

QUARTERLY PUBLICATION OF THE EUROPEAN ASSOCIATION OF ZOOS AND AQUARIA

# ZOOQUARIA

WINTER 2016

ISSUE 92

## LET IT GROW

THE LAUNCH OF EAZA'S NEW  
BIODIVERSITY CAMPAIGN



### Surplus needs

MANAGING POPULATIONS OF  
WHITE-FACED SAKI MONKEYS

### Space invaders

THE BANNED ALIEN INVASIVE SPECIES  
AND WHAT TO DO ABOUT THEM





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Zooquaria

**EDITORIAL BOARD:**

**Executive Director** Myfanwy Griffith (myfanwy.griffith@eaza.net)

**Managing Editor** David Williams-Mitchell (David.Williams-Mitchell@eaza.net)

**Editor** Malcolm Tait (malcolm.tait@eaza.net)

**Editorial Staff** Danny de Man, William van Lint

**Designer** Louise Tait

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EAZA Executive Office, PO Box 20164, 1000 HD Amsterdam, The Netherlands.

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## FROM THE DIRECTOR'S CHAIR

In my last letter I looked back at all the successful activities that EAZA achieved in 2015. Now, at the start of a new year, it is time to look forward and consider what opportunities and challenges 2016 might bring for our community. One of the major changes for EAZA in the next few months will be the election of a new Council and Chair during the spring AGM and Council meetings. I encourage you all to get involved in the process, and attend the AGM to agree on the new Council members who will represent your interests and help guide our association going forward. Our current Chair, Simon Tonge, has more than ably led EAZA for two successive terms – the maximum allowed. During his time in office we have seen EAZA grow from 321 members to the 379 we have today. He has successfully steered the Association through challenging times and overseen revisions of existing, and creation of new, documents that guide our practice and continue to make EAZA a leader in the global zoo and aquarium world. Our thanks go out to Simon for his dedication and vision. We are safe in the knowledge that his successor will be in the fortunate position of being handed over an Association which is strongly established and progressive.

The new Council and Chair will have the responsibility of working with our community to complete the remaining few actions in the current 2013–2016 EAZA Strategy, as well as implementing the new 2017–2020 Strategy (currently in the discussion phase). In addition to our own thoughts and ideas for where we would like to see EAZA go in the future, we are also able to gain input from our contemporaries in the conservation community. The recently released WAZA conservation strategy 'Committing to Conservation' (available from [www.waza.org](http://www.waza.org)) provides seven clear steps to conservation leadership. Each chapter also gives a list of recommendations. It is pleasing to know that many of these are already embedded as EAZA practice among our members. The first ever WAZA welfare strategy 'Caring for Wildlife' also has a checklist at the end of each chapter. The fact that this is the first time WAZA has released a stand-alone welfare strategy indicates the increasing profile of this discipline. Welfare science, especially for exotic animals, is strongly emerging as a fast-moving, developing field. Zoos and aquariums have much to offer, but also much to learn about how best to care for the welfare of animals in our institutions. I encourage everyone to read these two strategies. Make a start with one of the chapters, see how your work relates to the recommendations and gain inspiration for where you can continue to lead in that field.

EAZA also has numerous strong links with the IUCN and 2016 is similarly a big year for them. The IUCN World Conservation Congress takes place every four years with the goal of bringing together several thousand leaders and

decision-makers from government, civil society, indigenous peoples, business and academia, to identify ways to conserve the environment and harness the solutions that nature offers to global challenges. I, for one, am keen to see what roles they think zoos and aquariums play in the global challenge of saving wildlife and wild places. The IUCN Species Survival Commission, along with input from EAZA members, is also due to release various guidelines and policies in 2016 that will provide useful guidance. These cover a range of overlapping activities and areas of interest, for example, Placement of Confiscated Animals, Species De-Extinction, Use and Trade of Species, and Impacts of Oil Palm Expansion.

Another area that will provide opportunities for further input is the second Joint TAG Chairs meeting taking place at Omaha's Henry Doorly Zoo and Aquarium, Nebraska, USA, from 16-18 March 2016. EAZA, along with colleagues from the WAZA Committee for Population Management let the way for the first meeting held in Avifauna, Alphen aan den Rijn, The Netherlands. This successful format will be repeated to aid the building of relationships, sharing of ideas, development of initiatives and collaboration towards the sustainability of our animal populations. Now, more than ever, there is the need to coordinate our local, regional and global efforts to maximise our resources for the greatest positive impact for wildlife.

2016 will also see changes in legislation that have the potential to affect our work. The Invasive Alien Species (IAS) Regulation (see page 9) and revised Animal Health legislation will be implemented. The outcome of the review of the Birds and Habitats Directives will be known, and the evaluation of the implementation of the EU Zoos Directive will be taking place. It will be important for all EAZA members to establish, or maintain, links with local and national politicians to strengthen this potential impact on our work. EAZA members are experienced at being at the heart of their communities, and in this way we are able to maximise citizen power and influence. Involvement of communities in the EAZA/BGCI/Ecsite Let it Grow Campaign (see page 12) will be another excellent way to reinforce ourselves as a trusted voice and actor for nature.

To summarise, 2016 is going to be a year of exciting change, information gathering, and reflection on what the strengths of EAZA are and where we want to go in the future. We know that conservation, welfare, population sustainability, legislation and partnerships will shape and define our actions, but how is up to you!

**Myfanwy Griffith**  
Executive Director, EAZA

# NOTICEBOARD

## EU FUNDING

EAZA HAS BEEN AWARDED GRANTS from Erasmus+ and the Life NGO fund to assist the EU with projects relating to zookeepers' professional development, and the monitoring and protection of European species. The Erasmus+ project, which is headed by EAZA and includes stakeholders from a number of European educational institutions, is aimed at defining a competency framework for animal carers at zoological institutions. The Life NGO project includes funding for an Assistant Population Biologist working specifically with European species, a Biodiversity Communicator to assist with the development and dissemination of materials for public education, a Zoo Capacity Building Coordinator to help non-member zoos to improve welfare and Zoo Directive compliance, and a Funding Coordinator to generate income to assist EAZA with strategic goals.

## ZOO ASSOCIATION WORKSHOP HELD IN BRAZIL

PARQUE DAS AVES, a bird park near to the Iguacu falls of Brazil, played host to a special 10-day training course in December for Paloma Bosso of Brazilian national association SZB and Martin Zordan of ALPZA. Former Executive Director of EAZA and Chair of IUCN SSC's Asian Species Action Partnership Dr Lesley Dickie conducted the training with the Directors, aimed at increasing the capacity of their organisations and maximising their conservation impact.

Lesley's extensive experience with EAZA also allowed her to work with the Directors to identify key areas which can help the associations to raise standards, communicate better and more. The workshop covered accreditation, breeding



programmes, advocating for zoos and aquariums with legislative bodies, strategic planning, budgeting, internal management, crisis management, community-based social marketing, facilitation, and more. The training was funded by EAZA members Chester Zoo, Paignton Zoo and HMJ Design, as well as Mike Bird and WAZA member Parque das Aves, and included valuable contributions from Yara Barros and Arnaud Desbiez.



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**DIRECTORS DAY REGISTRATION IS OPEN** The 2016 EAZA Annual Directors' Day registration is now open. The meeting will take place from 13–15 April 2016 at Opel Zoo, Kronberg im Taunus, Germany. With a change in the Association's Council, Chair and (potentially) Committee Chairs, the Annual General Meeting, and further discussion of strategic priorities for the 2017–2020 period, this year's meeting is one of the most important of recent years. The current Chair and Council urge all Directors to attend if possible to vote on the new Council as well as voting on budgets for the Association and other important business. Directors should have received an email with a link to the registration site; Directors who have not received such an email should contact David Williams-Mitchell at the EAZA Executive Office.

**CONSERVATION FORUM** Spaces for participation in the Conservation Forum, to be held 10–13 May 2016 at BioParc Fuengirola, Spain are filling up fast! Be sure to register in time at [www.eaza.net/events/conservationforum](http://www.eaza.net/events/conservationforum), where you can also view the programme. The preconference EAZA Academy Course on sourcing funds for *in situ* conservation is already fully booked. The Forum is welcoming sponsorship for this and future editions: for further details please contact Mirko Marseille at the EAZA Executive Office.

**TUBERCULOSIS WORKSHOP CANCELLED** Due to the terrorist attacks in Paris in December 2015, the TB workshop organised by the EAZA Veterinary Committee at the Paris Zoological Park was cancelled. The Committee and Paris Zoological Park are currently working on rescheduling the event for late spring 2016. More information will be made available once dates and speakers have been confirmed.

The **EAZA ACCREDITATION PROGRAMME (EAP)**, the Association's screening programme for existing members, visited and reviewed 18 EAZA institutions over the course of 2015. The Membership and Ethics Committee would like to extend its thanks to all the screeners who gave their valuable time and experience to this process, as well as the members who agreed to be screened during the year; over 40% of members have been screened since the start of the programme in 2013, and we are still on course to meet the target of all members being screened within 10 years. Screening provides a valuable snapshot of your institution as seen by institutional peers including Directors and Curators, and can provide insights into areas of strength, weakness, opportunity and threat. Any institutions interested in taking part in the EAP during 2016 should contact April Adams at the EAZA Executive Office; schedules for spring and summer screenings are filling up fast.

## NEWS

## LAUNCH OF THE EAZA ANIMAL WELFARE WORKING GROUP

2015 SAW THE EXCITING LAUNCH of the EAZA Animal Welfare Working Group (AWWG). The AWWG will sit under the EEP Committee, and is chaired by Holly Farmer, Zoo Research Officer, Whitley Wildlife Conservation Trust and Paignton Zoo.

The AWWG has brought together experts in a range of animal welfare disciplines and species-specific welfare knowledge.

This will promote an informed, holistic and applicable approach to best practice in animal welfare within all EAZA institutions. Areas of expertise include general welfare scientists, and veterinary, nutrition, training, behaviour and taxon-specific welfare specialists, all of which will be actively involved in supporting and advising TAGs, EEPs, ESBs and general EAZA procedures.

This may include advising on, for example, general animal welfare parameters and indicators, and disseminate the latest animal welfare research for that species or management practice. The AWWG will also aim to develop an Animal Welfare Audit framework, freely available for all zoos to assess and monitor their own in-house animal welfare, and to promote EAZA as a leading organisation in applied positive animal welfare.

If you are interested in becoming a member or official advisor to the AWWG, please e-mail Sally Binding, EAZA Animal Welfare Training Officer, at [sally.binding@eaza.net](mailto:sally.binding@eaza.net), detailing your specific area of welfare-related expertise.

## BIRTHS AND HATCHINGS



## FIRE SALAMANDERS BORN AT GOLDAU ZOO

FIRE SALAMANDERS have a special standing among amphibians and are probably the best-known salamander species in Europe. They can easily be recognised thanks to their unique looks, and they symbolise fire in mythology.

In Europe, fire salamanders are in danger of becoming extinct. Their preferred habitats are deciduous forests, and they need small brooks or ponds with clean water for the development of their larvae. Over the last few years a mysterious fungal skin infection broke out in areas of The Netherlands and Belgium destroying whole populations. Nature Reserve & Wildlife Park Goldau is committed to preserve fire salamanders from extinction.

For that reason the team were delighted when 15 larvae were born in their facility. Fire salamanders differ from other amphibians. Towards the end of summer, frogs, toads and newts seek hibernation spots to spend the winter reducing their metabolism to a bare minimum. The more cold-resistant fire salamanders do not. The fertilised eggs

develop internally and the female deposits the larvae into a body of water just as they hatch. With their row of gills on each side of their heads, their rather large, ravenous mouths, and a practically transparent tail, they look like small dinosaurs and are adapted to living under water. They are quite ravenous and sometimes act as cannibals by going after smaller fellow prey in addition to other small animals found underwater.

Fire salamander larvae spend the winter in cold bodies of water. Because of the low temperatures they develop rather slowly. However, in spring, they have the advantage of being further developed than other amphibious larvae that have yet to be deposited. In early spring, therefore, fire salamander larvae do not have much competition for food so can develop faster. Soon, the metamorphosis takes place and fully developed, small fire salamanders take to the land. Fire salamanders are the only amphibians that can deposit larvae in spring and autumn.

## FIVE NEW CHEETAH CUBS AT LISBON



The latest members of Lisbon Zoo's feline family are now being publicly introduced; they are five cheetah cubs, one male and four females, which were born on 21 July. The small cubs, still unnamed, were sired by the male Aska and littered by the female Dakartas. The birth of these five cubs represents once again a huge success for the Lisbon Zoo breeding project which has been developed and carried out specifically for the zoo's group of cheetahs. A multidisciplinary team designed the species' facilities with the specific goal of breeding in mind. The breeding project began in 2010 and the park is once again having good results with this second remarkable birth, which adds five new cubs to the cheetah EEP.

## KING PENGUIN REARED AT ANTWERP ZOO



ANTWERP ZOO currently keeps 6.4 king penguins. Previously the sex ratio was even more unbalanced and during the breeding season unpaired males were observed disturbing breeding pairs, resulting in unfertilised or cracked eggs, and very low breeding success. To normalise the sex ratio, several males were transferred to all-male groups in other zoos since very few females were available in the breeding programme.

Last year the zoo used 24-hour video-recordings in the penguin enclosure, and these images revealed a possible cause for egg cracks besides disturbance by unpaired males: partners were switching the egg in a clumsy manner, standing too far from each other while rolling it over the concrete floor!

Therefore, we decided to remove the egg right after laying for artificial incubation and replace it with a dummy egg to keep the parents in breeding condition. Two pairs laid a fertilised egg, and both went into the incubator.

Before the first chick hatched it was transferred to the mother. As the inexperienced mother did not help the chick to hatch, the keepers removed all remaining egg shells and then returned the chick to her. She started feeding the chick right away. One day later we removed the two unpaired males as they were disturbing the parents, distracting them from feeding. Unfortunately the other chick did not hatch as it was badly positioned in its egg and did not manage to rotate.



## A LONG-AWAITED BIRTH!

THIS CROWNED SIFAKA YOUNG was born on 6 June at Lemurs' Park (which is 25km from Antananarivo in Madagascar), writes *Delphine Rouillet*, Coordinator of the crowned sifaka EEP, Parc Zoologique de Paris. The birth is the result of seven years' effort including:

- the building of a friendly and trusting relationship with Lemurs' Park where several French volunteers (veterinarians & biologists) have spent several months helping the park improve its lemur management;
- the signature of a collaborative agreement with the Ministry of Environment, Ecology, Sea and Forests;
- the approval of Lemurs' Park as a member of the Crowned Sifaka EEP;
- a first transfer of a confiscated female to Lemurs' Park at the request of the EEP (unfortunately this female, who was in a very poor condition upon her arrival, was not able to contribute to the breeding programme even though she had a quite good last couple of years at Lemurs' Park where she spent two years);
- the transfer of another female from Lemuria Land (Nosy Be) to Lemurs' Park at the request of the EEP. This was the first exchange of animals between two Malagasy parks as part of a captive breeding programme. A new



pair of new founders for the programme was then formed which led to this birth (a female!) which is very important for the *ex situ* population as well as for the Sifaka EEP.

The EEP would like to extend warm thanks to the EAZA Office for its constant support and to our friends from Lemurs' Park, especially Laurent Amouric, as well as to everyone who contributed to this success.

## Closed but not over

THE POLE TO POLE CAMPAIGN MAY HAVE DRAWN TO A CLOSE, BUT YOU CAN STILL STAY INVOLVED



Mirko Marseille, EAZA Executive Coordinator - Communications and Membership

The EAZA Pole to Pole Campaign was officially closed during the EAZA Annual Conference in Wrocław last September. The campaign ran from September 2013 to September 2015 and we can say that great things have been achieved. Many people across the globe (not just zoo visitors) actively joined in the Pull the Plug pledge as well as signing the petition. An overwhelming 250 institutions worldwide signed up for Pole to Pole and showed the commitment and involvement of the zoo community towards combating climate change.

It was amazing to see how all 250 participants each spread the message in their own way, and to see the enthusiasm of colleagues.

By the time of writing (mid-January 2016) 3,123 individuals had registered the pledge to pull the plug of a total number of 12,214 electronic devices (which are not in use) for the coming months. This means that together we have saved 338,762 kilowatt-hours of electricity! This equals: \*

- CO<sub>2</sub> emissions of 250,906 pounds of coal burned
- CO<sub>2</sub> emissions of 26,285 gallons of gasoline consumed
- Carbon sequestered by 191 acres of forest in one year.

The pledges of the participants were registered in a database and monitored throughout the course. Participants received occasional reminders and at the end of the pledge period successful participants that lived up to it received an exclusive digital photograph for personal use, taken by Daniel J. Cox/ Natural Exposures and generously made available to the EAZA Pole to Pole Campaign. In the second year the '2 degrees is the limit' petition initiative was launched. We have collected 17,160 signatures in total (both hand-written and digital). The signatures, printed on recycled paper with a total weight of almost 10kg, were handed over to the Secretariat of the United Nations Framework Convention at the intergovernmental meeting on climate change in Paris in December 2015.

PRESIDENT HOLLANDE MEETS TWO STUDENTS



And let's be fair on this, in hindsight we can conclude that **the Paris climate summit, COP21, resulted in an Agreement to curb climate change!** What has been agreed on in Paris?

- Climate warming should be well below two degrees Celsius, with a target of 1.5 degrees.
- Use of fossil fuels should be phased out, setting a goal for net zero emissions in the second half of this century.
- There will be regular monitoring, verifying, and reporting.
- Funds and expertise will be provided to help developing countries lower their emissions.

### SPARK OF HOPE

This sounds promising and offers a spark of hope for the near future. Yes, there is still a lot to be done, but the global willingness to tackle the problem of rapid climate change is evident. Back in 2013, before the Pole to Pole Campaign kicked off, the campaign team identified and formulated the following objectives:

1. Secure the participation of as many zoos and aquariums in as many countries as possible.
2. Affect positive behavioural change amongst zoos, schools and zoo visitors.
3. Run as near a carbon-neutral campaign as possible.
4. Present a petition calling on world leaders to reduce CO<sub>2</sub> emissions to below 350ppm.

We can now conclude this awareness campaign has been successful. But this is only the beginning; action is still required. That's why it has been decided to keep the Pole to Pole Campaign website ([www.poletopolecampaign.org/](http://www.poletopolecampaign.org/)) up and running, so that you can continue to take the pledge and resources will continue to be available at no cost. New stories and developments about climate change and new initiatives from the zoo and the conservation community will be published here.

Lots of zoos will continue spreading the word and organising awareness activities. Not too long ago, pupils from two secondary schools that participated in an educational project facilitated by the learning team of EAZA Member Parc de Clères were selected to visit the French Elysée. They had the opportunity to meet the French president, François Hollande, to talk about climate change and to present him with a book about projects, implemented by French schools, that raise awareness about climate change and which actions can impede global warming.

The campaign team would like to express gratitude to all zoos and individuals who were involved in making this campaign a success. Thanks to your effort and dedication we have been able to make a difference. Please continue to use energy wisely, visit the Pole to Pole Campaign website regularly and stay connected!

\*Source: <http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



# Dealing with the threat

A LOOK AT THE NEW LEGISLATION ON INVASIVE ALIEN SPECIES AND WHAT IT WILL MEAN FOR ZOOS

Daniel Nuijten, EAZA EU Policy Manager

In January 2015 Regulation 1143/2014 dealing with invasive alien species came into force setting out rules for species that are introduced into the EU by human actions and that are a threat to our biodiversity and/or economy. Any species that could be labeled in such a way would be banned from being kept, bred or traded in captivity in the EU, and EU Member States would be obliged to take eradication measures of populations of those species present on their territory. At the time the law came into force there were not any species yet named in the annex, which meant that implementation of the regulations could not yet take place. A list of 37 species was agreed upon and during a vote on 4 December 2015 the European Commission and all EU Member States, except four, voted in favour of this list.

It is quite an interesting list that contains some animals that are very popular in our collections such as sacred ibis and coatis. Conversely, very damaging invasive alien species are missing, most notably American mink, raccoon dog, Nile goose and Japanese knotweed. The contents of the list have been criticised by NGOs such as BirdLife, but also by the European Parliament that, on 16 December 2015, adopted a resolution asking the European Commission to redo the listing as it does not fulfil the necessary scientific criteria. The European Parliament resolution is not legally binding. The European Commission decided to continue implementation of the regulation with the 37 species that are adopted so far. As species can be added or removed from the list, EAZA is working with several members to see if a species such as the American mink can be added.

One worry is that this regulation will be used to ban more and more animal species from captivity. The European Commission is aware of this concern and has expressed that the purpose of the regulation is to only affect those species that are introduced into the

EU by human activities and that are having a negative impact. We will stay in close communication with our contacts to ensure that this is indeed the case.

What does this mean for zoos in daily life? It means that these species have to be phased out from February 2016. Non-lethal eradication is explicitly mentioned in the regulation and there is no need to start culling animals. The European Commission has confirmed this and indicated that as long as breeding is prevented and

that it is ensured that species cannot escape, zoos will be allowed to keep their animals until they die. Most EU Member States are still working on the details of the implementation of the regulation so if you have any questions on that please contact your ministry or national association. Hopefully this gives some clarity on new EU legislation that is affecting some animals that are very popular in our collections. If you have any questions please contact Daniel Nuijten, [daniel.nuijten@eaza.net](mailto:daniel.nuijten@eaza.net)

SPECIES	COMMON NAME
<i>Baccharis halimifolia</i> L.	Salt bushl
<i>Cabomba caroliniana</i> Gray	Green cabomba
<i>Callosciurus erythraeus</i> Pallas, 1779	Pallas' squirrel
<i>Corvus splendens</i> Viillot, 1817	House crow
<i>Eichhornia crassipes</i> (Martius) Solms	Water hyacinth
<i>Eriocheir sinensis</i> H. Milne Edwards, 1854	Chinese mitten crab
<i>Heracleum persicum</i> Fischer	Persian hogweed
<i>Heracleum sosnowskyi</i> Mandenova	Sosnowsky's hogweed
<i>Herpestes javanicus</i> É. Geoffroy Saint-Hilaire, 1818	Small Asian mongoose
<i>Hydrocotyle ranunculoides</i> L. f.	Water pennywort
<i>Lagarosiphon major</i> (Ridley) Moss	Curly waterweed
<i>Lithobates (Rana) catesbeianus</i> Shaw, 1802	American bullfrog
<i>Ludwigia grandiflora</i> (Michx.) Greuter & Burdet	Water primrose
<i>Ludwigia peploides</i> (Kunth) P.H. Raven	Floating primrose-willow
<i>Lysichiton americanus</i> Hultén and St. John	Yellow skunk cabbage
<i>Muntiacus reevesii</i> Ogilby, 1839	Reeve's muntjac
<i>Myocastor coypus</i> Molina, 1782	Coypu
<i>Myriophyllum aquaticum</i> (Vell.) Verdc.	Parrot's-feather
<i>Nasua nasua</i> Linnaeus, 1766	South American coati
<i>Orconectes limosus</i> Rafinesque, 1817	Eastern crayfish
<i>Orconectes virilis</i> Hagen, 1870	Northern crayfish
<i>Oxyura jamaicensis</i> Gmelin, 1789	Ruddy duck
<i>Pacifastacus leniusculus</i> Dana, 1852	Signal crayfish
<i>Parthenium hysterophorus</i> L.	Santa Maria feverfew
<i>Percottus glenii</i> Dybowski, 1877	Chinese sleeper
<i>Persicaria perfoliata</i> (L.) H. Gross ( <i>Polygonum perfoliatum</i> L.)	Asiatic tearthumb
<i>Procambarus clarkii</i> Girard, 1852	Red swamp crayfish
<i>Procambarus</i> sp. (marbled crayfish)	Marbled crayfish
<i>Procyon lotor</i> Linnaeus, 1758	Raccoon
<i>Pseudorasbora parva</i> Temminck & Schlegel, 1846	Stone moroko
<i>Pueraria montana</i> (Lour.) Merr. var. <i>lobata</i> (Willd.) ( <i>Pueraria lobata</i> (Willd.) Ohwi)	Kudzu
<i>Sciurus carolinensis</i> Gmelin, 1788	Eastern grey squirrel
<i>Sciurus niger</i> Linnaeus, 1758	Fox squirrel
<i>Tamias sibiricus</i> Laxmann, 1769	Siberian chipmunk
<i>Threskiornis aethiopicus</i> Latham, 1790	Sacred ibis
<i>Trachemys scripta</i> Schoepff, 1792	Pond slider
<i>Vespina velutina</i>	Asian predatory wasp



**Zooquaria:** David, can you tell us a bit more about your background and how you got involved within EAZA as Passeriformes TAG Chair?

**David Jeggo:** I have had an interest in birds and zoos from a very early age. After volunteering at Slimbridge, the Wildfowl and Wetlands Trust Headquarters, in my school holidays I started at Durrell in July 1970. Even before this, I realised the contribution zoos could make to conservation through the influence of the books and television programmes of Gerald Durrell. Durrell received some Bali starlings soon after I started and it is such an iconic species that I've been closely involved with it ever since. I think it's that involvement that drew me into putting myself forward to form and chair the Passeriformes TAG along with Theo Pagel, who was of course then EEP coordinator for Bali starling. It's a group that, despite comprising over half of all birds, is making real progress particularly with the songbirds from Southeast Asia.

**ZQ:** What triggered you or the TAG to become active for the conservation of threatened Southeast Asian bird species?

**DJ:** The Bali starling has, for the life of the TAG, been its flagship programme. Another is the blue-crowned laughingthrush and, more recently, we've set one up for the Sumatran laughingthrush. We could see a common theme developing for all these species, namely the extreme threat being placed on them by the wild bird trade. We wanted, as a TAG, to see how we could engage more with *in situ* aspects of the conservation of these species and go beyond just having captive programmes for them. Therefore, in June 2011, the

# A song of hope

DAVID JEGGO IS CHAIR OF EAZA'S THREATENED ASIAN SONGBIRD ALLIANCE. HE TOOK TIME OUT FROM HIS BUSY SCHEDULE TO TALK TO ZOOQUARIA

species coordinators, along with a few others already involved with the threatened songbirds of the region, met at Chester Zoo with Nigel Collar of BirdLife to explore what could be done. This enthusiastic and expanding group has met annually ever since, first as the Threatened Asian Songbird Working Group but after we changed our name last year, perhaps more appropriately, the Threatened Asian Songbird Alliance.

**ZQ:** You recently attended the Asian Songbird Summit in Singapore and the Bali Starling conservation meeting in Bali which discussed the conservation of some of the region's most threatened bird species. TRAFFIC has also recently released a report into the trade of songbirds in the region, and how it is decimating wild populations. Could you outline for us the scale of the threats posed by the illegal trade in these species?

**DJ:** It's a very serious threat. There are already concerns that some species are extinct in the wild and that others are under so much pressure that they may not survive for much longer. The Songbird Summit identified 27 species as being particularly at risk and prioritised 12 as being in need of the most urgent attention. If the trade is allowed to continue, more species will become threatened. Even widespread formerly common and familiar species are feeling the pressure; the Java sparrow, for instance, has almost gone from its natural range and, while not threatened as yet, white-rumped shama is noticeably absent from many parts of its range. Advances in our understanding of the taxonomy are also coming into play, and the shama is an example of this as there is good evidence to suggest that those occurring on the islands that lie off the southwest coast of Sumatra are sufficiently distinct to be separate species and under such pressure from the trappers that they are on the list of priority species requiring urgent attention. Captive assurance programmes were recommended for all but one of the 12 priority species.

**ZQ:** Could you give us a summary of the conservation strategies that came out of the meetings, and outline how EAZA members can assist both *in situ* and *ex situ*?

**DJ:** Four key themes were identified at the songbird summit; 1) field and genetic research, 2) captive breeding and husbandry, 3) outreach, education and communication and 4) trade, legislation and enforcement. As an outcome the required actions were a) monitor online trade and bird markets for illegal activity, b) implement enforcement against poachers, traders and middlemen violating both domestic and international laws, c) gain better protection for the priority species, d) regulate private captive-breeders supplying the pet markets and ensure welfare standards, e) ensure better communication, education and outreach to decrease demand for threatened species, f) carry out field studies to determine population status of species, g) manage assurance populations and develop proper post-release monitoring programmes, and h) carry out conservation genetics work. EAZA institutions can assist in three main areas: they can participate in the captive assurance populations and more and more spaces will be required as these progress, they can support the immense amount of *in situ* activities that need to take place, and we can all bring this pressing issue to the attention of our millions of visitors.

**ZQ:** Chester Zoo recently managed to import a number of Javan green magpies from Indonesia. What was the thinking behind bringing the birds to Europe, and does this action point to strategies for saving this and other bird species?

**DJ:** It's really important that for all the captive programmes recommended that sufficient founders are secured and bred up to populations large enough to retain as much genetic diversity as possible. With the number of programmes already identified and the likelihood of more to come, the captive capacity for all these



is going to be considerable. So far, the Cikananga Conservation Breeding Centre (CCBC) in west Java has provided a vital in-country lifeline. Taman Safari, which is also in West Java, is developing a second breeding centre. More spaces, however, are required and the risks of keeping the population at one centre were brought home when, in June 2014, Cikananga was broken into and over 50 birds stolen; fortunately only one was a Java green magpie but most were black-winged starlings, another Critically Endangered species. At that time, Cikananga held the only Javan green magpies known to be in captivity. It is a significant development, therefore, that six pairs of Javan green magpies went from Cikananga via Taman Safari to Chester Zoo towards the end of last year. Chester has been approved to coordinate an EEP for this species and hopefully we will soon see a thriving population in Europe. Most significantly, this importation demonstrates how we can move the species concerned around internationally and there can be regular exchanges of birds between Europe and Indonesia, working towards the reintroduction of this and other species into protected areas.

**ZQ: What steps could governments both in Southeast Asia and outside the region take to effectively shut down the trade in threatened songbirds? Does the responsibility lie with governments and law enforcement, or should we be looking for parallel solutions?**

**DJ:** The responsibility does of course lie with governments and law enforcement agencies, but I believe both internal and external public opinion has the potential

to influence them in this. I'm certain this is where awareness-raising can have a big role to play. As I understand it, much of the activity is already illegal. The Songbirds Summit and the resulting report that will come out of it will help to put the seriousness of this issue much more in the public eye.

**ZQ: Given the scale of the recent fires in Indonesia, and the short-term profit motive that has led to the destruction of millions of hectares of habitat, is there any chance that habitats can be stabilised in the near future? What needs to happen for the destruction to stop?**

**DJ:** While I'm not an expert in this I think it's again a question of looking at existing legislation that might be enacted to protect important areas and also encouraging public opinion against it. An aspect of the songbird crisis, however, is that while it may be a factor in many cases the loss of habitat is not the main issue. What we are increasingly seeing is that it is overexploitation of the species themselves.

**ZQ: In the face of all of the challenges you describe, is there any chance for the most threatened Southeast Asian bird species to survive, and will we ever be able to reintroduce birds back into the wild?**

**DJ:** I think there is a very good chance, particularly if we all work together, that these songbirds can be saved. If we act quickly and coordinate our efforts internationally, there is no need to think that any should be lost entirely. The scale of the problem is such that we may lose more species from the wild, which is why

assurance populations are so important. It is very feasible that reintroductions will be successful once the trapping can be brought under control and the birds afforded proper protection.

**ZQ: The classical music composer Olivier Messaien spent a lifetime adapting birdsong for his compositions in the hope that people would recognise the important role that it plays in our cultural and daily lives. Do you agree that birdsong is important to people?**

**DJ:** I certainly agree; it enriches our lives, and as with so many things we take it for granted. It is ironic that singing competitions that are so popular, are contributing to bringing about the demise of species concerned. It would be good to think that this popularity could be used as part of the solution. I'm not, however, sure how we can turn this around and use it to engender an appreciation of birds in the wild rather than in cages, but there must be potential there. We must help to ensure that future generation in Southeast Asia can enjoy birdsong in the wild.

**ZQ: When you are not travelling the world to help save birds, what do you like to do for relaxation?**

**DJ:** I'm not actually travelling that much but based mostly in the wildlife park, working with our bird collection. I count myself very lucky to be spending my days surrounded by birds and doing a job that I really enjoy. When not at work I spend as much time as I can gardening. It's also great to get out walking and do some birdwatching; Jersey is a good place for this.

# Let It Grow

A NEW JOINT CAMPAIGN FROM EAZA, ECSITE AND BGCI AIMS TO BRING BIODIVERSITY TO THE HEART OF COMMUNITIES

David Williams-Mitchell, EAZA Communications and Membership Manager, and interim Campaign Chair

We are over halfway through the UN Decade of Biodiversity, the world's 'moonshot' for stopping biodiversity loss through better public awareness and engagement. There's little doubt that levels of awareness of the term 'biodiversity' and what it means have improved thanks to the work of EAZA members, national government initiatives and the work of many NGOs, but it is equally clear that too many people still don't understand why it is important to live in the midst of a healthy and functioning ecosystem. Discussions between EAZA, BGCI (Botanical Gardens Conservation International) and Ecsite (the European Science Centres Network) on how to work together to improve this situation have been taking place for the last few years. They have borne fruit with an agreement to run a joint campaign, Let It Grow, which was introduced at the EAZA Annual Conference 2015. This Campaign will run throughout 2016-2017.

## WHAT'S THE ISSUE?

Many zoo educators and other environmental advocates will know the feeling: you try to explain the concept of biodiversity and healthy ecosystems, and have to watch as your audience's train of thought heads off towards another station, preferably one with free wi-fi. Let's face it: it's not easy to get people interested in the consequences of biodiversity loss, or even to explain what it is. Yet, despite this, raising awareness of biodiversity loss is one of the most important challenges we, as science communicators, face. If we do not protect space for nature in our communities, we risk dismantling the web of life that took many millennia to become established, and which safeguards our future. Moreover, we need people to acknowledge that biodiversity loss is not just a problem for Southeast Asia and other far-off parts of the world: ecosystems are just as threatened closer to home.

## HOW ARE WE GOING TO TACKLE THE PROBLEM?

It's clear that the easiest and longest lasting way to raise awareness of local biodiversity is to engage people in activities that get their hands dirty. This doesn't mean that we shouldn't try to raise awareness through more traditional activities within our museums, zoos,

aquariums and gardens, however, and the Let It Grow campaign's first level of engagement does just that, through educational resources, leaflets and displays.

The second level of engagement asks the public to set aside a space to encourage native species and root out invasives. People don't have to have a country estate to take part – any available space will help, from window boxes to roadside verges and suburban gardens. Participating institutions will be asked to help guide their visitors' efforts and provide advice on how to set aside space. Together, we have the opportunity to establish a large network of left spaces all across the continent, and make a big difference to nature in our cities and beyond.

On World Biodiversity Day (22 May) we will also aim to hold a Europe-wide event to measure biodiversity, the third level of engagement. Institutions taking part will identify a site on their grounds or locally, and take measurements of the range of species they find there. The campaign will provide a framework for this measurement, to make sure that the data we generate can be used to help provide a picture of our ecosystems for anyone that needs it.

## HOW CAN YOU JOIN THE CAMPAIGN?

We have set up a campaign website ([www.letitgrow.eu](http://www.letitgrow.eu)) which will give participating members access to a range of educational and promotional resources. By registering your zoo or aquarium at the website, you can get access to these resources, upload your own, and publicise your events and activities. As the campaign is being conducted with BGCI and Ecsite, we also encourage participants to set up 'coalitions' with local members of the associations, and design and hold events and activities together.

You can also join the campaign by contacting campaign coordinator Mirko Marseille at the EAZA office. Mirko can answer your questions on how to get logos, whether or not there's a BGCI member you can join up with, and so on.

This could very well be the biggest campaign we have ever attempted: it's local, it's engaging and it's important for the future of nature in our communities and beyond. Please do get involved!





SALAMANDRA SALAMANDRA © JELGER HERDER



# Hands on experience

HAVING FUN DURING LEARNING CAN RAISE AND INCREASE CHILDREN'S AWARENESS OF BIODIVERSITY

Natalia Álvarez Montes, PhD candidate in Conservation Biology, Goethe University Frankfurt, and Dr Martin Becker, Assistant Manager & Zoo educator, Opel Zoo Kronberg, GE

The term 'biodiversity' refers to the biological diversity of life on Earth, and an estimated 10 to 50 million different and unique animal and plant species live on our planet. This diversity has an important meaning for us as humans. These many, many life-forms are not only essential for the preservation of our ecosystems, but also the biological diversity that supports human survival, notably through health, food and industry.

As we already know, the conservation status of the known biological biodiversity has undergone a worrying decline in the last few decades. This is the reason why zoos and aquariums in this century are determined to make effective contributions to conservation. To contribute to this goal they have embraced the idea that one of their primary responsibilities is to provide education to enhance people's awareness and understanding of conservation issues, and to help their visitors take personal specific actions to conserve biodiversity. Modern zoos claim to educate their visitors, to promote conservation actions and to actively contribute to environmental education, and EAZA member Opel-Zoo Kronberg, Germany does as well. We as a zoo community are obliged to teach the young generations the importance of this biodiversity in order to preserve it.

## COOPERATION BETWEEN GOETHE UNIVERSITY AND OPEL ZOO

In an attempt to foster environmental interest and awareness among children and, especially, young adults, the Department for Bioscience Education from Goethe University Frankfurt and the pedagogical department from Opel Zoo Kronberg annually organise an educational programme that aims to motivate zoo visitors to recognise experience and value the biodiversity within their regional environment through interactive exhibitions.

For six years, these two institutions have hosted the event days



'Experiencing biodiversity at Opel Zoo', aiming to increase interest about the biodiversity all around us. The interactive activities at the zoo are rich in educational value, presenting a large number of animals and therefore serving as powerful triggers for student learning.

## LEARNING IS FUN

Once again, last July, the Opel Zoo, working together with the Department of Zoo Biology of Goethe University, presented this two-day biodiversity experience. This event involved 10 stations along the zoo tour, allowing zoo visitors the opportunity to discover, touch, investigate, ask questions and even eat during the different activities across the itinerary. In each station, the visitors were able to learn something about biodiversity.

The youngest members of the public, as well as adults, were able to enjoy, experience and especially learn

something in each station about a number of topics, such as locomotion, the ocean ecosystem, the importance of bees, the diversity of birds and their migration methods, apple varieties (with an opportunity to eat them, too!) and much more.

Particularly in this era of electronic media and virtual worlds, zoos are one of the last oases where children of all ages can be in close proximity with nature, and they can experience biodiversity using all their senses. With the guidance of zoo educators and university staff, observations are not only encouraged, but also intensified. Moreover, knowledge is imparted: visitors during the experience receive additional information beyond that in the zoo guide and interpretation. A major concern is to promote the identification of biological and ecological contexts and to strengthen the sense of responsibility of each individual towards nature. It is



SOME OF THE ZOO AND UNIVERSITY STAFF



important to place a special emphasis on interdisciplinary considerations leading us to offer special topics for older students. With expert assistance, these biodiversity days can be an unforgettable experience. It enables direct encounters with fauna and flora, making it an ideal way to get in touch and to learn about native and exotic wildlife. Pre-school playgroups and schools from primary through to high-school level see this activity at Opel Zoo as fun and useful. Through the direct contact with animals, interaction and discovery, the zoo visitors get a glimpse of the breathtaking diversity of nature and the need to stand up for its preservation.

After this two-day experience, more than 2,500 visitors, including about 1,500 children, have been registered with the aid of a punch card, while the special site plan through the zoo grounds now hosts information stands and interactive

stations to offer further insight into the diversity of nature.

#### RAISING AWARENESS

These active biodiversity days have highlighted one of the most important tasks of zoos: the education of the public. Although the Opel Zoo is always a popular destination, these activities are welcomed with great enthusiasm by the public, especially in schools. The Opel Zoo is also a great nature centre, performing important educational tasks in addition to tackling global challenges in wildlife conservation and animal research. Moreover, public tours and holiday programmes are conducted by the zoo education staff each month.

It is clear that zoos have to change with the times; they have to adapt to the demands of visitors. To better maximise visitor-supported conservation outcomes, zoos have advanced their role in helping visitors form connections with wildlife. If one

of the ultimate goals of zoo education – i.e., to increase visitors' knowledge of the need for animal conservation – is to be achieved, zoos must provide activities that enable people to understand basic concepts.

The zoo educator, Dr Martin Becker, and the rest of the staff are delighted that the school groups in particular, as well as many individual visitors, have enjoyed this experience and are now better informed about the need to preserve biodiversity.

With the right resources and motivation, every member of EAZA can contribute to conservation, education and research without overstraining or ignoring the people who make up this fascinating zoo community. The vision of WAZA is that zoos and aquariums, with their unique resource of live animals, their expertise, and their links to field conservation, will be recognised as leaders and mentors in formal and informal education for conservation.



# Excess behaviours

A STUDY OF SURPLUS MANAGEMENT TECHNIQUES IN THE WHITE-FACED SAKI MONKEY EEP IS PRODUCING SOME INTERESTING RESULTS

Emile F. Prins, MSc Zoo Conservation Biology student, Plymouth University, United Kingdom

The white-faced saki monkey (*Pithecia pithecia*) is a much-loved species within European collections. According to the latest studbook, 347 animals were being kept within the scope of the EEP, greatly exceeding the target population size of 268 animals. Evidently, reliable surplus management techniques, such as contraceptives and bachelor groups, are of great importance for proper captive population management of this species. For the majority of zoo-housed species, there is little information on the behavioural or welfare consequences of contraception use or bachelor group formation.

The white-faced saki monkey EEP, coordinated by Matthew Webb (Paignton Zoo Environmental Park, UK), has been actively working on evaluating surplus management techniques for the species. Under the supervision of Dr Holly Farmer, Paignton Zoo's placement students from the MSc Zoo Conservation Biology course (jointly provided by Plymouth University and Whitley Wildlife Conservation Trust staff) have conducted several research projects investigating the reliability of surplus management techniques for zoo-housed

white-faced saki monkeys. Here is a short overview of the studies done thus far investigating surplus management techniques, with a more in-depth look at bachelor groups.

## THE STORY SO FAR

The first study focusing on contraception use in the species was conducted by Savage *et al.* (2002) and evaluated the use of levonorgestrel in pregnancy prevention and also the reversibility. It successfully prevented pregnancy in five of the six zoo-housed females, while two females successfully conceived offspring after implant removal. The studies thereafter were conducted on behalf of the EEP. Stenger (2014) looked at the behavioural consequences of contraception use in two zoo-housed mixed-sex groups; in both groups the male received a gonadotropin-releasing hormone (GnRH) implant. Both groups were found to spend more time showing positive social behaviours after the implantation compared to before. Another group, in which the male was vasectomised, was found to spend more time on sexual behaviours after the vasectomy compared to

before. This is an interesting result given that vasectomy does not change hormonal processes; in this particular case one of the females in the group was likely going into oestrus, explaining the increase in sexual behaviours.

Bonsall (2010) compared the behaviour of males housed in mixed-sex groups and bachelor groups. Even though bachelor males performed fewer positive social behaviours and more negative social behaviours than males in mixed-sex groups, she concluded that bachelor group formation can indeed be a reliable surplus management technique for the species. Certainly these studies give us an insight into the behavioural consequences of surplus management techniques, although as is quite common with zoo research, the studies had small sample sizes and therefore these topics require further investigation. To learn more about the reliability of bachelor groups as a surplus management technique, the study looked at the social interactions performed within them, which provides indications about the social compatibility of these groups.



## DATA COLLECTION

Behavioural observations were conducted among three bachelor groups housed at three EAZA members, one in the UK (2 males), one in the Netherlands (2 males) and one in Denmark (3 males). Each group was observed for 10 days, with each individual being observed for approximately 1.5 hours per day. Next to collecting data on a few general state behaviours, the focus was mainly on social interactions, both positive and negative, and distance between individuals within each group.

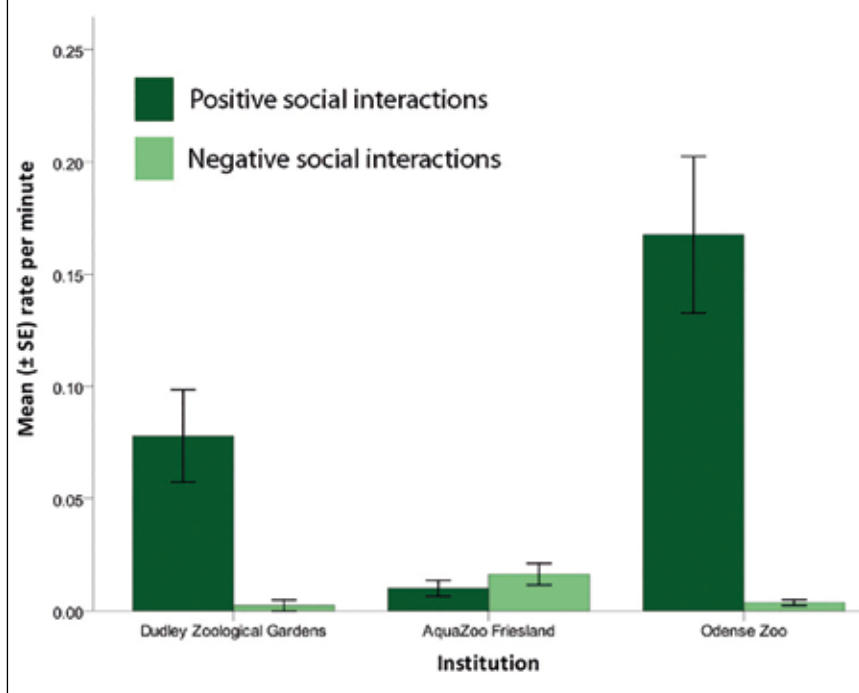
## SOCIAL COMPATIBILITY

Generally, primate groups, including all-male groups, are considered to be socially compatible when they display: 1) high levels of positive social interactions and 2) low levels of negative social interactions. Two of the three bachelor groups observed performed significantly higher levels of positive social interactions than negative ones and therefore appear to be socially compatible (Fig. 1). The other group did not display any significant differences between the two types of social interaction, and therefore do not appear to meet the criteria for primate group social compatibility. The results of the study corroborate with Bonsall (2010); bachelor group formation can be a reliable surplus management technique for the species.

## THE ZOO ENVIRONMENT

Although bachelor group formation can be successful, there have been numerous occasions where it has failed as well. It is not exactly known why certain introductions work where others do not. Visitor numbers were also measured on a scale from one (almost no visitors) to three (crowded) and evaluated behavioural differences through the scale for each bachelor group. The males at Dudley Zoological Gardens, for example, performed the most positive social interactions with high visitor numbers. Primates have certain strategies to reduce social tension within the group, of which an increase in positive social interactions when experiencing tension, such as grooming, is an example. Being housed in a walkthrough enclosure, visitor presence did seem to influence the social behaviours of these particular

FIGURE 1. BOTH SOCIAL INTERACTIONS PERFORMED PER GROUP



males.

Such social tension can, imaginably, also increase when the group experiences a sudden reduction in the size of their enclosure. The males at AquaZoo Friesland spend approximately half of the observation period in their indoor enclosure, allowing me to compare their behaviour indoors to outdoors. When housed indoors, not only did they perform more positive social interactions, they also spent more time in close proximity with each other. These findings suggest that white-faced saki monkeys also exhibit social strategies to cope with a higher social tension. It further suggests that the zoo environment potentially influences the social behaviour of males housed in bachelor groups, however we certainly need further investigation on this topic.

## WHAT'S NEXT?

This study was the first one to look at social behaviours performed within bachelor groups, as well as potential influences from the zoo environment on those social behaviours. Interestingly, their social behaviour did indeed appear to be influenced by the zoo environment. If we can increase our knowledge of these influences, then this can facilitate bachelor group formation for the species, aiming for an increase in success rate. Paignton Zoo's placement students and Plymouth University students will continue to look at the behaviour of zoo-housed

white-faced saki monkeys, evaluating behavioural consequences not only of bachelor groups, but also of surgical and hormonal contraceptives.

Other aspects of captive population management are included as well, for example the comparison of the behaviour of females when in oestrus and when not, to detect any potential external signs for oestrus in the species. The EEP also has the ongoing contraception survey, gathering zoo's experiences on contraception use for these primates to establish a database and to identify future research topics.

We have only taken the first few small steps towards understanding bachelor male behaviour of white-faced saki monkeys in zoos. Although it is not the most popular social-housing option among zoos, thus far bachelor group formation proves to be a helpful tool for the EEP with socially compatible groups actually being established.

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# Bear facts of hair loss

ALOPECIA SYNDROME IN SPECTACLED BEARS IS AN ONGOING CHALLENGE FOR THE EEP

G. Drake, Veterinarian, Chester Zoo, N. Bechstein, Veterinarian, University of Leipzig and L. Kolter, Zoologist, Cologne zoo and co-ordinator of the spectacled bear EEP, kolter@koelnerzoo.de

A survey in 2002–04 of the EEP spectacled bear population found that there have been 16 current and historic cases of Alopecia Syndrome. Since then, 11 more female spectacled bears have started to develop the condition. During this time, worldwide, symmetric hair loss has been reported from *ex situ* spectacled bears from all continents – even from zoos in Andean range countries, which mainly keep wild-caught animals under the climatic conditions in which the species evolved.

This skin disorder was first recorded in Europe in 1968 in a wild-caught female. Its distribution is strongly sex-biased, with only two males, but 25 females, showing the typical symptoms – symmetrical hair loss over the back and flanks, around the eyes (periorbital), over the rump and inner thighs. The hair loss is progressive and may end, in the worst scenarios, in completely bald animals after about a decade. In some bears, increased scratching indicating pruritus (itchiness) is obvious in conjunction with the hair loss; in others only close observations reveal an increase in this behaviour. In several spectacled bears alopecia coincides with swelling of the vulva and inflammation of the eyes. It is not known whether these signs are coincidence or have a common origin with the alopecia. In advanced stages of the disorder loss of appetite and apathy are reported for some animals.

In 2004, zoo veterinarians from Leipzig, Lyon and Paris set up protocols for collecting blood and skin samples of affected and non-affected animals, which had been circulated with annual EEP questionnaires. In 2009, a multidisciplinary working group was established to intensify research on the pathology and the background of the disease. Members of the working group met during conferences of zoo veterinarians and reported on results and findings in Europe as well as in the US.

## TREATMENT FOR THE SYMPTOMS

Thanks to numerous samples submitted to the working group by EAZA institutions over the years it was possible to characterise the histopathological features of the disease. These are suggestive of an immune mediated component. This hypothesis still needs to be confirmed by further investigations and by inclusion of results of the detailed clinical and husbandry surveys returned by the EEP participants during recent years. Classical treatments of glucocorticoids, antibiotics or anti-fungal therapies, have only a short-term effect, if any at all. None of them interrupts the progressive process of hair loss permanently or even reverses it. The coat condition of three spectacled bears is currently improving amazingly while being treated with oclacitinib maleate (Apoquel®, Zoetis, NJ, USA) – a drug which controls pruritus associated with allergic dermatitis. Even in bears with almost complete hair loss the fur is unexpectedly regrowing. This treatment improves the health and the welfare of affected animals considerably, but it only cures the symptoms. It is still necessary to explore the background in order to hopefully find causes of the spectacled bear Alopecia Syndrome.

Several respondents to the first survey assumed stress, in particular social stress, as an underlying, or at least triggering factor, as in some cases the detected onset of the syndrome coincided with a transfer, or with changes of the group composition. Occasionally, onset or increase of different forms of stereotypic behaviours occurred. This supports the idea of the involvement of stress. The results of a longitudinal study on hormonal monitoring of affected and non-affected spectacled bears in zoos, with considerably different husbandry, will be available soon. They may help to clarify the stress issue regarding grouping and other husbandry conditions, as there are also environmental factors which might act as stressors.

In the majority of cases any *post hoc* correlations have been difficult to confirm for two reasons: lack of knowledge of the social relationships/ social pressures and difficulties in detecting precisely the onset of the syndrome.

Changing social relationships are hard to assess without regular close behavioural observations. Records of subtle behaviours, like reactions to intra-specific staring, avoidance of, or alertness towards, conspecifics, inter-individual distances or behavioural elements (frequent auto-grooming or yawning) which are considered as indicators of conflict are needed. Overt aggression is extremely rare in powerful species like ursids. These might occur just once to fix the social positions among individuals.

## SPOTTING THE PROBLEM EARLY

The age of detection of the syndrome does not necessarily reflect its real onset due to the insidious nature of the disease progression. Accurate knowledge about this is necessary to make valid correlations with changes of location or group composition retrievable from the studbook. According to the survey and to announcements to the co-ordinator in recent years, the median age of detection is 11 years old. Symptoms might have been seen in bears as young as 3 years old, and as old as 24. In half of the animals signs became obvious between the age of 7 and 13 years.

Despite how spectacular and conspicuous the symptoms are in the advanced stages of the disease, at the beginning they are subtle and easily missed. Stripes of lighter reddish-brown or grey areas along both flanks or the rump, along the back, or around the eyes of the animals may be seen. Very often, these do not attract attention and might pass undetected, although they are the first indications of thinning fur. Additionally, the process might start slowly and intermittently, which



SPECTACLED BEAR FRANKA, (STUD #515) IN SEPTEMBER 2013 AT THE PEAK OF ALOPECIA  
© CHESTER ZOO



FRANKA AFTER 18 MONTHS OF TREATMENT (RIGHT FLANK ASPECT) © CHESTER ZOO



FRANKA'S FACE AFTER 18 MONTHS OF TREATMENT © CHESTER ZOO



FRANKA IN 2006: A LIGHT STRIPE AT THE RUMP INDICATES THE BEGINNING OF ALOPECIA © C. OSMANN, DORTMUND ZOO

does not facilitate the detection of the onset of the condition. In several cases, slight hair loss just occurred seasonally in September and the fur regrew in spring. In others, alopecia seemed to disappear during pregnancy, just to become a little bit more obvious several months after birth and then getting worse each year. In one case at an early stage of alopecia, the fur even became completely normal and regained its shiny appearance for several years, after the transfer of the animal into an environment without a conspecific. It reappeared some time later, after the bear was joined by a male.

There is a very recent new case of alopecia in a spectacled bear in the EEP, and it is probable that more cases will follow, so everybody keeping the species should be aware that, occasionally, another animal might become affected. It is, therefore, of utmost importance to closely monitor coat condition and to check for the subtle signs of any of the above mentioned states, diseases and behaviours. In particular, stressful situations should be monitored closely. Even early signs should be reported to the coordinator (kolter@koelnerzoo.de) immediately, who will make contact with the whole working group.

Samples taken at very early stages of the disease might reveal much more about the pathogenesis than those from later stages. Only if the pathogenesis is understood, and risk factors for the development of the condition are known, might we be able to treat and prevent the disease in the future. All members of the working group are prepared to give advice concerning the best approach for treatment at the current state of knowledge.

If symmetrical alopecia has been observed in other ursids, the authors would appreciate photos and short reports.

# FIGHTING FIRES

IN 2015, SOUTHEAST ASIAN FOREST FIRES WERE AN INCREASING THREAT TO WILDLIFE, LIVELIHOODS AND HEALTH

Catherine Barton, Chester Zoo, and James Burton, IUCN SSC Asian Wild Cattle Specialist Group

For more than three months in late 2015, Indonesian forests were on fire. This was an environmental crisis on a huge scale, threatening globally important habitats and biodiversity. Forest and peat fires in Borneo and Sumatra raged for weeks on end with more than a third of the world's remaining orangutan populations under threat. The air became toxic with pollutants, easing only when the rains arrived in mid-November; the haze and smoke were then replaced by floods.

These fires were not an isolated incident. Every year, raging fires and haze engulf the country while farmers clear land quickly and cheaply for agriculture, such as palm oil, rubber and pulp and paper. These industries are an important part of the economy in Indonesia and keep millions of people in employment. But this 'slash and burn' technique of clearing land is having a huge impact on the people and wildlife of Borneo and Sumatra. Both islands have a rich species diversity with high proportions of endemic species. There is still so much to discover about these tropical forest habitats: 360 new species have been discovered in Borneo in the last 10 years.

## THE 2015 CRISIS

Although an annual occurrence, last year the fires had a much bigger impact. With the fires starting as usual around July, the severe El Nino drought conditions meant that the tens of thousands fires spread out of control, burning for longer and with more intensity than in previous years. Indonesia's usually wet climate has also changed – the wet, swampy, peaty rainforests with once high water tables have been drained for agriculture. Forests that would once have been wet enough to control fires naturally have been dried out, and their natural defence for wildfires has disappeared along with the water table. With peat deposits burning out of control, clouds of toxic gases have blanketed Southeast Asia, spreading to neighbouring

Malaysia and even as far as Thailand. Affecting billions of people, some areas had to contend with visibility as low as 30m.

There were 19 human deaths reported last year linked to the fires, with over half a million people affected by respiratory problems. Schools' windows were shuttered and local people forced to stay indoors. These are thought to be the worst fires since 1997. The impact of this crisis is worldwide – the 2015 fires have released as much carbon dioxide into the atmosphere as some industrialised nations do in a year; this is a scale beyond comprehension. With El Nino continuing, the issue has still been affecting the region into 2016, so although the rains started to arrive in November, the crisis isn't over yet.

## WHERE DOES RESPONSIBILITY LIE?

The question being asked by many is: 'who is responsible for these current illegal fires?' A big issue to overcome is the blame which is immediately placed on large-scale plantation owners. In fact, it has been quoted that over 50% of the fires can be attributed to small- and medium-scale growers. Rural communities are therefore a major factor in this crisis. The question of responsibility for the actual fires is one thing, but ultimately who is responsible for solving this situation? Many organisations have called on the Indonesian government to ensure that this environmental crisis doesn't happen again. Many organisations, such as the Great Apes Survival Partnership (GRASP) have called for the Indonesian government to immediately ban the use of fire to clear land if sustainable practices cannot be implemented.

This recent statement by GRASP has estimated that the cost of the fires to the Indonesian government is in excess of \$30 billion USD; the impact on the country goes further than environmental issues. Better law enforcement by the government is vital in solving this issue.



## TAKING ACTION

The good news is that things are being done. A multitude of conservation organisations in Indonesia have put their daily project work on hold to fight these fires. Lacking equipment and funds, rescuers are putting their lives at risk to save Indonesia's forests and wildlife. One of these organisations is The Orangutan Tropical Peatland Project, (OuTrop) which is based in Kalimantan, Indonesian Borneo.

'The past few months have been really tough in Kalimantan as well as other parts of Indonesia', says Suzanne Turnock, OuTrop Communications Manager. 'In the Sabangau Forest in Central Kalimantan, OuTrop's main study site, we had fires as close as 1km from base camp and, during one week alone in October, there were over 350 fire hotspots in this forest. Sabangau is home to the world's largest population of orangutans and, as the largest remaining lowland rainforest in Borneo, it's a habitat we cannot afford to lose.

'Palangkaraya, 20km from Sabangau, was one of the areas worst affected by the smoke. It was the most polluted place in the world for about 6 weeks, often 13 times above what is considered hazardous while visibility was as low as 15m. We were all sick from the toxic smoke that lay like a thick blanket over the city and blocked the sunlight out for weeks on end. Our local field teams have been absolutely incredible and were out 24 hours a day battling the fires. As it was burning peatland, it can take weeks to extinguish as the fires burn underground and can spread very quickly. As well as in the Sabangau Forest, OuTrop has also been supporting local firefighters in other areas in and around Palangkaraya and Sabangau, as firefighting teams in Kalimantan are seriously under-resourced.'

It's not just NGOs on the ground, though, that are actively trying to fund solutions. Increasing numbers of plantations

are becoming members of The Roundtable on Sustainable Palm Oil (RSPO) ensuring that guidelines set by the RSPO are adhered to and palm oil is grown responsibly to the set principles and criteria. In the last year, the number of certified growers increased by 6%. The RSPO has called for the Indonesian government to revoke all laws which allow small-scale burning for forest clearance. We often feel far removed from these situations here in the EU, particularly in asking how our visitors can help in these situations. But we have a clear link to make a positive impact right now. Promoting sustainable palm oil, and ultimately 'deforestation-free' palm oil in the EU, a standard which the RSPO has not yet reached in its principles and criteria, will help to drive demand for sustainable practices on plantations, and reduce activities such as burning for land clearance.

## WHAT ZOOS CAN DO

Many zoos are actively encouraging visitors to demand sustainable palm oil from EU retailers and manufacturers and recently Chester Zoo launched the Sustainable Palm Oil challenge which aims to make sustainable palm oil the norm. The challenge has reached new audiences, from zoo visitors and the general public to companies and organisations with our activities. These include our theatrical interactive adventure game, 'The Green Gold Conspiracy', the creation of a sustainable palm oil shopping list and development of a restaurants toolkit, to assist UK restaurants in adopting a sustainable palm oil policy. You can find out more at [www.actforwildlife.org.uk/palm-oil-challenge](http://www.actforwildlife.org.uk/palm-oil-challenge).

The more demand that we can collectively put on governments, growers and certification schemes for deforestation-free palm oil, the better chance we have at preventing future scenarios like the 2015 fires.



## Ark of triumph

ELMAR MEIER HAS ALMOST SINGLE-HANDEDLY SAVED A NUMBER OF ASIAN TURTLE SPECIES FROM THE THREAT OF EXTINCTION

Dr. Martina Raffel, Curator for *in situ* Conservation, Allwetterzoo, Münster

Roughly 10 years ago, the EAZA Shellshock Campaign for Turtles and Tortoises took place. Its aim was to raise awareness of the plight of turtles and tortoises, and to encourage zoos to work with more Critically Endangered chelonians and to bring them into the safety of a 'turtle ark'. One of the models for such an ark is the International Centre for Turtle Conservation (IZS) at Allwetterzoo Münster, established in 2003 as a joint project with the Zoological Society for the Conservation of Species and Populations (ZGAP) and the German Herpetological Society (DGHT).

This turtle conservation project has been based on the tremendous experience of turtle breeder Elmar Meier. Being aware of the massive consumption of millions of turtles in Asia for medicine and food and the increasing destruction of their natural habitat, Elmar anticipated the population crash in many Asian turtle species. He therefore dedicated his spare time to developing a method for successful breeding of stress-susceptible and aggressive species such as the Asian box turtles (*Cuora* spp). With his method of reducing social stress by keeping individuals singly and introducing sexual partners only for mating, he achieved some first-ever European and world breeding successes. Armed with this approach, he established a breeding programme on a larger scale, integrating both private turtle specialists (who have the knowledge to breed many difficult species and can provide valuable founder individuals for such breeding programmes) and zoological institutions (which provide the necessary scientific background and organisational structures).

### PERSONAL SACRIFICE

In order to arrange financing and construction, Elmar Meier even reduced his weekly working hours (and therefore his personal income), giving him one day a week to push the project along. In many talks, presentations and publications he provided information about the proposed project as well as about the Asian turtle crisis and the necessity to build up assurance colonies and was able to raise funds for the



construction of the breeding station. The IZS finally came about and today focuses on the survival of several Asian turtle species, e.g. *Chinemys nigricans*, *Cuora aurocapitata*, *C. cyclornata*, *C. galbinifrons*, *C. bourreti*, *C. mccordi*, *C. pani*, *C. picturata*, *C. trifasciata*, *C. zhoui*, *Heosemys depressa*, *Leucocephalon yuwonoi* and *Mauremys annamensis*.

Elmar not only donated his private turtle collection as founders, but also donated almost all of his spare time – mostly together with his wife Ingrid – to maintain this unique collection of Critically Endangered turtles. The IZS still completely relies on Elmar's unsalaried engagement – there are no paid zookeepers or any other paid staff except for a few friendly volunteers. Nevertheless, Elmar is by far the world's most successful breeder of several *Cuora* and other Critically Endangered Asian turtle species. So far, he has been able to breed 24 different turtle species or subspecies regularly, three of which have already been bred to a second generation. In total, more than 500 offspring have hatched in the past 10 years.

Elmar has bred perhaps 70–80% of all the Zhou's box



HUBERT GARITZMANN

turtles (*Cuora zhoui*) ever born in captivity, and well over 50% of all *Cuora zhoui* alive on the planet (around 100–150) have hatched at the IZS. This species is still not known from its original habitat as its description was based on individuals found in Asian food markets, and it almost entirely (as do a few other species to a very large extent) owes its continuing existence to Elmar’s knowledge and passionate dedication.

#### SPREADING OUT

Offspring from the IZS have been transferred to several EAZA zoos (eg Rotterdam Zoo, Artis Zoo, Chester Zoo, ZSL Whipsnade Zoo, Nordens Ark, Cologne Zoo, and Wrocław Zoo), some of them now already breeding as well, and further individuals will be distributed to other facilities and reliable private collections around the world to build up assurance colonies.

In addition to publications and presentations on the maintenance, breeding and conservation of turtles, Elmar Meier has been the co-editor of a turtle book and is also the studbook keeper (managed within the framework of the

European Studbook Foundation) for *Cuora aurocapitata* and *C. zhoui* as well as co-studbook keeper for *C. trifasciata* and *C. cyclornata*.

With his dedication and enthusiasm, he has realised a project for some turtle species which might otherwise have become extinct. Elmar is a true species champion for several turtle species – though not in the traditional sense as a field conservationist – and as such deserves any potential support to make the ark a safe place as long as is needed. The Species Champion concept might allow Elmar and the IZS to build a sustainable direction for the future and further explore the potential of field conservation activities. First steps have been made with the return of captive-bred Annam turtles (*Mauremys annamensis*) to Vietnam in 2013, and hopefully many more will follow.

If you are interested in becoming involved with Asian turtle conservation work – be it by providing/raising funds, providing suitable space in your institutions or facilitating research or field conservation needs – please contact Martina Raffel at Allwetterzoo Münster ([raffel@allwetterzoo.de](mailto:raffel@allwetterzoo.de)).

# Saving the Corfu killifish

A TRANSLOCATION PROGRAMME COULD BE HELPING TO SAVE TWO SMALL SPECIES OF NATIVE EUROPEAN FISH

Brian Zimmerman, Curator of Aquarium, ZSL London Zoo, and Dr Eleni Kalogianni, Institute of Marine Biological Resources and Inland Waters at the Hellenic Centre for Marine Research



The Corfu killifish is a name attributed to two species of killifish confined to Western Greece, the southern tip of Albania and the Ionian island of Corfu. As recently as 2014 the species was split into two, with the southern population taking the name *Valencia robertae* and the northern populations, including those of Corfu and Albania, maintaining the name *V. letourneuxi*. These diminutive fish comprise two of only three species found in the family Valenciidae; the third species is confined to eastern Spain on the other side of the Mediterranean. This fragmented distribution for the family is thought to have occurred as a result of the last glacial period when most of Europe was covered in ice and many species retreated.

The Corfu killifish is a habitat specialist that requires clean, spring-fed lowland habitats without too much flow and plenty of floating vegetation. It is not a strong swimmer and this has prevented it from colonising upland habitats. The species is a secondary freshwater fish, that is it tolerates brackish waters but normally occurs in inland aquatic systems, thus dispersal from spring to spring via the sea is not possible and the species distribution is therefore extremely patchy with populations isolated from each other.

As in other parts of the Mediterranean, coastal wetlands in Greece have been routinely drained and the available habitat for the Corfu killifish has shrunk significantly in the last several decades. The human requirement for freshwater has led to the diversion of whole river systems to supply water to urban areas; hydro-engineering projects often use every drop of water from the springs that feed these rivers. Agriculture also has impacts, as freshwater is pumped for irrigating crops and pesticides are sprayed which are harmful to aquatic organisms including killifish. Wetlands are often considered dumping grounds for human refuse and springs that were once pristine are now littered with garbage. Added to these pressures is the invasion of the alien mosquitofish (*Gambusia holbrooki*) a North American live-bearing fish that was widely introduced in the Mediterranean for malaria control after the 1920s. Mosquitofish have reproduced and spread throughout much of the Corfu killifish's range, severely impacting its

survival either by direct aggressive egg- and fry-predation or through competition for available resources.

Due to the wide range of threats the Corfu killifish faces and its alarming decline in range and numbers the Northern species, *V. letourneuxi* is assessed as Critically Endangered by IUCN. The newly described Southern species, *V. robertae* is yet to be assessed, although its survival is likely to be equally precarious.

## TAKING ACTION

In 2005 the Zoological Society of London (ZSL) started collaborating with the Institute of Marine Biological Resources and Inland Waters at the Hellenic Centre for Marine Research (HCMR) in Greece to conduct the first ever complete survey of the Corfu killifish's range. The aim was to document the locations where the species occurred and map the full extent of its range. Nearly 100 different sites were sampled and after several years of detailed investigation that included identifying the species' habitat and dietary requirements, an alarming discovery showed that the species range had shrunk and its area of occupancy had contracted significantly since historical accounts.

Over the next several years, continued monitoring by the HCMR and further investigations helped build a clearer understanding of what the Corfu killifish needed to survive and how those threats in its environment were impacting its numbers. Work was undertaken on the genetics of each population, the food items eaten, the sympatric species that formed part of the killifish's ecological realm and on parasites and diseases.

At ZSL's aquarium a population of *V. robertae* had been maintained for many years and this captive population provided an opportunity for behavioural study and observation that would not have been possible in the field. The species requirement for floating vegetation was thought to be for protection from overhead predators such as kingfishers and herons but in the aquarium we observed that the species also spawns on the roots of floating plants near the surface. Larval fish spend several weeks exclusively in the layer of water just below the surface, hunting tiny invertebrate prey items and avoiding predation themselves.

In the aquarium we also observed that the species had yellow-green iridescent eye-spots that reflected light and were easily detectable as the fish swam near the surface. This proved to be an important identifying feature when doing surveys in the wild that required searching through thousands of mosquitofish to find the Corfu killifish.

During 10 years of research, monitoring and learning we gathered information to start pulling together a conservation management plan for the species. All the threats faced by the Corfu killifish are caused by humans but finding a solution to these problems is not easy. The eradication of mosquitofish





is probably impossible and its rapid reproduction rates would make control a never-ending battle. Reducing human dependency on freshwater to save a small fish is also not a realistic goal. However, after much thought, planning and careful consideration of the possibilities we determined that conducting translocations of the species could be an option worth investigating.

### TRANSLOCATION BEGINS

Following the IUCN Guidelines for Translocation we carefully assessed not only the sites containing populations of killifish that we had been monitoring but also sites where the species was not present but which potentially met their ecological requirements. These various locations were monitored over two years and, eventually, four sites were identified – two donor sites and two recipient sites. The sites chosen would involve both species of killifish and two different types of translocation exercise: a supplementation and an assisted migration.

Our first translocation exercise was a supplementation of *V. robertae* from an area with one of the most robust and healthy populations in existence; this spring site had no mosquitofish present and therefore an extremely high abundance of *V. robertae*. From this site we moved 40 fish to a spring several kilometres away. The recipient spring contained very small numbers of *V. robertae* and we were concerned that these numbers were too small to be genetically robust. At this spring the habitat was overgrown with *Phragmites* sp. reeds and these had choked out most of the floating vegetation. Earlier in the year, however, the local municipality had cleared some of the reeds and this improved the habitat, creating places for floating vegetation to recolonise. Another positive outcome was learning that part of this spring was designated as a Natura 2000 site and that it would therefore hopefully be assured some greater protection.

Our second translocation exercise involved an assisted migration of *V. letourneuxi* from a degraded location to an area where the species had never been recorded. Although both sites were in the same watershed, the recipient site is at a higher elevation with natural barriers to prevent the colonisation by *Valencia*. The donor site is part of a large wetland system but this site had recently been deprived of much of its vegetation, possibly through some local weed-eradication initiative, and it most importantly contains very large numbers of mosquitofish. The assisted migration involved moving 43 *V. letourneuxi* from this site and releasing them in a mosquitofish-free spring with dense aquatic plant growth.

IUCN Guidelines for Translocation suggest that repeated stocking attempts should be made each year for several years to allow for natural attrition rates and to give the best chance of success. For this reason we will continue to move fish over the next couple of years and monitor all four of these sites to ensure the best chance of establishing the new populations and to prevent any negative impact on the donor sites.

We are some way off knowing whether our efforts will pay off but we have learned a great deal along the way and will continue to document what we do so others can learn too.

The ZSL aquarium continues to hold a strong population of *V. robertae* and the species will feature in the European Regional Collection Plan for EAZA. We hope that other institutions will get involved with this species' conservation, too, and would welcome other aquariums maintaining populations. The species is shy and not a great exhibit animal but its space requirements are small so many facilities could probably keep a group. Although it is not easy to keep, it would be a good challenge for any aquarium wishing to get involved in the conservation of a very special native European species.

# The Making of *Islands*

NOT ONE, NOT TWO, BUT SIX ISLANDS COMPRISE THE NEW EXHIBIT AT CHESTER ZOO

Dr Mark Pilgrim, Director General, Chester Zoo

The realisation of a dream, five years in the making, *Islands* is a zoo experience unlike any other. A breath-taking journey takes visitors to the heart of six remarkable Southeast Asian islands with the sights, colours, smells and the culture of each brought to life as a fascinating story of discovery.

*Islands* was designed to transport visitors thousands of miles away, not only to encounter some of the world's most amazing animals and plants, but to experience what it's like to be a real-life conservationist.

Southeast Asia is a biodiversity hotspot and the islands in the region are home to tens of thousands of different animal and plant species, many threatened with extinction. Chester Zoo is involved with, and supports, a number of conservation projects across the region and it therefore seemed like a natural progression for our next development, providing us with the opportunity to showcase our vital fieldwork.

Chester Zoo was already the most visited zoo in the UK but, since the opening of *Islands* this summer, our visitor numbers have increased by over 220,000 compared with our record-breaking year last year. We see *Islands* as the first step in a much wider plan to transform Chester Zoo over the next few decades, enabling us to increase the amount of work we can do with our conservation partners around the world.

Our vision was that, by throwing a spotlight on threatened species in a more immersive way, our visitors would develop a deeper connection with the animals. Not only will our visitors be able to appreciate why we have animals here and what we are doing as a wider zoological community to help these endangered species in the wild, but they might also feel more empowered to become the conservationists of the future. We have already seen more visitors moving away from the more 'social' visit and telling us that they feel both an emotional and intellectual motivation for visiting us.

Conservation in the 21st century is as much about people as it is about animals and plants, and *Islands* is all about telling the story of how people live alongside wildlife. It's so much easier to engage and educate the public if you have a fascinating story to tell. The story behind *Islands* has been a big part of the theming and why we've brought in a wide range of artefacts from across Southeast Asia – everything from tools to tuk-tuks, stalls and fishing boats. The fact that we can interweave the human stories alongside the animal stories is what makes *Islands* so special.

## ATTENTION TO DETAIL

We'd seen examples in Europe of innovative zoo developments, where they used immersion techniques successfully. Their



FACE-TO-FACE WITH FRANKIE  
THE SUNDA GHARIAL CROCODILE

success was all about attention to detail and in *Islands* everything is themed to replicate the landscape from each individual island. We have tried to disguise the boundaries between the visitors and the animals, so that it appears you're walking through their habitat.

The details goes right through to recreating the architecture from each of the islands – we have six islands, which meant six different types of architecture and culture to recreate, plus a 450m boat trip around the islands.

Central to the *Islands* experience is Monsoon Forest, our 4,000m<sup>2</sup> Indonesian tropical house and the biggest indoor zoo exhibit in the UK, a highly complex building. We've created a rainforest home to Sumatran orangutans, Sulawesi crested macaques, Sunda gharial crocodiles and a range of bird species inside a free-flight aviary. Technically, we have a complex roof structure with transparent, insulated plastic pillows allowing maximum daylight into the exhibit.

With temperatures inside the building around 27°C with 70% humidity we're growing Southeast Asian plant species and adding the fragrance of the forest with fruiting trees such as breadfruit, starfruit, paw paw, coconut, mango and banana. We are also showing off some of our national collection of tropical pitcher plants (*Nepenthes*). These are amongst the largest and most spectacular of all carnivorous plants but many are Critically Endangered so it's vitally important that we conserve them and the climate in Monsoon Forest is the perfect place to grow them and show them off.

In all we have moved 650 animals to *Islands* – not including the fish and invertebrates. The orangutans, tigers and macaques have always proven popular with our visitors but *Islands* gave us an opportunity to showcase other unsung heroes from the collection like the Visayan warty pig, southern cassowary,



lowland anoa and banteng.

We're also focusing on songbirds like the Bali starling – one of 11 species of bird in *Islands*, some of which are highly threatened in the wild. This gave us the perfect opportunity to talk to the public about our involvement in tackling the songbird crisis in Indonesia where millions of birds are kept in captivity, a tradition deeply embedded in Southeast Asian culture.

Our keepers were involved with the design process of *Islands* from day one, nearly five years ago, working closely with architects to ensure that all aspects of the development are suitable for both animals and keepers. The move means an improvement for all the animals at *Islands* – bigger enclosures and much better back-of-house facilities, too.

### NATURAL BEHAVIOURS

We have taken the opportunity to use research to enhance conditions for the animals to recreate the natural environments that they would experience in the wild, and we hope this will encourage more natural behaviour. For example, we worked with the University of Birmingham to produce carbon-fibre sway poles for the Sumatran orangutans. In the wild they move through the trees, leaning from tree to tree to use tree-movement to help them through the canopy. This natural motion especially helps when carrying their young. The new sway poles should allow them to move in a more natural way around their new enclosures. The Sumatran orangutans proved to be one of the most challenging animals to design an enclosure for, as they are so intelligent!

Moving so many animals into brand new enclosures was a challenging element of the project. The team worked for years with the animals here at the zoo to make them feel comfortable going into their crates in preparation for the move.

We were really keen to ensure that our naturally inspired

enclosures showcased the varied and interdependent biodiversity linked to our key islands. This meant we would have to start working closely with species that had not really been kept in zoos before. Using expertise that we'd developed with other, closely related species, we developed pioneering new husbandry techniques for a selection of lizards known as forest dragons, a family of frogs known as gliding frogs and a whole bunch of bugs, many of which we couldn't even pronounce! We looked at a range of reptiles, amphibians, fishes, almost 40 species of invertebrates and one crocodylian!

From this selection we were able to select a group of species which would live happily alongside each other within Monsoon Forest in large mixed-species exhibits, representing various types of habitat found on the islands of Sumatra and Sulawesi.

The public are particularly captivated by the Sunda gharials that now live in a fantastic new pool within Monsoon Forest which they share with various fish and turtle species. Native to the jungles of Southeast Asia, our pair travelled from a specialist breeding centre in the South of France. As a vulnerable species with fewer than 2,500 left in the wild, we are delighted that their presence in *Islands* will draw attention to the issues threatening this magnificent species.

It has been a huge challenge planting over 52,000 plants across 14 acres. Around the perimeter of *Islands*, we have put in a selection of species that are native to the UK to provide habitat for the existing wildlife. The majority of the rest of the vegetation includes evergreen and deciduous plants with lush and exotic qualities to create a tropical rainforest effect.

The main challenge of *Islands* has been the sheer scale of the project. With many complex elements and numerous construction interfaces, we have fought to ensure that our high standards and animal welfare were never compromised. We are incredibly proud of what we have achieved and we are looking forward to seeing *Islands* grow and evolve in the years ahead.

# Planting great ideas

ZOOPLANTS.NET IS A DYNAMIC DATABASE THAT ENABLES A GREATER SHARING OF KNOWLEDGE OF PLANT USE IN ZOOS AND AQUARIUMS

Sven Seiffert, ZSL Horticulture Manager, [SvenSeiffert@zsl.org](mailto:SvenSeiffert@zsl.org), Zoological Society of London

The use of plants in zoos and aquariums not only enhances visitor experience, underpins site biodiversity and offers educational opportunities, but also plays an important part in meeting animal welfare needs. Plants provide, for example, forage, shelter, sensory stimulation, shade, perching, and spatiotemporal variation. However, practitioners face two major challenges when working with plants in animal collections. First, plant-animal interactions can be highly complex. Second, not much information about the use of plants in zoos and aquariums is available and knowledge that does exist is often not well documented or readily accessible.

To help address this situation, ZooPlants.Net was set up in 2007 to provide a peer-reviewed platform for the evidence-based documentation and sharing of knowledge about the use of plants among the zoo community. Since then, the project has become a joint BIAZA, EAZA, Zoolex and ZSL partnership. The site currently has nearly 2,100 registered users and lists more than 400 plant species.

ZooPlants.Net uses a web-based database that runs on Mediawiki software. This means that registered users can access content online and that authors can collaborate in real time when creating and editing information. The technology also provides a framework for the instant review of contributions by an editorial board.

## WHAT DOES IT INCLUDE?

ZooPlants.Net is structured around species-specific plant pages that each serve as a portal for collating relevant information such as toxicity, use as forage or enrichment for specific animal species, suitability for exhibit planting and nutritional data. To give an example, the entry for sycamore (*Acer pseudoplatanus*) provides up-to-date information and references about atypical myopathy in equids from the ingestion of sycamore seeds, and



documents the use of sycamore as fresh browse and leaf silage for a wide range of animal species such as emu (*Dromaius novaehollandiae*), white-naped mangabey (*Cercocebus atys lunulatus*) and okapi (*Okapia johnstoni*). It also lists detailed nutritional data for both fresh browse and leaf silage, including tannin and silica levels.

## ACCESSING AND CONTRIBUTING INFORMATION

Users can access information on ZooPlants.Net after registering with a user name and password. All plant pages can be accessed via an alphabetic content listing or by querying the site for specific information such as common or scientific name, or any other term of interest. Users are also strongly encouraged to contribute to ZooPlants.Net. They can create new entries and modify existing information by using their web browser after a site administrator has authorised 'editing' for their account. The process is similar to working on a text document and a number of tools are available for marking up text, defining headings, adding images and creating links. In addition, there is a detailed user guide that provides step-by-step instructions that covers subjects such as formatting and referencing.

## EVIDENCE-BASED APPROACH AND PEER REVIEW

An evidence-based approach to sharing knowledge is absolutely essential when

disseminating information about the use of plants in zoos. This is particularly true with regard to toxicity and forage provision. Authors are therefore asked to use reliable sources only and to provide the relevant details, references and authoring information to enable others to verify and evaluate their contributions. Content changes on ZooPlants.Net are furthermore subject to a peer review by an editorial board, consisting of professionals with expertise in a range of zoo and aquarium disciplines. Every time the site is edited, board members receive an automated notification that invites them to review the information. In case of queries, comments or corrections, they can then contact the author or edit the entries directly.

## SUMMARY

ZooPlants.Net is a powerful tool for collating evidence-based knowledge about the use of plants in zoos, and the site contains a considerable amount of related information such as details about plant toxicity, the documentation of animal specific forage species and nutritional data. However, to really fulfil its potential, the project needs additional collaboration from the wider zoo community. Practitioners are therefore strongly encouraged to share their knowledge by contributing. For further information, please visit ZooPlants.Net or contact the author at [sven.seiffert@zsl.org](mailto:sven.seiffert@zsl.org)

# Keeping ahead



ERASMUS+ FUNDING HAS BEEN AWARDED FOR THE ZOO KEEPER COMPETENCY FRAMEWORK

Sally Binding, EAZA Animal Welfare Training Officer

In May 2015, the EAZA Academy conducted a needs-analysis across the EAZA community to explore the zookeeper training opportunities and needs of the Members. The Academy extends its gratitude to the 160 zoological institutions, from 31 European countries, employing a total of 4,541 permanent zookeepers who completed this survey. The survey highlighted the extent of opportunities available to zookeepers to expand their knowledge and skills. This ranged from keepers being able to choose from a variety of recognised courses and continue their professional development throughout their career, to keepers having little or no access to educational resources and no standardised method of recognising their skill set. In these instances, zookeeper training is reliant on the application of in-house identification of core zookeeping skills and training, which lacks inter-institutional standardisation and a quantifiable measure of skills competency. This often leads to limited capacity-building within the role of the zookeeper, barriers to mobility between institutions, lack of recognition of zookeeping as a profession and compromised knowledge of best-practice animal management.

Aided by these survey results, EAZA submitted a funding proposal to the EU Erasmus+ programme to develop a Zoo Keeper Competency Framework. The funding was subsequently successfully granted under the Erasmus+ Strategic Partnerships programme for adult vocational educational training. The project will be led by the EAZA Academy, in partnership with Sparsholt College, UK; Aeres Group, The Netherlands; Zoo Wroclaw, Poland; Zagreb Zoo, Croatia; Lithuanian Zoological Gardens, Lithuania; Chester Zoo, UK; and the Romanian Zoos and Aquariums Federation, Romania.

Over the three years the team will aim to develop two key outputs: the Zoo Keeper Competency Framework and Educational modules. The



framework will support and build upon the European Skills, Competences and Occupations (ESCO) database and the educational modules will align with the European Credit System for Vocational Education Training (ECVET). Consequently it will be supported on a Europe-wide platform.

## WHAT DOES THIS MEAN FOR YOU?

For your keepers and institution, this means opportunities. The framework and resultant educational modules will be accessible to all zookeepers across Europe as a freely available resource. Keepers can progress through core units to gain their qualifications in zookeeping while being able to select specialist units to allow them to explore their interests and strengths. The qualification will run alongside, and be comparable to, current qualifications in zookeeping, although as it will be available across the EU it will aid all zookeepers in recognition of their knowledge and skills through a standardised qualification, thereby aiding employment mobility and recognition of zookeeping as a skilled profession in all EU countries. The qualification will build zookeeper capacity to promote good practice

animal management and expand the range of keeper skills and knowledge that can be implemented within your institution.

## HOW CAN YOU GET INVOLVED?

The project will be seeking support from across the EAZA Members. A range of expertise, experience and advice will be greatly appreciated to ensure the success of the project. This includes, but is not limited to, those with expertise in:

- application of general and/or specialised zoo keeper skills;
- development of educational resources;
- zookeeper education;
- website design and online platforms;
- translators;
- marketing and information dissemination;
- development of quality assurance and quality control tools;
- institutional support in conducting pilot tests.

For more information, or if you would like to offer your support to the project, please contact the EAZA Academy Manager, Laura Myers, on [laura.myers@eaza.net](mailto:laura.myers@eaza.net).

# Peter Lupták

THE RENOWNED EXPERT ON LARGE AFRICAN MAMMALS HAS DIED SUDDENLY AGED 45



Peter Lupták passed away in a tragic car accident in Africa on November 17. In his early years, Peter had studied zoology at the Faculty of Natural Sciences of the Comenius University in Bratislava, Slovakia, he had attended internships at the Smithsonian Institution and the British Museum of Natural History, and he had worked as a research assistant at the Zoology Institute and the Department of Ecology of the Comenius University. As time passed, Peter had focused his research on the taxonomic and biogeographic assessment of African mammals, especially carnivores, primates, and ungulates, and, in 2001, he took a job as a chief zoologist in the Bojnice Zoo, Slovakia.

In his 14 years in the Bojnice Zoo, he created a new graphic style, introduced the publication of yearbooks, co-authored the *Bojnice Zoo Guide* (2012), and created countless information panels, tags and scholarly texts. He brought many rare and Critically Endangered species and subspecies to the zoo, such as the bongo, Roloway monkey, Hamlyn's monkey, Barbary lion, golden takin, clouded leopard and others, as well as the largest collection of Lake Malawi cichlids in European zoos.

Peter served on expert committees, and published many popular and specialised articles, as well as two books (in Slovak): *Slovak Names of the Mammals of the World* (2003) and, in 2015, *Bojnice Zoo, the Slovak Arch of Biodiversity*, which maps the 60-year history of the Bojnice Zoo and depicts the diversity of species living there.

Thanks to his remarkable professionalism and personal engagement, Peter enriched not only the Czecho-Slovak but also the European and world zoo communities and quickly became one of the most active members. He also created the website of the EAZA Antelope and Giraffe Taxon Advisory Group, which helps to maintain the populations of these endangered African species.

Peter loved Africa. During his travels, he mapped its disappearing, endangered, and less known species, shot videos and took breathtaking photos. He emphasised the popularisation of nature conservation, and his message lives on in his numerous activities, as well as in the people he infected with his passion and love for animals.



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- Ostrich Starter
- Parrot (Zoo A)
- Pheasant Breeder
- Pheasant Maintenance
- Pheasant Starter
- Poultry Breeder
- Poultry Grower
- Poultry Starter
- Sea Duck
- Sunbird Nectar
- Waterfowl Breeder
- Waterfowl Maintenance
- Waterfowl Starter

## RODENTS

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- Rabbit Breeder
- Rabbit Maintenance
- Rodent Breeder
- Rodent Maintenance

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- Carnivore Feline
- Carnivore Supplement
- Feline
- Feline High Vit A Supplement
- Feline Supplement
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- Polar Bear Supplement
- Zoo Diet A

## GRAZERS AND BROWSERS

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- Browser Maintenance
- Camel
- EL-E-VITE
- Exotic Grazer
- Grazer
- Herbivore Concentrate
- Macropod
- Moose
- Pig
- Reindeer
- Sheep (Locush)
- Vitamin E Cubes
- White Rhino Concentrate
- Zebra

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- Fish Eater Tablets
- Aquatic Gels (Herbivore and Omnivore)

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- Milk Replacers
- Rhino Milk Replacer

## SPECIAL DIETS

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Leading the way



# LET YOUR VISITORS DESIGN THEIR EXPERIENCES

# 24h<sup>e</sup>

## & TURN ONE-TIME GUESTS TO FANS

### INVITATION

#### DOWNLOADING YOUR APP

#### DESIGNING THE EXPERIENCE

Choosing the visit day

Choosing the company to visit with

Choosing a theme for the visit

Choosing special activities

Choosing food and drinks

Confirming the summary and paying



### VISIT

Feed the Vicuñas

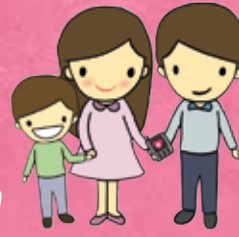
Mini Meet Tigers

## HAVING DAY AT THE ZOO

Mementos with personal messages



### MEMORIES



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- Allan Malmström, CEO, SEA LIFE Helsinki



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