (*Cyprinodon alvarezii*), are being attempted at Berkeley University in California. However, it is likely that the species will soon be lost forever.

Examples such as this highlight the urgent need for better coordination between institutions plus a well-developed RCP with managed breeding programmes. There are already five species of pupfish lost to extinction and at least six additional species of pupfish from Mexico that are already extinct in the wild. Public aquariums and zoos are the last hope for these species but coordinated management is essential to improve gene flow between meta-populations and solve breeding and husbandry problems. With time running out for so many species, immediate prioritisation is the first step to determine which species need coordinated conservation breeding before it's too late.

The zoo and aquarium community in Europe has huge untapped potential to rescue freshwater fish species from extinction. Of the nine families of fish chosen for review in the RCP the majority are small-bodied species that require minimal space. One



aquarium facility could easily manage more individuals of a Critically Endangered pupfish than the whole global population of Sumatran tigers, for instance. It is important to ensure that we don't continue along the path of only a few institutions taking part in freshwater fish conservation. The Dallas example with the last Catarina pupfish highlights the need for more holders of each species to ensure that there are safety-net populations scattered over multiple institutions.

At the Vienna workshop, Kristine Schad's presentation suggested that each species should be maintained in at least three locations, with more populations greatly increasing the chances of the long-term demographic survival of the species and healthier gene pools. In order for this type of coordinated management to take place, the priorities must first be set. This is why the Vienna meeting was so crucial to agreeing conservation priority species.

A recent review conducted by Joao Falcato, Director of Lisbon's Oceanario, found that there are just over 100 EAZA members that have aquariums or keep fish of some sort. Add to this the large number of non-EAZA European aquariums and the number increases by fivefold. With conservation on the agenda of many of these organisations and the

public expectation that the zoo and aquarium community take a leading role in species conservation, it begs the question: why aren't more zoos and aquariums involved with freshwater fish conservation?

If one institution can keep a population of 200 critically endangered rainbowfish in an enclosure of three cubic metres then shouldn't every aquatic collection in Europe be getting involved? The cost of managing this entire population would be a fraction of what it takes to keep one tiger alive for a year. Why has there not been a greater response to the extinction threat when solutions to immediate loss of freshwater biodiversity are obvious?

One possible reason is that there has been a lack of coordination. The sophisticated EEP and ESB management plans for mammals and birds does not exist for freshwater fish yet. In fact, it may be that these programmes would never work for freshwater fish given the difficulties encountered with the ESB programmes for the two native European seahorse species. However, it would be beneficial to explore further whether these programmes or a modified version of them would suit the management of freshwater fish species. Most species under review for the RCP are highly fecund, often short-lived and

impossible to identify as individuals. Group management tools are needed that take these traits into account. These must be developed alongside the prioritised list of species then a test-case scenario could be implemented with three to five species to work through the challenges. Perhaps if these issues are overcome then more institutions would join forces to help tackle the extinction crisis now facing freshwater fish.

The RCP workshop in Vienna is just a starting point for the European Zoo and Aquarium community when it comes to freshwater fish. Now that the process has started it is essential that we move rapidly to complete the RCP. After the RCP is produced the coordinators will need to move quickly to develop an inventory of existing captive stocks, identify more species coordinators (or family coordinators) and plan a population management strategy that is workable for the species included.

If your institution would like to get more involved, then please contact the new Fish and Aquatic Invertebrate TAG co-chair responsible for freshwater fish, Toni Weissenbacher or TAG chair, Brian Zimmerman, for more details.

a.weissenbacher@zoovienna.at
brian.zimmerman@zsl.org



GOLDEN LION TAMARINS
(*LEONTOPITHECUS ROSALIA*)

Assessing the species

A ONE PLAN APPROACH TO COLLECTION PLANNING HAS BEEN DEvised FOR A FAMILY OF NEW WORLD MONKEYS

Miranda F Stevenson, Vice-Chair Callitrichid TAG and Kristin Leus, EAZA, CBSG Europe and Copenhagen Zoo

The previous Regional Collection Plan for Callitrichidae (New World monkeys including marmosets and tamarins), published in 2006, had recently become outdated so in 2012 the TAG began work on a replacement. The overall philosophy, incorporating the One Plan Approach (OPA) to species conservation planning, was instigated by Kristin Leus and this culminated in a TAG workshop in March 2013, at which the process was applied to each species. The final document was issued in September 2014, in time for the Annual Meeting in Budapest, and is available from the Callitrichid TAG section of the EAZA website. The full details can be found in the RCP.

This article will focus on the species assessment part of the publication and aims to explain the philosophy and logic behind the plan, which may prove useful to other TAGs in the process of revising their RCPs. The process should be regarded as a start to applying the OPA to collection planning, which may result in a full species conservation-planning process in the future. The

methodology determines, and produces, two main outcomes for each species: a conservation or non-conservation role(s), and a level of management.

THE ROLE

In the spirit of the OPA, *ex situ* conservation can be used more effectively as a conservation tool if it is part of an integrated approach to species conservation. The potential need for a conservation role of an EAZA *ex situ* population was therefore decided in consultation with *in situ* specialists. The TAG is very fortunate in having Anthony Rylands from the IUCN SSC Primate Specialist Group (PSG) as one of its members and the plan incorporates the latest information from the field and also on callitrichid taxonomy. In addition, several TAG members and species coordinators are already involved in range-state species conservation-planning processes that evaluate and incorporate *ex situ* activities as part of the overall conservation strategy. This ensured that all relevant authorities

and species-specific *in situ* experts were contacted. However, rather than merely posing them the question 'do you feel there is need for an EAZA population for conservation?', we presented them with detailed descriptions of potential conservation roles of *ex situ* populations based on an adaptation of the Amphibian Ark conservation roles, and with information on the current status of the EAZA population. Without this information, *in situ* specialists may not realise either the full spectrum of ways in which *ex situ* activities may contribute to conservation, or the potential already present in the current EAZA population. For future work, we encourage TAGs to work with the descriptions of common conservation roles in the revised IUCN *ex situ* guidelines, for which the Amphibian Ark roles provided inspiration.

In brief, the following roles for *ex situ* populations were considered (for full descriptions, see RCP).

Conservation roles for threatened or non-threatened species:

1. Ark: would become completely

extinct without *ex situ* management.

2. Rescue: in very imminent danger of extinction and requires *ex situ* management.
3. Supplementation: *ex situ* management benefits the wild population through breeding for release.
4. Insurance: it is unsure whether *in situ* threat mitigation will have a sufficient effect, but an *ex situ* population may be desired as an insurance population.
5. Conservation Research: may benefit from applied research that contributes to conservation in the wild; includes non-threatened species being a husbandry analogue for threatened species.
6. Conservation Education: species may inspire and increase knowledge to visitors to promote human behaviour change.

Roles 1 and 2 are not relevant to current callitrichid populations.

Non-conservation roles for non-threatened species:

1. For husbandry experience: eg before taking on more difficult species.
2. Non-conservation related research: eg may be appropriate for basic and applied research.
3. Non-conservation education: ie general callitrichid biology.
4. Colourful/distinctive/attractive exhibit: this may be good for zoo business and therefore indirectly contribute to conservation *in situ*.

To assist with points 3 and 4, the Evolutionary Distinctiveness scores for each species, kindly provided by the Zoological Society of London's EDGE (Evolutionary Distinct and Globally Endangered) project, were also taken into account. The higher the score, the higher is the evolutionary uniqueness of a species.

POPULATION CHARACTERISTICS AND FEASIBILITY

Once it has been decided if there is a role for an EAZA population, the next series of questions deals with deciding which the genetic and demographic targets of such a population would be, and whether these can likely be achieved. For non-threatened species, this included evaluating the space resource factor, ie is the space required for a more important taxon. If the answer to this is 'yes', then the species becomes a Potential Replacement Species (PRS): this

may be implemented immediately or sometime in the future. Currently four species are designated for replacement: common marmoset (*Callithrix jacchus*), black-tailed marmoset (*Mico melanurus*), moustached tamarin (*Saguinus mystax*) and black-mantled tamarin (*S. nigricollis*) and a further four are PRS. Non-threatened species not in EAZA collections received the recommendation Do Not Obtain (DNO).

THE MANAGEMENT LEVEL

The TAG is of the opinion that all callitrichid species in EAZA zoos should, at the very least, be monitored. In order to decide the appropriate management category, the TAG evaluated if, in order to reach the set roles and goals, just numbers need to be tracked or if individual information needs to be collected, if recommendations are necessary and if these need to be mandatory, if a species committee would help, what kind of commitment would be required from any non-EAZA participants, etc. The answers to these questions determined if a species is going to be managed as an EEP, ESB, Mon-P or Mon-T. Here are two examples.

Cotton-top tamarin (*Saguinus oedipus*). This species is 'CR' and there are many in EAZA collections. The management level is an EEP and the role of the programme is Insurance. Working through the Decision Tree: the species is in EAZA zoos and is increasingly endangered in the wild, thus the sizable and healthy EAZA population makes a sensible back-up. There are many secondary roles including Conservation Education and support for the *ex situ*

field project in Colombia. In answer to the question 'do you think that the genetic and demographic goals needed to achieve the role can be met with the current population?' the answer is 'yes' and the population can be kept at 90% GD for 100 years. As this will require intensive management, it is reasonable to have the programme as an EEP.

Golden lion tamarin (*Leontopithecus rosalia*). The species is 'EN', there are many in EAZA collections, and the global programme has been genetically well managed for many years. The overall conservation programme for the species is a model for the OPA and the *ex situ* needs are clearly stipulated in the national action plan. The primary roles of the programme are Insurance and Supplementation. The secondary roles are Conservation Education, Research and Fundraising. The TAG management level is an EEP.

The RCP carries out this process for each species. However, apart from the fact that it is an extremely useful document, it is not fulfilling its purpose if simply stored on the EAZA website or on a multitude of computers; it must be actioned. **So all callitrichid holders are urged to:**

- read the plan,
- see how it applies to their Institutional Collection Plan and how they might assist in its implementation,
- contact TAG members for advice (the list is in the RCP), then
- commence and continue with its implementation in respective collections.

Please feel free to contact the relevant Callitrichid TAG members for further information.

DECISION TREE

The role(s) and management level are deduced from a Decision Tree process, the general flow of which was inspired by the methodology promoted in the soon-to-be published revision of the IUCN SSC

Guidelines on the Use of Ex Situ Management for Species Conservation.

The full decision process within the tree is as follows:

- 1 Is a species threatened (EW, CR, EN or VU) according to IUCN Red List?
- 2 Is there a role for an *ex situ* population of the species in EAZA collections?
- 3 What is the current genetic and demographic status *ex situ*?
- 4 If there is a role, what are the genetic and demographic goals?
- 5 For non-threatened species, are space and resources required to fulfil the role of the species needed for a more important taxon?
- 6 Can the genetic and demographic goals required to achieve the set role be achieved?
- 7 Which management level is required to reach the goals?



Hatching the hornbills

AMIENS ZOO HAS HAD SOME SUCCESS WITH BREEDING WREATHED HORNBILLS, AND IS NOW LOOKING TO IMPROVE THE HATCHING-RATE EVEN FURTHER

Christine Morrier PhD, Amiens Zoo director and Cathy King, studbook keeper, Weltvogelpark Walsrode

Amiens zoo is a seven-hectare city zoo with plenty of trees and water. Now 62 years old, the zoo holds about 65 species (11 EEP and 7 ESB), one of which is the wreathed hornbill (*Rhyticeros undulatus*). The two adults are an 18-year-old male from Amsterdam and a 19-year-old female from Rotterdam, which have been on show since 2001.

We do not have information about breeding before 2006 when the birds were vaccinated against avian Influenza, but the first egg was laid in 2007, although it was unfertilised. In 2010, two young females were hatched and have been raised successfully by their parents, and in 2012, another young bird was successfully raised.

KEEPING HORNBILLS

The hornbills' aviary is 8m x 3.65m, and 5m high, with a wall on the west side. The temperature is maintained at around 16°C all the time with 60% humidity and light from 08:00 to 16:00. It is important to keep the ground clear so that the birds can parade and pair up on the ground, although mating has never been witnessed.

The process of incubation and hatching of the most recent chick was as follows. The female began to close the nest hole on 1 February, with food and beech shavings provided, although we did not provide clay at this stage because we did not want her to lock

herself in too early. Clay was eventually steadily introduced over a six-day period, and by 3 March the nest was completely closed.

We had been feeding the birds with two apples, two pears, three tomatoes, one banana, three kiwi fruit, 200g of grapes and 350g of hornbill pellets from Mazuri. From 17 February, we increased rations by including a further pear, tomato and kiwi fruit, plus 90g of croquette Purina chiot, supplemented by a daily dose of Fertivit. For additional protein, we also provide locusts and mice all year round, and during the incubation period (February and March) the birds receive six locusts four times a month and four mice six times a month. After hatching, this supply is upped to 15 locusts 16 times a month and eight mice 17 days a month. Other animal protein complements such as boiled eggs, mealworms, and insectivorous mix can also be provided, but we do not use them at Amiens as our pair does not like them.

After hatching, the young hornbill presented a right lateral distal deviation of the rhinotheca. The left upper and lower tomia were too thick, preventing the tomia of the gnathotheca to fit perfectly on the tomia of the rhinotheca at the extremity of the beak. Nevertheless, the bird was able to eat and be fed by parents. We used a Dremel ND drill

grinding stone to shorten the lower and upper beak in order to remove most of the abnormal part of the beak, refining the edge of the beak. There was a little bleeding during this procedure but it stopped with disinfection and manual pressure. Immediately after the procedure, the animal ate without apparent discomfort. As the abnormality only affected the beak's extremity, we think it was probably caused by a shock during growth rather than an improper incubation temperature, genetic issue or incorrect diet.

At Amiens Zoo, then, we have successfully reproduced the wreathed hornbill twice. For more regular and increased reproduction, we will be monitoring the pair more closely, and tweaking some of the husbandry details, such as increasing the number of hours of light. Overall, we feel that the breeding conditions are largely right, as we have had success, and the size and dimensions of the aviary are suitable. It is important that the birds remain as undisturbed as possible, and in years when breeding is not successful, we could try moving the nest or altering the size of its entrance.

Thanks to Laure Garrigues, Amiens zoo biologist, Florence Ollivet Courtois, DMV, and Amiens Zoo Keepers, especially Elodie Flautre, for their help in compiling this information.

William Oliver

THE WELL-RESPECTED CONSERVATIONIST AND WILDLIFE ARTIST HAS DIED AGED 67



FLORA AND FAUNA INTERNATIONAL

William Oliver, the well-respected conservationist and wildlife artist, died on 10 September aged 67 from a suspected heart attack. William, who was based in the Philippines and headed the country's Biodiversity Conservation Foundation as Director, was closely involved in the conservation of many species, but his specialism was wild pigs; he chaired the IUCN Specialist Group for wild pigs for many years.

A fierce defender of the role of zoos and aquariums in conservation, William had no doubts that the chances of survival of many species are greatly increased by the support and insurance provided by the best and most conservation-minded zoos. Indeed, he worked closely with EAZA members including Avifauna and Chester Zoo and received funding from the South East Asia Campaign for BCF's project to conserve Visayan wreathed hornbill (*Aceros waldeni*) in the Philippines.

In addition to his conservation work, William was also a gifted painter, producing wildlife watercolours for projects as far afield as the Philippines, where he ended his career, and Jersey, where he started it. These highly detailed and accurate portraits of wildlife helped inspire those who saw them to notice and value their local wildlife, and will remain a major part of his legacy.

William Oliver's dedication to conservation has led to the naming of two species after him: *Sus oliveri*, a wild pig described only from skulls, and *Haematopinus oliveri*, a critically endangered parasite of the pygmy hogs he was instrumental in helping save from extinction.



ABOUT THE WREATHED HORNBILL

The overall zoo population of wreathed hornbills is small, with 25 birds in 10 EAZA zoos and four non-EAZA zoos participating in the ESB. Although 10 founders have contributed to the population, we have now reached the point at which the offspring of these birds are all paired up with each other, which means that in the next generation it will be impossible to pair unrelated birds. Currently, there are two sibling pairs and one mother-son pair, but only one of these is reproducing. There are two females in the population that are potential founders, but no males that are potential founders.

No breeding occurred in 2012, but three zoos were successful in 2013. There was only one death in the population in 2012, and no birds left the ESB.

The sex ratio is almost even. The female in Rotterdam is 32 years of age but still nesting. She produced eggs but no chicks in 2012.

In the wild *Rhyticeros undulatus* (Shaw 1811 Java) is distributed from Bhutan and northeast India to Vietnam, and south to Sumatra, Borneo, Java and Bali, including several intervening offshore islands. The bird is not globally threatened, and locally common in several areas across its range, which includes several large reserves and at least seven national parks, including KhaoYai (Thailand), UluBelum and GunungMulu (Malaysia) and Bali Barat (Bali). Within the more sedentary Thailand population, the breeding home range 10km² while the non-breeding range is 28km². Although still common, the wreathed hornbill has been lost from many marginal areas, and distribution is now patchy as a result of forest loss and species' requirement for large, unbroken tracts of forest. The hornbills are still hunted in several areas.

Because of their fruit-eating habits and mobility, hornbills are vital for seed dispersal, performing an extremely important function in the ecological balance of tropical forest.

EAZA WORKED WITH WILLIAM OLIVER ON PHILIPPINE HORNBILL CONSERVATION



Champion the champions

THE NEW EAZA SPECIES CHAMPIONS PROGRAMME GIVES ZOOS THE CHANCE TO HELP THE PEOPLE WHO ARE OUT THERE SAVING SPECIES

Roland Wirth, Zoologische Gesellschaft für Arten- und Populationsschutz (ZGAP) and Andrew Terry, Durrell Wildlife Conservation Trust

Global indicators such as the IUCN Red List show that species are becoming increasingly threatened worldwide. In fact, the Living Planet Report recently estimated that over 50% of our wildlife has been lost in the last 40 years. Alongside this, globally it is estimated that approximately \$3-400bn a year is needed for biodiversity protection and yet there is something like \$50bn currently being directed to conservation. While these figures are estimates they tell us what we already know: that funding needs for nature conservation are increasing and the costs are not being met by existing sources.

Nonetheless, the conservationists we meet and work with are the most dedicated and passionate people out there. Managing a successful conservation project and delivering these positive results requires a combination of skills that extends far beyond the technical; successful conservationists are managers, leaders, fundraisers and communicators. In most successful species restorations, this whirlwind of activities, skills, partners and needs all revolve around singular or a very small group of individuals. These individuals provide the core and vision of the project and ensure that with all the competing demands, activities stay on track towards that vision. When we find failures in conservation, it is often because these individuals have been missing from the project. These individuals are Species Champions and without them and their dedication, more species would be extinct and conservation would be a far less effective and much more depressing affair.

You may be asking what is the role of zoos in this discussion? Over 148 million people visit European zoos each year. While looking for an enjoyable experience, these visitors are at least motivated to see more

of the natural world and wildlife. Equally zoos have become increasingly focused on their role in protecting and restoring species and educating their visitors – thus helping to meet several of the Aichi Biodiversity Targets. But there still remains a very wide variation in the degree to which zoos actually support conservation – some are highly effective and there are several species that would have gone extinct without the help and expertise provided by the zoo community. In many cases, zoos that do not have very active conservation programmes are looking for opportunities to support conservation in the wild.

NEW CONCEPT

With this fundamental need and opportunity in mind, and striving to find new ways in which the zoo community can support effective conservation in the field, the EAZA Conservation Committee is developing the Species Champions concept. The aim is to provide a mechanism whereby EAZA member institutions can identify individuals who are having or can have a major role in halting the decline or loss of a species in the field.

Species Champions can be proposed by any zoo and a working group in the EAZA Conservation Committee will nominally approve these individuals as EAZA Species Champions.

Then these people can link to participating zoos based on the interests of either party, either through the species being protected or the region. The goal would be for institutions to raise the profile of these individuals and raise funds to help them run their projects. Through the conservationists they would be engaging their visitors to donate or learn more about what the zoo does to support conservation. The participating zoos would guarantee a certain level of financial support to the conservationist and in return the

conservationist would guarantee a certain level of communication and material to the zoo.

The important component is that this would be a partnership between the EAZA member and the conservationists (or their NGO) and not with EAZA as an organisation. This would not be a one-way provision of funds. However, funding should be provided without conditions – these funds should be given to help the conservationists achieve their goals but would not be restricted to particular activities, otherwise this becomes like another donor scheme that makes management and reporting more complicated for the conservationist. As this concept develops we will highlight Species Champions through the EAZA website and *Zooquaria*, profiling their work and helping to facilitate links with potential zoos that could provide support.

It will take some time to develop the specific details and the limits of the role provided by EAZA. But given the scale of challenge we face globally, the commitment of conservationists to meet the challenge and the opportunity provided by many zoos, this is an important initiative for EAZA to support and promote. To get you started we have included short biographies of two such species programmes and their Champions: people who have made a real difference to the fate of highly threatened species and who need our support. Please watch this space in coming issues to learn more about the Species Champion programme.

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THE PYGMY HOG CONSERVATION PROGRAMME

Standing just 30cm at the shoulder the pygmy hog (*Porcula salvania*) is the world's smallest and most threatened hog species. Its habitat is the strip of rich tall grasses that runs along the foothill plains south of the Himalayas in northern and northeastern India. For many years these grasses have been under great threat from habitat change, over-exploitation and too frequent burning; so much so that by the 1960s the pygmy hog was thought to have gone extinct.

Thankfully it turned out that a small number of hogs remained in the wild and early efforts to survey the species were started by William Oliver, a true Species Champion, who sadly passed away earlier this year. From the first surveys in 1977 until the Pygmy Hog Conservation Programme began in earnest in 1995, William was a tireless campaigner and advocate for the species. It took those 18 years to get agreement and a formal partnership in place to deliver an Action Plan for the Species. The hog had been reduced to its last stronghold, with a few hundred animals remaining in the Manas National Park.

With a partnership between the Government of India, Forest Department of Assam, IUCN and the Durrell Wildlife Conservation Trust in place and with support from the EU, it was possible to start a breeding programme at a centre near the regional capital of Guwahati. A captive population of over 70 hogs has been maintained in two breeding facilities and 85 hogs have been released back to the wild in two new areas: Orang National Park and Sonai Rupai Wildlife Sanctuary. Working closely with wildlife wardens and forestry staff, the programme has trained hundreds of staff to use hog-friendly grassland management. Research into the hogs and their habitat has supported PhDs and Masters programmes.

THE PHILIPPINE COCKATOO CONSERVATION PROGRAMME

Once found across the Philippines, the Philippine cockatoo (*Cacatua haematuropygia*) declined dramatically during the 20th century mainly because of its value to the caged bird trade and loss of its native forest habitat. There are now fewer than 1,000 birds remaining in less than 2% of its original habitat. One of the strongholds for the species was Rasa Island, but the population there was reduced to about 25 birds due to poaching.

Responding to the perilous situation faced by the cockatoo, Peter and Indira Widmann began the Philippine Cockatoo Conservation Programme (PCCP) in 1998. It focused on immediate conservation needs as well as research, captive breeding and translocation. Through this combined approach they have been able to increase the population of cockatoos on Rasa Island to over 300 and start projects on five other islands encompassing more than 50% of the remaining range of the species. They started the Katala Foundation and through their commitment to the cockatoo and its habitats have broadened out to work with a number of highly threatened species including green turtle, Palawan peacock-pheasant and dugong.

David Waugh (Loro Parque, long term supporter of the project) said 'one of their innovative approaches was to employ ex-poachers as wardens to protect the cockatoos. The ex-poachers not only now have a source of regular income working as wardens on the projects but their local knowledge and skills also increase its success.'

'Peter and Indira typify what it means to be a species champion' says Philippine cockatoo EEP coordinator Eric Bairrão Ruivo from ZooParc de Beauval. 'They have rallied against major challenges to bring attention and support to a species that could have easily gone extinct.' Roger Wilkinson from Chester Zoo adds, due to their campaigning a major threat to this important population from a proposed nearby coal plant has been averted.'

For a full list of supporters and to find out more about this important programme visit: www.philippinecockatoo.org.



Enhancing the database

EAZA AND CONSERVATION - ARE WE PUTTING OUR EFFORTS AND MONEY WHERE OUR MOUTHS ARE?

Merel Zimmerman, EAZA Executive Coordinator, Conservation



Do you really know how much your institution is contributing to conservation? Or to which species? How about other institutions within our membership? Or what if a fellow member is already involved in an interesting project and your institution wants to join or collaborate? Where to go for your information? The EAZA Conservation Database! It aims to provide the membership with a further improved tool to get information on all our members' conservation activities and, over time, create an overview on conservation contributions that gives a more complete reflection of the breadth and extensive conservation work that our membership does.

The EAZA Conservation Committee has supported the restructuring and facelift of the online EAZA Conservation Database (www.eazaconservation.org) and it was officially launched during the EAZA Annual Conference in Budapest. An important aim while working on the new database was to improve the user-friendliness of entering data, create better search options and enable the collation of information on our contributions to conservation for the entire membership.

WHAT ARE CONTRIBUTIONS TO CONSERVATION?

The EAZA Conservation Committee speaks of a contribution to conservation in the case of a donation of time, expertise, monies, materials and/or in-kind support from an EAZA member institution that is aiming to secure long-term populations of species in natural ecosystems and habitats. Within the EAZA Conservation Database, a contribution to conservation can be more than supporting an *in situ* project. The EAZA Conservation Committee believes that projects, in time, include a broader spectrum of conservation activities such as *ex situ* management which brings conservation benefit to that specific species, lobbying for combating wildlife trade or providing legal advice. On the other hand, not all activities of our members will be considered conservation by default. An EAZA guideline on defining a contribution to conservation has been developed by the Conservation Committee, describing the categories of conservation activities which, when supported or carried

out, are considered to directly contribute to the long-term survival of species in natural ecosystems and habitats. The six categories currently identified are: habitats, species and populations, conservation, research, conservation education and capacity building, advocacy and fundraising/direct grants. The same six categories are available as Conservation Categories in the EAZA Conservation Database to create the opportunity to gain experience in working with and feeling for these terms. One of the steps you can take to start providing data in a more standardised manner is using the EAZA Conservation Category (or Categories) while providing details on your projects. Once the EAZA guideline on defining a contribution to conservation is endorsed by EAZA Council and published we can move towards officially including these activities as well. EAZA members and the EEO will be able to use the valuable information in the EAZA Conservation Database more efficiently and inform fellow EAZA members, TAGs, committees, other regional associations, NGOs and key decision-makers through news items, *Zooquaria* articles and EAZA Annual Reports.

OBJECTIVES OF THE EAZA CONSERVATION DATABASE

The main objectives of the EAZA Conservation Database have been described as:

- I. To provide up-to-date statistics and information on contributions (financial support, time and/or materials) of EAZA institutions to conservation projects worldwide.
- II. To inform other regional associations, NGOs and key decision-makers with details on the involvement of EAZA institutions in conservation projects worldwide.
- III. To facilitate collaborations between EAZA institutions in contributing to conservation projects worldwide.
- IV. To promote contributions to conservation projects.

WHAT OTHER INFORMATION IS COLLECTED?

The type and amount of information collected has been adjusted to allow for an easier and fast input. The amount of fields to fill in has been brought down from more than 50 to less than 20. The fields have been determined by what output we want to have instead of trying to collect as many details as we can.

General information collected is project title, project description, species, country and any specific locations (nature parks, regions or provinces), start date and end date of the project.

One of the limitations experienced with the previous versions of the database was that financial support information was (generally) entered in ranges 50,000 – 100,000 euro, for instance) instead of exact amounts. It made pulling information on total money spent on support for, for instance, projects or species difficult. That is why it is now made possible to enter information on support only in exact amounts (financial or time). The form (financial and/or time) and frequency of the contributions are visible to all. However, the amounts are considered to be confidential information; they are only visible to the institution that entered the information and the Database Administrator. Another adjustment is the use of a number of pre-set categories to choose from when entering information about your conservation activities. A few examples of new information collected in this manner are:

- Threats the project is trying to address; the terms to choose from are available in a dropdown menu and are derived from the IUCN Red List Threats Classification Scheme (version 3.2) – which is also used in the classification of the Red List Status of species.
- If your project has a specific focus on a habitat type (or types) you can select the relevant habitat type from the terms derived from the IUCN Red List Habitats Classification Scheme (Version 3.1) which describe the major habitats in which taxa occur.

WHAT TYPE OF INFORMATION CAN YOU EXPECT TO GET FROM THE DATABASE?

Pulling information from the database can be done by using the available Search features. Once you have found the information you were looking for (either a specific project or a collection of projects), you can save the information for later use or consultation. In the very near future you will be able to export the results into an Excel document and take the information you need from it. Examples of results that can be pulled:

- Overview of projects supported by EAZA members in 2014 aimed at species relevant for a TAG.
- Overview of projects supported by EAZA members in Bolivia during 2010 – 2013 by your institution (or any other EAZA member institution).
- Overview of projects supported by EAZA members involving a specific conservation agency.
- Overview of projects supported by EAZA members in a geographical area for species dealing with the threat of 'Invasive & other problematic species, genes & diseases'.
- And so on.....

The information allows us all to not only talk about how we are putting our efforts and money into conservation, but

actually show what our contributions to the conservation of species are and who we collaborate with!

FUTURE

In the near future your institution will also be able to pull standard reports from the database. With one click of a button information relevant for your institution will be collected and made available as a PDF to you and can help you with your own reporting or communication plans. The first standard reports which will be developed are:

- Overview of total money spent on support of conservation by your institution in a certain year.
- Overview of total money spent on support of conservation by your institution of a certain species.

More standard reports will be developed as we go along, depending on the requests coming from the membership and their relevance for the entire membership.

Of course, the success of the online EAZA Conservation Database is dependent on the input of our members! Within each EAZA member institute, designated Conservation Contacts have been approached to add information online on their conservation efforts in 2014. All members are offered support from the EAZA Executive Office in doing so. Since the request, a number of members have already registered their 2014 contributions to projects for the conservation of, for instance, snow leopards, lemurs, monk seals, European otters and hornbills. Make sure your institution is also represented! If you are not an EAZA Conservation Contact but an employee at an EAZA member, you can always request a browsing account or ask your questions, by sending a message to info@ezaconservation.org. Happy browsing!

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AZA EAZA

Earning its stripes

QUAGGA IS A NEW ZOO CONSERVATION FUND SUPPORTING CONSERVATION PROJECTS AROUND THE WORLD

José Kok, Quagga Chair

Quagga was founded in 2012, having evolved from the Dutch Zoo Conservation Fund (DZCF) which had been established in 1997 as an initiative by the Dutch Zoo Association (NVD) to support the World Zoo Conservation Strategy. Several NVD members already had individual funds for conservation but there had been no collective conservation initiative. It was decided that a pooled conservation fund would have a greater impact, not just financially but in terms of capacity-building, communication, education and public relations, too. It would also be a unique and interesting way of emphasising the commitment of NVD zoos to nature conservation. The project that kicked the process off supported the development of the Uganda Wildlife Education centre project in Entebbe.

In 2012, due to budget costs and financial constraints, it was decided to disassociate DZCF from the NVD. A few NVD zoos wanted to withdraw from the fund whereas others expressed an interest in continuing under a more self-governing and self-determined structure. Quagga, the zoo conservation fund, was born.

The new Quagga Fund is independent and not related to the NVD or any other zoo-related association. Current Quagga members are Apenheul Primate Park, Artis Zoo, Burgers' Zoo, Amersfoort Zoo, Dolfinarium, Ouwehand Zoo, Birdpark Avifauna, Safaripark Beekse Bergen and Dierenrijk. Quagga is always looking for new members, and institutions from across Europe are encouraged to get involved. Quagga projects follow the same criteria and conditions as did those under the DZCF. Conservation projects focus on integrating the conservation of important and/or threatened species (around 80% of the species that feature in the projects are IUCN Red List Critically Endangered,

Endangered or Vulnerable) or species relevant to the protection of specific ecosystems. Project criteria require an educational component, involvement of local communities and/or NGOs and the visual promotion of the nature conservation role played by zoos.

Quagga projects are very diverse. Some project partners have received substantial support throughout the years and have built up a strong relationship with Quagga. These include established projects such as the African hunting dog (*Lycaon pictus*) conservation project (Painted Dog Conservation) in Zimbabwe, the lowland tapir (*Tapirus terrestris*) project in Brazil and the Grevy's zebra (*Equus grevyi*) project in Kenya.

LOCALLY RUN PROJECTS

Other project partners are relatively small-scaled and/or recently initiated. Most grassroots projects are characterised by the fact that implementation is carried out by communities in their immediate surroundings. Quagga has supported community projects in Benin, Kenya and Guatemala focusing on species including the red-bellied guenon (*Cercopithecus erythrogaster*), the pancake tortoise (*Malacochersus tornieri*) conservation project in Kenya and the Guatemalan black howler monkey (*Alouatta pigra*) reforestation and education project. Obviously, education is a key component of all Quagga projects, with some projects that focus solely on educational impact. The Humboldt penguin (*Spheniscus humboldti*) bus project in Peru exemplifies this. This is a mobile exhibition that calls at local communities along the Peruvian coastline: children visit the bus and learn about the biology of the bird, why the species is threatened and what can be done to protect it. A similar educational Quagga project is the travelling snake exhibit project along the Caribbean coast of Colombia.

Quagga supports several projects for which the prime focus is the production of educational materials such as brochures, books and nature conservation movies. The first phase of the brown bear (*Ursus arctos syriacus*) conservation project in Iran, for example, included the production of the first documentary movie about locally endangered brown bears in the country. This movie is now disseminated through the communities in Iran that share their environment with free-roaming bears.

Two recent projects funded by Quagga are the hammerhead shark (*Sphyrna lewini*) conservation project in Costa Rica and the blue-eyed black lemur (*Eulemur flavifrons*) project on Madagascar. The hammerhead shark project of Asociación Conservacionista Misión Tiburón, which was already funded by Quagga in 2008 with €5,000, is set in Golfo Dulce, a large bay in the southwest of Costa Rica. This bay, surrounded by rainforest and mangroves, is one of the most important nursery grounds for hammerheads in the eastern Pacific Ocean. In collaboration with local traditional fishermen, an inventory project for the most critical areas for the survival of the young hammerheads has been implemented. The integration of traditional knowledge and new technological data, derived from implanted radio transmitters, will produce a new hammerhead shark management plan in the coastal waters of Golfo Dulce. The blue-eyed black lemur project from AEECL (Association Européenne pour l'Etud et la Conservation des Lémuriens) concentrates conservation effort on a small area on the Peninsula Sahamalaza on the northwest coast of Madagascar.

AEECL protects the blue-eyed black lemur and numerous other Endangered species in the same area. For more than a decade this has been done through scientific research, protection of the last forest fragments by rangers, support for the local population, educational activities and the promotion of ecotourism. Quagga supported the project with €6,000 towards the construction of a campsite within Ankarafa Forest for rangers and ecotourists. This year the Grevy

zebra project in Kenya (Marwell Conservation) also received another grant.

PRESERVING NATURE BY SUPPORTING PEOPLE

Conserving nature is impossible if one doesn't consider human beings, who are crucial to the protection process. Local involvement is key, and empowerment of communities leads to pride which in turn leads to protection of their environments. Conservation is about people caring for their ecosystem of which they are a part, and here Quagga makes a real difference. By supporting small-scale community-based conservation projects, not only is local involvement secured, but these small initial grants can form the basis of a larger conservation impact.

Quagga currently has nine participants, all Dutch zoos (listed above), which contribute with a minimum of €3,000 annually. Participants meet once a year for a strategic meeting. Each year there are two application rounds with application deadlines on 1 April and 1 October. Application forms can be downloaded from the website www.quaggaconservation.com. The Quagga board, consisting of experts in different fields, assesses the applications. For a proposal to be successful it has to meet the listed criteria:

- protection and conservation of important and/or threatened species, or species which are relevant to the protection of specific ecosystems ('flagship species'),
- an educational component,
- promotion of the nature conservation role of zoos,
- local community involvement, and
- involvement of local NGOs and/or universities.



JUST SOME OF THE SPECIES BENEFITING FROM QUAGGA FUNDING



JOIN US!

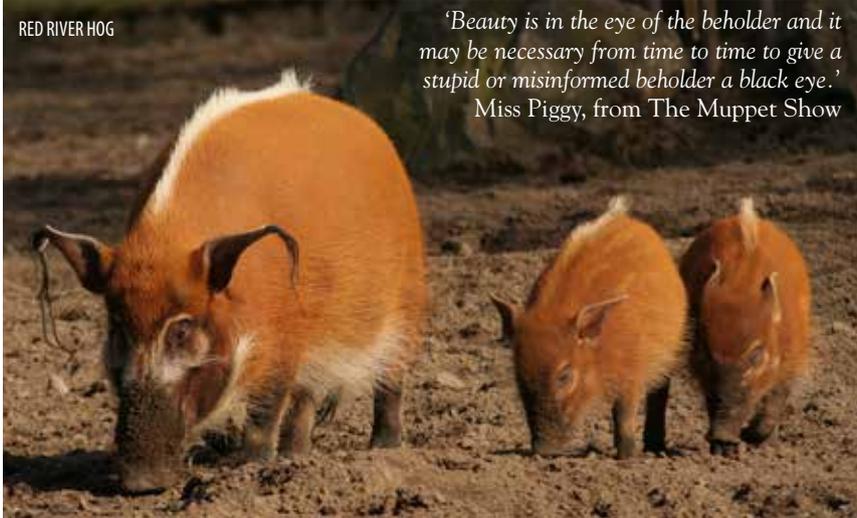
The demand for constructive conservation support is growing rapidly. Many EAZA zoos do their share, by supporting all kinds of dedicated conservationists. Quagga is looking for synergy. We can create more conservation impact by combining effort and financial support. With more Quagga participants, we as an EAZA community can make a big difference! Why don't you join us! Need more information? Check www.quaggaconservation/en or send an email to info@quaggaconservation.com. The Quagga policy plan for 2014-2019 can also be found on the website. Let's make a difference together!



Think Pig!

A CALL FROM THE IUCN SSC WILD PIG SPECIALIST GROUP TO GO PIG CRAZY

Erik Meijaard (People and Nature Consulting International) and Kristin Leus (Copenhagen Zoo), chair and deputy chair respectively of the IUCN SSC Wild Pig Specialist Group



Pigs tend to have an image problem. The word ‘pig’ often conjures up images of the eponymous film character *Babe*, perhaps unsurprisingly with an estimated global domestic pig population of about one billion. Encouraged to broaden the mind to wild pigs, Europeans tend to leap to images of fierce, mud-covered, Eurasian wild boar (*Sus scrofa*), more preferably encountered in a stew. So let us suggest a new game to play at ‘bo(a) ring’ dinner parties – how many wild pig species can you name (and yes, do encourage folk to google because those photos will liven up any party!). The total is no fewer than 17! These wild (and semi-domesticated) pigs provide a source of crucial protein for hundreds of millions of forest-dependent people, as well as for many wild carnivores, including such sexy conservation icons as tigers and leopards. In areas where they remain abundant, these large, omnivorous landscape engineers are ecological keystone species. But here is the catch. Of the 17 species, 10 are listed as Threatened on the IUCN Red List. All 10 are Asian, making the wild pigs a taxon of concern within the Asian extinction crisis. The Philippine, Critically Endangered, Visayan warty pig (*Sus cebifrons*) is indeed one of the species of note for the Asian Species Action Partnership (ASAP).

EAZA has already been of

tremendous help to pigs, notably through a long-standing collaboration between the EAZA Pigs and Peccaries TAG and the IUCN SSC Wild Pig Specialist Group (WPSG). Since its inception in 1978, the WPSG membership has included zoo staff and, indeed, the group’s first chair, William Oliver, was one of ‘Durrell’s army’ insert (see page 31).

SHARING MEMBERS

The TAG and WPSG have always shared members, ensuring continued cross-fertilisation between the two groups, as illustrated by the following recent examples. TAG members participated in the WPSG meeting at the Cikananga Wildlife Center (Java, Indonesia), home of the Endangered Javan warty pig (*Sus verrucosus*) *ex situ* programme. They provided husbandry advice and participated in action planning for this and other Asian species. EAZA zoos, particularly those participating in the Visayan Warty Pig EEP, have been supporting Philippine pig conservation. TAG members and EAZA institutions have supported the Indonesian National Action Plan for babirusa (*Babirusa* spp.), and EAZA just signed an MOU (witnessed by the Indonesian Ministry of Forestry) with the Indonesian Zoo and Aquarium Association, the Association of Zoos and Aquariums, the WPSG, the Asian

Wild Cattle SG and the IUCN SSC that aims to create Global Species Management Plans for babirusa, anoa and banteng.

But we continue to need your help! Please continue supporting range-state conservation activities. For example, who could resist financing the high profile programme for the endearing Critically Endangered pygmy hog (*Porcula salvania*)? Surely those WAZA conference participants who visited the project while in India have become fans for life! Please consider keeping Visayan warty pigs in your collection, too. It will be hard to look ourselves in the mirror if we fail to fulfil the promise

to build an insurance population for this Critically Endangered ASAP species. Why not support plans for a meeting in the Philippines to help us take stock following the recent passing of William Oliver, the initiator and coordinator of the Philippine programme? Or help organise an International WPSG symposium in 2016 to promote pig conservation? And you can promote pigs at no cost!

Think pig! Talk about pigs everywhere to everyone! Do the dinner party game. Give illustrated talks to your members. Write stories for our newsletter *Suiform Soundings*. Send us your holiday pig snaps or photos of your mischievous zoo inhabitants to illustrate our website, newsletter, articles, presentations etc.

Last but not least, we would love to hire a Miss or Mister Piggy. Copenhagen Zoo already supports Kristin Leus in her role of deputy chair, but organising the WPSG’s plans for strategically strengthening our group and its conservation goals requires significant time. For this reason, the WPSG is seeking funding to employ a half-time paid assistant. Just think of the PR potential in being able to say that you (helped) employ a Miss Piggy or Mister Hog!

WPSG’s newsletter *Suiform Soundings* can be found on its website <https://sites.google.com/site/wildpigspecialistgroup/>

Measuring success

THE LATEST CONFERENCE FOR ZOO EDUCATORS WAS HELD IN HONG KONG TO GREAT ACCLAIM

Sarah Thomas, Head of Discovery and Learning, Zoological Society of London, and Dr Maggie Esson, Education Programme Manager, Chester Zoo & IZE Regional Representative for Europe and the Middle East

The 22nd Biennial Conference of the International Zoo Educators association was held at Ocean Park, Hong Kong in September 2014, with the theme: 'Education Success – what does it look like and how do you measure it?'.

The conference rotates around the continents and in holding the conference in Hong Kong we hoped to attract a strong contingency from mainland China. This proved to be a successful plan with 50 delegates out of a total of 158 coming from mainland China. This was also the first time in the history of IZE conferences that the proceedings were delivered in dual language presentation format – English and Mandarin. Between them, the delegates came from 30 countries and represented 105 institutions.

The conference programme and networking opportunities were very much enriched by the presence of 12 Grant Sponsored Delegates. The IZE sponsorship scheme is made possible by the generous support of IZE members with a portion of each Institutional membership fee going towards the grants. Competition for the scheme is strong with 38 applications for 12 places this year. Recipients were well-deserving of their attendance with each giving a presentation or providing a poster. The countries and practices represented were wide-ranging: from Madagascar to Mexico and a Bird Park in South Africa to community education in Borneo.

The conference was preceded by a two-day workshop on fostering sustainable behaviour: an introduction to community-based social marketing run by Dr Doug McKenzie-Mohr. This course led participants through the five steps of community-based social marketing (selecting behaviours, identifying barriers, developing strategies, conducting pilots, and broad-scale implementation) and exposed participants to numerous case studies illustrating its use while

IZE MEMBERSHIP BENEFITS ARE:

- International networking and professional development
- The IZE Journal and conference proceedings
- IZE Newsletter
- Membership certificate for you to display
- A programme of regional activities
- The IZE conference
- Post-conference tours

IZE membership reflects your institution's quality standards and commitment to conservation education.

providing the knowledge they need to design and evaluate their own community-based social marketing programmes.

The conference programme included a mixture of presentations, workshops and posters that showcased a global perspective of success in zoo education. Dr Kevin Tam from Hong Kong University delivered a keynote address outlining elements of psychology for zoo education and environmental education. Delegates presented on a wide range of topics including: education in future zoos and aquaria: what will success look like?; delivering conservation through guest action; and climate change: engaging audiences, prompting action, measuring change. EAZA Executive Director, Myfanwy Griffith presented on quality frameworks – what they are and how they can improve the success of education in which zoos and aquariums are involved. There were several case studies detailing successful zoo education programmes and examples of innovative tools and techniques that promote emotional connections to nature and support positive

environmental behaviours.

Other highlights included a visit to Hong Kong Wetland Centre and Kadoorie Farm and Botanic Garden, and a post-conference boat trip to observe the population of pink dolphins which live close to Hong Kong Island.

WHY JOIN IZE?

IZE is dedicated to expanding the educational impact of zoos and aquariums worldwide and a group of regional representatives is responsible for networking on behalf of IZE. The defined regions are Africa, Europe and the Middle East, North and South East Asia, North America, Australia and New Zealand, Latin America and South Asia. See the IZE website for details of your regional representative.

Networking with educators in other parts of the world through membership of IZE is valuable to many educators, sharing resources and providing insights into the work of others. IZE also facilitates communication with related organisations such as WAZA (the World Association of Zoos and Aquariums) and IUCN, in particular the IUCN/SSC-CBSG (Conservation Breeding Specialist Group).

IZE membership reflects your institution's quality standards and commitment to conservation education. There are choices of membership from Associate to Full to Institutional. Institutional members enjoy high profile publicity at the IZE conference in recognition of their support for the Grant Sponsored Delegate scheme.

For more information go to www.izea.net, or contact sarah.thomas@zsl.org or maggie@chesterzoo.org. Copies of the presentation and material can be found here: <http://www.oceanpark.com.hk/ize2014/en/call-for-papers.html>. The next IZE Conference will be hosted by Fundación Temaikèn, Buenos Aires, Argentina 17 – 21 October 2016 www.temaiken.org.ar.



Small is beautiful

A NEW EXHIBITION FOCUSES ON MICROBES; THAT PART OF NATURE WHICH IS A PART OF US ALL

Janna Laeven, Communications Officer Micropia

At Natura Artis Magistra (Artis) Zoo in Amsterdam, an important new chapter is being added to the tradition of collecting, displaying and experiencing the natural world. It's called Micropia, and it aims to connect science with its various stakeholders, encouraging a wider public to discover microbiology from an early age.

The history of Micropia began when Haig Balian was appointed director of Artis in 2003. He drew up a wide-ranging blueprint for the Artis of the 21st century, encompassing three core principles: more space for animals; more attention to learning about the natural world and a central focus on the Artis heritage. Balian's children grew up as the Artis blueprint developed. As adolescents, aged 14 and 16, they had their first romances, experienced their first kiss. But what actually happens when we kiss? The mouth is the entrance to the gastrointestinal tract, but is also the habitat of hundreds of thousands of families of bacteria. There are also the complex flora exchanged during a kiss. Zoos have traditionally

tended to show just a small part of nature: large mammals and other animals which are of obvious interest. Balian wanted to change this, and show his children they were part of nature, and nature is part of them. The idea of Micropia was born.

A team was set up in 2005 to develop the project. The team's strength lay in the diverse backgrounds of the members: exhibition developers, architects, microbiologists, a project manager and a network of professionals as back-up. As time went by, the team was enlarged, with new members including a specialist microbe photographer, writers, educationalists, lighting, audio and laboratory technicians, and exhibition builders. Major contributions have been made by scientists, the government and businesses, including the Dutch firm DSM.

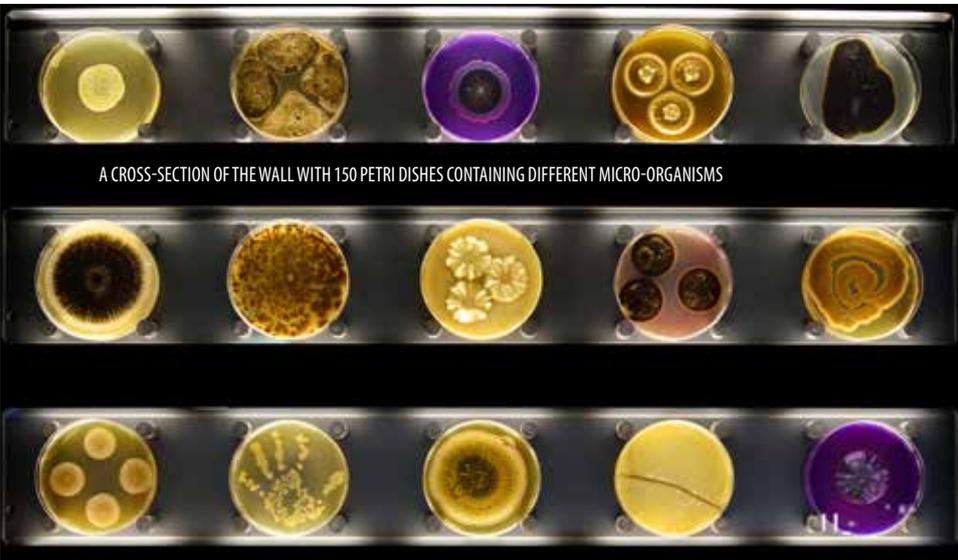
HOW DO YOU KEEP MICROBES?

Artis has 176 years' experience of keeping animals and plants in a safe and responsible way. But how does that work with bacteria? Or viruses? It was decided

that the stories should be told by living organisms as much as possible. When this proved impossible, for example when the organisms in question could cause sickness, a more virtual way of telling the story was chosen. Another bottom line, decided upon together with the experts, was that there would be no physical contact between microbes and the public.

A collection plan had to be drawn up, just as at every zoo. This was time-consuming: the microbes chosen for display had to tell an involved story, had in some cases to be kept alive, had to pose no danger to the public and had to be sufficiently different from the other microbes on show.

The development of Micropia was also hit by the financial crisis. Originally, the idea was to house Micropia in a specially designed building, but fundraising results plummeted overnight. We decided to house Micropia in part of de Ledenlokalen (1870), a listed building in need of restoration. The national monument was restored, and modern architecture by Sprenger von der Lippe



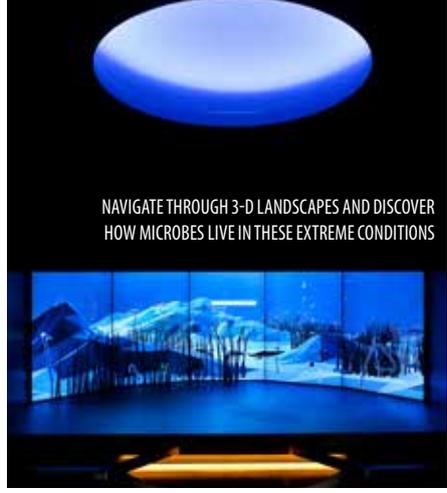
A CROSS-SECTION OF THE WALL WITH 150 PETRI DISHES CONTAINING DIFFERENT MICRO-ORGANISMS



ARCHITECTS SPRENGER VON DER LIPPE'S HELIX STAIRS, INSPIRED BY THE STRUCTURE OF DNA



ARTIST LUKE JERRAM DESIGNED THESE GLASS MODELS. THE EBOLA VIRUS (RIGHT). A MICROPIA LAB TECHNICIAN HOLDS A MODEL OF THE HIV VIRUS



NAVIGATE THROUGH 3-D LANDSCAPES AND DISCOVER HOW MICROBES LIVE IN THESE EXTREME CONDITIONS

Hamburg was added. It is located on the Artisplesin, a new, freely accessible square next to Artis Royal Zoo. We made a virtue of necessity and kept to our core principles and concepts in developing the museum at this location. The building now plays a big part in the Micropia experience.

Just as with the building, we were also forced to take stock regarding content. Over 100 displays had been developed during the years of preparation. Not all of them made it through to the production phase. During the course of 2011, it became clear that decisions would have to be made. Financial considerations, the space available and the feasibility of proposals made hard choices inevitable. The result is a portrayal of the world of microbes. The choices were based on criteria such as beauty, remarkable properties, presentation possibilities, live versus virtual, macro versus micro, importance to people (and to mankind).

'ANIMALCULES'

Micropia has taken over twelve years

to develop into the museum which is now open. The visitor is able to get to know the 'animalcules' as Antoni van Leeuwenhoek described it in the 17th century. He had just discovered these micro-organisms in sperm, ditchwater and tooth plaque using his simple microscope. Animalcules, we now know, are found in their billions on every single human body.

The microbes are the stars of Micropia. They are literally in the spotlight because the only light in the space comes from the exhibits themselves. Micropia takes pride in the fact that it is genuine, and that lots of the organisms on display are alive. Creating a virtual world would have been much easier. Duplicating the perfect living conditions for the micro-organisms was the biggest challenge.

In creating the exhibition the exhibition designers worked in close collaboration with media designers. Their work included the concept design of the media-based exhibits as well as their interaction and hardware design, prototyping and programming. For the

'extremophile' exhibit, about organisms which can survive in the most extreme conditions, they designed a spectacular 3-D landscape in which the visitor, can move around.

Lots of Micropia's exhibits are interactive, although the designers were at pains not to make things interactive just for the sake of it. Interactivity has to add something to the experience and not distract from the content.

The museum was opened on 30 September by the Her Majesty Queen Máxima of the Netherlands, when she left her invisible handprint to reveal the world of micro-organisms to the public. The many national and international guests experienced this straight away – they used 3D viewers, specially designed for Micropia, which allowed them to see how living microbes move around, eat and reproduce. And with a bodyscan, they encountered their own micro-organisms. After visiting Micropia, people understand they are part of nature. And they will probably never see themselves, or the world, in the same way again.

Mixed Emotions

OUR KNOWLEDGE OF ANIMAL SENTIENCE IS VITAL TO OUR UNDERSTANDING OF THEIR WELFARE NEEDS

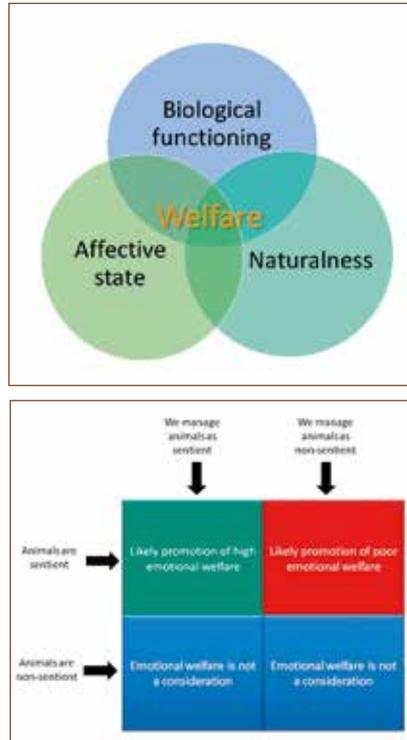
Sally Binding, EAZA Animal Welfare Training Officer

Over the last three decades, animal welfare science has grown into a major branch of biology and had a direct effect on the interactions of humans and animals at our institutions and beyond. Transforming what we have learned over this period into best practice for animal welfare remains difficult, however, particularly as it is hard to identify a starting point from which to work. At the base of welfare science – and at the heart of our consideration of how to give animals in human care the most fulfilling lives possible – is the question: ‘Do all animals have emotions?’ It’s a controversial topic, and continues to be debated hotly, but in the absence of proof one way or the other, should we not be adopting the precautionary principle – in other words, in order to avoid causing suffering and promote positive mental states, we have to assume that all animals have emotions and ensure constant consideration of this, among other factors, in how we manage them.

In today’s society few people still consider animals as ‘automatons’. However, it’s not a stretch to say that at all levels from respected biologists to members of the public, some animals’ emotions are more accepted than others. Stating that all animals from gorillas to geckos share the capacity for sadness, joy, remorse and grief is likely to be a difficult concept for many people; emotional awareness in invertebrates is likely to be even more controversial. However, where on the evolutionary tree did sentience develop and how far does the depth of emotional complexity reach? Are emotions the fruit of only a few branches of the tree, or are they much more common among animals than we have traditionally thought?

EMOTION VS. INTELLIGENCE?

Counter-intuitively, evidence points to a separation between intelligence and emotion. Dawkins (2006) argues



that the two function completely independently; while they can influence each other, they are not intrinsically linked. Lower levels of cognitive ability may actually stop animals from being able to interpret, rationalise and moderate negative emotions and sensations – such an animal may not be able to cognitively process that the pain and fear of such a situation will end, and their welfare will deteriorate further (Broom, 2007). Consequently, it is important to consider animals’ emotional capacities separately to that of their perceived intelligence.

Sherwin (2001) suggests that our own in-built bias leads us to interpret sentience research findings differently if the subject is an invertebrate rather than a vertebrate. If we applied the same criteria to all animals, would there already be a strong case that invertebrates also have emotions? 92% of studies into sentience focus on mammals (Proctor *et al.*, 2013). However there is increasing evidence of sentience and emotional states in other taxa, including both vertebrates

and invertebrates. Reactions of fish to aversive stimuli strongly suggest that they experience pain and fear (Chandross *et al.*, 2004), while decapod crustaceans and cephalopods seem to experience pain and a range of complex emotions including anxiety (Braithwaite and Boulcott, 2007; Elwood, 2011; Elwood and Patterson, 2009; Fossat, 2014; Mather, 2008; Mather, 2011; Sherwin, 2001; Sneddon, 2003), while honeybees demonstrate pessimism and optimism (Bateson *et al.*, 2011). The list goes on.

Scientific knowledge on animal sentience is, then, rapidly expanding, but that does not mean that we truly understand the depth and breadth of animal sentience and emotions.

EMOTIONAL CHALLENGES

Being able to identify and understand animals’ emotional state (and their causative factors) offers scientists a great challenge for three principle reasons:

1. There is an extensive array of animal species to be explored.
2. Emotional states do not naturally lend themselves to being objectively measured. For example, we cannot even truly understand how an individual of our own species is feeling. We can say that someone is feeling anxious or happy but only they know what that experience is like; and we can only judge them based on our own experience and empathy.
3. Whilst sentience and presence of emotions can be considered on a species level, each individual animal has a unique emotional state. For example, in humans, some people will experience joy when bungee-jumping, others will experience fear. We can’t assume that all individuals of a species will have the same emotional experience when exposed to the same factors.

We can’t say for sure what emotions feel like to the animals that experience them. They aren’t human emotions,

after all. That doesn't mean, however, that attributing emotions to animals is anthropomorphism – as we have seen, the evidence is mounting that whatever those emotions are, we need to take them into account when caring for our animals. For better or worse, our best bet for encouraging positive emotional welfare is to take everything we know about an animal's behaviour, environmental and sentience, and filter it through our own experience of feeling emotions. This cautiously applied principle is known as critical anthropomorphism and should not be confused with what we would term classical anthropomorphism – assuming that animals' emotional needs and reactions are the same as ours.

If we review what we know about our own emotions: they rarely exist in isolation; they are dynamic and constantly changing; and they are highly subjective (and personal) to the individual feeling them. Emotional welfare is fluid and constantly influenced by external and internal stimuli; in the absence of a more objective standpoint – objective, evidence-based research has not yet been carried out in the majority of species – 'we must assume that animals experience emotions in the same way that we do – 'argument by analogy' – even if they react differently, and plan welfare strategies accordingly.

Most of the modern concepts underlying welfare strategy do include an emotional or psychological element. Mellor and Reid's (1994) 'Five Domains' concept states that welfare can be spilt into four 'Physical Component' domains; Nutrition, Environment, Health and Behaviour. Each of these four domains feeds into a paramount fifth: the 'Mental State' which represents what the animal is actually feeling, and which dictates its welfare status. The input of animal care professionals, who often know their animals better than anyone and will almost certainly testify to the presence of emotions in their animals, is a key element in monitoring these five domains. Well-trained and informed animal-care professionals are ideally placed to marry what they know about the species and individual animal, their own experience of emotion, and scientific findings to maximise positive emotional welfare.



THE IDEA OF
EMOTIONAL
AWARENESS IN
INVERTEBRATES
IS LIKELY TO BE
CONTROVERSIAL

In short, planning for good welfare in zoos and aquariums needs to take account of all the information that is available, and should assume, until the concept is disproven, that all animals in our care experience emotions and that we have a duty to provide the best possible set of circumstances for them to experience positive emotional states – the so-called precautionary principle.

Over the next few issues we will look at some measures we can take to improve the welfare of animals based on these principles.

Sally Binding is available at the EAZA Office to answer questions on this piece as well as discuss strategies and tactics for improving animal welfare based on the latest thinking of the welfare science community. Sally.Binding@eaza.net

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