



EUROPEAN ASSOCIATION OF ZOOS AND AQUARIA

TAG Reports 2023



INTRODUCTION

This Annual Report provides a detailed overview of the many and diverse activities that EAZA's 42 Taxon Advisory Groups (TAGs) were involved in over the course of 2023. It demonstrates successes and progress achieved across the EAZA TAGs. All but four TAGs (Coral, Waterfowl and Pelecaniformes, Charadriiformes, Tapir and Suiform) were able to provide a report.

In 2023, we returned to a (new) normal after the COVID-19 pandemic years. So, while benefitting from the lessons learnt, and the continued use of online platforms to meet, there were further face-to-face meetings providing the opportunity for the TAGs to meet again and reconnect.

The EAZA TAGs are at the heart of EAZA's collection planning and management framework and responsible for producing, implementing and updating Regional Collection Plans (RCPs) and Best Practice Guidelines (BPGs) as well as monitoring the functioning of the breeding programmes that are run under their remit. TAGs also have increasing responsibilities towards research and *in situ* conservation activities. It is thus of crucial importance that TAGs function to the best of their abilities. Therefore, they are cyclically being evaluated to improve the process of how a TAG functions and to improve and maintain a level of quality of its output. Thirteen TAGs have completed their evaluation so far, another four are in progress.

The implementation of the new EAZA population management structure continued with RCP workshops held, either online, face-to-face or in a hybrid set up, for the Reptile TAG – snakes, Ciconiiformes and Phoenicopteriformes TAG, Gruiformes TAG, Parrot TAG, Toucan and Turaco TAG and Small mammal TAG – bats and moles, tenrecs, shrews, aardvarks and hyraxes. The Larger New World Monkey TAG RCP was postponed to 2024, that will be the last year of the first cycle of RCPs. Upon completion, RCP reports are made available on the [Member Area of the EAZA website](#).

The RCP process informs which species EAZA will actively manage across its Member zoos and aquariums as part of an EAZA Ex situ Programme (EEP). Each EEP will then develop its own tailor-made Long-term Management Plan (LTMP), which outlines the strategy towards achieving the species-specific goals set as part of the RCP process. In 2023, LTMPs were published for 45 species, and 62 pre-LTMP check-ins were held.

By the end of 2023, 313 new-style EEPs were established. In addition to these, TAGs will continue to oversee 82 old-style EEPs and 79 European Studbooks (ESBs) until all have completed their new-style RCP process. Five old-style programmes were discontinued. To make people aware and raise the profile of the programmes, 89 EEP pages were available on the EAZA website (www.eaza.net/conservation/programmes/eep-pages) by the end of 2023.

This report also demonstrates the wide variety of species conservation activities that the TAGs were involved in last year. It is truly exciting to see that the members of EAZA TAGs are involved across all three parts of the IUCN Species Survival Commission (SSC) 'Assess, Plan, Act' conservation cycle. Cooperation with field conservation partners and experts, in addition to those with IUCN SSC Specialist Groups (SGs), stayed strong and continued to grow.

Another core task of TAGs is (to coordinate) developing [EAZA Best Practice Guidelines](#) that reflect the best practice management in human care of the respective taxa. Another seven BPGs were completed, approved and are freely available on the EAZA website (see page 51).

Among other tasks, the TAGs worked on providing expertise input for EAZA's lobbying work at the European Union and representation with other organisations.

For more information on topics raised in this report, please contact the EAZA Executive Office (EEO) at info@eaza.net. EAZA extends its thanks to all the Chairs, Vice Chairs, Programme Coordinators and Committee members for their support, commitment and enthusiasm to EAZA in 2023.

GLOSSARY

AZA: Association of Zoos and Aquariums (USA)

BPG: Best Practice Guidelines

EEO: EAZA Executive Office

EEP: EAZA Ex situ Programme

ESB: European Studbook

GSMP: Global Species Management Plan

IUCN: International Union for the Conservation of Nature

LTMP: Long-term Management Plan

MON-P: Monitored-by-designated-person Programme, includes MON-T, MON-T REPLw, MON-T Phase out and MON-T DNO (see EAZA Population Management Manual in [EAZA Governing Documents](#) for more details)

RCP: Regional Collection Plan

SG: Specialist Group

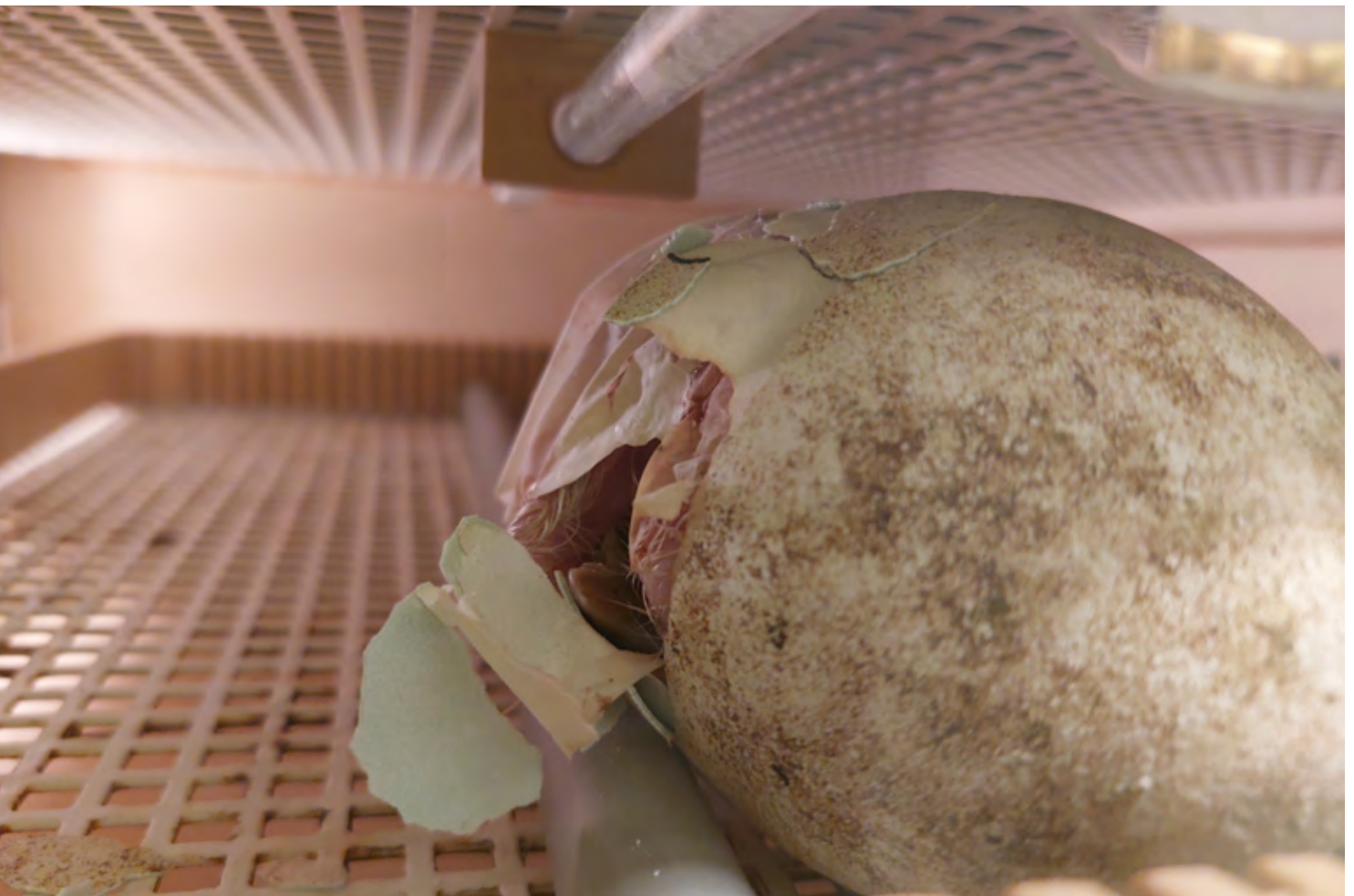
SSC: Species Survival Commission

SSP: Species Survival Plan

TAG: Taxon Advisory Group

ZAA: Zoo and Aquarium Association (Australasia)

ZIMS: Zoological Information Management Software



In 2023, Rotterdam Zoo, Avifauna Birdpark and Amersfoort Zoo (all the Netherlands) have been collaborating for the artificial incubation and foster parenting of Rüppell's vultures (*Gyps rueppelli*), leading to 14 healthy chicks joining the EEP! © Maarten Vis, Rotterdam Zoo

1 TERRESTRIAL INVERTEBRATE

TAG Chair: Melissa Bushell (Bristol Zoo, Bristol, United Kingdom) • **Vice Chairs:** Tamás Papp (Chester Zoo, Chester, United Kingdom) and Vítek Lukáš (Ústí nad Labem Zoo, Ústí nad Labem, Czechia)

INTRODUCTION AND ACHIEVEMENTS

It has been another busy year for invertebrates and although the EAZA Terrestrial Invertebrate Taxon Advisory Group (TITAG) has been quiet, there have been a lot of developments in EAZA Ex situ Programmes (EEPs) and conservation programmes across collections. Plus, subgroups have been developed within the TITAG.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The EEP population of the Giant tenebrionid beetle (*Polposipus herculeanus*) is slowly growing. There are now around 480 individuals at five institutions but the population remains at risk of collapse, so holders are encouraged to breed to their maximum capacity. Work to get the Studbook migrated onto Zoological Information Management Software (ZIMS) for Studbooks is ongoing, and options are being explored for new founding stock. There is potential interest in reintroduction work on the Mauritian islands, such as Round Island, where the species had previously occurred before going extinct.

In 2023, discussions started between the Zoological Society of London (ZSL, UK), Prague Zoo (Czechia), the Australian government and Melbourne Zoo (Australia) to work towards both European collections acquiring Lord Howe Island stick insects (*Dryococelus australis*). These institutions will take on the management of the EEP, as Bristol Zoo Project (UK) are exiting the programme. Work on Best Practice Guidelines (BPG) for the species is underway, with the aim to be completed in 2024.

The EEP population for the Seychelles giant millipede (*Sechelleptus seychellarum*) grew to 306 animals in nine institutions in 2023, with successful breeding at four institutions. There is continued interest in the species with multiple EAZA institutions enquiring about housing them. The aim is to continue to spread the population out across more institutions to mitigate colony collapses. The Long-term Management Plan (LTMP) is in progress and will be completed in 2024.

CONSERVATION AND RESEARCH

A total of 5,401 snails of nine different *Partula* taxa were released from EEP institutions in 2023, following the resumption of the reintroduction programme. The snails, which came from ZSL London and Whipsnade Zoos, Marwell Wildlife, Edinburgh Zoo and Bristol Zoo Project (all UK), were released into the wild in French Polynesia in April and September, along with 3,913 individuals from American colleagues from the Association of Zoos and Aquariums (AZA; USA). This brings the total number of released *Partula* to over 25,000.



Partula snail marked for the post-release monitoring © ZSL

North of England Zoological Society / Chester Zoo (referred to as 'Chester Zoo' in the rest of the report, UK) sent 3,000 lesser Bermuda land snails (*Poecilozonites circumfirmatus*) to Bermuda in May 2023. This is a continuation of the reintroduction work, scaling back on the greater Bermuda land snail (*P. bermudensis*) as that species is now breeding and expanding in at least five locations from reintroductions. Reintroduced lesser Bermuda land snails are yet to be confirmed breeding in the wild, so efforts are now focused on this species. Details of this and other work were published in an article in *Tentacle*, the newsletter of the IUCN Species Survival Commission (SSC) Mollusc Specialist Group (SG), titled "*Preventing extinction: the past decade of snail conservation at Chester Zoo*".

In addition, the fourth species of endemic Desertas Islands land snail (*Geomitra coronula*) was rescued from the wild and arrived at Chester Zoo in April 2023. From the 23 rescued specimens, the species quickly bred, and around 1,500 individuals are now living at the zoo. All four species (*Discula lyelliana*, *Atlantica calathoides*, *Geomitra grabhami* and *G. coronula*) are now being bred in increasingly large numbers. Health screening and marking studies are being undertaken in preparation for a first trial release of *D. lyelliana* and *G. coronula* on Bugio island (Portugal) later in 2024.

The team at Chester also made the first recordings of the drumming behaviour of the scarce yellow sally (*Isogenus nubecula*) in the population in human care. These behaviours are used by male stoneflies to attract females, and the specific pattern of vibrations can be used to distinguish species.

Copenhagen Zoo's (Denmark) programme for locally threatened saproxylic beetles has continued in 2023, with activities including surveys for *Lucanus cervus*, ex situ breeding and release of *Gnorimus nobilis* and *G. variabilis*, and the first breeding of *Osmoderma eremita* in this project. Chester Zoo also received a group of larvae of the European glow-worm (*Lampyrus noctiluca*) in 2023. Arguably one of the most charismatic European insects, this declining beetle, known for the fluorescence of females, has been the subject of local introductions in the UK from sites where it has previously been lost. Chester Zoo aims to support these efforts by breeding and rearing glow-worms for reintroduction.

2 FRESHWATER TELEOST

TAG Chair: Brian Zimmerman (Bristol Zoological Society, Bristol, United Kingdom) • Vice Chair: Anton Weissenbacher (Vienna Zoo, Vienna, Austria)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Freshwater Teleost TAG has a Steering Committee formed of each family-based EEP Coordinator and select members of the EAZA Executive Office (EEO). The Steering Committee meets regularly to discuss matters of common interest. Each EEP has its own membership comprised of individuals that carry knowledge and interest in the programme's taxa. In 2023, two new EEPs and Coordinators were approved: Becky Goodwin (Chester Zoo, UK) for the Goodeidae family EEP and Peter Peterson (Blue Planet Aquarium, UK) for the Cichlidae family EEP, bringing the total number of EEPs in the TAG to 11. Additionally, two new Veterinary Advisors were appointed to the TAG: Amanda Guthrie and Simon Spiro, both from ZSL (UK).

After a meeting of all stakeholders at the end of 2022, the Action Plan for the Conservation of Mexico's Goodeid Fishes 2023-2033 was developed following the principles of the IUCN One Plan Approach and published in October 2023. The action plan was launched during a webinar on 31 October 2023 that included representatives of its different stakeholders. The Goodeidae EEP forms the basis of the *ex situ* section of the action plan.

Brian Zimmerman (Bristol Zoological Society, UK) and Alex Cliffe (ZSL Whipsnade Zoo, UK) were awarded funding from the European Union of Aquarium Curators (EUAC) to conduct

fieldwork surveys in Lake Chichancanab in Mexico in 2024. The objective is to assess the status of seven endemic species of pupfish. The outcome of this study will help inform a possible reprioritisation of pupfish species with the Cyprinodontidae EEP.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The Goodeid EEP Coordinator completed the EAZA Academy Introduction to EEP management course and worked with EAZA Population biologists, Elmar Fienieg and Nora Hausen, to make a short-term plan for the management of the *ex situ* populations.

The Pupfish EEP is investigating the use of indoor/outdoor facilities by assessing the impact of various factors (such as seasonality, space, UV provisions, fecundity) on behaviour as well as monitoring mycobacteria. At ZSL Whipsnade Zoo, a pond is being built as an initial trial for Turkish killifish (*Aphanius mento*). Additionally, a successful translocation was undertaken of the Acigöl killifish (*A. transgrediens*) from Antalya Ministry aquaculture facility (F1) to Hacettepe University in Ankara (Turkey). The fish are in an isolated campus lake on site and will be assessed for adaptability and breeding success in the spring of 2024.

Since many Members of the EAZA community do not have a full overview of newly created EEPs and do not expect such programmes for fish, it is necessary to regularly review the animal keeping records and contact new holders directly. To raise awareness of our TAG, we published an article in Zooquaria 119 (Autumn 2023) which calls for institutions to become involved in keeping endangered freshwater fish.

COLLABORATIONS AND MEETINGS

Many TAG members attended a bespoke group management training course hosted online by Elmar Fienieg and Merel Zimmermann (both EEO). This useful course provided a good overview of considerations applicable to freshwater teleost management.

During the TAG meeting in Helsinki (Finland) in September, an online session was held with our American counterparts working on freshwater teleost conservation. Together we worked to develop a strategy for *ex situ* conservation on a global scale. The meeting was attended by Tim Lyons, director of the Conservation New Mexico Biopark Society and special Advisor for reintroductions and *ex situ* conservation with the IUCN SSC Freshwater Fish SG.

Chester Zoo established a connection with Manchester Metropolitan University (UK) for MSc student projects to be completed in the aquarium, with the first student due to start a project assessing mate selection in the butterfly splitfin (*Amea splendens*).

CONSERVATION AND RESEARCH

Markéta Rejlková (Ostrava Zoo, Czechia) and Charles Fusari (Aquarium Tropical de la Porte Dorée, France) worked jointly on a project 'Capacity building for conservation of



Students evaluating *Xiphophorus*' biotope for potential future reintroductions © Ana Laura Lara Rivera

threatened *Xiphophorus* species in northeastern Mexico' which is supported by EUAC. This project involved i) field work in several (former) biotopes of the species to evaluate the potential for future reintroduction, and ii) work in the laboratory of Universidad Autónoma de Nuevo León in Monterrey (Mexico) on the revision of technical equipment, collection plan, training of personnel and students etc. This cooperation continues. Furthermore, we are working on establishing the first *ex situ* population of two Extinct in the Wild poeciliids in their country of origin, Mexico: *Xiphophorus couchianus* and *X. meyeri*. Our Mexican partner, Acuario Inbursa, has joined the Poeciliidae EEP.

The Coordinator for the Cyprinodontidae EEP, Alex Cliffe, worked with key partners to develop a conservation action plan for three Extinct in the Wild Mexican pupfish. This will help towards funding opportunities for these species and action plans for *ex-* and *in situ* initiatives in Mexico. A suitability assessment of the native habitat for each of the three pupfish species was developed. Four main points were reviewed: macrohabitat suitability, water availability, water quality and logistical feasibility.

The Pupfish EEP Coordinator is working with the IUCN Green Status team on the assessment of the conservation actions, threats, species recovery trajectories and conservation impact indicators for the Acigöl killifish.

Research on the Chichancanab pupfish (*Cyprinodon simus*) is underway to investigate the mineral compositions due to ongoing challenges with breeding and general health concerns.

The Valenciidae EEP is working with teams in Greece and Spain to finetune methodology at the Bristol Zoological Society on the Greek killifish (*Valencia letourneuxi*) egg drying techniques. This study will inform future invasive species control measures in the field and will be rolled out to Turkish killifish at ZSL Whipsnade Zoo.

3 MARINE TELEOST

TAG Chair: Attila Varga (Sóstó Zoo, Nyíregyháza, Hungary)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Marine Teleosts TAG had a busy year in 2023, with the publication of its Regional Collection Plan (RCP), recommending the establishment of three EEPs for Long-snouted seahorse (*Hippocampus guttulatus*), Short-snouted seahorse (*H. hippocampus*) and Banggai cardinalfish (*Pterapogon kauderni*).

An online meeting was held in December to discuss the forthcoming actions needed in the EEP and MON-T species under the remit of the TAG. The Coordinators and species champions agreed to prepare a questionnaire about the present state of the populations, ongoing breeding activities and institutional interest in future breeding cooperations in European zoos and aquariums.



Humphead wrasse (*Cheilinus undulatus*) © Sóstó Zoo

After discussions during the EUAC and EAZA meetings, an online meeting was held in December to talk about 'Breeding and Acquisition.' Specifically, how to develop public acceptance and the sustainability of public aquariums and zoos by increasing breeding capacity and decreasing the wild animal acquisitions. Several interesting topics were brought up, such as the creation of breeding centres around Europe, sustainable transport methods of eggs and larvae, live food challenges, methods of spreading the offspring among participants, financial possibilities of such centres, and managing educational workshops connected to the topic. The next meeting is planned to be held in the first quarter of 2024.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The actual 2023 status in European collections of the bluestreak cleaner wrasse (*Labroides dimidiatus*), a MON-T species, was evaluated by Taissa Faust (Duisburg Zoo, Germany) using the ZIMS database. One of the aims was checking the gender distribution in the populations. Although the sex can be identified easily, most of the individuals are not checked or registered with their gender and only a few specimen breed. This also gives an overview of the present knowledge on husbandry issues and management of the species in human care. In 2024, the MON-T will focus on the implementation of individual recordkeeping, writing a husbandry manual and supporting the breeding efforts in EAZA and EUAC institutions.

COLLABORATIONS AND MEETINGS

In 2023, the Educational Working Group held several online meetings to develop the very first educational campaign of the TAG called "Marine Fish of the Year". The campaign will start in the first quarter of 2024 with the Banggai cardinalfish as focus. The group created several posters that can be edited / translated by the users themselves. All the educational

material is free to use for all interested zoos and aquariums. More information can be found in Zooquaria 121 (to be published in March 2024) and the material can be found on the Marine Teleost TAG section on the [EUAC website](#).

Another event called 'International Marine Fish Day' was proposed by the educators to encourage aquariums to celebrate and raise awareness together about marine species and their habitat through a flagship species on a specific day every year. The planned date is 6 August. The educational group is working on activities, posters, and other resources that will be available at the beginning of 2024.

4 ELASMOBRANCH

TAG Chair: Max Janse (Royal Burgers' Zoo, Arnhem, the Netherlands)

INTRODUCTION AND ACHIEVEMENTS

For the EAZA Elasmobranch TAG, 2023 was a year of rolling out the RCP. An increase in scientific and conservation activities and collaboration can also be reported for the different species programmes.

The European Studbook (ESB) for the Californian horn shark (*Heterodontus francisci*) is now an official EEP. As defined in the LTMP, this EEP was established to prohibit new wild caught individuals being transferred into the EAZA community. The Studbook was kept up to date so there is a good genetically stable population within our aquariums. There is however a big challenge because half of the Studbook individuals

are swimming in non-EAZA organisations which makes it challenging for the Coordinator to keep them all within the EEP. This issue will be faced by most programmes to be changed into new-style EEPs.

In 2023, a genetic study was conducted with the temperate water smoothhound *Mustelus* species complex, where two look alike species *Mustelus asterias* and *M. mustelus* are found within the *ex situ* population. Due to difficulties in morphological determination, 70% of the reported stock of both species in European aquariums were tested for the mitochondrial ND2 gene by an alternative sampling method via gill swabs. The results of this thesis study – a collaboration between the German Ocean Museum in Stralsund and the University of Rostock (Germany) - revealed that there were some misidentifications of *M. mustelus* in aquariums in Germany, Denmark, UK and France and that the species was only found in Spanish aquariums. The study included parental investigations of *M. asterias* bred in human care in Stralsund and SEA LIFE Berlin (Germany) with suitable results for genetically viable animal exchange within the EEP. It's a nice example of the importance of genetic research within the *ex situ* elasmobranch population.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Our RCP was published in 2022 with recommendations for 27 species to be managed at an EEP level (see last year's report for the detailed list). In 2023, the first EEPs were officialised and others are in the application stage. The EEP for the zebra shark (*Stegostoma tigrinum*) was the first new-style EEP officially approved.



A new-style EEP was approved for the Californian horn shark (*Heterodontus francisci*) © Alex Huiberse, Artis Zoo

COLLABORATIONS AND MEETINGS

Within the current ESB (soon to be changed into an EEP) of the Blackchin guitarfish (*Glaucostegus cemiculus*), extensive genetic research was conducted by Kirsti Ann Burnett in collaboration with the Leibniz Centre for Tropical Marine Research (Germany). The main goal was to determine the reference genome of this species, an extremely important resource for managing the conservation of threatened species. This is currently done for less than 1% of all elasmobranch species. Part of the *ex situ* population was sampled and a reference genome was formed. Inbreeding and low genetic diversity are major risks in all *ex situ* breeding programmes, and the analysis of these parameters requires high-quality reference genomes. This new information will allow genetic diversity to be preserved in the blackchin guitarfish population. Within the same study it was found that *G. cemiculus* belongs to a monophyletic family group, sister to the sawfishes (Pristidae), and further suggested that the order Rhinopristiformes consists of six monophyletic family groups.

The TAG will continue to work towards the connections with the IUCN SSC Shark Specialist Group (SSG). Two representatives from EAZA are members of the Northern-European IUCN SSG and the IUCN SSG Public Aquarium Working Group. By establishing further connections with members of the IUCN SSG, the TAG will look for potential *ex situ* conservation needs and actions and will also increase the collaboration with *in situ* conservation initiatives. The IUCN SSG Public Aquarium Working Group has defined their current goals as:

- Develop a Position Statement for IUCN SSG on the role of zoos/aquariums in elasmobranch conservation
- Compile aquarium life history information for threatened (IUCN red listed) elasmobranch species to inform conservation action, with a focus on sawfish, wedge fishes, and freshwater stingrays
- Develop an IUCN SSG Position Statement on *ex situ* elasmobranch release, rescue, and reintroduction based on the IUCN One Plan Approach
- Develop IUCN SSG messaging and graphics on elasmobranch conservation for zoo/aquarium exhibits, outreach, and education programmes

A conservation planning workshop on the Critically Endangered bowmouth guitar fish (*Rhina ancylostoma*) was held in Shedd Aquarium Chicago (USA) on 14-16 November. Two representatives from the TAG including the MON-T Coordinator of the species attended the workshop. An outcome report will be published in 2024.

CONSERVATION AND RESEARCH

A small working group on the Critically Endangered short tailed nurses shark (*Pseudoginglymostoma brevicaudatum*), which is also an EEP species, was formed to discuss the potential of *in situ* conservation work in eastern Africa. The first meetings explored potential partners and discussed how the *ex situ* population might possibly help the *in situ* population. Genetic research is first needed on the EEP specimens to know the paternity and genetic variability. This will be conducted in 2024.

5 CORAL

Due to the current lack of Chair and Vice Chair in the EAZA Coral TAG, no report was submitted by the TAG for 2023.

6 JELLYFISH

TAG Chair: Hugo Batista (Oceanário de Lisboa, Lisboa, Portugal)

INTRODUCTION AND ACHIEVEMENTS

In 2023, the EAZA Jellyfish TAG continued its invaluable work of sharing information upon request regarding the care and production of various jellyfish species via the database present on the website www.jellyfishtag.com. These requests have been increasing every year.

Additionally, we played a crucial role in assisting different institutions in acquiring polyps and surplus specimens.

COLLABORATIONS AND MEETINGS

In May, the Jellyfish TAG participated in the Regional Aquatics Workshop held at the National Mississippi River Museum and Aquarium in Dubuque (USA). During the event, there was a specific focus on seeking updates regarding the TAG's accomplishments and collaborative efforts. In addition to networking opportunities, the attendees shared experiences to enhance the TAG's operations and explore innovative approaches. One exciting proposal discussed was the potential development of a European Jellyfish Camp, highlighting the ongoing commitment to advancing knowledge and collaboration within the jellyfish community.



White-spotted jellyfish (*Phyllorhiza punctata*) © Hugo Batista

7 AMPHIBIAN

TAG Chair: Gerardo Garcia (Chester Zoo, Chester, United Kingdom) • **Vice Chairs:** Olivier Marquis (Paris Zoo, Paris, France) and Benjamin Tapley (ZSL London Zoo and Whipsnade Zoo, London, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

The core membership of the EAZA Amphibian TAG (ATAG) increased with several new EEP Coordinators joining. We welcomed Carlos Barros (Oceanogràfic Valencia, Spain), Tristan Ningler (Thoiry Zoo, France) and Laure Garrigues (Amiens Zoo, France). Jemma Dias (Colchester Zoo, UK) also joined the ATAG as an Education Advisor.

Many breeding achievements took place in 2023. Chester Zoo (UK) successfully bred the Imbabura tree frog (*Boana picturata*) for the first time in EAZA. This success will not only secure the future of the species within EAZA collections but also enabled the team to gain experience that could be applied to other threatened amphibians in the future.

Cologne Zoo (Germany) bred 14 species of amphibian, seven of which are threatened with extinction.

Münster Zoo (Germany) opened their Conservation Campus where the Mallorcan midwife toad (*Alytes muletensis*) is exhibited in collaboration with Citizen Conservation (Germany). The Zoo is also developing a breeding centre for local fire salamanders (*Salamandra salamandra*).

Zürich Zoo (Switzerland) bred five anuran species including the Vicente's poison frog (*Oophaga vicentei*) for the first time and the Sambava tomato frog (*Dyscophus guineti*).

Several mountain chicken frog (*Leptodactylus fallax*) transfers took place to enable the creation of genetically valuable pairs, and successful nesting occurred in the biosecure groups at Nordens Ark (Sweden) and ZSL London Zoo (UK).

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

An RCP for dendrobatid frogs was published. The BPG for the Lake Oku frog (*Xenopus longipes*) were updated. EEP programmes were established for the Kurdistan newts (*Neurergus* sp.), the Sharp-ribbed salamander (*Pleurodeles waltl*) and the Fire salamander. They are coordinated by Thoiry Zoo, Oceanogràfic Valencia and Amiens Zoo, respectively.

The ESB for the Lemur leaf frog (*Agalychnis lemur*) was elevated to an EEP and is coordinated by Nordens Ark. A research project was developed by Gonçalo M. Rosa (ZSL London Zoo) aiming to restore the wild populations of lemur frogs in Costa Rica and Panama. This project includes both *in situ* and *ex situ* initiatives with the involvement of EAZA institutions and the EEP.

Monica Alonso (Torreferrusa breeding centre in Catalonia, Spain) visited Chester Zoo in support of the BPG for the Montseny brook newt (*Calotriton arnoldi*). The guidelines are expected to be published in 2024.

COLLABORATIONS AND MEETINGS

In 2023, staff from Chester Zoo, ZSL London Zoo, Jersey Zoo



A smooth-skinned warted treefrog (*Theloderma lycin*) bred at Cologne Zoo © Anna Rauhaus

(UK), Nordens Ark and Riga Zoo (Latvia) with partners from the Montserrat National Trust, Wild Dominique and Dominica's Forestry, Wildlife and Parks Division, participated in the first full population survey of Dominica's remaining mountain chickens - the last fully wild population of this species. The survey resulted in a more accurate and up-to-date estimate of the species' population size (roughly 30 individuals) and range, providing vital data to steer conservation action.

Jersey Zoo collaborated with Instituto Biotropicos (Brazil) researching conservation needs for spiny thumb frogs (*Crossodactylus* spp.). They also provided technical assistance in Bolivia and fundraising advice to the Bolivian Amphibian Initiative for community engagement work and field research on harlequin toads (*Atelopus* spp.).

Chester Zoo received Malagasy researcher Raphali Andriatsimanarilafy on two occasions. These visits enabled knowledge exchange with the amphibian team, and contributed towards his PhD project, which the zoo supports, on the Endangered harlequin mantella (*Mantella cowanii*).

Paris Zoo (France) is also collaborating with Illinois University (USA) regarding a population genetics PhD on the harlequin mantella in Madagascar.

ZSL London Zoo organised a conservation action plan workshop for Chinese giant salamanders (*Andrias davidianus*) in collaboration with Green Camel Bell (China) and the Chinese Academy of Science. It was attended by 32 delegates representing a variety of different stakeholder groups.

CONSERVATION AND RESEARCH

Supported by Chester Zoo, Plymouth University (UK) and the University of Michoacan (Mexico), Pablo Lechuga started his PhD on the genetics of captive and wild Lake Patzcuaro salamanders (*Ambystoma dumerilii*). Using samples from Chester Zoo, he will evaluate possible application of the use of eDNA with the species. His work supports the EEP directly. In Mexico, animals were released back into the wild after the experimental period of last year, when they were released in a pond within the lake. A collaborative publication investigating and quantifying morphological differences between wild and captive salamanders, showed that captive salamanders develop a different body shape to their wild counterparts. Cologne Zoo released 173 young European green toads (*Bufo viridis*) into the wild in support of the city's green toad population. The zoo in partnership with the Institute of Genome Research in Hanoi received funding for a project to sequence the unusually large and complex genome of the Vietnamese crocodile newt (*Tylototriton vietnamensis*). They also supervised a BSc thesis on gaps in the protection of amphibians in Myanmar, an MSc thesis on the vertebrates maintained in EAZA zoos in relation to the Vietnamizing campaign and an MSc on the reptiles and amphibians of Ethiopia.

Jersey Zoo supported a PhD study into phylogenetics of amphibians, and completed a third population survey for two Critically Endangered frog species in Ambohitantely National Park (Madagascar). Jersey Zoo's annual head-starting project for Jersey agile frogs (*Rana dalmatina*) saw 3,762 tadpoles released, bringing the total number to 70,204 since 2008.

ZSL London Zoo supported EDGE Fellows working on rock toads (*Bufoides* sp.) resulting in the description of a new species, the Atewa slippery frog (*Conraua sagyimase*), and continued to support and coordinate a long-term project on threatened amphibians in northern Vietnam in collaboration with Indo-Myanmar Conservation.

Münster Zoo started a PhD on monitoring the amphibian pathogen *Batrachochytrium salamandrivorans*.

Nordens Ark and the county administrative board of Kalmar have been undertaking post release monitoring of the green toad population on Öland. In 2023, they recorded the most individuals observed since the species became locally extinct in the late 90s.

Paris Zoo are co-supervising a veterinary thesis on the effect of environmental enrichment on aquatic caudata welfare.

Zürich Zoo continued to support ongoing reintroductions of 118 juvenile Critically Endangered Lehmann's poison frogs (*Oophaga lehmanni*) in partnership with Cali Zoo and WCS Colombia to an extirpated and newly established protected area in Valle del Cauca.

Members of the Amphibian TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

8 REPTILE

TAG Chair: Ivan Reháč (Prague Zoo, Prague, Czechia) • **Vice Chairs:** Ivan Cizelj (Zagreb Zoo, Zagreb, Croatia), Matt Goetz (Jersey Zoo, Jersey, United Kingdom), Fabian Schmidt (Basel Zoo, Basel, Switzerland) and Guido Westhoff (Hagenbeck Zoo, Hamburg, Germany)

INTRODUCTION AND ACHIEVEMENTS

In 2023, the EAZA Reptile TAG (RTAG) consisted of 40 members and three Advisors. It maintained 31 EEPs and 10 ESBs, with a wide geographical representation of participated zoos. Approximately 12,000 species fall under the remit of this TAG.

The year 2023 was significant in terms of capacity expansion for reptile species prioritised in the relevant RCPs. Nordens Ark (Sweden) launched the project "On the edge of extinction - an Ark for the world's turtles" and opened a unique breeding centre where some of the world's most vulnerable species can find refuge and reproduce for future releases. Münster Zoo (Germany) opened the Conservation Campus, a new area showing conservation efforts for endangered reptile species that are rare in zoos. Jersey Zoo (UK) ran their "Tortoise Takeover" art trail with 50 life-sized tortoise sculptures painted by local and international artists to raise funds to build their new reptile/amphibian house.

In 2023, the reproduction of some species very difficult to breed in human care was achieved for the first time in the history of EAZA, such as *Crocodilurus amazonicus* in Vienna Zoo (Austria), *Lophosaurus dilophus* in Plzeň Zoo (Czechia) and *Manouria emys* in Prague Zoo (Czechia). ZSL London Zoo (UK) achieved the third successful breeding of Critically Endangered *Platysternon megacephalum*. The number of reared reptiles in some zoos in 2023 is considerable: e.g. 335 hatchlings of 41 species hatched in Prague Zoo and 243 hatchlings of 28 species in Cologne Zoo (Germany).

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

In 2023, the Reptile TAG underwent its evaluation. According to its results, the TAG functions well, but the fruitful discussion suggested possibilities to further improve its work.

Significant progress was made in the development of reptile population management in EAZA during the year. The RCP for Lizards was approved by the EEP Committee (see the new EEPs established in the document available on the EAZA Member Area) and the RCP workshop for Snakes was successfully held.

The *Testudo kleinmanni* EEP published its LTMP, issued its Studbook and formed a Species Committee.

The EEP for *Aldabrachelys gigantea* published historical, demographic and genetic analyses of its population and organised a workshop for the husbandry of the species in Biotropica (France).

The *Orlitia borneensis* EEP formed a Species Committee and also carried out a detailed population analysis. The results,

together with contributions aimed at the breeding of this species, were presented during the two RTAG meetings held last year.

The BPG for *Iguana delicatissima* were published.

Münster Zoo has included two of their species, *Cuora cyclornata* and *Thamnophis s. tetrataenia*, into Citizen Conservation (Germany) population management.

Through the active management of *Lacerta viridis*, freely occurring on the territory of the zoo, Prague Zoo has achieved, as shown by repeated monitoring, an increase in abundance (over 2-fold) over the past five years.

COLLABORATIONS AND MEETINGS

The RTAG cooperated with partners from other regional zoo associations, continued to develop a close cooperation with the IUCN SGs and participated in projects with external partners.

For example:

- Jersey Zoo is collaborating with the IUCN Iguana SG and local partners of Lesser Antillean islands in conservation actions for Lesser Antillean iguana species; with Cardiff University (UK) on genetics of Mauritian skink and gecko species as well as Saint Lucia iguanas; with the Anguilla National Trust on Lesser Antillean iguana and other native reptile species translocation programmes on Anguilla (UK)
- ZSL London Zoo is supporting an EDGE Fellow working to conserve *Bitis worthingtoni* in Kenya, populations are being estimated using mark release recapture. They collaborated with the Asian Turtle Programme for the description of a new *Rhabdophis* species from the Hoang Lien Range in northwest Vietnam as well as in the rehabilitation and rescue of *Platysternon megacephalum* seized from the illegal wildlife trade. Together with geneticists from the Vietnam National University, University of Science, they analysed the largest number of genetic samples from the species to date which corroborated the hypothesis that only two of the three currently recognised subspecies have strong molecular support and that there is much greater genetic structuring within one subspecies than was previously reported

In addition to the joint mid-year meeting with the EAZA Amphibian TAG and the TAG annual meeting during the EAZA Annual Conference, other meetings and workshops were organised in relation with respective management programmes, e.g. Drayton Manor Park (UK) hosted the fifth conference jointly organised with the British Herpetological Society and Advancing Herpetological Husbandry. The theme "innovations" attracted speakers and delegates from several countries representing zoos, private keepers, vets, researchers, students and the reptile legal trade.

A practical training session on crocodile capture and constraint for zoo staff was held in Zoo de Guyane (France).

CONSERVATION AND RESEARCH

Some of our EEPs have significant research and conservation components. For example:

- Münster Zoo reintroduced *Indotestudo elongata* and *Cuora amboinensis* into the wild



The year 2023 marked the centenary of the continuous care of Aldabra giant tortoises (*Aldabrachelys gigantea*) in European zoos
© Petr Velenský, Prague Zoo

- In the summer, the second release into the wild of current natural brood of *Crocodylus mindorensis* that hatched in Cologne Zoo took place. The EEP Coordinator was invited to speak at the third Forum on Crocodiles in the Philippines, which was attended not only by local researchers and conservationists, but also from Australia, Indonesia, Malaysia and the USA
- Auckland Zoo's (New Zealand) remaining Critically Endangered skinks *Oligosoma salmo* were released into the newly-created predator-fenced habitat, the 'Kapitia Scientific Reserve', north of Hokitika, on the west coast of New Zealand's South Island. The zoo also has been a key player in a challenging multi-disciplinary and multi-partner collaboration to survey and assess risks to survival of gecko *Woodworthia korowai*, a local endemic species restricted to one short stretch of west Auckland coastline, particularly from introduced mammalian predators
- Jersey Zoo continued its field programmes for reptiles in Madagascar (three chelonian species), Mauritius (reptile species translocations on and ecological restorations of offshore islands), Montserrat (native iguana monitoring), and Saint Lucia (native iguana monitoring; as well as breeding in human care project of in-country *Erythrolamprus ornatus* and research on conservation aspects and the genetics of taht species for a PhD thesis)
- Paris Zoo (France) ended the project of radiotracking of *Coralus hortulana* in French Guiana which allowed the collection of data about habitat use and thermoregulation behaviour. In collaboration with the Caméléons Center Conservation (Switzerland), the zoo continues to collect microclimatic parameters for 12 species of chameleons in the Vohimana reserve (Madagascar). They also participate in the survey of a *Paleosuchus trigonatus* population in Les (French Guiana)

ADDITIONAL COMMENTS

Members of the RTAG were involved in a number of publications issued in 2023 (see [Annex document](#)), supervised several student theses, worked in the editorial boards of scientific journals and gave lectures at scientific conferences.

9 RATITE

TAG Chair: Joost Lammers (Avifauna Birdpark, Alphen aan den Rijn, the Netherlands) • Vice Chair: Zoe Sweetman (Chester Zoo, Chester, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Ratite TAG encompasses all species of *Palaeognath* birds. This includes ostriches, rheas, cassowaries, emus, kiwis and tinamous. Since its establishment in 2008, the TAG's mission has been to facilitate management of ratites and tinamous in human care in the EAZA region and participate in and support relevant conservation efforts.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Kathleen Brader (Smithsonian National Zoo and Conservation Biology Institute - SCBI, USA) retired in October and as such had to give up her position as Studbook keeper for the Brown kiwi (*Apteryx mantelli*) Species Survival Plan (SSP). Since the EAZA population is also managed under the umbrella of the SSP, we are very thankful for all the time spent and efforts Kathleen deployed for kiwis and she will be missed. Wesley Bailey from SCBI has expressed interest in taking over. EAZA zoos with breeding results in brown kiwis in 2023 have been Avifauna Birdpark (the Netherlands) and Frankfurt Zoo (Germany).

The RCP workshop schedule for the Ratite TAG, initially scheduled for 2023, was postponed to June 2024. During this hybrid one-day workshop, hosted by the EEO, we will be developing an RCP in the intended new format of the proposed new EAZA population management structure. We are the last bird TAG to go through the process.

COLLABORATIONS AND MEETINGS

On 26 April, the Ratite TAG held a meeting during the mid-year Bird TAG meeting in Alpenzoo Innsbruck (Austria). Stephan Rijnen (Dierenrijk, the Netherlands) introduced himself to the EAZA community as new Coordinator for the Lesser rhea ESB and briefly presented his ideas for the coming years with the species. Zoe Sweetman (Chester Zoo, UK) talked about the research project, undertaken as part of her Master's, on improving *ex situ* conservation breeding management of southern cassowaries (*Casuarus casuarus*).

CONSERVATION AND RESEARCH

Zoe Sweetman's research project aims to comprehend the breeding mechanisms of southern cassowaries to not only understand the species behaviour better but to also aid keepers in identifying breeding behaviour cues. The research has been focusing on four main areas:

- Make a detailed description of the behavioural context prior, during and after courtship and mating of southern cassowaries, closely documenting the behavioural cues that may facilitate mixing
- Document and analyse the species' vocalisations (both male and female) in relation to breeding
- Analyse faecal reproductive hormone concentrations across a number of breeding and non-breeding male and female individuals

- Synthesise current husbandry and management of southern cassowary across EAZA holders

To achieve this, recording equipment was sent to three organisations to study the behaviours and vocalisations of the birds: Avifauna Birdpark, Birdland (UK) and Chester Zoo.

The data has been analysed and is currently under review. Vocalisations for the southern cassowary have not been identified or described before, particularly the role they play in courtship behaviour, making this a new area of research. A fantastic response was seen from EEP holders for both the questionnaire and the endocrinology study. Twenty-four organisations responded to the questionnaire, detailing their husbandry, management and personality type of their birds to identify patterns that may lead to breeding success. Seven organisations contributed to the hormone analysis and sent faecal samples from their birds throughout the year. Seasonal hormone changes have not been measured in this species before. Therefore, this contribution has given a unique insight into how southern cassowary hormone levels change throughout the year.

Completion of this work will occur in 2024 and the data shared with all holders. It will also feed into the BPG to help improve husbandry and welfare for this species.



Female southern cassowary (*Casuarus casuarus*) © Avifauna Birdpark

10 PENGUIN

Chair: Pierre de Wit (Wildlands Emmen, Emmen, the Netherlands) • **Vice Chair:** Craig Allum (Selwo Marina, Málaga, Spain)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Penguin TAG was evaluated in 2023. It was determined that the TAG and the penguin programmes are functioning well. The RCP process was rather smooth. EEPs were established and LTMPs completed.

A strong push is however needed to publish BPGs and to complete the follow up steps captured in the RCP. The TAG currently operates rather isolated from the other bird TAGs. It was felt that we could benefit from having more frequent meetings during the mid-year Bird TAG meeting to streamline discussions about research opportunities, veterinary issues, etc.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The EEP population for African penguin (*Spheniscus demersus*) saw a slow increase in numbers (from 2,200 to 2,250 birds). A new Species Committee was elected, comprising 11 members from across Europe. At the end of 2023, the preparation of the new LTMP was started with colleagues from the EEO and

the Coordinator; the third session was held together with the new Species Committee. This LTMP will be published early 2024.

For the recently established Magellanic penguin (*Spheniscus magellanicus*) EEP, a Studbook was created to manage the population more carefully and according to the roles set for the programme.

The population of Humboldt penguin (*Spheniscus humboldti*) remained stable at 2,529 individuals. The LTMP for the species was published in November 2023, giving guidance on how to manage the population over the coming years to achieve the roles set for the programme (e.g. insurance, fund-raising).

The overall population of Gentoo penguins (*Pygoscelis papua*) saw a small increase (+ 25 birds) compared to the previous year. The population of *P.p. ellsworthi* and *P.p. papua* remained the same (48 and 191 birds respectively), while the generic Gentoo penguin (*P. papua*) population saw a slight rise to 655. Overall, the population is still female heavy, which has been the case for over 10 years.

The population of King penguins (*Aptenodytes patagonicus*) slowly increased to 327 birds. There is a lot of space and a high demand for individuals and larger colonies, so breeding



King penguin (*Aptenodytes patagonicus*) with chick © Vienna Zoo

continues to be an important goal. In 2023, nine institutions bred the species.

It was a good year for Northern rockhopper penguins (*Eudyptes moseleyi*) with an increased population (147 birds), while the populations of the Southern (*E. chrysocome*) and Eastern (*E. chrysocome filholi*) rockhopper penguins remained stable (79 and 37 birds, respectively).

COLLABORATIONS AND MEETINGS

In 2023, the Penguin TAG was again in close contact with the Zoo and Aquarium Association (ZAA) in Australasia regarding the possibility of importing little penguins (*Eudyptula minor*) in the future. Currently, there is one colony of the species in a non-EAZA facility in the UK.

CONSERVATION AND RESEARCH

As stated in previous annual reports, the Penguin TAG does not directly support conservation work but highlights the work of its members. In this context, it encourages the holders to educate the public about the status of penguins, the threats specific species and penguins in general face, the need for conservation actions whilst asking the question “How can we help?”.

In the African penguin EEP, many participants continued sponsoring the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB). The results of an ongoing research project about moult of African penguins were shared with the holders as well as SANCCOB.

The LTMP for Gentoo penguin published in 2021 states that no direct conservation roles were selected for this EEP during the RCP as the species is listed as Least Concern on the IUCN Red List (Birdlife International 2020). Recently, a paper suggested that the Gentoo penguin should be split into four different species based on ecological, morphological and molecular data. This might impact on the earlier decisions made for this programme.

Institutions holding penguins are encouraged to continue using them as a flagship species to raise awareness for more endangered species of penguins and to educate the public about the health of our oceans and the effects of climate change.

11 CICONIIFORMES AND PHOENICOPTERIFORMES

TAG Chair: Catherine King (Lagos Zoo, Lagos, Portugal) • Vice Chair: Andrea Bračko (Zagreb Zoo, Zagreb, Croatia)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Ciconiiformes and Phoenicopteriformes TAG includes 24 members and nine Advisors. During 2023, the EEP Coordinator for the Northern bald ibis (*Geronticus eremita*), Christiane Böhm, retired after 29 years of dedication to this programme. Juliana Pokorny, also employed by Alpenzoo Innsbruck (Austria), has taken on this challenging EEP. Marcin

Chrapowicki (Warsaw Zoo, Poland) has become Studbook keeper for the Black stork (*Ciconia nigra*). Fabia Wyss (Basel Zoo, Switzerland), who studied pododermatitis in flamingos for her PhD, has become a Veterinarian Advisor to the TAG.

The most important achievement this year was the RCP workshop and resulting publication, which is still being finalised. Sixteen people, including 12 TAG members, two population biologists, our TAG liaison from the EEO, and our Nutrition Advisor gathered in Alpenzoo in April. The Chairs of the IUCN SSC Stork, Ibis and Spoonbill SG and the IUCN SSC Heron SG as well as the representative of ALPZA joined us online. Of the 137 species covered by the TAG, 45 were discussed individually, resulting in a proposal for 21 EEPs, including four for multiple species. Eleven EEPs were already managed as an EEP or ESB, including the Southern bald ibis (*Geronticus calvus*) which was already established as a new-style EEP in 2021, and two programmes that are now merged into one combined EEP. More general Indirect Conservation – Conservation Education role and/or a Non-conservation – Exhibit role were identified for a number of Least Concerned species. The Conservation Education role focuses on using the species to raise awareness for the need for wetland conservation, and the important roles wetlands play in ecosystems. Some species were assigned a Non-conservation – Exhibit role to ensure there is a geographic representative of the different families that can easily be mixed in geographically themed aviaries and to educate the public about the general biology (e.g. the different bill shapes and usage, colony breeders).

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Some species selected for EEPs have quite large populations, making traditional management (i.e. maintaining a Studbook and preparing recommendations for individuals) unnecessary and overly arduous. Therefore, together with EEO population biologists, we are exploring group management options that can be finalised as the LTMPs are developed.

Zlín-Lešná Zoo (Czechia) manages the ESB for the Lesser adjutant stork (*Leptoptilos javanicus*), but is now the only European zoo keeping it, as the population has dwindled. A pair imported from Indonesia in 2017 laid the first clutch of unfertilised eggs in 2021. A chick hatched in 2022, but the parents did not care for it. It was initially reared by a pair of maguari storks (*Ciconia maguari*) but later had to be removed for hand-rearing. Three fertilised eggs were laid in 2023 and two chicks hatched. They were transported to Prague Zoo (Czechia) to be reared by a proven pair of marabou storks (*Leptoptilos crumeniferus*). The older chick was put in the nest in the morning, and the younger one in the afternoon to ensure both were accepted for the first five days. Thereafter, they were left together all the time. The chicks were regularly weighed and received supplementary feeding for the first two weeks to ensure that both were growing well. They were then reared entirely by the foster parents and returned to Zlín-Lešná Zoo at three months of age when fully independent. Such examples of interzoo cooperation and creative foster-rearing are important to have as species become increasingly



Marabou (*Leptoptilos crumeniferus*) with lesser adjutant foster chicks (*Leptoptilos javanicus*) © Antoin Vaidl, Prague Zoo

threatened and dependent on *ex situ* programmes.

COLLABORATIONS AND MEETINGS

The two 2023 TAG meetings had a number of presentations demonstrating experiences and practices in addressing husbandry and other management problems.

At the April mid-year meeting in Innsbruck, Luke Forster (Blackpool Zoo, UK) presented an instructional video on providing nesting opportunities for African spoonbill (*Platalea alba*). The TAG would like to compile a library of many such videos, to help zoos refine husbandry practices.

Two talks on reintroduction projects were also given. Richard Wardle (Cotswold Wildlife Park, UK) gave an interesting perspective on management of the white storks (*Ciconia ciconia*) to be released in the UK. Johannes Fritz (Waldrappteam, Austria) talked about developments in the European LIFE Northern Bald Ibis Project as migration of the reintroduced European population seems to be influenced by rising temperatures.

The TAG conferred with the EAZA Animal Training Working Group bird specialists, Jim Mackie (ZSL London Zoo, UK) and

Henrik Futtrup (Copenhagen Zoo, Denmark) regarding topics to present in their excellent workshop given.

These two trainers also held a useful workshop specifically for management of northern bald ibis at the EAZA Annual Conference, prioritising topics selected by holders of this species. During the TAG meeting in September, Jim Mackie also gave an instructive presentation on marabou stork husbandry training, as this intelligent but sometimes aggressive large stork can be challenging to work with and is a good example for other such species. The meeting also saw two helpful presentations on managing large aviaries in the Netherlands by Emile Prins about the flamingos in GaiaZoo and Stephan Rijnen about a mixed waterbird aviary at Dierenrijk. Useful experiences at Mandai Wildlife Reserves (Singapore) with two common flamingo issues were also shared: Anaïs Tritto shared their method for transporting flamingos from one location to another, and Trent Van Zanten gave an update on practices in managing pododermatitis and renal disease. Additionally, the TAG organised a side meeting with experts to discuss how EAZA should proceed in further researching flamingo pododermatitis management.

CONSERVATION AND RESEARCH

The TAG encourages participation of EAZA zoos in conservation of greater adjutant storks (*Leptoptilos dubius*) in Assam, India. Wilhelma Zoo (Germany) provided €30,000 in 2023 to support multiple aspects of this conservation programme led by Purnima Barman in the three adjacent villages where approximately 250 pairs of these storks (half the world's breeding population) nest. Construction of nesting platforms, rescue and rehabilitation of chicks that fell from nests or were otherwise injured, as well as salaries of several interns doing community-based conservation education were funded. The grassroots-women-based "Hargila Army" was supported with funds for livelihood items, hygienic education and yarn donations so that these women can achieve some financial independence. Beauval Zoo (France) also supported nest platform construction in 2023.

As part of the continued support of EAZA to the Royal Society for the Protection of Nature (RSPN) Captive Breeding Centre for the Critically Endangered white-bellied heron (*Ardea insignis*), avian veterinarian Helena Vaidlova (Prague Zoo, Czechia) traveled to Bhutan in 2023 to help three hand-reared chicks suffering from metabolic bone disease. Two of the chicks were surgically treated but the bone deformations were too severe to resolve, and none of the chicks survived. Helena Vaidlova provided training for the staff on why this problem occurs, measures to avoid it in the future, and on hand-rearing of herons more generally.

12 WATERFOWL AND PELECANIFORMES

No report was submitted by the EAZA Waterfowl and Pelecaniformes TAG for 2023.

13 RAPTOR

TAG Chair: Jan Hanel (Liberec Zoo, Liberec, Czechia) •
Vice Chair: Dominik Fischer (Wuppertal Zoo, Wuppertal, Germany)

INTRODUCTION AND ACHIEVEMENTS

Since October 2023, the EAZA Raptor TAG welcomed new members. Our great TAG Chair Kirsi Pinnönen-Oudman (Helsinki Zoo, Finland) retired, and she has been replaced by Jan Hanel (Liberec Zoo, Czechia). A Vice Chair position was added to the TAG for which Dominik Fischer (Wuppertal Zoo, Germany) was elected. The TAG continued to operate with five subgroup leaders: Jan Hanel for Hawks and Eagles; Joost Lammers (Avifauna Birdpark, the Netherlands) and Vaclav Straub (Zlín-Lešná Zoo, Czechia) for Vultures; Ville Vepsäläinen (Helsinki Zoo) replaced Kirsi Pinnönen-Oudman for Owls; and Graeme Dick (Durrel Wildlife Conservation Trust, UK) for Falcons. The TAG created a new position of Scientific Advisor for which Alessandro Di Marzio (Riga Zoo, Latvia) stepped up.

In 2023, the TAG successfully maintained the continuity of its work despite the changes in its membership.

The Raptor TAG is supporting the fight against the ongoing African vulture crisis. As per the RCP for Vultures, our work focused on improving the management of the EEPs for African vultures. In order to boost the EEP populations for Rüppell's vulture (*Gyps rueppelli*) and White-headed vulture (*Gyps africanus*), double clutching was performed in several Dutch zoos. Eggs were collected and artificially incubated in Rotterdam Zoo (the Netherlands). This collaboration resulted in three white-headed vulture and 10 Rüppell's vulture chicks reared or foster-reared in four Dutch zoos: a tremendous success and a major boost for those two EEPs! Details on this project were presented during the Raptor TAG meeting at the EAZA Annual Conference.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Vultures

Marleen Huyghe (Planckendael Zoo, Belgium) retired in 2023. She has been a huge inspiration to the TAG and others regarding her work as EEP Coordinator for the Cinereous vulture (*Aegypius monachus*) and the conservation efforts deployed for the species. She will continue working with the Vulture Conservation Foundation (VCF) but her colleague in Planckendael Zoo, Frédéric Verstappen, is replacing her as EEP Coordinator. One of her last important tasks in this role was the production of the BPG for the species, that were published in 2023 and are publicly available on the EAZA website.

The LTMP for the White-headed vulture EEP was also produced.

The three *Gyps* species EEP Coordinators started as a joint effort the process of writing the first BPG for the *Gyps* species. The publication is expected in 2024.

Darwin Ruiz (Breeding Centre for Endangered Arabian Wildlife, UAE) took over the EEP for the Lappet-faced vulture (*Torgos tracheliotos*). Nicolas Lefrique (Beauval Zoo, France) took over the EEP for the Andean condor (*Vultur gryphus*). Andreia Pinto (Lourosa Bird Park, Portugal) was approved as Coordinator of the new-style EEP for the King vulture (*Sarcoramphus papa*).

Hawks and Eagles

Graeme Dick was approved as a new Coordinator for the new-style White-tailed sea eagle EEP.

The Raptor TAG also established good cooperation with the Philippine Eagle Foundation (Philippines) and aims to help improve the breeding in human care of the Critically Endangered Philippine eagle (*Pithecophaga jefferyi*). Concrete actions are planned for 2024, such as a workshop for keepers



Rüppell's vultures (*Gyps rueppelli*): adults and chick successfully reared in Zlín-Lešná Zoo © Vaclav Straub



White-headed vulture (*Gyps africanus*) chicks successfully reared in Avifauna Birdpark © Joost Lammers

in EAZA zoos, assistance with artificial insemination, semen freezing, etc.

Owls

The LTMP for the Snowy owl EEP was published in Spring 2023 and Educational Materials for Snowy owl holders were published in autumn and distributed to all holders.

The EEP Committee approved two new programmes and Coordinators: Matt Hartley (Supported by Yorkshire Wildlife Park, UK) is now coordinating the Chaco owl EEP and Rebecca Loiseleur (Parc Animalier de Sainte-Croix, France) is coordinating the Ural owl EEP. Both programmes have clear conservation roles.

COLLABORATIONS AND MEETINGS

In 2023, the Raptor TAG meeting was held during the EAZA Annual Conference. Former TAG Chair Kirsi Pinnõnen-Oudman was thanked for her work. In addition to the introduction of the new TAG structure, there was a disturbing online presentation about the worrying situation of the laggar falcons (*Falco lugger*) in India by Bob Dalton (Project Lugger, UK) who has been working for many years on improving the situation. Jayson Ibanez (Philippine Eagle Foundation) then talked about the conservation efforts and the breeding project in human care for the most endangered eagle species in the world. Information about ongoing research on the secretary bird (*Sagittarius serpentarius*) population in human care was also presented. Finally, there were two practical topics. A summary on the West Nile and Avian Flu viruses' impact on wild and captive populations of birds of prey was presented by the TAG Vice Chair and Veterinary Advisor Dominik Fischer. Joost Lammers talked about the efficient cooperation between Dutch zoos on the methods for boosting the breeding success of Rüppell's and white-headed vultures.

CONSERVATION AND RESEARCH

For European vultures, too many conservation (education) and release projects are ongoing to mention them all in this report. So we focused on one species here. For the Bearded

vulture EEP, it has truly been a remarkably successful breeding year: we have managed to surpass the 30-chick per year mark substantially. Forty-seven pairs laid 80 eggs from which 37 hatched and 35 survived: an incredible new record! Thanks to this high number of chicks produced in the EEP, it was possible to offer the maximum previewed number of nestlings to each release site and at the same time to compensate the losses suffered last year (15 birds). In total, 21 nestlings were released in four of the five ongoing reintroductions projects (Andalusia, Maestrazgo, Grands Causses – Baronnie – Vercors in the framework of the Gyp'Act LIFE project; and Melchsee-Frutt CHE – Berchtesgaden G in the Alpine project). The 14 remaining birds were included in the EEP.

Together with the University of Reading (UK), an ongoing research project is focusing on genotyping African white-backed vulture (*Gyps africanus*) to improve the EEP with the aim to get individual genotyping and genetic diversity estimates of up to 60 individuals from the current EEP population. Analyses have been completed on samples from 49 vultures. A further 11 samples will be collected after the 2024 breeding season ends.

There are three ongoing research projects for Rüppell's vultures:

- Genetics (with Wageningen University and Research, the Netherlands) at Rotterdam Zoo
- Behavioural study (with Utrecht University) at Avifauna Bird Park and Rotterdam Zoo
- Breeding success factors (with Royal Veterinary College) at London Zoo (UK)

ADDITIONAL COMMENTS

Members of the TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

14 GALLIFORMES

TAG Chair: Jan Dams (Antwerp Zoo, Antwerp, Belgium) • Vice Chairs: Ludo Pinceel (World Pheasant Association, Hexham, United Kingdom) and Geer Scheres (Cracid and Crane Breeding and Conservation Centre, Zutendaal, Belgium)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Galliformes TAG manages all species of the order Galliformes, including megapodes (*Megapodiidae*), turkeys (*Meleagrididae*), New World quails (*Odontophoridae*), pheasants and partridges (*Phasianidae*), guinea fowl (*Numididae*) and chachalacas, guans, and curassows (*Cracidae*). Together with the AZA Galliformes TAG and the World Pheasant Association (WPA, UK), the Galliformes TAG has been working to increase conservation efforts through the management of Studbooks, actively studying birds in our care and participating in and sharing knowledge with ongoing *in situ* projects.

The TAG held two meetings in 2023: during the mid-year Bird TAGs meeting in Alpenzoo Innsbruck (Austria) and at the EAZA Annual Conference (see section Meetings).

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The Galliformes TAG RCP was published in 2023. Thanks to the EEO team for preparing the workshop and writing the final RCP report. In summary, 16 EEPs are proposed, including new EEPs for Green peafowl (*Pavo muticus* – Vacant), Bornean crested fireback (*Lophura ignita* – Vacant), Grey partridge (*Perdix perdix* – Vacant), Collared hill partridge (*Arborophila gingica*), Ocellated turkey (*Meleagris ocellate* – Vacant), Northern helmeted curassow (*Pauxi pauxi* – Vacant) and Red-billed curassow (*Crax alberti*). An EEP for the European grouse species (e.g. Capercaillie *Tetrao urogallus*) was already proposed and approved.

COLLABORATIONS AND MEETINGS

During the TAG mid-year meeting, Meret Huwiler (Bern Zoological Park, Switzerland) and Anthony Kohler (Sainte-Croix Zoo, France) talked about grouse husbandry in their institutions, Andreia Pinto (Lourosa Bird Park, Portugal) gave a presentation on their experience with keeping and breeding cracids, and Ludo Pinceel (WPA) gave an update on the Vietnam pheasant project.

At the EAZA Annual Conference, the TAG meeting included presentations from: Antonin Vaidl (Prague Zoo, Czechia) about the successful management of mixed exhibits, Tjalle Boorsma (Association Armonía, Bolivia) on horned curassow (*Pauxi unicornis*) conservation in Bolivia, Luis Carlos Neves (Mandai Nature, Singapore) who shared his insights on how to make birds more attractive within our zoos, and Basil von Ah (Zürich Zoo, Switzerland) about grey partridge conservation in Switzerland.

The Galliformes TAG, and Vietnam pheasant EEP, has a close collaboration with the Vietnam pheasant (*Lophura edwardsi*) recovery team of which Galliformes TAG Chair Jan Dams (Antwerp Zoo, the Netherlands) also functions as Chair. In 2023, the construction of the Vietnam pheasant breeding centre (under the leadership of the Vietnamese NGO Viet Nature) continued with the completion of staff housing, a

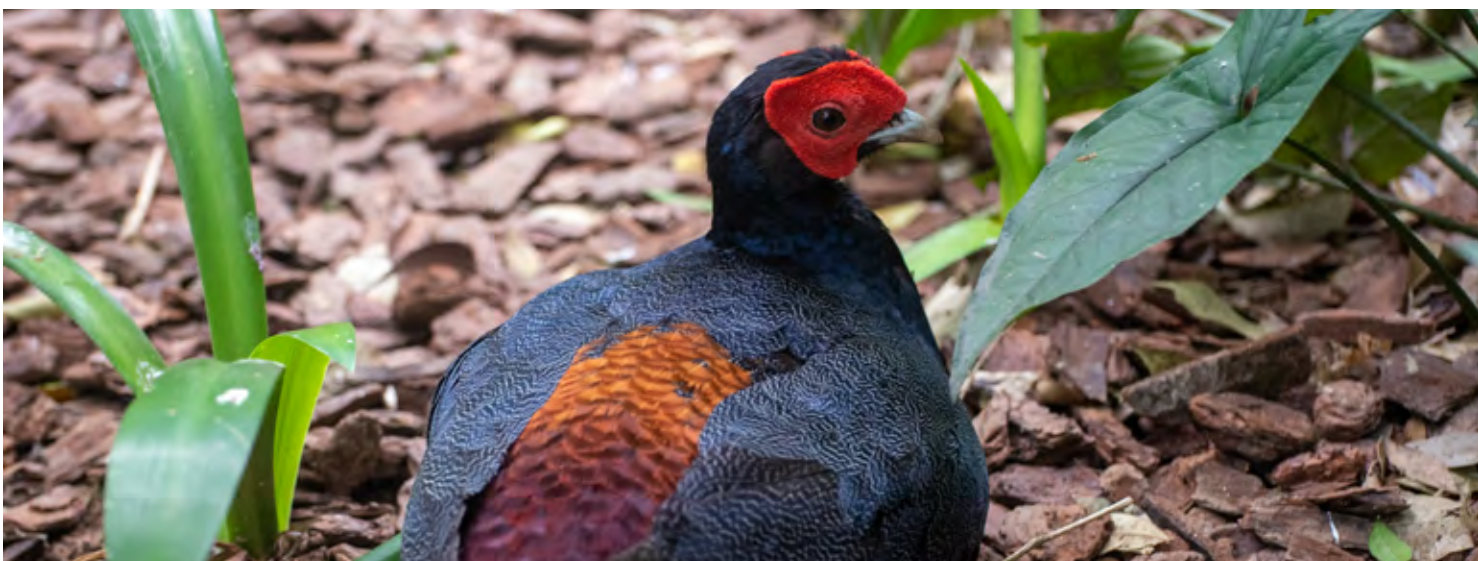
sanitary block, offices and an education centre. An aviculturist (Rik Dams, Belgium) was hired to finalise the design and guide the construction of the aviaries. The continued support from, among others, Karlsruhe Zoo, Berlin Zoo (both Germany), Prague Zoo, Mandai Nature, WPA and Birdlife International remains vital for this project.

CONSERVATION AND RESEARCH

In preparation for future reintroductions of Vietnam pheasants, Gary Ward (ZSL London Zoo, UK) is coordinating a study on the use of tail-mounted radio transmitters. Birds at ZSL Whipsnade Zoo and Chester Zoo (both UK) have been equipped with dummy radio transmitters attached to their tails to investigate how they affect the behaviour of the birds.

Genetic research, which is very much needed for the Vietnam pheasant, is also ongoing. A total of 80 samples were received and specific requests have been sent out to close the gaps within the Studbook. When the genetic analyses are run, all the bloodlines will thus be represented in the study. The close collaboration between EAZA Biobank researchers Philippe Helsen and Jordi De Raad (Antwerp Zoo's Centre for Research and Conservation, Belgium) and EEP Coordinator Veronika Zahradníčková (Prague Zoo) is crucial for this study.

Philippe Helsen and Jordi De Raad are also working on a genetic study focusing on the Malay crestless fireback (*Lophura erythrophthalma*). This species has recently been assessed as Critically Endangered according to the IUCN Red List criteria. Unfortunately, the *ex situ* population of the species is small. Working together with WPA, most of the birds in Europe (with the majority being kept by private aviculturists) have been sampled. Genetic analyses will allow the EEP Coordinator (Marcin Chrapowicki, Warsaw Zoo, Poland) and the WPA Malay crestless fireback focus group (led by Dirk Callebaut, Belgium) to give optimal breeding recommendations aiming at retaining as much genetic diversity within the European population as possible. This species might be functionally Extinct in the Wild so the European *ex situ* population might be its only chance to survive.



Malay crestless fireback (*Lophura erythrophthalma*) © Jonathan Beilby

15 GRUIFORMES

TAG Chair: Gary Ward (ZSL London Zoo, London, United Kingdom) • **Vice Chair:** Maximilian Birkendorf (Neuwied Zoo, Neuwied, Germany)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Gruiformes TAG oversees all species in the order Gruiformes, including cranes (*Gruidae*), finfoots (*Heliornithidae*), limpkin (*Aramidae*), rails and gallinules (*Rallidae*) and trumpeters (*Psophidae*) as well as the bustards (order Otidiformes), kagu and sunbittern (order Eurypygiformes), mesites (order Mesitornithiformes) and seriemas (order Cariamiformes).

In 2023, the TAG continued to go from strength to strength. The TAG Chairs would like to thank the colleagues who participated in programme management, Species Committees, attended and contributed to meetings and showed support for the TAGs activities.

Certainly, the biggest achievement for the year was carrying out the RCP meeting, which was hosted by Neuwied Zoo (Germany) and attended by external colleagues from the IUCN Bustard SG and the Angkor Centre for Conservation of Biodiversity (ACCB, Cambodia), in addition to TAG members. The TAG was pleased to connect with these external colleagues and appreciated their input into the RCP process. We hope to build on the collaboration with the IUCN Bustard SG moving forward.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

During the Gruiformes TAG RCP meeting, we reviewed 41 species and recommended 14 new-style EEPs. Notable recommendations include:

- A new EEP for the Grey crowned crane (*Balearica regulorum*)
- The upgrade of the Black crowned crane Studbook into an EEP
- A new EEP for the Sarus crane (*Antigone Antigone*) as the species is listed as Vulnerable with the *sharpii* sub-species suffering devastating declines throughout Southeast Asia
- An EEP for the Grey-winged trumpeter (*Psophia crepitans*) for its potential value as a model species for the threatened dark-winged trumpeter (*P. viridis*)

Species from the family Rallidae were given careful review during the RCP meeting as it was recognised this family is at risk of dying out in EAZA zoos if some level of management is not applied. There are several threatened rail species globally as well as projects to restore European rail species such as for corn crakes (*Crex crex*). It was recommended to establish a new-style EEP for rails generally with the goal to develop Best Practice Guidelines using the rail species currently present in EAZA collections and to investigate how the TAG can support rail species recovery projects. Bustards were also reviewed with input from the SG colleagues and EEPs were recommended for the Great bustard (*Otis tarda*) and the Little bustard (*Tetrax tetrax*) to investigate supporting restoration projects for these species in Europe.



Corncrake chick (*Crex crex*) at Whipsnade Zoo © Jamie Graham, ZSL

At the time of writing, the RCP is awaiting EEP Committee approval. The Gruiformes TAG thanks the colleagues from the EEO for their preparation and facilitation of the RCP meeting.

COLLABORATIONS AND MEETINGS

The TAG session at the EAZA Annual Conference 2023 was well attended and highlighted the potential for supporting a diversity of species within the TAG's remit. In addition to a detailed update on the RCP recommendations, there were also excellent presentations on the management and breeding of sarus cranes at Karlsruhe Zoo (Germany), an overview of the Great Bustard Project in Germany which is supported by Berlin Tierpark (Germany) and an introduction of the Steppe Bird Project at Oasys Mini Hollywood (Spain) focusing on little bustards. The TAG Research Advisor, Paul Rose (Wildfowl & Wetlands Trust, UK) talked about measuring personality in birds for husbandry purposes.

The Vice Chair Max Birkendorf (Neuwied Zoo) represented the TAG during the new edition of the Research Group of the IUCN Crane SG in digital. In the future, such meetings will take place quarterly to exchange and build links on research progress and priorities both *ex* and *in situ*.

CONSERVATION AND RESEARCH

The TAG has been engaging with the ongoing project to restore corn crakes to wetland reserves in Norfolk (UK). A population under human care was founded for the project with wild birds caught in Scotland and initially established at ZSL Whipsnade Zoo (UK). These birds are currently held at Pensthorpe Nature Park (UK), a non-EAZA member who have continued to breed birds for release each year. ZSL is now starting a research project to assess the genetic viability of the corn crane population in human care with colleagues from their Institute of Zoology. Maintaining this population is important as they are only UK-sourced corn crakes in human care and they are the only suitable source of birds for ongoing and future restoration projects in the UK. UK birds have a larger body size and a different flight path during migration compared to corn crakes in other parts of Europe.

16 CHARADRIIFORMES

No report was submitted by the EAZA Charadriiformes TAG for 2023.

17 PIGEON AND DOVE

TAG Chair: Nigel Simpson (Bristol Zoo Project, Bristol, United Kingdom) • Vice Chair: Gary Ward (ZSL London Zoo, London, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Pigeon and Dove TAG had many activities and changes during 2023 as implementation of new-style EEPs were established for eight of the 15 EEPs identified in the RCP (see below). After Duncan Bolton (Paignton Zoo, UK) stepped down as TAG Chair in 2022, Nigel Simpson (Bristol Zoo Project, UK) and Gary Ward (ZSL London Zoo, UK) were approved as new Chair and Vice Chair, respectively. The EEP for the Socorro dove (*Zenaida graysoni*) welcomed Eric Diener (Heidelberg Zoo, Germany) as its Vet Advisor.

The focus of the TAG in 2023 was its membership and establishing new-style EEPs. Our achievements from the year are highlighted in the sections below.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The first LTMP for the Socorro dove EEP was published in 2023 with a call for action to find new holders for this Extinct in the Wild species. Ideally these zoos would have the capacity to hold several pairs to help the EEP grow the population. The new Vet Advisor will be looking at mortality data for the species and all holders are requested to send him detailed mortality reports. Besides, to be able to follow the genetic status of the population on a molecular level, EEP participants are reminded to (continue to) keep tissue samples of their birds whenever possible.

In addition to the one for the Socorro dove (*Zenaida graysoni*), seven new-style EEPs were approved by the EEP Committee in 2023 for the Bleeding heart dove complex (*Gallucolumba keayi*, *luzonica* and *crinigera*), Blue-headed quail dove (*Starnoenas cyanocephala*), Western crowned pigeon (*Goura cristata*), Sclater's crowned pigeon (*G. sclaterii* and *scheepmakeri*), Victoria crowned pigeon (*G. victoria*), Extinct pigeons (*Ectopstes migratorius* and *Raphus cucullatus*), and Pheasant pigeons (*Otidiphaps aruensis* and *nobilis*).

These EEPs are at the beginning of their establishment and will be focussing on producing LTMPs and BPGs. The blue-headed quail dove is still a "Do Not Obtain" (DNO) species: all EAZA zoos are encouraged to not get these birds and to contact the Coordinator with any enquiries about the species.

Coordinators are still needed for several EEPs. Please check the vacancy list on the Member Area and contact the TAG Chair/Vice Chair or the EEO if you are interested.

COLLABORATIONS AND MEETINGS

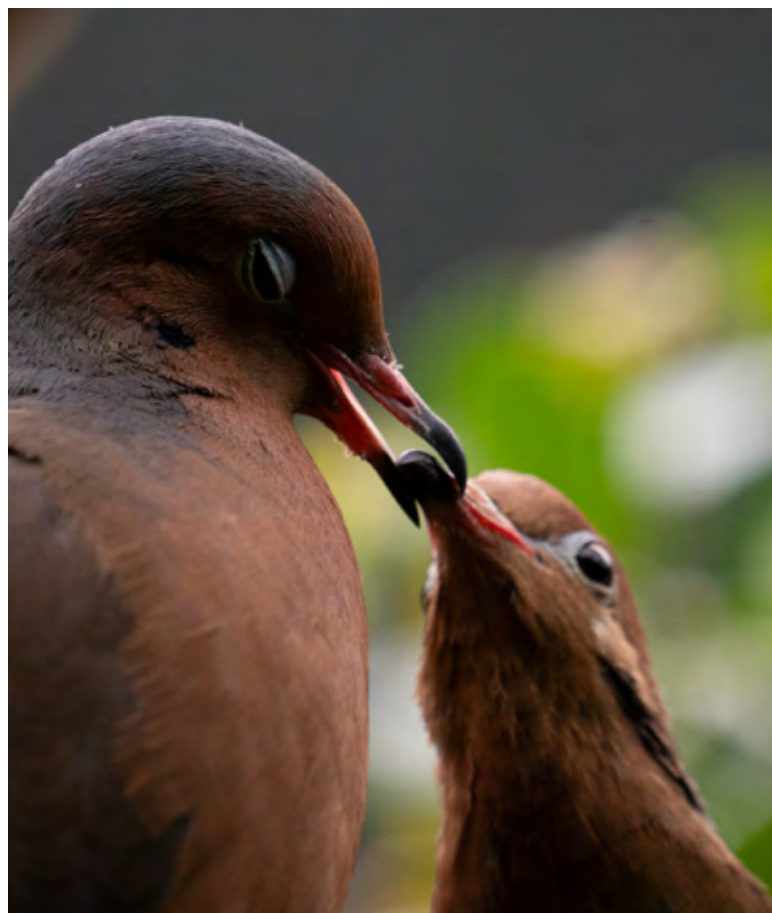
In 2023, the TAG met online to introduce the new Coordinators and Vice Chair to other TAG members, and to discuss an action plan capturing all the activities that the TAG members are working on.

An in-person meeting was held at the EAZA Annual Conference, with an excellent presentation from Joe Wood, Chair of IUCN SSC SG for Pigeons and Doves, on his work with the Critically Endangered Blue-eyed ground dove (*Columbina cyanopsis*) and the efforts to establish a population in human care of this enigmatic species.

CONSERVATION AND RESEARCH

Stefan Stadler (Frankfurt Zoo, Germany), Gary Ward and Axel Moehrenschrager, Chair of the IUCN Conservation Translocation Specialist Group (CTSG), travelled to Mexico to discuss the conservation actions for the Extinct in the Wild Socorro dove with EEP partners from the *in situ* range of the species. Both the IUCN/SSC CTSG and ZSL representatives were participating for the first time. It was agreed to continue working together and furthering the long-term plan of returning Socorro doves to Socorro Island.

The Pink pigeon EEP is looking to repatriate a small number of birds back to Mauritius as a trial before larger numbers will be considered in the future. Previous repatriated birds are now established in breeding aviaries and have paired with Mauritian females and produced three offspring.



Socorro doves (*Zenaida graysoni*) at ZSL London Zoo
© Camille Munday, ZSL

18 PARROT

TAG Chair: Simon Bruslund (Copenhagen Zoo, Copenhagen, Denmark) • Vice Chair: Laure Pelletier (Beauval Zoo, Saint Aignan, France)

INTRODUCTION AND ACHIEVEMENTS

Parrots and parakeets remain a popular taxon in EAZA zoos. According to ZIMS records, there are 265 EAZA institutions in four regions holding a total of 19,247 specimens in their collection. Unfortunately, the desired shift towards a higher percentage of Threatened vs. Least Concern parrot species kept is still only marginally visible. This topic was discussed during the EAZA Parrot TAG RCP workshop organised in 2023. The Parrot TAG follows a strict strategy to prioritise the development of coordinated programmes for the most conservation-dependent species and this fact strongly influenced the decisions made during the RCP meeting.

In 2023, a total of 399 parrot species were assessed by the IUCN Red List: 233 Least Concerned, 51 Near Threatened, 51 Vulnerable, 27 Endangered, 20 Critically Endangered, 1 Extinct in the Wild and 16 Extinct. The main threat is the use of biological resources, especially hunting and trapping, logging, and wood harvesting. Other main threats are agriculture, climate change and invasive and other problematic species, genetic issues or disease. The small range or island endemic status of numerous parrot species is accelerating their decline. Many parrot species are protected or managed through conservation measures, including land protection, education and awareness, enforcement of laws and policies to combat animal trafficking, and also through *ex situ* breeding programmes. In 2023, the Parrot TAG Chair was involved in the formation of an IUCN SSC Wild Parrot SG, which we hope will be approved in 2024.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Several programme changes occurred in 2023: Antonin Vaidl (Prague Zoo, Czechia) retired as MON-P of the Black-billed amazon (*Amazona agilis*); Bernd Marcodes (Cologne Zoo, Germany) retired as Studbook keeper of the Purple-naped lory (*Lorius domicella*); Hayley Potter (Banham Zoo, UK) retired as MON-P of the African grey parrot (*Psittacus erithacus*), Xavier Vaillant (Amiens Zoo, France) retired as MON-P of the Lilac-crowned amazon (*Amazona finschi*); and Michael Merker (Halle Zoo, Germany) retired as MON-P of the Cape parrot (*Poicephalus robustus*). Many thanks to all of them for their work these last years. New programmes are in development following the RCP workshop. Some already have Coordinator candidates while others are still vacant and waiting for new Coordinators in 2024.

COLLABORATIONS AND MEETINGS

The EAZA Parrot RCP workshop, held at Beauval Zoo (France) brought together 50 participants (on site and online). They reviewed 49 species sheets (a total of 81 species) to define the role(s) that *ex situ* management will play in the overall conservation of the species; determine the characteristics and dimensions of the *ex situ* population needed to fulfill



Red-fronted macaw (*Ara rubrogenys*) © Beauval Zoo

the identified conservation role(s); define the resources and expertise needed for the *ex situ* management programme to meet its role(s) and appraise the feasibility and risks; make a decision about the RCP category.

In September, our annual meeting included news and updates on the TAG, a presentation about preventing extinction of Bolivia's most threatened macaws by Tjalle Boorsma (Asociacion Armonia, Bolivia), a presentation about the management and challenges of mixed parrot flocks in a new setting at Bird Paradise by Mark Rusli (Mandai Nature, Singapore) and a presentation on the Zoo Animal of the Year Campaign in the German-speaking zoos – macaws in 2023 – by Arne Schulze (Zoological Society for the Conservation of Species and Populations, ZGAP, Germany).

World Parrot Day is celebrated every year on 31 May and the TAG encourages all EAZA Members to use this occasion for educational purposes. Material and inspiration are freely downloadable on www.parrottag.org thanks to Parrot TAG Education Advisor, Stephan Worm, who developed them on behalf of the TAG. In 2023, the focus species for this special day was the Red-fronted macaw (*Ara rubrogenys*).

The Cockatoo Working Group continues to collaborate by discussing solutions to improve breeding success and management in zoos for cockatoo species. Two online meetings were organised in 2023 to discuss i) how to prevent intraspecific aggressions and ii) Parrot virus management.

CONSERVATION AND RESEARCH

In collaboration with Dublin Zoo (Ireland) and the University Centre Sparsholt (UK), a project investigating factors (e.g. enclosure design, flock size etc.) that determine breeding success of white cockatoos (*Cacatua alba*) was initiated. In collaboration with Copenhagen Zoo and University of Copenhagen (Denmark), the development of a PhD project entitled "*Reducing mate aggression to increase breeding success in captive populations of endangered cockatoos*" is discussed. The ongoing PhD with Evangelos Achilleos (Nottingham Trent

University, UK) on the “*Evaluation of conservation methods and conservation genetics of the hyacinth macaw*” continued its collaboration with the Hyacinth macaw EEP and the Parrot TAG with support from Twycross Zoo and the Royal Zoological Society of Scotland (both UK).

19 TOUCAN AND TURACO

TAG Chair: Koen Brouwer (Attica Zoological Park, Athens, Greece) • Vice Chair: Joost Lammers (Avifauna Birdpark, Alphen aan den Rijn, the Netherlands)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Toucan and Turaco TAG hosted a meeting at the EAZA Annual Conference where Vice Chair Joost Lammers (Avifauna Birdpark, the Netherlands) presented the selected species for the upcoming RCP workshop, encouraging as many colleagues as possible to attend and participate in this important endeavour. Frederic Verstappen (Planckendael Zoo, Belgium) talked about the successes and failures in breeding great blue turacos (*Corythaëola cristata*). More knowledge and skills are still needed before this species is regularly bred and parent-rearing of the chicks is successful. Carol Hsieh (Taipei Zoo, Taiwan) talked about the project ‘from abandoned eggs in the wild to blue-tailed bee-eaters (*Merops philippinus*) in the zoo’. Much experience in hand-rearing and keeping this species has been gained by this zoo over the past few years. Gary Ward (ZSL London Zoo, UK) presented on the involvement of ZSL in the conservation of the Guam kingfisher (*Todiramphus cinnamominus*), the so-called Sihék project. ZSL is working intensively together with several American partners in efforts aiming at reintroducing the species back into the wild. Invasive snakes still occur in large numbers on Guam, preventing the reintroduction of the kingfishers onto their native island. Releases on the Palmyra atoll, almost 6,000 km from their natural homeland on Guam, will facilitate the

development of release protocols, increase the population and allow birds to re-adapt to wild living. Wild birds from Palmyra can then hopefully be used to establish a population back on Guam in the years to come. Furthermore, updates for violet turaco (*Musophaga violacea*) and channel-billed toucan (*Ramphastos vitellinus*) were presented by the respective Studbook keepers. Finally, TAG Chair Koen Brouwer (Attica Zoological Park, Greece) presented an overview on the legal trade in toucans over the past 40 years with data recently published (Carpenter, A. and J. Slade (2023) *A Review of the Trade in Toucans (Ramphastidae): Levels of Trade in Species, Source and Sink Countries, Effects from Governance Actions and Conservation Concerns*. Conservation (3): 153–174). Legal trade has significantly decreased in the 40-year period, however due to little breeding success in human care, developing a genetically healthy insurance population in zoos and other holders still require the occasional acquisition of individuals from their native range.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

At the end of 2023, a thoroughly prepared RCP workshop meeting was held at the EEO in Amsterdam. Several months of preparation by Nora Hausen and David Aparici (both EEO) together with the TAG (Vice) Chairs were needed to successfully conduct the meeting. Some 30 EAZA colleagues from over 15 countries, joining in person and online, contributed to developing the RCP for this complex group of species, including not only turacos and toucans, but also trogons, hummingbirds, barbets, kingfishers, bee-eaters and rollers, to name a few. The draft RCP is now under review by the TAG and will be circulated in 2024 to all attendees and other relevant parties so that the final product can be officially approved before the EAZA Annual Conference in 2024.

Jonathan Beilby (Chester Zoo, UK) started working on the BPG for Trogons, with special attention for the collared trogon



Great blue turaco (*Corythaëola cristata*) © Avifauna Birdpark

(*Trogon collaris*), which is expected to be published in 2024. Best Practice Guidelines for Bee-eaters are also in production, an effort led and coordinated by Maarten Vis (Rotterdam Zoo, the Netherlands).

CONSERVATION AND RESEARCH

The TAG has been approached by Kaunas Zoo about their involvement in European roller (*Coracias garrulus*) conservation in Lithuania. The Lithuanian Ministry of Environment, the Lithuanian Ornithological Society and Kaunas Zoo are initiating and making efforts to preserve this species by managing habitats, providing nest boxes, and ringing individuals. These efforts, however, seem so far to be insufficient. Initial thoughts and plans are now moving toward beginning a conservation project by breeding the species in human care and releasing their offspring into the wild. This topic was also discussed during the RCP workshop. The TAG will surely keep an eye on these developments and make serious efforts to get involved in the planning and implementation.

20 HORNBILL

TAG Chair: Koen Brouwer (Attica Zoological Park, Athens, Greece) • Vice Chair: Joost Lammers (Avifauna Birdpark, Alphen aan den Rijn, the Netherlands)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Hornbill TAG hosted a meeting during the EAZA Annual Conference in September. The new draft BPG for Hornbills was presented by Duncan van Tuijl and Rick Smits (Van Hall Larenstein University of Applied Sciences, the Netherlands) who have been working in close collaboration with TAG members, EEP Coordinators and some other hornbill specialists on revising the 2002 husbandry guidelines. We aim to publish these new Best Practice Guidelines in 2024.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Marc Vercoe (Chester Zoo, UK) replaced Sarah Lavin (Paignton Zoo, UK) as Coordinator of the Wrinkled hornbill EEP, when she started a new job at Species360. Sarah is acknowledged for the efforts she made over the past years and making it possible for Marc to start with an up-to-date Studbook on ZIMS.

The LTMP for the Rhinoceros hornbill EEP was produced in 2023. This EEP currently includes 51 birds (21 males and 30 females) in 15 EAZA and one non-EAZA institutions. Increased successful reproduction is needed to sustain the population on the longer term.

Breeding success is notoriously scarce in many of our EEPs. The Great hornbill EEP is especially dealing with poor breeding results over the last years, so it is important to mention in this report that a female chick was successfully reared in Zlín-Lešná Zoo (Czechia) in 2023. This is the second reared chick of the pair. The first chick in 2021 was hand-reared but this time the chick was parent-reared.

COLLABORATIONS AND MEETINGS

During the September meeting, two different presentations on breeding success in Papuan hornbills (*Rhyticeros plicatus*) were given by Anna Kazazou (Attica Zoological Park, Greece) and Frank Rietkerk (Dubai Safari Park, UAE). Trent van Zanten and Luis Carlos Neves (both Bird Paradise, Singapore) presented on the practical management of iron storage disease in hornbills in human care, and on the management of hornbills, respectively.

The 8th International Hornbill Conference was hosted from 22 to 24 May in Thailand. Koen Brouwer, TAG Chair from Attica Zoological Park, Marc Vercoe and Cathy King (Lagos Zoo, Portugal) participated in the meetings on behalf of EAZA. Apart from attending very interesting presentations and discussions, their presence strengthened the bonds with *in situ* conservationists and researchers. More long-term commitment to conservation work on hornbills is needed from EAZA zoos.

CONSERVATION AND RESEARCH

Last year's work on artificial insemination (AI) in Papuan hornbills (*Rhyticeros plicatus*) by Michael Lierz (Karlsruhe Zoo, Germany) and Dominik Fischer (Wuppertal Zoo, Germany) was followed by an attempt in great hornbills (*Buceros bicornis*) and white-crowned hornbills (*Berenicornis comatus*) in Avifauna Bird Park (the Netherlands). Unfortunately, this effort did not succeed, as little to no active sperm was obtained. No fruitful AI attempt could be made. Nevertheless, more experience was gained in two new species and further attempts might be scheduled for 2024.

ADDITIONAL COMMENTS

The Black hornbill hatchlings at Hertfordshire Zoo (UK) were promoted in Zooquaria 117 (page 6).



Great hornbill (*Buceros bicornis*) © Zlín-Lešná Zoo

21 SONGBIRD

TAG Chair: David Jeggo (Cologne Zoo, Cologne, Germany)
• Vice Chairs: Simon Bruslund (Copenhagen Zoo, Copenhagen, Denmark) and Jessica Borer (Basel Zoo, Basel, Switzerland)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Songbird TAG has within its remit the whole of the order Passeriformes comprising some 140 families and over 6,000 species, more than half of all birds.

During the year, the TAG continued with the process of implementing its RCP for Asian songbirds with several more EEPs approved. It also appointed a second Vice Chair, Jessica Borer (Basel Zoo, Switzerland) to assist with the TAG's workload.

The Silent Forest Group, the TAG's conservation arm, remained active, raising funds for, encouraging and coordinating conservation for songbirds by EAZA Members, not only for Asian species but with a worldwide remit.

The TAG continues to develop and push forward with its focus on supporting conservation efforts for threatened songbirds and developing expertise in their management within EAZA institutions. A good number of its EEPs are for highly threatened species and they are moving towards a holistic One Plan Approach to their conservation, often working in association with partners. Other EEPs, while not for species as yet threatened, serve as models and link to closely related and highly threatened taxa.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Four new EEPs were approved in 2023: for Java sparrow (*Padda oryzivora*), Rufous-fronted laughingthrush (*Garrulax rufifrons*), Red-tailed laughingthrush (*Trochalopteron milnei*) and Montserrat oriole (*Icterus oberi*).

The Coordinators for Chestnut-backed thrush (*Geokichla dohertyi*), Orange-headed thrush (*Geokichla citrina*) and Grosbeak starling (*Scissirostrum dumium*) had check-ins with the EEO to review their EEPs. This is a very valuable service supporting Coordinators to determine how their programmes are progressing and in which direction they need to develop. All three went on, with further assistance from the EEO, to develop and publish their LTMPs.

COLLABORATIONS AND MEETINGS

The TAG held meetings at the mid-year Bird TAG meeting and at the EAZA Annual Conference. During both, a series of presentations illustrated various aspects of member activities with songbirds in human care and in the wild. At the Annual Conference, the Silent Forest Group had a meeting to review the progress of the various projects they support. These projects are dedicated to the conservation of an increasing number of highly threatened songbird taxa, and particularly provide funds to in-country conservation breeding centres.

The Blue-crowned laughingthrush (*Pterorhinus courtoisi*) Global Species Management Programme (GSMP) held its annual master planning meeting at Rotterdam Zoo (the



Fatu Hiva monarch (*Pomarea whitneyi*) in Fatu Hiva © Benjamin Ignace

Netherlands) in October. This is a wonderful example of a successful and well managed songbird conservation breeding programme which continues to develop on a sound demographic and genetic basis. It serves as an excellent insurance population to this Critically Endangered Chinese endemic species with an estimated wild population in the region of 350 individuals.

CONSERVATION AND RESEARCH

The TAG, including through the Silent Forest Group, continues to remain active and make great efforts to engage with *in situ* conservation of songbirds. It enjoys close links with the IUCN SSC Asian Songbird Trade Specialist Group (ASTSG) in part through many staff in EAZA institutions being active members of ASTSG. The TAG also works closely with BirdLife International and with several conservation NGOs through the projects it supports.

The Ornithological Society of Polynesia MANU, a BirdLife partner, working on bird conservation in French Polynesia is a new recent collaborator thanks to a project run jointly with Auckland Zoo (New Zealand) to save the Critically Endangered Fatu Hiva monarch (*Pomarea whitneyi*) of which there were just 18 birds surviving at the end of 2023.

A coming new project aims to provide a grant to the Monitor Conservation Research Society to access the threat posed by the trade of the chestnut-backed scimitar-babbler (*Pomatorhinus montanus*). This species is on ASTSG's Tier 1 list of priority taxa, those it considers in most urgent need of conservation action. Recently, due to concern over its declining status, it was categorised on the IUCN Red List as Vulnerable. This new project – if the funding gets approved in 2024 - will provide vital information on how great the threat to this species is.

Simon Bruslund (Copenhagen Zoo, Denmark) and Jess Lee (Mandai Nature, Singapore) representing their respective EAZA institutions took part in a meeting in Bangkok to discuss various aspects of Convention on International Trade in Endangered Species (CITES) and how this international convention could be used more effectively to reduce the negative effects on songbirds, brought by international trade, mainly fueled to supply the pet markets around the world.

22 MONOTREME AND MARSUPIAL

TAG Chair: Flemming Nielsen (Copenhagen Zoo, Copenhagen, Denmark) • Vice Chairs: Achim Winkler (Copenhagen Zoo, Copenhagen, Denmark) and Matthias Papies (Tierpark Berlin, Berlin, Germany)

INTRODUCTION AND ACHIEVEMENTS

Following the successful publication of its RCP, the EAZA Monotreme and Marsupial TAG (M&M TAG) focused on the conversion of all breeding programmes into new-style EEPs in 2023. The TAG thanks the Vice Chairs and all EEP Coordinators for their work in 2023.

The BPG for the Yellow-footed rock wallaby (*Petrogale xanthopus xanthopus*) were published in 2023. BPGs for the koala (*Phascolarctos cinereus*), the common wombat (*Vombatus ursinus*) and the Tasmanian devil (*Sarcophilus harrisii*) are in progress.

Nenna Sebaek, registrar at Copenhagen Zoo (Denmark), analysed the birth date estimates for Marsupials listed in ZIMS

with recommendations to clean up the data for more precise birth date records.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Progress is under way to upgrade the MON-P for Short-beaked echidna (*Tachyglossus aculeatus*) into a new-style EEP. Two subspecies are held within the EAZA region with increasing breeding successes in recent years. Yet, the population sizes are small and cooperation is needed with other zoo regions which keep several animals of the *T. a. lawesi* subspecies.

A total of 21 Tasmanian devils were imported by Copenhagen Zoo to stabilise the EEP population in EAZA and to start breeding again. Two females already produced a total of five joeys. Ten of the imported animals were transferred to EAZA ambassador holders within the Tasmanian Devil Ambassador Programme. There is great interest in the species but not enough animals available.

The MON-P for Eastern quoll (*Dasyurus viverrinus*) was upgraded into a new-style EEP coordinated by Ariel Jacken (Leipzig Zoo, Germany). The population expanded over the years due to breeding successes at Leipzig Zoo and Frankfurt Zoo (Germany). More breeding and further imports are needed to maintain the population. The mean life expectancy is less than four years with tumors being the most common cause of death. Husbandry recommendations were provided by Leipzig Zoo.



Eastern grey kangaroo (*Macropus giganteus*) with Tasmanian common wombat (*Vombatus u. tasmaniensis*) at Copenhagen Zoo © Frank Rønsholt

New imports from Australia are needed to increase the genetic diversity in the Koala EEP, ideally animals free of the deadly KoRV strains. Two males and two females were imported by Wilhelma Zoo (Germany).

Despite recent breeding successes, new imports are needed to further increase the population of both subspecies present in the EEP for Common wombat. Two males and two females of the Tasmanian subspecies were imported by Copenhagen Zoo from Tasmania. One non-EAZA zoo with a breeding pair may join the EEP.

Two new holders joined the EEP for Kowari (*Dasyuroides byrnie*) and the small European population has slowly increased to 60 animals. A Species Committee was elected and will work on a LTMP.

Anja Hantschmann, veterinarian and research coordinator at Berlin Tierpark (Germany), was appointed as the new EEP Coordinator for the Common bear cuscus (*Ailurops ursinus*).

The population of long-nosed potoroo (*Potorous tridactylus*) continued to expand. Genetic studies showed that all the animals in the population belong to the subspecies *P. t. apicalis*. The TAG is working on the establishment of this EEP, with Johnpaul Houston (Calviac Zoo, France) as Coordinator.

A Species Committee was elected for the swamp wallaby (*Wallabia bicolor*). The EEP population remained stable and breeding recommendations were circulated.

The TAG is still looking for an EEP Coordinator for Parma wallaby (*Macropus parma*).

The EEP for Eastern grey kangaroo (*Macropus giganteus*) consists of two subspecies lumped together. The population is large, and it is difficult to rehome males. Western grey kangaroos (*M. fuliginosus*) are now managed as a separate EEP, whose population remained stable in 2023.

The situation in the other programmes remained similar to 2022 (see TAG Annual Reports 2022).

COLLABORATIONS AND MEETINGS

The M&M TAG continued to cooperate with the IUCN M&M SG and AZA. Collaborations also continued with the Australian federal government and ZAA to finalise a new Position Statement for the export of Australian monotremes and marsupials on an association-to-association or TAG-to-TAG basis only.

CONSERVATION AND RESEARCH

Most European holders of koalas pay an annual contribution fee to support the ongoing koala conservation and research projects in Australia coordinated by San Diego Zoo (USA).

Wilhelma Zoo supports the Dreamworld Wildlife Foundation in Australia in its conservation activities for koalas in the wild.

Scientific research is ongoing in conjunction with the Leipzig Institute for Zoo and Wildlife Medicine (IZW, Germany), the Robert Koch Institute in Hamburg (Germany) and the

University of Nottingham (UK) in collaboration with experts from Australia to gain a better understanding of the effects of the various strains of the koala retrovirus (KoRV) on the health status of the koala.

The Tree kangaroo GSMP supports the Tenkile Conservation Alliance focusing on conservation actions for the Tenkile tree kangaroo (*Dendrolagus scottae*) in Papua New Guinea.

Members of the Tasmanian devil EEP support for the Devil Ambassador Programme in Tasmania.

The Kowari EEP cooperates with the School of Biological Science of the University of Melbourne (Australia) in studying kowari skull morphology.

A veterinary study on toxoplasmosis vaccination among several marsupial species is undertaken at Copenhagen Zoo. A study by Sara Abreu from Copenhagen Zoo analyses the effects of the diet composition on vitamin D levels in wombats.

23 PROSIMIAN

TAG Chair: Achim Johann (NaturZoo Rheine, Rheine, Germany) • Vice Chair: Delphine Roulet (Cotswold Wildlife Park, Burford, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

In 2018, 21 taxa of prosimians – 16 species of lemurs and five loridid and galago species – were defined as priority for management within the framework of new-style EEPs. Since then, for most of these EEPs, LTMPs have been developed and implemented accordingly. The EAZA Prosimian TAG acknowledges the stability in managing the programmes with very few personal changes over the years. Having said this, there are new Coordinators for the Microcebus, Crowned sifaka and Crowned lemur EEPs: Krystina Rothova (Plzeň Zoo, Czechia), Sylvie Laidebeure (Paris Zoo, France) and Charlotte Desbois (Mulhouse Zoo, France), respectively.

The TAG is frequently consulted for advice when individual zoos intend to take lemur species in their collection. Therefore, we play a significant role in balancing the EEP population developments of species with similar husbandry and housing requirements. It became obvious that mixed-species habitats are crucial to establish or work towards establishing, sustainable sized populations in each EEP species. Promoting and supporting mixed-species holdings is thus essential and specific husbandry guidelines are needed to provide advice to the (potential) holders. The TAG will work on those. To get more knowledge on the possibilities and effects of mixed-species holdings on lemurs, NaturZoo Rheine (Germany) initiated a study on their crowned, red-bellied and ring-tailed lemurs (*Eulemur coronatus*, *E. rubriventer* and *Lemur catta*, respectively). The activity of the animals when being kept in different combinations was compared and will be evaluated with regards to welfare. Results are expected to be available in 2024.



The Black and white ruffed lemur EEP is working on Best Practice Guidelines to document the essentials of husbandry for this Critically Endangered species © Achim Johann, NaturZoo Rheine

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

In a combined effort, the EEP, the TAG and invited guests met online to discuss husbandry issues and work on saving the *ex situ* population of the Critically Endangered blue-eyed black lemur (*Eulemur flavifrons*). The small EEP population is lacking reliable breeding to keep it at least balanced. There were questions about stress susceptibility, insufficient social 'skills' - maybe in consequence of hand-rearing - and essential basic husbandry, such as appropriate feeding. Important advice came from the SSP and Duke Lemur Center (USA) where the species is seen as somewhat 'special' but not outstandingly difficult in management and propagation. A suggestion was made to support the EEP with animals from the SSP. Due to their high conservation status, the connection to the Lemur Conservation Association (AEECL) and their *in situ* conservation efforts in the Sahamalaza National Park, the blue-eyed black lemur stay a priority species for the EAZA Prosimian TAG.

There is work on the way for more BPGs.

COLLABORATIONS AND MEETINGS

There is an obvious need for compiling, keeping and spreading husbandry experience as seen from the specific requests and invitations to contribute to workshops on the care and propagation of lemurs. The TAG Chair and Vice Chair gave presentations about zookeepers' trainings in events organised by the British and French zookeepers associations.

CONSERVATION AND RESEARCH

The 'Prosimian TAG compendium' was revised and brought up to date with latest EEP population numbers and people involved. This document as well as the TAG's newsletters reporting on *ex situ* and *in situ* conservation activities are available on the Member Area or by direct contact of Florence Perroux (Zoo de la Palmyre, France; florence.p@zoo-palmyre.com) or of the TAG Chair (ajohann@naturzoo.de).

ADDITIONAL COMMENTS

After more than five years since its publication, the Prosimian TAG RCP needs a revision. By considering its developments, achievements and failures, the RCP will be updated and an action plan developed during a TAG meeting in May 2024.

24 CALLITRICHID

TAG Chair: Eric Bairrão Ruivo (Beauval Zoo, Saint Aignan, France) until September and Greg Clifton (Yorkshire Wildlife Park, Branton, United Kingdom) from September
• Vice Chairs: Miranda Stevenson (Bristol Zoo Project, Bristol, United Kingdom) and Dominic Wormell (Jersey Zoo, Jersey, United Kingdom) until September

INTRODUCTION AND ACHIEVEMENTS

The EAZA Callitrichid TAG (CTAG) manages 17 EEPs and monitors five species. In 2023, there were considerable changes in the composition of the CTAG during the year (see section Population Management Programme).

The TAG outreach work continued with the production of our newsletter and a growing following of our Facebook page. Kelly-Anne Keleher (supported by Twycross Zoo, UK) and the TAG's communication subgroup organised a fantastic Callitrichid husbandry conference at Twycross Zoo in November. It was attended by 75 enthusiasts.

At the EAZA Annual Conference in Helsinki (Finland), the CTAG held a workshop on 'what are the greatest challenges with keeping Callitrichids in European Zoos' at their open meeting. The aim was to obtain guidance from participants on how they saw the TAG moving forwards; this will lead our strategic planning in 2024 and beyond. One major challenge raised at the workshop is that callitrichid holders need to have spare enclosure space in the event of the breakdown of a group. Another complex topic for this family of primate is contraception and Ronnie Cowl (EAZA Reproductive Biologist) gave some advice to the TAG on contraceptive issues during the conference.

The Nutrition Working Group continued to collect data which should be published in 2024.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

In September, Greg Clifton (Yorkshire Wildlife Park, UK) took over from Eric Bairrão Ruivo (Beauval Zoo, France) as TAG Chair. The TAG is extremely grateful to Eric for the incredible work he carried out for 13 productive years. The EEP for Common marmoset (*Callithrix jacchus*) and Black-tufted-ear marmoset (*Callithrix penicillata*) was split into two separate EEPs and their coordination was taken on by Hertfordshire Zoo (UK) staff, Amy Heffernan and Kim Vaughan, respectively. They are making great progress with these difficult 'phase out' programmes.

Dominic Wormell left Jersey Zoo (UK) in September. Jersey Zoo maintained the programmes for Pied tamarin (*Saguinus*

bicolor) and Black lion tamarin (*Leontopithecus chrysopygus*) and we welcomed Becky Braley and Rachel Cowen as the respective Coordinators. However, the zoo no longer wishes to support the EEPs for the Buffy-tufted-ear marmoset (*Callithrix aurita*) and the Buffy-headed marmoset (*C. flaviceps*) and a solution still needs to be found.

When taking over as TAG Chair, Greg Clifton handed over EEP coordination for the Red-handed tamarin (*Saguinus midas*) to Amy Denny (Marwell Zoo, UK). The very tragic death of Jennifer Mickelberg, who was the International Studbook Keeper of the golden lion tamarin (*Leontopithecus rosalia*), has caused delays in the implementation of the EEP for the species, which Bryan Carroll (formerly Bristol Zoo Project, UK) is working on.

At the end of the year, Dave Rich left Newquay Zoo (UK) but they will continue to support him in his species coordination work. Dave officially took over the Pygmy marmoset EEP which has become challenging due to taxonomic changes.

Brexit continued to cause serious issues regarding animal movements to and from the UK. The CTAG is very grateful to the EEO Population Management team for providing the help and expertise for LTMPs and check-ins which are currently up-to-date: especially thanks for Maria Balcazar's assistance to Dave Rich with the complexities of the Pygmy marmoset EEP.

All meeting minutes, annual, species reports, and Studbooks, can be found on the TAG webpage.

CONSERVATION AND RESEARCH

The CTAG continued to support eight species in field projects in Brazil and Colombia.

Progress was also made with the CTAG conservation fundraising plan and this should be finalised and published in 2024.

In March, Dom Wormell attended the fifth Callitrichid Conservation and Husbandry Workshop in Brazil. The aim is to build capacity for the establishment of *ex situ* populations with the range country. The focus was on the black lion tamarin, but the workshop also covered the three other *Leontopithecus*

species and other Brazilian Callitrichid species. Forest restoration was a major topic of the workshop. There are plans for a survey to determine the exact status of the black-faced lion tamarin (*Leontopithecus caissara*) on the mainland in the state of Parana. Another important outcome of this workshop was the formation of a Brazilian callitrichid advisory group. Similar to an EAZA TAG, it will consist of a group of specialist who work with *ex situ* populations in Brazil.

The white-footed tamarin (*Saguinus leucopus*) group produced their 2023 Annual Report, available on request. They continue to have both field and *ex situ* components in Colombia. The report contains information on the progress of the national action plan for the species.

Linett Rasmussen (Copenhagen Zoo, Denmark) gave a presentation in Helsinki on her work with genetic differences in populations of cotton-top tamarins (*Saguinus oedipus*), while her colleague Juliana Andrea Berner talked about her research on spermatogenesis and the battles between X and Y chromosomes for transmission into viable sperm. You can find more information about Linett's work in the article: Rasmussen, L. et al. (2023). *Assessing the genetic composition of cotton-top tamarins (Saguinus oedipus) before sweeping anthropogenic impact*. *Molecular Ecology*, 32(20):5514-5527.

Amanda Bartlett, now a PhD student at the University of Portsmouth (UK), is planning to conduct a review of the literature and of pathological findings in ZIMS Studbook data for a selection of callitrichid species.

Amanda Ferguson (ZSL, UK) continues to study the Vitamin D status of primates at ZSL until November 2024. Another study was planned at ZSL by Alecia Carter on "Why do primates carry infants' corpses? A test of the 'mammalian attraction' hypothesis."

Research publications and listings are on the CTAG webpage on the EAZA Member Area under "research" and also reported in our newsletter.



Attendees of the Callitrichid husbandry conference at Twycross Zoo © Twycross Zoo

25 LARGER NEW WORLD MONKEY

TAG Chair: Adrian Baumeier (Basel Zoo, Basel, Switzerland) • Vice Chairs: Steven van den Heuvel (Overloon Zoo, Overloon, the Netherlands) and Warner Jens (Apenheul, Apeldoorn, the Netherlands)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Larger New World Monkey (LNWM) TAG manages the larger species of New World Monkeys, excluding the callitrichids. Currently, the TAG manages programmes for 12 species of South American primates. These include several smaller programmes of only 50 animals up to larger EEPs, such as the one for Squirrel monkeys (*Saimiri spp.*) with over 1,000 living individuals. The different species of capuchin monkeys and spider monkeys are monitored by the TAG.

Most LNWM EEPs have to deal with a lack of holding capacity for their species within EAZA zoos. Therefore, the LNWM TAG carried out an intensive survey about mixed exhibits with other LNWM species and other animals. Results were presented during the EAZA Annual Conference and will be published on the EAZA Member Area.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

In 2023, the preparation work for our RCP - that will be held in a hybrid format in Amsterdam (the Netherlands) in May 2024 - started. In the spirit of the One Plan Approach, *in situ* specialists from Colombia and Brazil will attend online, joining forces with the experts from the zoo community, to identify potential conservation roles for the *ex situ* management of LNWP species.

Jean-Pascal Guéry (Vallée des Singes, France) stopped coordinating the white throated capuchin monkey (*Cebus capucinus*) population. Due to a presumed hybridization in the EAZA population and a challenging collaboration with non-EAZA holders, the future of the programme will be discussed during the RCP workshop, to understand if active management is still necessary and/or under what circumstances.

Nick Davis (Chester Zoo, UK) handed over the coordination of the Colombian spider monkey EEP to Amy Humphreys from the same zoo. We are happy that Nick will stay involved as an Advisor for this challenging EEP.

CONSERVATION AND RESEARCH

Interesting research was conducted by Benoit Quintard (Mulhouse Zoo, France) and Florine Wedlarski (Bioparc Doué de la Fontaine, France) on the vaccination of squirrel monkeys with nanoparticle-based *Toxoplasma gondii* antigens, that gives us new hope for this elusive parasite.

26 AFRO-EURASIAN MONKEY

TAG Chair: Tjerk ter Meulen (Artis Zoo, Amsterdam, the Netherlands) • Vice Chair: Andrea Dempsey (Heidelberg Zoo, Heidelberg, Germany)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Afro-Eurasian Monkey TAG wishes to thank all its EEP Coordinators, TAG members, Species Committee members and Advisors who have made managing the 27 programmes possible. We are grateful to you and your institutions for the support throughout 2023.

This year, the TAG held both a closed and an open meeting at the EAZA Annual Conference in Helsinki (Finland). Both were well attended and productive (see section Meetings).

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Ten LTMPs were undertaken in 2023. The process took place online for the following EEPs: Javan langur (*Trachypithecus auratus*), Francois langur (*Trachypithecus francoisipatas*), Patas monkey (*Erythrocebus patas*) and Sulawesi black-crested macaque (*Macaca nigra*). Others were completed in person, such as for the King colobus (*Colobus polykomos*), three Black and white colobus species (*Colobus spp.*), Mandrill (*Mandrillus sphinx*) and Drill (*Mandrillus leucophaeus*). Thank you to Ostrava Zoo (Czechia) for hosting this important meeting. The process will continue into 2024.

The TAG also welcomed new Coordinators: Fabian Krause (Hannover Zoo, Germany) for the Drill EEP, Kirsty McFaul (Edinburgh Zoo, UK) for the L'hoest monkey EEP and Bjorn Unger (Zoom Erlebniswelt, Germany) for the Pig-tailed macaque EEP. The TAG thanks all the out-going EEP Coordinators for their hard work.



Black-headed squirrel monkey (*Saimiri boliviensis*) © Zoo Basel



Gelada (*Theropithecus gelada*) at Yorkshire Wildlife Park © Shelia Smith

COLLABORATIONS AND MEETINGS

The open meeting at the EAZA Annual Conference included many interesting presentations. Lorraine Scotson, CEO of the Saola Foundation for Annamite Mountains Conservation (USA), gave an update on their work involving the search for not only saola but also for a new primate species. Holly Farmer (Paignton Zoo, UK) gave two presentations: an update on the EAZA and AZA contraception database and the new baboon enclosure planned at the zoo. The TAG Vice Chair gave an update on West African Primate Conservation Action (WAPCA, Ghana), the conservation programme recommended by the TAG. Warner Jens (Apenheul, the Netherlands) presented the mixed talapoin (*Miopithecus ogouensis*) and colobus (*Colobus polykomos*) enclosure at the park. Juliana Andrea Berner (Copenhagen Zoo, Denmark) gave an update on their chromosomal research.

During the closed TAG meeting, we had useful discussions around sanctions, private holders, managing surplus animals, transfers to range countries and adopting a GSMP for certain species in the same geographical location.

Our TAG members continue to work with IUCN SSC Primate SG in the development of the following published work:

- Alexander, S.D., et al. (2023). *The Past, Present, and Future of the Primate Pet Trade*. In *Primates in Anthropogenic Landscapes: Exploring Primate Behavioural Flexibility Across Human Contexts* (pp. 247-266). Cham: Springer International Publishing
- Gnanaolivu, S.D. and Dempsey, A. (2023). *Primates in Anthropogenic Landscapes: Exploring Primate Behavioural Flexibility Across Human Contexts*, p.247

The TAG encourages all zoos to follow their *Best Practice Guidelines for Responsible Imagery of Non-Human Primates* (<https://human-primate-interactions.org/resources>) and consider sharing the IUCN SSC Primate SG useful documents with their staff and public, especially *Responsible Primate-Watching for Primate Tourism Professionals*.

CONSERVATION AND RESEARCH

The TAG throughout 2023 continued to support a number of conservation programmes, and encourages all holders of Afro-Eurasian monkeys to do so. It is recommended for example that:

- all mangabey species, patas monkey, Diana monkey and rolaway monkey holders support WAPCA (www.wapca.org). WAPCA is very pleased to share their new documentary, a 20-min film by Framework detailing their work in Ghana. It can be watched on <https://youtu.be/zT1TS6hTdbo>
- mangabey holders are also recommended to support Limbe Wildlife Centre in Cameroon (www.limbewildlife.org)
- Sulawesi crested macaque holders support the Selamatkan Yaki project (Indonesia, www.selamatkanyaki.ngo)
- Barbary macaque (*Macaca sylvanus*) holders support Barbary Macaque Awareness and Education Conservation (Morocco, www.barbarymacaqueconservation.org)
- Drill holders support Save The Drill (Germany, www.save-the-drill.org)

ADDITIONAL COMMENTS

The TAG would encourage all institutions to consider adding Afro-Eurasian monkeys recommended in the RCP to their collection plans; they mix very well with other species of primate and hoofstock for which there are guidelines available. Many of the managed programmes have *in situ* project partners, that link directly to the species in the wild, which institutions could support promoting the One Plan Approach.

27 GIBBON

TAG Chair: Brice Lefaux (Mulhouse Zoo, Mulhouse, France) • Vice Chair: Matt Ford (Howletts Wild Animal Park, Canterbury, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Gibbon TAG manages six EEPs for: the Siamang (*Symphalangus syndactylus*), two Crested gibbons (*Nomascus leucogenys* and *N. gabriellae*) and three Hylobates (*Hylobates moloch*, *H. pileatus* and *H. lar*). All of these species in the wild are threatened by deforestation and poaching. They are all listed as Endangered or Critically Endangered on the IUCN Red List.

The Gibbon TAG is composed of the six EEP Coordinators, the TAG Chair, one Vet Advisor, one Research Advisor, one Communication Advisor and the Vice Chair of the IUCN Primate SG Small Ape Section, who functions as the *in situ* conservation liaison.

Petra Bolechova (Liberec Zoo, Czechia), after several years of excellent coordination of the research proposal in gibbons, stepped down from her role of Research Advisor and the TAG is looking for a new one to complete the team. We would also love to welcome a Conservation education Advisor to the TAG.

In 2023, the TAG continued working jointly on Gibbons BPG.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The TAG had very productive monthly catch up allowing to deal with current issues in EEPs. The first meeting of the LTMP for Javan gibbons (*Hylobates moloch*) was held and the plan will be finalised in 2024.

All the EEPs are seeking new holders to increase the available institutional space and fulfill the RCP's and LTMPs' roles which are similar for all Gibbon EEPs. Extinction in the wild is deemed realistic for these species considering their *in situ* status, the EEPs thus function as insurance populations as well as to raise awareness of the threats to the species and educate on photo-props. The EEPs also fundraise for identified projects and enable research that may benefit the *in situ* population.

There is a shortage of structural appropriate institutional space for all Gibbon EEPs and most species have a skewed (birth) sex-ratio. Each EEP aims to improve their potential for reintroduction in the future, while at the same time normalising the space situation and improving the sex-ratio.

COLLABORATIONS AND MEETINGS

In 2023, the TAG had several online meetings with the Aspinall Foundation (UK) to discuss their wish to send some their own Javan gibbons to Java.

A Gibbon TAG meeting was also held during the EAZA Annual Conference with a great attendance.

CONSERVATION AND RESEARCH

The TAG supported several research proposals to holders in 2023:

- The battle of the sex chromosomes: Consequences for spermatogenesis and reproduction in primates
- Form and function of the primate shoulder joint complex
- Exploring the structure and function of dance-like displays in crested gibbons
- Husbandry and enclosure design management of gibbons (Hylobatidae) in human care: what is current practice and how do we link in scientific evidence?
- Vocal behaviour of gibbons in human care – Part II
- Dynamics of relationships between male gibbons (Family Hylobatidae) in human care: a questionnaire survey

The Crested gibbon EEPs have been contacted to be part of the EAZA Vietnamizing Campaign for 2024-2025. This provides an opportunity to create links with the *ex situ* institutions in range and to raise awareness in EAZA institution visitors of the conservation solutions for the *Nomascus* species in Vietnam.

28 GREAT APE

TAG Chair: Severin Dressen (Zürich Zoo, Zürich, Switzerland) • Vice Chairs: Sandra Reichler (Heidelberg Zoo, Heidelberg, Germany) and Claudia Rudolf von Rohr (Zürich Zoo, Zürich, Switzerland)

INTRODUCTION AND ACHIEVEMENTS

In 2023, normal activities for the EAZA Great Ape TAG (GATAG) could resume and we were able to discuss the challenges in great ape populations in person again.

In March, we said goodbye to María Teresa Abelló (Barcelona Zoo, Spain) who retired. She was the GATAG Chair for seven successful years. We are very thankful for her endless efforts, her patience, her laughter and above all for the many results she achieved to make sure great apes flourish in our care. We welcomed Severin Dressen (Zürich Zoo, Switzerland) as new GATAG Chair.

In September, Tjerk ter Meulen (Artis Zoo, the Netherlands) took over the Gorilla EEP coordination from Neil Bemment (formerly Apenheul, the Netherlands). Sarah Lafaut (Antwerp Zoo, Belgium) was appointed as the new Bonobo EEP Coordinator taking over from her colleague Jeroen Stevens. The TAG thanks both Jeroen Stevens and Neil Bemment, who remains Vice Coordinator for the Orangutan EEP, for their many years of good work, and welcomes the new Coordinators. The Chimpanzee EEP welcomed several new Advisors: Florence Perroux (La Palmyre Zoo, France) as Education and Conservation Advisor, Marc Alcott (Kristiansand Zoo, Norway) as Nutrition Advisor, and Mike Seres (private consultant) as Behavioural Advisor. In spring, a new Chimpanzee Species Committee holding 15 members from different countries across the EAZA region was elected.

The TAG education subgroup is working on a better understanding of great apes regarding their behaviour



White handed gibbon (*Hylobates lar*) © Job Stumpel, Emmen Zoo

and needs. Information material and workshops are being developed to help keepers and curators explain better the typical behaviour of the different species. Importantly, the subgroup wants to reach directors as they are the decision-makers regarding how zoos communicate about their great apes. Following this strategy, new educational documents about chimpanzees are being translated into various languages. The Chimpanzee EEP is preparing a newsletter and updating the list of *in situ* projects they endorse.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The GATAG aims for healthy, self-sustainable populations with maximum welfare for all great apes managed in human care. The main challenges in the individual EEPs are mentioned below.

In the EEP for Bonobo (*Pan paniscus*), after a record of 14 births in 2022, only four young were born in 2023. This is in line with the LTMP published in 2022 recommending decreasing the birth rate to maintain capacity and to slowly grow to an EEP population of 200 bonobos in 10 to 15 years. To achieve this goal, about five additional bonobo holders are needed.

The EEP for Gorilla (*Gorilla gorilla*) maintained its population size. In the coming decades, however, there is still a need for more holders and flexibility to hold individual males, as explained in the LTMP published in 2021. Accordingly, there were only two births in 2023. A concern is the announcement of several institutions to stop holding gorillas.

The Chimpanzee EEP population continued declining for both the western (*Pan troglodytes verus*) and the central (*Pan t. troglodytes*) chimpanzee. Several females were brought into a breeding situation, which resulted in 22 births. Nevertheless, due to the housing requirements changing towards higher welfare, several institutions will need to stop holding this species. Furthermore, safety measures around chimpanzees were highlighted in the updated section in the BPG. The EEP Coordinators visited different holders to discuss and give advice around various challenges occurring in the housed groups.

The EEP for Orangutan (*Pongo spp.*) focused on improving breeding recommendations for the future and learning more about potential Tapanuli-hybrids in its population. The sample collection for the Orangutan Conservation Genetics Project by Graham Banes (USA) was completed. Over 260 saliva samples from over 150 individuals were obtained; the number of samples is further increased by blood samples already stored in the EAZA Biobank. The number of non-successful breeding recommendations is currently quite high, especially in genetically important pairings. This needs to change to obtain high genetic diversity in the population. To ensure that the population stays viable despite the low number of births planned for every year, holders with no birth despite breeding recommendations were contacted as to investigate what might be the causes for non-breeding.



A chimpanzee (*Pan troglodytes*) with her offspring in Ostrava Zoo
© E. Gombala

COLLABORATIONS AND MEETINGS

In addition to a fruitful mid-year meeting at Ouwehands Zoo (the Netherlands), workshops on nutrition and body condition scores (BCS) in great apes were organised by the Great Ape Welfare Working Group during the EAZA Annual Conference. For these workshops, we invited Sarah Depauw, nutrition specialist from University College Odisee (Belgium), and Lynsey Bugg (Twycross Zoo, UK), who is working currently on BCS charts to be included in the great apes BPGs.

The Chimpanzee EEP renewed collaboration with different associations outside of Europe, such as the AZA and the ZAA Species Management Program, to share species-specific knowledge and discuss possible future exchanges of animals.

CONSERVATION AND RESEARCH

Studies involving only one ape species are coordinated and approved at the EEP level. The latest research projects the GATAG endorsed are mentioned below:

- **Assessing vitamin D status in zoo-housed great apes** (by R. Jarvis and M. Liptovszky from Twycross Zoo, University Nottingham and Birmingham, all UK): first article on chimpanzees published
- **Evolutionary roots of innovativeness: Tracing the phylogeny of human curiosity** (by I. Laumer and C. Schuppli, Max Planck Institute of Animal Behaviour, Germany): data collection started
- **Study on regurgitation, coprophagy and hair plucking in great apes** (by S. Hill, University of Chester, UK): data collection started
- **Battle of the sex chromosomes: consequences for spermatogenesis and reproduction in primates** (by C. Hvilsom and R. Fiuza, Copenhagen Zoo, Denmark): data collection started

ADDITIONAL COMMENTS

Members of the TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

29 SMALL MAMMAL

TAG Chair: Richard Viduna (Jihlava Zoo, Jihlava, Czechia) • **Vice Chairs:** Dijana Beneta (Zagreb Zoo, Zagreb, Croatia), Dorota Gremlicova (Liberec Zoo, Liberec, Czechia), Jutta Heuer (Halle Zoo, Halle, Germany), Johannes Pfliederer (Leipzig Zoo, Leipzig, Germany) and David White (Chester Zoo, Chester, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Small Mammal TAG supports and promotes conservation of small mammal taxa within our scope around the world. This is achieved through management in human care, conservation education, engagement in *in situ* management and conservation programmes, and advocacy for these taxa, both in human care and in the wild.

The TAG is structured in six subgroups, each having its own responsible person:

- subgroup Afrosoricida, Macroscelidea, Tubulidentata, and Hyracoidea (golden moles and tenrecs, elephant shrews, aardvarks, and hyraxes) managed by Richard Viduna (Jihlava Zoo, Czechia)
- subgroup Chiroptera (bats) managed by David White (Chester Zoo, UK)
- subgroup Erinaceomorpha, Soricomorpha, and Scandentia (hedgehogs, moles and shrews, and treeshrews) managed by Dijana Beneta (Zagreb Zoo, Croatia)
- subgroup Hystricomorpha (cavies, porcupines, and gundis) managed by Dorota Gremlicova (Liberec Zoo, Czechia)
- subgroup Lagomorpha, Myomorpha, Sciuromorpha, and Anomaluomorpha (mice and rats, squirrels, and springhares) managed by Johannes Pfliederer (Leipzig Zoo, Germany)
- subgroup Pholidota and Xenarthra (pangolins, sloths, anteaters, and armadillos) managed by Jutta Heuer (Halle Zoo, Germany)

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The Black-and-rufous elephant shrew (*Rhynchocyon petersi*) will be monitored by Ruben Holland (Leipzig Zoo). The monitoring for both Panay cloudrunners (*Crateromys heaneyi*) and springhares (*Pedetes sp.*) will be discontinued because of the limited number of individuals remaining in each population.

The second of four planned RCP workshops covering the subgroups 'Afrosoricida, Macroscelidea, Tubulidentata, and Hyracoidea', 'Chiroptera', 'Erinaceomorpha, Soricomorpha, and Scandentia' was held online in October.

COLLABORATIONS AND MEETINGS

The TAG mid-year meeting was held in May 2023 at Skærup Zoo (Denmark) and attended by more than 40 participants from 11 European countries. In addition to 20 interesting talks and inspiring tours of Givskud Zoo, Odense Zoo, Naturama Svendborg and Terrariet Vissenbjerg, a fundraising auction concluded the meeting where €1,200 were raised to support Ukrainian zoos. Once again, we wish to express our huge thanks to all the staff and volunteers at Skærup Zoo for their

warm welcome and hospitality.

We also established new contact with Foreningen Eksotiske Pattedyr, the Danish Association of Exotic Mammal Holders, and their Chair Niels Brandt introduced this association in detail to the TAG during the meeting.

Because of the interest and significant attendance numbers (nearly 200 people), the TAG annual meeting at the EAZA Annual Conference in Finland was held in two sessions. Talks covered all the subgroups, ranging from information about the conservation programme for garden dormouse (*Eliomys quercinus*) at Gaia ZOO (the Netherlands), a complex population structure research project for Eurasian flying squirrel (*Pteromys volans*) by Oulu University (Finland), and a possible example of how to safely handle adult porcupine, to name just three.

CONSERVATION AND RESEARCH

In November, Zak Showell, director of Shaldon Wildlife Trust (UK), visited Save Vietnam's Wildlife's (SVW) rescue centre in Cuc Phuong National Park (Vietnam). SWT has supported projects for pangolins and small carnivores in Vietnam for many years. Zak was able to observe their veterinary team working with rescued pangolins and provide breeding advice to the centre manager. Zak also ran an animal records training workshop which was very helpful to the centre staff.

Three of our six (Vice) Chairs and two programme leaders travelled to Madagascar in November. They visited the Kirindy Forest, the only site where Critically Endangered votsotsas (*Hypogeomys antimena*) are still living. Unfortunately, no wild giant rats were observed but important information about their natural environment was obtained. Habitat degradation and growing predation by fossas (*Cryptoprocta ferox*), which are concentrated in constantly reduced living space, are major threats votsotsas face. Feral dogs from nearby villages also have a huge impact. This taxon is one of the TAG's flagship species and is a priority species for the future.

The human-wildlife crisis surrounding the Mauritius fruit bat (*Pteropus niger*) has prompted efforts from the Mauritian Wildlife Foundation, Chester Zoo and the Government of Mauritius, as well as other key stakeholders, to come together to establish the Human-Bat Conflict Working Group in January



Black-and-rufous elephant shrew (*Rhynchocyon petersi*) at Frankfurt Zoo
© Richard Viduna



Striped hyena (*Hyaena hyaena*) © Alam Shamshad

2022. This group aims to address the challenges posed by interactions between humans and fruit bats, seeking sustainable solutions and implement strategic measures to mitigate conflict and to avoid culling of the species, promoting the coexistence and harmony between humans and the wildlife on Mauritius. Conclusions from recent research carried out on the various issues resulting from this local conflict have been very helpful in identifying and addressing knowledge gaps.

To provide capacity building to stakeholders within the monitoring and reporting department led by the Croatian Ministry, Zagreb Zoo and several partners conducted *in situ* research on the 'Capture – Mark – Recapture method' using camera traps at the beginning of 2023. This was part of the project for designing and testing monitoring programmes for small mammals, such as the Balkan snow vole (BSV, *Dinaromys bogdanovi*), common hamster (*Cricetus cricetus*), hazel dormouse (*Muscardinus avellanarius*) and forest dormouse (*Dryomys nitedula*). Several methods for catching and observing BSV in the wild were designed and tested in Zagreb Zoo. *In situ* activities included two visits, a month apart, on the three chosen locations where 100 live traps were set up. The traps were checked three times a day for five days resulting in 143 BSV with 84 % of re-catch success were found. Emphasis was put on determination of the species, body measures and collecting samples for future genetic and microbiome research. Given that the BSN is a rare and neophobic mammal, whose population status is not well known, this research is of great importance.

30 CANID AND HYAENID

TAG Chair: Simon Marsh (Knowsley Safari Park, Prescot, United Kingdom) • **Vice Chairs:** Mike Woolham (Blackpool Zoo, Blackpool, United Kingdom) and Sarah Forsyth (ZSL London Zoo, London, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

In 2023, the EAZA Canid and Hyaenid TAG published LTMPs for the Grey wolf and Painted dog EEPs. We also worked on the one for the Fennec fox EEP LTMP, due to be published early 2024. We would like to thank the EAZA Population Management Centre and the Executive Office for their support, particularly in the development of LTMPs and the editing of the BPG draft documents.

Collaborations with our partners and Advisors continued to improve and although the *in situ* conservation funding initiative failed to raise funding, we learnt a lot from this trial and will continue to work with the IUCN Canid SG. We have reproductive, veterinary, research, and education Advisors to help drive forward husbandry and animal welfare practices as well as *ex situ* and *in situ* conservation, research, and education goals for each EEP.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

After a couple of years of changes in EEP Coordinators, we saw a stable year with little change, allowing them to focus on managing the programmes. Challenges remain to find

the time needed to effectively manage the programmes, communicate with participants in a timely manner, and develop additional resources, such as Best Practice Guidelines.

The EEP for Bush dogs (*Speothos venaticus*) collaborated with the Brazilian Zoo Association (AZAB) to send a female to Brazil. She mated with a wild born male and in September gave birth to two male pups. Further transfers are being planned to send more females from the EEP to Brazilian zoos for breeding with wild individuals living in their facilities. This will not only improve the *ex situ* conservation programme in Brazil, but will also allow for genetically important animals to come back into the EAZA population, increasing genetic diversity and sustainability of the programme.

COLLABORATIONS AND MEETINGS

We held an open meeting at the EAZA Annual Conference which included updates from the EEPs, as well as presentations on how international collaboration is improving the *ex situ* management of bush dogs and one on how climate change is threatening canid species with extinction.

During the online mid-year meeting there were updates on the progress made in developing BPGs and LTMPs and on the EAZA training programmes attended.

The TAG continued to collaborate with the Institute for the Breeding of Rare and Endangered African Mammals (IBREAM) regarding *in situ* and *ex situ* research. We also work with other NGOs and academic institutions to support research and *in situ* conservation projects, such as the IUCN Canid SG and Sparsholt University College (UK). The partnership with the IUCN Canid SG saw the development of an *in situ* conservation initiative where small projects are identified through a review process and then promoted through the TAG and EEP network. Although several projects were identified and two *in situ* projects were shared across the EEP participants, it did not ensure any funding. It did lead to a productive dialogue between the EEP Coordinators, and the *in situ* project leads which helped build relationships and future collaborations, particularly with the EEP for Iberian wolf (*Canis lupus signatus*).

The EEP for Striped hyena (*Hyaena hyaena*) held meetings with the IUCN Hyaena SG to collaborate on two topics, 1) to define the number of subspecies of striped hyena and aardwolves, and 2) to create Educational Guidelines for zoos and rescue centres in-range countries, and for zoos outside of the species natural range.

CONSERVATION AND RESEARCH

The TAG supported several research projects in 2023. Here are a few examples of the studies undertaken during the year:

- Does ambient temperature influence the reproductive behaviour of wild canids?
- Intraspecific cooperativeness in different species of Canidae
- Using international collaboration to improve management of bush dogs in human care

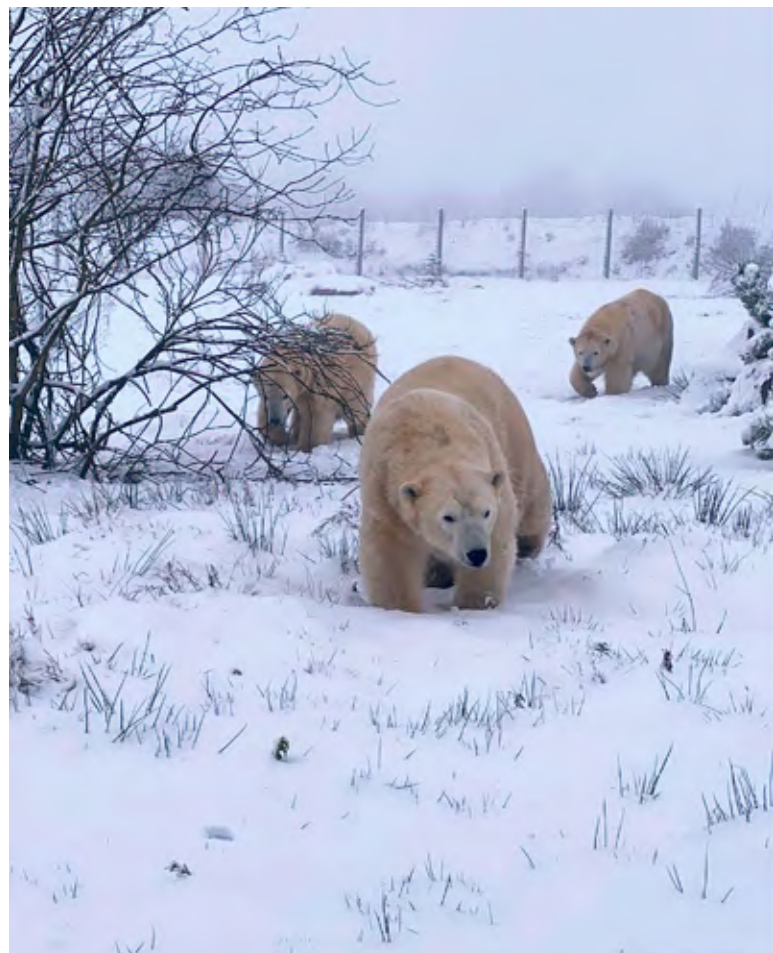
31 BEAR

TAG Chair: José Kok (Ouwehands Zoo, Rhenen, the Netherlands) • Vice Chair: Will Walker (Bristol Zoological Society, Bristol, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

All eight of the world's bear species are found within EAZA zoos, the EAZA Bear TAG focusses efforts on six of them: brown bear (*Ursus arctos*), polar bear (*Ursus maritimus*), Asiatic black bear (*Ursus thibetanus*), Andean bear (*Tremarctos ornatus*), Malayan sun bear (*Helarctos malayanus*) and sloth bear (*Melursus ursinus*).

One of our biggest and most time-consuming achievements this year was working on the EAZA Bear Education Guidelines which will be finalised in 2024. This amazing informative booklet showcases all eight species of bears and covers topics such as natural history, conservation, threats and of course educational material and ideas that can be used in your zoo with school groups and visitors. In addition, the leaflet 'The bear is not a toy' created by the TAG Educational Advisor, Zsuzsa Petró (Sóstó Zoo, Hungary) has been translated into six languages (Spanish, French, Italian, Polish, Czech, Romanian and Croatian) so that those living in brown bear range countries can be informed about how to safely enjoy the outdoors.



Polar bears (*Ursus maritimus*) enjoying the snow at Peak Wildlife Park
© Kim Wilkins

After the completion of our RCP in 2022, we have now updated most of our old EEPs and ESBs into the new-style EEPs.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The Brown bear EEP will focus on two subspecies only: the European (*Ursus arctos arctos*) and Syrian (*U. a. syriacus*) brown bears. A new Species Committee was established for the species.

The Malayan sun bear population is now managed as a new-style EEP. This EEP has also established a new Species Committee and published its LTMP in 2023. The biggest challenge for this programme is the small population size and skewed sex ratio. The EEP aims to get new founders (especially males) and holders to grow to a minimum of 50 individuals in the next five to 10 years. This is going to be difficult, but we are committed to try to achieve our goals for this tropical bear species.

Members of the polar bear Species Committee were very active with regard to visiting and assessing new facilities in the UK and Italy.

The American black bear (*Ursus americanus*) and the giant panda (*Ailuropoda melanoleuca*) continued to be monitored by the TAG.

COLLABORATIONS AND MEETINGS

The Bear TAG held its annual meeting in Helsinki (Finland). In addition to covering several topics including *in situ* and *ex situ* research, education, and conservation, we also tried to focus on ways in which we can tackle one of our biggest challenges within the TAG: the space issue in zoos. We looked at options, and came up with some suggestions, for how to work more collaboratively with non-EAZA zoos. As well as the Bear TAG meeting, we also hosted an 'open' polar bear meeting whilst in Helsinki where we covered more topics specifically tailored around these Arctic bears.

In March 2023, Tierpark Berlin (Germany) hosted a polar bear research prospectus workshop to compile an overview of research that can be done in zoos for conservation of the species of the wild, based on research priorities proposed by field researchers. Conservation priority, method and feasibility in zoos were discussed and rated.

CONSERVATION AND RESEARCH

The [Polar Bear Research prospectus](#) was completed in 2023. This document is tailored for researchers and institutions interested in conservation-oriented studies on polar bears in EAZA, as well as the staff involved in their care. The prospectus will be regularly updated to serve as a guide for collaborative, conservation-relevant polar bear research. It outlines five main areas of interest (topics): Behavior and physiology; Biobanking and research data management; Disease and pathology; Energetics, diet and nutrition; and Field techniques.

32 SMALL CARNIVORE

TAG Chair: Aude Haelewyn-Desmoulins (Parrot World, Crécy-la-Chapelle, France) • **Vice Chairs:** Janno Weerman (Rotterdam Zoo, Rotterdam, the Netherlands) and Peggy Rüegg-van den Broek (Papiliorama, Kerzers, Switzerland)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Small Carnivore TAG (SC TAG) covers eight families with a total of 167 species. It has 31 members: 24 core members, three Advisors in conservation, two general Advisors and two co-Coordiators for research. One of the core members is appointed as liaison with the EAZA Animal Welfare Working Group.

At the end of 2023, the TAG was managing five new-style EEPs, three EEPs and monitoring 67 species and subspecies.

The TAG mid-year meeting held at Pilsen Zoo (Czechia) in March was very productive especially for Malagasy species. A workshop was dedicated to the endangered small carnivore species from Madagascar: eight zoos took part in the discussion, including two from the USA. The participants benefited from the expertise of Will Duckworth (IUCN SSC Small Carnivore SG) and Frank Hawkins (IUCN Policy Advisor), under the supervision of Daniel Willcox, co-Chair of the IUCN Small Carnivore SG. The main outcomes are the creation of a working group and the first steps of an action plan based on the IUCN One Plan Approach philosophy for eight species.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

We actively continued the implementation phase of the RCP for Small Carnivores that started in 2022, after its approval by the EEP Committee in June 2022.

The EEP Committee approved the new-style EEP for Meerkat (*Suricata suricatta*) and Jessie Boylan (Hertfordshire Zoo, UK) as its Coordinator.

The status of new-style EEP was also approved for European mink (*Mustela lutreola*), together with a new Coordinator, Kristel Nemvalts (Tallinn Zoo, Estonia), Red panda (*Ailurus fulgens*), Binturong (*Arctictis binturong*) and Fossa (*Cryptoprocta ferax*). The latter also has a new Vice Coordinator: Taissa Faust (Duisburg Zoo, Germany).

The LTMPs for Giant otter (*Pteronura brasiliensis*) and Meerkat were published in 2023.

COLLABORATIONS AND MEETINGS

The International Giant Otter Conservation Alliance founded in 2022, and linking *ex situ* and *in situ* organisations, made possible the introduction of a new founder in the EAZA population. A young, orphaned female was transferred from French Guiana to Halle Zoo (Germany).

The European otter EEP Coordinator started an active cooperation with the French National Action Plan manager. The first step of this collaboration will be in the conservation education field, with common activities and events for Otter International Day.



The Granddier's vontsira (*Galidictis grandidieri*) is one of the eight species for which the Small Carnivore TAG is developing an action plan based on the One Plan Approach © Chester Zoo

CONSERVATION AND RESEARCH

Despite the low numbers of individuals, the efforts continued on the Owston's civets (*Chrotogale owstoni*) with all four holders working together towards both the EEP goals and the overall conservation strategy for the species.

Behavioural studies using video data continued at Newquay Zoo (UK). Thrigby Hall Wildlife Gardens (UK) installed a camera system to enable continuous monitoring.

The endocrine and reproductive project also continued alongside the EAZA Reproductive Management Group. This was the fourth year of collaboration with all holders providing civet faecal samples. Previous sampling had indicated two females did not have signs of oestrus cycles, so ovarian stimulation was attempted with them using a new protocol. This was also the first step towards an artificial insemination protocol which is one of the goals to achieve in 2024 to help maximise breeding potential within the population.

The EEP Coordinator visited Save Vietnam's Wildlife in Vietnam to discuss current and future partnerships within the programme, advise on breeding programme management and visit their new breeding centre for Owston's civet. Multiple pairs will be introduced for the 2024 breeding season at the Cuc Phuong centre with the hope of expanding the population.

European mink holders received a comprehensive questionnaire aiming at mapping the current mink enclosure designs, husbandry (including enrichment, training, and diet), and management (including breeding, transport, and restraint)

practices, as well as animal behaviour and health data. This will facilitate the compilation of the species BPGs in 2024.

The LIFE VISON project ended in November, after six years of implementing the project's 23 actions in the Charente River basin (southeast of France). An after-LIFE plan starts in 2024 for a period of five years to ensure that all the conservation actions, implemented during the LIFE project, continue.

The West Bengal Zoo Authority under the Department of Forests, Government of West Bengal and Darjeeling Zoo (all India) have taken up the programme for conservation breeding of red pandas as well as re-stocking the declining population in Singalila National Park. By the end of 2023, nine red pandas were transferred to the Singalila NP. Three of these females gave birth to cubs in the wild. In 2023, a more than average number of deaths were recorded. A dozen of these deaths did not have an obvious cause. Because of our current understanding of the Amdoparvovirus, the focus on this subject will be intensified. The yearly support for red panda conservation increased both in terms of number of supporting organisations and of amount of money transferred to Red Panda Network. The primary focus of the conservation action was restoring habitat.

ADDITIONAL COMMENTS

Members of the TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

33 FELID

TAG Chair: Alexander Sliwa (Cologne Zoo, Cologne, Germany) • Vice Chairs: André Stadler (Alpenzoo Innsbruck, Innsbruck, Austria) and David Barclay (Highland Wildlife Park, Kingussie, United Kingdom)

INTRODUCTION AND ACHIEVEMENTS

Following the 2022 successes, 2023 continued to be another busy and productive year for the EAZA Felid TAG. In March, we were finally able to have an in-person mid-year meeting – the first since the COVID-19 pandemic. The meeting was held in Alpenzoo Innsbruck (Austria) and we were joined by our close colleagues, the Chairs of the IUCN Cat SG. The packed agenda included programme challenges, small cat husbandry and management principles, veterinary issues and conservation support. The Felid TAG then met at the EAZA Annual Conference in Helsinki (Finland) and as usual delivered a series of exciting presentations covering key topics such as an update on Carpathian lynx (*Lynx lynx carpathicus*) reintroduction plans in Germany, wildcat (*Felis silvestris*) reintroductions in Scotland, Andean mountain cat (*Leopardus jacobita*) research, Snow Leopard Trust field work, Panthera (NGO) conservation work in Senegal and Sand cat (*Felis margarita*) research in Morocco, amongst many others.

A significant achievement of 2022 / 2023 has been the completion and start of the implementation of our RCP. This has given greater direction for all programmes and clearer roles and goals for felid holders to follow. In addition, the TAG was delighted to welcome new EEP Coordinators who bring enthusiasm and passion to their roles.

The final achievement of the year was the ongoing contribution and support from the TAG and its members to conservation. Although there were several positive developments within individual EEPs, there has been one general theme for the TAG in 2023 – conservation support. In addition to financial support and direct conservation actions (see conservation and research), individual TAG members continue to act as specialist advisors to various conservation projects, such as for Persian leopards (*Panthera pardus tulliana*), Pallas's cats (*Otocolobus manual*), black footed cats (*Felis nigripes*) and sand cats. There is no doubt that several current felid conservation projects would either not be as successful as they are, or not exist at all without the valuable input from EAZA Felid TAG members. This work along with developing a wider global network for felid conservation is one of many significant outputs of the TAG.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Thanks to the new RCP, Coordinators have clear objectives for the management of programmes. This helped guide discussions throughout the year whilst giving improved guidance and recommendations to felid holders.

Marco Penello (La Torbiera Zoo, Italy) taking over the coordination of the EEP for the Fishing cat (*Prionailurus viverrinus*) from Tomas Rus (Děčín Zoo, Czechia). Jos Hartog (Rotterdam Zoo, the Netherlands) became Coordinator of

the Asiatic lion EEP taking it over from Rikke Nielsen (Aalborg Zoo, Denmark). Andrea Cerny, who coordinates the European wildcat and Puma EEPs, left Attica Zoological Park (Greece) but continues the programme coordination under sponsorship from Alpenzoo Innsbruck.

The TAG would like to thank all departing Coordinators for their efforts and work, especially Rikke Nielsen for her long standing commitment and support to the EEP and the TAG as a whole.

COLLABORATIONS

The Felid TAG continues to work closely with the IUCN Cat SG Chairs, Urs and Christine Breitenmoser. Their support to the TAG has been instrumental in helping individual programmes develop greater contributions to the IUCN One Plan Approach and in providing valuable input to the RCP and ongoing programme priorities. Our close collaboration with them also continues across several conservation projects supported by the TAG including for Persian leopards, wildcats, Pallas's cats, Iberian lynx (*Lynx pardinus*).

The TAG continues to develop its close relationship with the AZA Felid TAG with the Chairs and other TAG members attending several of our mid-year meetings over the years. This allowed valuable sharing of experiences, different perspectives on solutions for challenges in population management and close alignment on priority species. The EAZA Felid TAG (Vice) Chairs will meet the AZA Felid TAG Chair (Dan Dembiec) in-person again at the World Association of Zoos and Aquariums Joint TAG Chairs Meeting in Edinburgh (UK) in 2024.

CONSERVATION AND RESEARCH

Many critical conservation actions involving or led by TAG members / institutions took place in 2023 with key projects including:

- **Pallas's cat International Conservation Alliance (PICA)**, led by Nordens Ark (Sweden) in partnership with Royal Zoological Society of Scotland (RZSS) and The Snow Leopard Trust, continues to be one of (if not the biggest) contributor to global Pallas's cat conservation and has supported over 15 range countries projects



Female wildcat (*Felis silvestris*) with GPS collar, following the first reintroduction of the species in Scotland © Saving Wildcats (RZSS)

- **Saving Wildcats** (Scotland), a European (EU LIFE) partnership project led by RZSS, released for the first time 19 cats in Scotland in 2023
- **Linking lynx**: through a network of expert working groups (including *ex situ* management), planning for Carpathian lynx reintroduction and reinforcements is well underway for three sites in Germany. The first releases from an EAZA Member are expected in 2024
- **Iberian lynx** (Spain / Portugal): The recovery of this Critically Endangered species continues to deliver successes. Wild populations have increased, their range has expanded and more EAZA institutions are holding the species. The species was downlisted from Critically Endangered to Endangered
- **Arabian Leopard Conservation Breeding Centre** (Kingdom of Saudi Arabia): Led by the Royal Commission of Al Ula, this project has developed and is now implementing a long-term plan for the reintroduction of Arabian leopards (*P. pardus nimr*). It has started in a dedicated breeding centre where successes have already been recorded with increased breeding

ADDITIONAL COMMENTS

The Felid TAG would like to thank all felid holders for their ongoing support to programme management and for the financial support given to the range of felid conservation projects. The aim of the TAG is three-fold: continue to make our programmes more sustainable, continue to contribute to conservation efforts in the wild and raise awareness and education for the plights of felids globally. This cannot be done by the TAG members alone. Therefore, the TAG asks for your continued support and most importantly your compliance with the recommendations set out in the new RCP. Together we can give threatened felid species a bright future.

34 MARINE MAMMAL

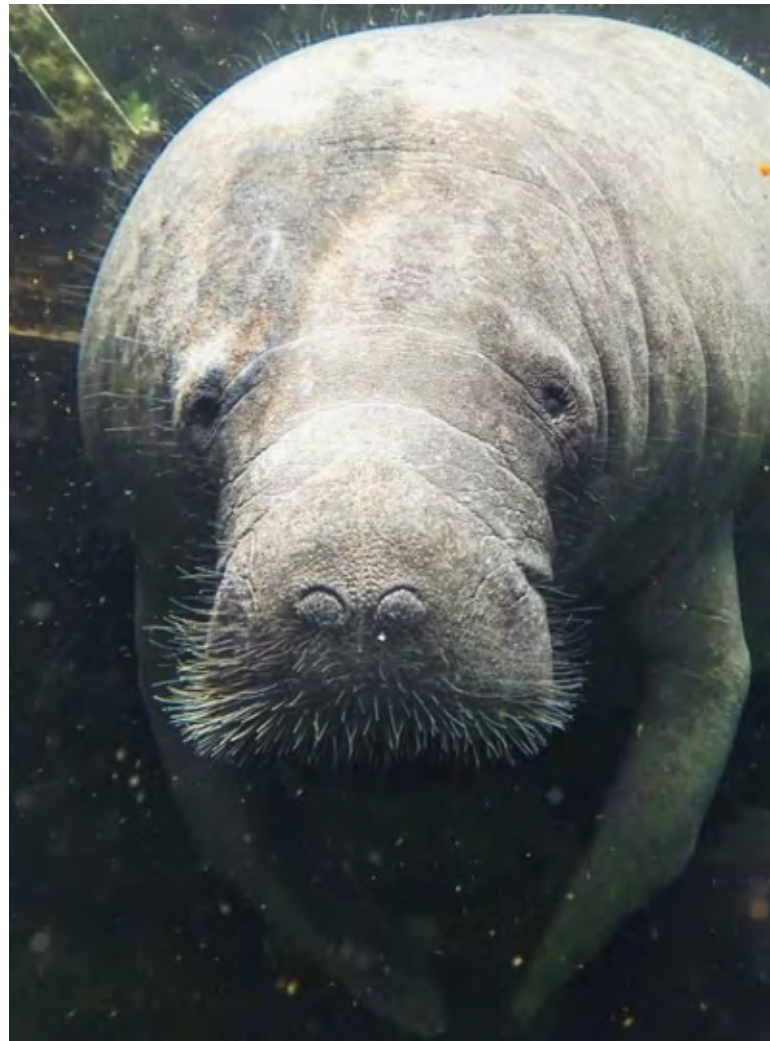
TAG Chair: Claudia Gili (Parco Natura Viva, Verona, Italy)
• Vice Chair: Agustín López Goya (Madrid Zoo Aquarium, Madrid, Spain)

INTRODUCTION AND ACHIEVEMENTS

Since our new-style RCP was officially approved by the EEP Committee in July 2022, the EAZA Marine Mammal TAG proposed to establish eight EEPs for the: bottlenose dolphin (*Tursiops truncatus*), Caribbean manatee (*Trichechus manatus*), Patagonian (*Otaria flavescens*) and Californian (*Zalophus californianus*) sea lions, fur seals – which includes South American (*Arctocephalus australis*) and South African (*A. pusillus*) fur seals, grey seal (*Halichoerus grypus*), harbour seal (*Phoca vitulina vitulina*) and Lahille's bottlenose dolphin (*Tursiops truncatus gephyreus*). The latter two will be new programmes entirely.

Our Veterinary Advisors are:

- Daniel García Párraga (Valencia Aquarium, Spain): TAG Advisor
- Kathrin Baumgartner (Nuremberg Zoo, Germany) and Antonio Mignucci (Puerto Rico University, USA): Caribbean manatee international Vet Advisors



South African fur seal (*Arctocephalus pusillus*)
 © Verónica Márquez Ávila, Faunia

- Nicola Pussini (Genoa Aquarium, Italy) and Kerstin Terner (Duisburg Zoo, Germany): Pinniped Advisors
- Tania Monreal (International Zoo Veterinary Group, IZVG – Independent Veterinarian) is a member of our TAG as a representative between EAZA and the Accreditation Committee of European Association for Aquatic Mammals (EAAM)

Thanks to a close collaboration between the TAG and Ex Situ Options for Cetacean Conservation (ESOCC), there is a possibility of getting involved with conservation projects on freshwater dolphins.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The TAG continued working on all the programmes and addressing the major challenges for the species, targeted by either our detractors or by commercial requests from other countries.

The population of bottlenose dolphins is still decreasing (as planned) to face the space problem. It currently consists of 131 males and 117 females. In 2023, there were two unsuccessful pregnancies and no calves. The EEP is helping holders to manage the population optimising the space

available and searching for new options worldwide. The draft of the new BPG will be presented by September 2024.

COLLABORATIONS AND MEETINGS

The collaboration with EAAM continued, aiming to achieve the best possible species management and care of marine mammals, and to make the greatest possible contribution to public education and conservation of these species and their habitats.

CONSERVATION AND RESEARCH

The conservation and research activities of the TAG continued for the Rescue and Information Network Project, with EAAM support focusing on the rehabilitation and monitoring of Mediterranean monk seal (*Monachus monachus*) populations as well as participation in national and international fora. See the EAZA TAG Annual Reports 2022 for publications related to the project.

35 ELEPHANT

TAG Chair: Thomas Kölpin (Wilhelma Zoo, Stuttgart, Germany) • Vice Chairs: Jana Pluháčková (Ostrava Zoo, Ostrava, Czechia) and Cordula Galeffi (Zürich Zoo, Zürich, Switzerland)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Elephant TAG manages two EEPs: for the African (*Loxodonta africana*) and the Asian (*Elephas maximus*) elephants. The goal of the TAG is to maintain demographically and genetically sustainable insurance populations of both species within EAZA institutions.

Three TAG meetings took place in 2023: a closed mid-year meeting in May in Copenhagen Zoo (Denmark), a closed and an open meeting during the EAZA Annual Conference in September. The main topics discussed were treatment and vaccination against the Elephant Endotheliotropic Herpes Virus (EEHV), management euthanasia and the reorganisation of the TAG structure.

The EAZA membership of Al Ain Zoo (UAE) was terminated in 2023 due to imports of wild caught elephants from Namibia without the approval of the TAG.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

In 2023, the Asian elephant EEP population decreased from 305 in 2022 to 294 individuals at the end of 2023, as predicted in the LTMP. Due to the restricted breeding protocol to which we have been adhering for five years, we had six births (three males and three females) in 2023. There were 12 deaths (six males and six females) and five individuals exited the EEP, of which four (two males and two females) were transferred from Dublin Zoo (Ireland) to Cincinnati Zoo (USA) and are now part of the SSP. This followed a previous transfer of two females from Rotterdam Zoo (the Netherlands) to the Smithsonian National Zoo (USA) in 2022. Hereby the EEP and the SSP strengthen their bonds and intensify their cooperation.

It's still the main challenge to reconstruct our management system in such a way that it will be able to hold a population consisting of 50% males and 50% females. We are therefore happy that two institutions started a bachelor group in 2023, namely Selwo Aventura (Spain; who was already in the EEP) and Safari Park Lago Maggiore (Italy; a new non-EAZA EEP participant). Moreover, Sofia Zoo (Bulgaria) re-joined the EEP and welcomed two older females from Augsburg Zoo (Germany). The latter does not currently have elephants anymore but will start an only-male group in 2024, which is great news for the EEP.

At the end of 2023, a special transfer happened when female Panang from München Zoo (Germany) was reunited with her mother Ceyla-Himali in Zürich Zoo (Switzerland) after 28 years.

In 2023, the African elephant EEP saw five births of females, five deaths (two males and three females) and transferred seven males and one female. At the end of 2023, the EEP consisted of 55 males and 138 females in 46 institutions. Looking at the age structures with high death rates, we found that most animals died before one year of age or after 30-34 years old. Out of the early deaths, 30% of the calves came from inexperienced first birth mothers. This is congruent with numbers in the wild. The mortality rate of young animals in human care (22%) is comparable to that in Amboseli National Park (19%), for example.

In the future, the focus will be on bringing younger bulls from bachelor groups into breeding situations. Brexit has also prevented transports to and from the UK in 2023 and we hope to be able to carry out the first successful transport to the UK in the first quarter of 2024.



Eye of an African elephant (*Loxodonta africana*) © Thomas Kölpin

CONSERVATION AND RESEARCH

In 2023, the Conservation Group of the Elephant TAG developed their Terms of Reference. Therein their objectives are defined and focus on A) Further collaboration with IUCN SSC SGs, B) Recommendations for the support of *in situ* conservation projects and C) Communication of conservation efforts by the elephant holders. The Conservation Group is committed to follow these goals in accordance with the tasks defined in the LTMPs.

The Research Group of the Elephant TAG has provided its expertise in 2023 not only on research proposals, but also on veterinary topics such as vaccination and EEHV monitoring recommendations. Research projects approved in 2023 cover subjects of relevance for *ex situ* as well as *in situ* conservation by investigating for example the genetic basis of Asian elephant (sub-) species, efficiency of tetanus vaccination, first birth survival and social learning.

The research activities resulted in the publication of several scientific reports in 2023 such as the report on the historical development of zoo elephant survivorship (Scherer, L. et al. (2023). *The historical development of zoo elephant survivorship*. Zoo Biology, 42: 328-348).

The EEHV study led by researchers from Utrecht University (the Netherlands) showed direct correlation between the absence or low levels of EEHV-sub-type specific antibodies and the occurrence of fatal EEHV-HD, informing us on which candidate antigens for a subunit vaccine should be chosen. This was presented at the TAG meeting during the EAZA Annual Conference. It is expected that safety studies in adult elephants will be done in 2024. The TAG's endorsement as well as legal permissions for a clinical trial in Asian elephants will be requested soon. It is expected that this process will take at least six months.

In the meantime, the research on the efficacy of immunological treatment options is ongoing.

ADDITIONAL COMMENTS

Members of the TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

36 EQUID

TAG Chair: Ulrike Rademacher (Wilhelma Zoo, Stuttgart, Germany) • Vice Chairs: Jaroslav Šimek (Prague Zoo, Prague, Czechia) and Tanya Langenhorst (Marwell Wildlife, Winchester, UK)

INTRODUCTION AND ACHIEVEMENTS

A total of 12 species fall under the remit of the EAZA Equid TAG of which eight are formerly managed as EEPs: African wild ass (*Equus africanus somaliensis*), Grevy's zebra (*E. grevyi*), Turkmenian kulan (*E. hemionus kulan*), Onager (*E. hemionus onager*), Kiang (*E. kiang*), Przewalski's horse (*E. przewalskii*), Maneless zebra (*E. quagga borensis*), and Hartmann's mountain zebra (*E. zebra hartmannae*).

While there has been no change in membership in 2023,



Onager (*Equus hemionus onager*) in Hagenbeck Zoo © L. Schnier

Richard Østerballe (Givskud Zoo, Denmark) announced that he will retire in 2024 and a successor was suggested.

The TAG evaluation was finalised and results will be circulated in the first half of 2024.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Turkmenian kulan

Only three foals were born in 2023, of which one did not survive. The population is aging. Therefore, four new stallions were transferred to start breeding and breeding recommendations were issued for eight zoos. There are two potential new holders in Czechia and Finland.

Onager

The number of holders remains stable (13).

The new Species Committee was elected in December.

Przewalski's horse

The LTMP was published in April and an online meeting with holders of the so-called A-line individuals was held on its outcomes.

The number of breeding recommendations was increased, mainly to produce candidate horses to start two reintroduction projects.

The EEP started a collaboration with Rewilding Europe on an extensive grazing project in central Spain.

Somali wild ass

Initial meetings were held to develop the LTMP for the species. Completion is expected for 2024.

The birth rate was too low in 2023; breeding must be increased to maintain the individuals' reproductive potential.

The pedigree of the animals at non-EAZA EEP participant Hai Bar Yotvata Nature Reserve (Israel) is unclear and will have to be examined using molecular genetic methods.

The AZA SSP was discontinued, which increases the importance of the EEP as an insurance population.

Maneless zebra

The population only grew by three individuals. The EEP is suffering from insufficient capacity. One breeding institution was lost, but the situation stabilised as two new breeding groups were established. One new holder is expected to join the EEP, and one current holder should start to breed. The reconstruction of maternity herds is expected in three holders.

New holders for breeding herds and bachelor groups will be needed as the EEP population needs to at least double in the coming years.

Hartmann's mountain zebra

Several online meetings took place to work on the LTMP. This work will continue in 2024.

Two holders were lost in 2023.

Several negative experiences led to the recommendation to avoid mixed exhibits with the species, except in very specific situations.

Grevy's zebra

The LTMP process was initiated for the species. Some final adjustments are needed before completion in 2024.

The EEP population is still very small due to low recruitment. Breeding recommendations were issued to increase numbers as much and as quickly as possible.

An investigation into causes for low foal survival began last summer. So far, no common reason could be identified by the Vet Advisors. Further research is ongoing.

CONSERVATION AND RESEARCH

The EEP collaborates on a reintroduction project of Turkmenian kulans into the central steppe of Kazakhstan with the Association for the Conservation of Biodiversity of Kazakhstan (ACBK) and the Frankfurt Zoological Society (FZS, Germany). Two males and four females from an acclimatisation pen (transported earlier from Altyn Emel National Park to Altyn Dala State Reserve) were released in the summer of which two females were collared. There were

no births in 2023 but mating was observed. A new anaesthesia protocol tested successfully on kulans in European semi-reserves proved to be suitable for application in a semi-wild context.

The next transportation to Altyn Dala SR is planned by road for autumn 2024. The aim is to transport a large number of females and young animals; if successful, bringing in a few stallions from the EEP would be valuable (most likely in the summer 2025 or 2026).

A PhD study started on the genetic characterisation of onager at Hai Bar Yotvata Nature Reserve (Israel).

The main conservation effort for Przewalski's horses was focused on initiating the reintroduction project in central steppe of Kazakhstan (Altyn Dala SR), run by a collaboration between Prague Zoo (Czechia), Nuremberg Zoo and Berlin Zoo (both Germany), ACBK, FZS, Hortobágy NP and other governmental and non-governmental organisations in Kazakhstan. The first international workshop on planning the project was held in Prague Zoo. In 2024, the team plans to transport eight horses from the EEP to Altyn Dala SR.

Prague Zoo also continues to prepare for reintroductions in Nömrög Strictly Protected Area (SPA) (Eastern Mongolia) and to support the Great Gobi B SPA reintroduction project with International Takhi Group.

Six adult Somali wild ass females were documented close to the Djibouti border during a successful survey in the border area of Ethiopia and Djibouti. Local pastoralists confirmed that wild asses cross the border.

Interested holders can send samples to Alex Greenwood (Leibniz Institute for Zoo and Wildlife Research, IZW, Germany) to test for EHV viruses.

Liberec Zoo and Zoo Dvůr Králové (both Czechia) are associated with conservation activities for maneless zebras in Uganda. Another trip is planned, and efforts are ongoing to sign a Memorandum of Understanding with the Ugandan Wildlife Authority for future cooperation.

The extreme drought in Kenya that lasted for nearly two years ended in March 2023. The landscape and animals recovered reasonably quickly. Its full impact on Grevy's zebras will only be known after the next population survey in 2024.

The Kenya Wildlife Service (KWS), together with Marwell Wildlife (UK) and the Grevy's zebra Trust (Kenya), carried out a long-delayed collaring mission. Twenty zebras were fitted with GPS collars to monitor their movement and connection across core rangeland. This will enable KWS to supply developers with information to build mitigating measures (like under- and over-passes) into large scale infrastructure and avoid separation of sub populations.

ADDITIONAL COMMENTS

Members of the TAG were involved in a number of publications issued in 2023. Some are listed in the [Annex document](#). The full list of Equid related publications is available the Equid TAG page on the EAZA Member Area.

37 RHINOCEROS

TAG Chair: Lars Versteeg (Beekse Bergen, Hilvarenbeek, the Netherlands) • **Vice Chair:** Katharina Herrmann (Berlin Zoo, Berlin, Germany)

INTRODUCTION AND ACHIEVEMENTS

The vision and mission of the EAZA Rhinoceros TAG is to have a healthy, viable population of free ranging and intensively managed rhinos ranging through intact ecosystems, where they are valued and cherished both locally and globally, and to ensure all populations in human care are healthy, self-sustaining and genetically viable and are capable of being an effective tool in support of rhino conservation in the wild.

In 2023, the TAG pushed through with plans progressing towards a 'One Plan Approach' in collaboration with every established rhino organisation worldwide. This is a long-term effort of the TAG. After multiple brainstorm sessions, many actions were captured for further discussion. For now, the actions are centred around the *ex situ* rhino community and linked to the EAZA Rhino RCP and LTMPs. Per species, these actions are now being divided and subgroups created for further follow up. The *in situ* angle will, in the future, be further incorporated aiding the creation of a comprehensive plan.



White rhinoceros (*Ceratotherium simum*) © Borås Zoo

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

In the EEP for the white rhinoceros (*Ceratotherium simum*), development is consistent and very positive. However, there are future challenges. The number of births has outnumbered the number of deaths for many years in a row possibly creating a future surplus challenge. In 2023, the population grew to 359 animals (146 males and 213 females) due to 18 births and only five deaths. The EEP and its participants need to become extremely creative. All participants are asked to create separation exhibits for potential surplus, and the EEP is pro-actively searching for additional holders. The balance between breeding (for health and behaviour reasons next to demographic reasons) and maximum capacity is tricky. Contraception is not easy, and one risks losing breeding animals for life.

The black rhinoceros EEP population continued to grow slowly during 2023. With the death of the last Southern black rhinoceros (*Diceros bicornis minor*) during the year, the EEP population is now predominantly composed of Eastern black rhinoceros (*D.b. michaeli*). The results of a genetic study on the EEP population indicate that there is a low level of genetic mixing in the population, introduced through the import of a 50% *D.b. minor* male from Japan in 2000. The number of international transfers remained low, as was the case during the COVID-19 years, however the urgent welfare issues resulting from a large new zoo facility being cancelled were mostly resolved. Work continues to get the Memorandum of Understanding approved for the proposed translocation of three females to the Grumeti Reserve in Tanzania. A new request for two males to be transferred to the Thaba Tholo Reserve in South Africa is being reviewed and there has been a request for a male from the Japanese black rhinoceros Coordinator. The population remains an extremely important resource for conservation translocations to Africa and new holders are being sought to maintain genetically healthy sustainable population.

Despite the breeding recommendations issued by the EEP Coordinator for the greater one horned rhinoceros (*Rhinoceros unicornis*) in February, there was only one birth in 2023: a male at Parc Animalier de Branféré (France). The skewed sex ratio – 44 males and 43 females as of 31 December 2023 - and the increasing numbers of male calves are a serious problem in this EEP, and solutions will need to be found to house single bulls or bull groups. Given that about 15 of these 43 females are post reproductive or have long lasting problems with breeding, the sex ratio is very problematic.

In autumn, the greater one-horned rhinoceros LTMP was published. In addition, a task force was formed for this species. The Vet Advisor, Fabia Wyss (Basel Zoo, Switzerland), has developed an information sheet on the use of contraception in greater one-horned rhinoceros which is available from the EEP Coordinator upon request. She has also produced a research proposal to examine the EEP population for antibodies and antigens of EHV1 and EHV4. This was sent to all holders with the request to collect samples.



Greater one-horned rhinoceroses (*Rhinoceros unicornis*) © Basel Zoo

COLLABORATIONS AND MEETINGS

During the EAZA Annual Conference, a meeting was organised with Save the Rhino International and included nutritional, veterinary and educational presentations. The Rhinoceros TAG values all the worldwide cooperation and is encouraging all holders to join forces for rhinoceros conservation.

Next to the cooperation with Save the Rhino International and the International Rhino Foundation, the three EEPs have strong collaborations to rhinoceros conservation partners all over the world. The TAG is pushing very hard to increase global cooperation and regularly exchanges information with the AZA Rhino TAG. The EAZA rhino *ex situ* community is represented in the IUCN African Rhino SG. Topics like rewilding, sustainable use, legislation and wildlife mitigation are only a few examples of joint effort documents worked on.

CONSERVATION AND RESEARCH

As said before, as part of the cooperation between EAZA and Tanzania, preparations are ongoing to establish an Memorandum of Understanding and transfer three zoo-born Eastern black rhinoceros to Grumeti. Another initiative is the cooperation with Thabo Tholo to send unrelated males to their game reserve.

38 TAPIR AND SUIFORM

No report was submitted by the EAZA Tapir and Suiform TAG for 2023.

39 CATTLE AND CAMELID

TAG Chair: James Burton (Chester Zoo, Chester, United Kingdom) • **Vice Chair:** Marcel Alaze (Münster Zoo, Münster, Germany)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Cattle and Camelid TAG had another successful year and completed many of the priorities set for this two-year period.

New members joined the TAG bringing additional expertise to strengthen our work. The TAG has a new Vet Advisor,

Rebecca Amos (Highland Wildlife Park, UK). We also have two new Research Advisors, Lewis Rowden and Sam Turvey (ZSL London Zoo, UK), who will support the TAG in developing a number of research projects and advise on other projects.

With these new enthusiastic TAG members, we look forward to achieving much more in 2024. Priorities for 2024-2025 are currently being developed.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Lena Bockreiß (Munich Zoo, Germany) became the new Vicuña EEP Coordinator and International Studbook keeper at the end of 2023, following a thorough handover from Christian Schmidt (Zürich Zoo, Switzerland). We acknowledge Christian's huge input to the TAG, being EAZA's longest serving Coordinator.

Nadja Lane (Jersey Zoo, UK) took over the European bison EEP Coordinator role and is working closely with Douglas Richardson (Peak Wildlife Park, UK) on transition.

The review of the gaur (*Bos gaurus*) status as a phase out species is involving all holders and is on-going. We held a call to hear thoughts about future management during the year and discussions will be completed in 2024.

COLLABORATIONS AND MEETINGS

Presentations on *in situ* activities for tamaraw (*Bubalus mindorensis*), wild camel (*Camelus ferus*), saola (*Pseudoryx nghetinhensis*), anoa (*Bubalus spp.*) and banteng (*Bos javanicus*) were given at the TAG meeting at the EAZA Annual Conference.

The GSMPs for anoa and banteng held the fifth international awareness raising day 'Action Indonesia Day'. Lots of visitor events and activities were conducted by EAZA Members. Many TAG members are working with our Indonesian zoo colleagues to support cooperative breeding, animal welfare, and fundraising.

The tamaraw became an EEP in 2022, for EAZA Members to support conservation efforts in its range in the Philippines. A Tamaraw Conservation Workshop was held in 2023 with government, local and international stakeholders to work towards developing a feasibility assessment for translocation or *ex situ* management, using decision science. The assessment will result in options provided to the Philippine government for the conservation of the species going forward. The long-term aim is a tamaraw meta-population that is thriving, while ensuring local communities and indigenous peoples are respected and able to live alongside them.

In August 2023, Zoo Berlin and Tierpark Berlin (Germany) together with WWF hosted a celebration commemorating the 100th anniversary of the efforts by zoos and select private holders to save the European bison (*Bison bonasus*) from extinction. This anniversary was not just a landmark for European bison conservation, it also represented the 100th anniversary of the zoo community's first coordinated effort to save a species.

The TAG Chair contributed to selection of priority species for



A zoo-bred female European bison (*Bison bonasus*) with her calf and offspring from two other females in Shahdag National Park © WWF Germany

the newly formed Regional Zoo and Aquarium Association of Southeast Asia (SEAZA) Ungulate TAG. This allowed for taking a more global perspective to ensure endangered Asian species are represented.

CONSERVATION AND RESEARCH

In November 2023, the latest group of European bison were sent through the EEP to Shahdag National Park in Azerbaijan. As in previous years, most of the bison were collected at Berlin Tierpark, who continue to play a significant role in this important project in partnership with WWF Germany. The zoos that generously provided animals for this reintroduction were EEP participants Berlin Tierpark, Borås Zoo (Sweden), Chomutov Zoo (Czechia), Karlsruhe Zoo (Germany), Nordens Ark (Sweden) and Târgu Mureş Zoo (Romania). We also had bison from non-EEP participants Hanau Zoo (Germany) and Pescheray Zoo (France).

The European Bison EEP conducted a Husbandry Survey to identify holders' current needs and support them best. Forty-one holders responded. It also identified interest for joining a Species Committee, with the intention of establishing the first European Bison Species Committee in 2024.

Twenty staff from Indonesian zoos were trained to help develop their colleagues' skills in animal husbandry and education. Amy Humphries, Banteng EEP Coordinator (Chester Zoo, UK) co-facilitated the training.

ADDITIONAL COMMENTS

The Action Indonesia (GSMP for banteng and anoa) annual report for 2023 is available on www.asianwildcattle.org/resources.html. Members of the TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

40 DEER

TAG Chair: Noam Werner (Haifa Educational Zoo, Haifa, Israel) • **Vice Chair:** Marco Penello (La Torbiera Zoo, Agrate Conturbia, Italy)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Deer TAG is responsible for three taxonomically distinct groups: the chevrotains (mouse-deer; *Tragulidae*), musk deer (*Moschidae*) and true deer (*Cervidae*). Following the taxonomy currently used by the IUCN/SSC Red List, a total of 73 species falls under the remit of the Deer TAG (10 *Tragulidae*; 7 *Moschidae*; 56 *Cervidae*).

The TAG's latest RCP, published in late 2019, recommended the (re)establishment of 18 EEPs, all but one are now established.

In late 2022 and 2023, LTMPs for five programmes were published: southern pudu (*Pudu puda*), Michie's tufted deer (*Elaphodus cephalophus michianus*), lesser chevrotain (*Tragulus javanicus* and *Tragulus kanchil*), Bactrian wapiti (*Cervus hanglu bactrianus*), Siberian musk-deer (*Moschus moschiferus*).

Two Best Practice Guidelines are in the final stages of editing and should be published in 2024, while two other programmes are compiling theirs.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

The Sambar EEP maintained its Coordinator, Simon Jeffrey (Port Lympne Wild Animal Park, UK) for a full year after the programme was established in late 2022.

The White-lipped deer EEP was coordinated by Tony Souvignet (Mulhouse Zoo, France) who took over from Ryszard Topola (Zamość Zoo, Poland). We thank Ryszard for managing the programme, as a monitoring one, an ESB and finally an EEP, and Warsaw Zoo (Poland) that held it for many years.

In late 2023, Lidia Przybylska (Wrocław Zoo) stepped down as Hog deer EEP Coordinator, and Markéta Glenková (Ústí nad Labem Zoo, Czechia) took over. We would like to deeply thank Lidia for coordinating the EEP since its establishment and Wrocław Zoo for supporting her. Lidia remains the Coordinator of the Bawean deer EEP.

One more RCP-recommended programme, the Formosan sika deer EEP, awaits further genetic research to confirm subspecies held within EAZA before a decision is made on whether to establish it or not.

Import of hoofstock, including deer, musk-deer, and chevrotains, from third countries, including the UK, into the EU, is still a major obstacle for managing the TAG's programmes despite the new EU Animal Health Law going into force mid 2021. This challenge makes it difficult for programmes to introduce new founders in their respective populations.

Another EU regulation, the EU Invasive Alien Species Act (1143/2014), is still challenging. Two species, the Reeves' muntjac (*Muntiacus reevesi*) and the axis deer (*Axis axis*), have already been included in the EU List which means that their populations in human care should be phased out. The sika deer (*Cervus nippon*) is expected to be voted on soon and might also be added to the List. Officially, the legislation orders member states to establish a mechanism for holders to apply for an exemption based on conservation reasons, but the establishment and implementation of these mechanisms have been partial. Moreover, many zoos choose not to make an effort and apply for such an exemption, despite the needs and the fact that one species, the Reeves' muntjac, is listed as Vulnerable by conservation authorities in its native China and an EEP for this species was established. To help zoos that are interested in applying for the above-mentioned exemption, the TAG can provide material and information following collaboration with the EAZA Policy team. Also, according to the above-mentioned regulation, member states can decide to include more species in their respective National Lists of Invasive Alien Species, and some have. For example, the sika deer is now included in the national lists of four different member states, which means that zoos in these countries officially need to phase out the species, including the Indochinese sika deer (*C. n. pseudaxis*), which is Extinct in the Wild and is an EEP species, such as water deer (*Hydropotes inermis*) and even European fallow deer (*Dama dama*), have also been added to various national lists. While these species are not managed at the moment, the water deer is threatened in the wild (Vulnerable) and the fallow-deer might be categorised as such soon. The TAG is monitoring such national-level decisions and assisting as necessary.

The identification of Chronic Wasting Disease (CWD) in Europe

is still a potentially emerging challenge. In North America, CWD is prevalent and restricts the transfer of cervids to the point that some AZA programmes are dying out and some unmanaged species are also being phased out. In Europe, CWD has only been reported in very few animals, all wild or semi-domesticated, and only in Scandinavia. Following the identification of the pathogen in Europe, the EU adopted new rules (Commission Regulation 2022/2246) to minimise the risk of the disease spreading. While this regulation does not prohibit the transfer of cervids from CWD-infected countries to non-infected ones, the transfers should gain approval from competent authorities in the receiving countries. It is yet too early to know if, or how, the new regulation will affect the Deer TAG programmes.

COLLABORATIONS, CONSERVATION AND RESEARCH

Cooperation with the IUCN/SSC Deer Specialist Group (DSG) is ongoing. The TAG Chair, Noam Werner (Haifa Educational Zoo, Israel), is also serving as a Co-Chair of the DSG and several TAG members are members of the DSG.

A collaboration between the DSG and the IUCN/SSC Conservation Translocation SG is ongoing and intending to write a Deer Conservation Translocation Guidelines. Several TAG members may be asked to contribute to the writing of this document. The TAG member contribution is important as several TAG members, through the respective programmes they run or through their institutions, have been involved in long-term *in situ* deer conservation projects in range countries, such as the Visayan spotted deer (*Rusa alfredi*) in the Philippines, forest reindeer (*Rangifer tarandus fennicus*) in Finland, and Mesopotamian fallow-deer (*Dama mesopotamica*) in Israel, among others.

Several TAG members are also involved in research projects focusing on deer, including EEP species.



Deer antlers are shed every year which makes a great enrichment to large carnivores. Keep an all-male deer group, and you will never run out of antlers! © Noam Werner

41 ANTELOPE AND GIRAFFID

TAG Chair: Sander Hofman (Antwerp Zoo and Planckendael Zoo, Antwerp, Belgium) • Vice Chair: Kim Skalborg Simonsen (Givskud Zoo, Givskud, Denmark)

INTRODUCTION AND ACHIEVEMENTS

The EAZA Antelope and Giraffid TAG (AGTAG) aims to work towards the conservation of antelopes and giraffids and instil wonder for these species in people. We are a large and complex TAG, representing approximately 45 species (and about 80 taxa) held in EAZA institutions. After the publication of the RCP in 2022, the number of EEPs in the TAG currently stands at 24 of which seven are part of an International Studbook. The remaining species within the EAZA region are all monitored by the subgroup leaders within the TAG.

The AGTAG consists of the following subgroups: Giraffe and Okapi, Woodland Antelopes, Savannah Antelopes and Aridland Antelopes. Several Advisors are connected to the TAG as well, helping us with themes like conservation, genetics, nutrition, husbandry, research, veterinary questions, and education.

The TAG is proud to report that in December, the scimitar-horned oryx (*Oryx dammah*) was downlisted from Extinct in the Wild to Endangered as a direct result of conservation action involving zoos and the EEP. Reintroductions of animals from the EEP and the North American SSP into various national parks in Tunisia took place between 1985 and 2007. There are currently approximately 200 scimitar-horned oryx in four partially fenced protected areas. Many EAZA institutions supported the post-release monitoring and management

of the species in Tunisia. In 2016, a new ambitious project, led by the Environment Agency-Abu Dhabi and the Chad Government and implemented on the ground by Sahara Conservation, released scimitar-horned oryx to the unfenced Ouadi Rimé-Ouadi Achim Faunal Reserve in Chad, one of the largest protected areas in Africa. There are now over 600 scimitar-horned oryx free-ranging in the reserve. The source population for this reintroduction was genetically augmented by animals from EEP participants collected together at Marwell Wildlife (UK), the EEP Coordinator at the time.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Following the finalisation of the RCP, our big focus was to get all the new-style EEPs approved. We went from 12 EEPs and 11 ESBs to 26 new-style EEPs, and at the end of 2023, 24 were approved, and a Coordinator for the 25th EEP had been identified. A few new Coordinators were appointed and went through the EAZA Population Management course.

A few of the decisions of the RCP were revised during 2023. Initially, an EEP was recommended for the Speke's gazelle (*Gazella spekei*), but the largest holder left EAZA leaving us with only one holder. The TAG decided not to pursue this EEP anymore. The same withdrawal from EAZA also meant that the proposed liaison for Western Asia is no longer needed.

COLLABORATIONS AND MEETINGS

The AGTAG has a good relationship with the IUCN SSC Antelope SG and IUCN SSC Giraffe and Okapi SG. They have helped in our decision-making during the RCP, especially for the species we do not hold in EAZA. They also help the TAG to choose relevant projects for fundraising and to identify where we can offer our *ex situ* expertise in relation to the wild populations through our 'taskforce'.

The 2023 mid-year meeting was held in Givskud Zoo (Denmark) to go through each of the EEPs' roles and general challenges. Every Coordinator left the meeting with a short list of tasks to take their programme to the next level.

During the EAZA Annual Conference meeting, the TAG paid special attention to the management of antelope in mixed species exhibits. We presented a selection tool to guide institutions in their choice of antelope species for their collection and talked about exciting prospects in regard to conservation breeding of slender-horned gazelle (*Gazella leptoceros*) in Tunisia and mountain bongo (*Tragelaphus eurycerus isaaci*) in Kenya where we aim to bring new genes from the EEP.

CONSERVATION AND RESEARCH

The AGTAG hope to be able to continue to stimulate the zoos' involvement in conservation and research, as we consider this a priority for the years to come. One of our goals is that each programme endorses at least one conservation project. We are currently developing a tool for selection of meaningful and impactful conservation.



Western giant eland (*Tragelaphus derbianus derbianus*) in Senegal
© Karolína Brandlová



Scimitar-horned oryx (*Oryx dammah*) in Bou Hedma National Park © Marie Petretto

The TAG membership is very much involved in conservation work. A few programmes are relevant for conservation translocation. But we also promote sharing expertise and provide funding. A great example from the EAZA Conservation Database is in Senegal, where the last remaining 250 individuals of the Critically Endangered Western giant elands (*Tragelaphus derbianus derbianus*) live in the Niokolo Koba National Park. Together with 150 individuals in two fenced wildlife reserves, Bandia and Fathala, that is all there is left worldwide. Through the NGO 'Antelope Conservation' this species gets fundamental support from EAZA zoos.

In 2023, the Spiral-horned Antelope Conservation Genetics Project was completed. Many years of data collection and analyses were translated into practical advice to the EEP Coordinators for our *Tragelaphini* Studbooks on how to deal with the genetic situation of inbred or potentially outbred populations. A scientific paper on the project will follow in 2024. Molecular genetics is of high importance to the management of our programmes. There currently are molecular genetics studies on the way through the Biobank for scimitar-horned oryx and addax (*Addax nasomaculatus*) to identify if there are genes available in our EEPs that could supplement the reintroduced populations in Tunisia and Chad.

ADDITIONAL COMMENTS

Members of the TAG were involved in a number of publications issued in 2023 (see [Annex document](#)).

42 CAPRINAE

TAG Chair: Dennis Müller (Halle Zoo, Halle, Germany)
• Vice Chair: Marco Penello (La Torbiera Zoo, Agrate Conturbia, Italy)

INTRODUCTION AND ACHIEVEMENTS

In 2023, 39 species belonging to three different taxonomic tribes - *Caprini*, *Ovibovini* and *Pantholopini* – were under the remit of the EAZA Caprinae TAG. The taxonomy of caprines has been repeatedly revised and the exact number is still susceptible to change. Currently, the TAG manages 16 new-style EEPs implemented following the most recent EAZA Caprinae RCP published in November 2020.

A new and innovative 'first-contact coordinator' position was established by the TAG to coordinate incoming requests of potential new holders for caprine species, to advise those possible new holders, and to find the 'best match' between the needs of the programmes, their capacities, and the aims and possibilities of the new holders. Tony Souvignet (Besançon Zoo, France) took over this role and already begun to check the current needs of the EEPs and to collect requests from zoos that could be interested in one of the species. Tony will also oversee a plan to reduce the numbers of overrepresented species that do not have any conservation role - such as feral sheep like the European mouflon (*Ovis aries musimon*), generic aoudads (*Ammotragus lervia unsp.*) or Cretan goats (*Capra hircus cretica* syn. *Capra aegagrus cretica*).



Markhor (*Capra falconeri*) ram at Helsinki Zoo who coordinates the EEP for the species © Dennis Müller, Halle Zoo

- to make space for the priority species of the TAG. In many cases such groups can be easily replaced by EEP species that are in need for more breeding and new holders.

In cooperation with all TAG members, Simone Haderthauer (Vienna Zoo, Austria) almost finalised the BPG for the husbandry of caprines. It was a complex task as the guidelines cover all the species currently managed by the TAG. This comprehensive approach to the husbandry of caprine species will hopefully help zoos that want to start with those charming animals or those that want to improve their husbandry. We aim to publish this new important work at the EAZA Annual Conference 2024.

POPULATION MANAGEMENT PROGRAMME DEVELOPMENTS

Almost all the programmes had a continuing management in 2023. The only change was for the Muskox EEP, as Mikkel Stelvig (Copenhagen Zoo, Denmark) had to step down from his position. Angelica Åsberg (Lycksele Zoo, Sweden) took over the role. We want to thank Mikkel for his great long-term work as Coordinator and for his contribution to the TAG over the years, and Copenhagen Zoo for taking care of the EEP for many years.

In 2023 (and beginning of 2024), the first four LTMPs since the implementation of the new-style EEPs were published for

the Aoudad (*Ammotragus lervia*), Urial (*Ovis orientalis arkal* and *bochariensis*), Takin (*Budorcas taxicolor bedfordi*, *B. t. taxicolor*, *B. t. tibetana*) and Blue sheep (*Pseudois nayaur*).

The remaining LTMPs are currently being developed and shall be finalised in 2024.

For several EEP species, there have been some sanitary issues difficult to manage and it seems that the situation will become even more challenging over the next years. Paratuberculosis had the biggest impact. It affected different species (takin, urial, ibexes and aoudad) both with incidental cases and with larger outbreaks. The established managements of this disease are complex and time intensive. Some protocols have been shared with the participants of the affected EEPs and will hopefully help the zoos to control the disease and reduce animal losses.

The uncertainties about the new EU Animal Health Law are still complicating a lot of transfers. Transfers from EU to UK (and vice versa) are still difficult and time consuming because of the paperwork and sanitary regulations. Additionally, many EEPs would greatly benefit from the arrival of new founders from range countries, as genetics of several programmes are pure. However, the import of ungulates (or frozen semen) from other continents is still very complicate to almost impossible.

COLLABORATIONS AND MEETINGS

The cooperation with the IUCN/SSC Caprinae Specialist Group (CSG) is ongoing. The former Caprinae TAG Chair Pascal Damois (Parc Animalier d'Auvergne, France) has been a member of the CSG since 2021.

The TAG had two meetings in 2023.

The three-day mid-year meeting in May was very productive and well organised, and the TAG wants to thank Košice Zoo (Slovakia) for the organisation and their hospitality. It was another valuable opportunity for the 11 participants to share experiences, discuss new projects and the development of the programmes. Additionally, we worked on the BPG for EEP-managed caprines and attended a field excursion into the Tatra National Park.

At the EAZA Annual Conference, the Caprinae TAG meeting was attended by over 60 delegates, a record in the history of the TAG. This is a big success for a TAG that manages rather 'unpopular' species within the EAZA community. The session highlighted our conservation and research topics, as well as current challenges within the programmes. There were talks about sanitary problems management in urials, genetic research on Alpine ibexes (*Capra ibex*) under human care and a presentation of mixed enclosures with caprine species.

CONSERVATION AND RESEARCH

The TAG approved a research project on the genetics of Alpine ibex in human care in relation to the genetics of wild populations. The results will help to improve the decisions for ongoing and future reintroduction projects. Merel Huwiler (Bern Zoological Park, Switzerland) conducts the project in corporation with the University of Zürich (Switzerland).

BEST PRACTICE GUIDELINES 2023

Thanks to the efforts of Programme Coordinators and TAG members, seven BPGs were approved and published on the EAZA website in 2023. Congratulations as well to the EAZA Animal Training Working Group for the publication of the Animal Training Guidelines, available in several languages.

[Dragon-headed katydid](#) (*Eumegaladon blanchardi*) • [Black-eyed leaf frog](#) (*Agalychnis moreletii*) • [Cinereous vulture](#) (*Aegypius monachus*) • [Mount Omei liocichla](#) (*Liocichla omeiensis*) • [Crowned and Coquerel's Sifaka](#) (*Propithecus coronatus* and *Propithecus coquereli*) • [Lesser Antillean iguana](#) (*Iguana delicatissima*) • [Lake Oku frog](#) (*Xenopus longipes*) • [Animal training Guidelines](#)



Visit www.eaza.net/conservation/programmes for a complete overview of the available EAZA BPG.

ANNEX: PUBLICATION LIST

Scan the QR code or [click here](#) to open the list of peer-reviewed publications issued in 2023 and involving members of the TAGs.





TAG Reports 2023

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