

**Crocodile Specialist Group Steering Committee Meeting**  
**Universidad Nacional del Litoral, Santa Fe, Argentina**  
(6 May 2018)

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**Europe**

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Within the European Association for Zoos & Aquaria's (EAZA) Reptile Taxon Advisory Group there is a crocodylian subgroup led by Fabian Schmidt (Zoo Leipzig). Samuel Martin (La Ferme aux Crocodiles, Pierrelatte, France) is the veterinary advisor for this group. Following the Regional Collection Plan recommending species in need for conservation, three new programs were established.

As partner for the existing SSP with its strong *in-situ* link an ESB for African slender-snouted crocodiles (*Mecistops cataphractus*) has been established by Francois-Pierre Huyghe from Biotropica Val de Reuil. One of the first steps within this ESB will be the identification of taxa kept in European zoological institutions. Currently 23 animals are kept in 8 institutions. Additionally, ZSL EDGE Programmes are supporting research in Ghana.

Similarly, it will be the first step in the newly established ESB for the Siamese crocodile (*Crocodylus siamensis*) to create an overview of the genetic situation of the population in Europe. Genetic work will be carried out by Jan Robovsky (Department of Zoology, University of South Bohemia, Ceske Budejovice, Czech Republic). The population in Europe currently consists of 29 animals in 9 institutions and the program is managed by Jan Vasak (Jihlava Zoo, Czech Republic).

Conservation and research activities dealing with the *C. siamensis* in Lao PDR were continued in 2016 by Cologne Zoo (Prof. Dr. Thomas Ziegler) together with its partners in Hanoi (Institute of Ecology and Biological Resources, Ass. Prof. Dr. Truong Quang Nguyen) and Vientiane (National University of Laos, Ass. Prof. Dr. Sengdeuane Wayakone). Based on the engagement of this working group, supported by Rufford Foundation and promoted by Sisomphone Soudthichak (Natural Resources and Environment Department, Khammouane, Lao PDR), the crocodile protected area "Khammouane Crocodile Conservation Area Ban Soc" was established by the provincial authority in Khammouane Province in 2016. The species was re-discovered there by the team in 2015. Subsequently, Siamese crocodiles kept in Zoological Gardens in Vietnam (Saigon Zoo, Hanoi Zoo) were individually marked and tissue samples collected for genetic screening. Continued tissue sample collection and individual marking proceeded with the Lao Zoo in Vientiane. The goal of genetic screening is to determine pure individuals for conservation breeding and later on potential release/restocking projects in protected areas in Laos. Due to regular changes of curators at Lao Zoo, it is uncertain which individuals were already marked and screened, so the process has been restarted by the German-Vietnamese-Lao team together with geneticist Ass. Prof. Dr. Minh D. Le from Hanoi National University. Results of genetic screening from zoos in Vietnam and Laos are expected to be available soon. In June 2017, a training workshop was organized for local villagers around the newly established protected area in Khammouane Province to introducing how to contact Siamese crocodile and recording methods. Cologne Zoo further provided GPS devices and equipment such as cameras for recording the species at other sites in this area.

Due to the increased number of imports in the last years, it made sense to establish an official program for Gharials (*Gavialis gangeticus*). Prague Zoo, one of Europe's leading zoos in reptile husbandry offered to establish the ESB and with CSG member Ivan Rehak and experienced studbook keeper took over this task. Currently only 14 specimens in 3 institutions are reported but it is well known that some more Gharials are kept in zoos that are not members of the EAZA. In fact, during 2017 for the first time in Europe Gharials were bred, but this happened outside of the EAZA program, in Protivin Crocodile Zoo, Czech Republic. The program of course will support conservation and research projects in India. Gharials are also supported by the EDGE programs and participants of the ESB like Prague Zoo and Berlin Zoo are supporting Jeff Lang's work in the Chambal River.

With these new programs, there are now 8 programs in EAZA, one EEP (European Endangered Species Programs) and 7 ESB (European Studbook). By this, all species that are in the Red List registered as Critically Endangered or Vulnerable and are present in Europe in reasonable numbers are now for the first time covered by a program. These are:

- EEP for Chinese Alligators (*Alligator sinensis*) kept by Norbert Fritsch (Zoo Neunkirchen, Germany)
- ESB for Philippine Crocodiles (*Crocodylus mindorensis*) kept by Thomas Ziegler (Cologne Zoo, Germany)
- ESB for Cuban Crocodiles (*Crocodylus rhombifer*) currently vacant (Paignton Zoo, UK)
- ESB for Siamese Crocodiles (*Crocodylus siamensis*) kept by Jan Vasak (Zoo Jihlava, Czech Republic)
- ESB for African Slender-snouted crocodiles (*Mecistops cataphractus*) kept by Francois-Pierre Huyghe (Biotropica Val de Reuil, France)
- ESB for African Dwarf crocodiles (*Osteolaemus* spp.) kept by Fabian Schmidt (Zoo Leipzig, Germany)
- ESB for Tomistoma (*Tomistoma schlegelii*) kept by Jesus Recuero (Bioparc Fuengirola, Spain)

- ESB for Gharials (*Gavialis gangeticus*) kept by Ivan Rehak (Prague Zoo, Czech Republic)

Unfortunately, Mike Bungard resigned as coordinator of the program for Cuban Crocodiles. Mark Dainty was elected as successor, but after less than one year he also left the institution. Currently Paignton Zoo is expected to nominate a new studbook keeper.

Within the studbook for *T. schlegelii*, Crocodiles of the World in Brize Norton (UK) bred this species successfully for the first time. The 14 hatchlings represent the first breeding success of this species in Europe since 2010, and the first time in Europe that *Tomistoma* bred when kept inside a building with a closed roof. An interesting project carried out by Martine van Zijll Langhout and her colleagues from the Veterinary Department at Artis Amsterdam was the sperm collection and artificial insemination of *Tomistoma*, which unfortunately so far was not proving to be successful. A survey on *T. schlegelii* in the Sabangau River, Central Kalimantan, carried out by Mark Harrison, Borneo Nature Foundation, and supported by the ESB and its participating zoos from Fuengirola, Chester, Dvur Kralove, Leipzig and Pierrelatte was finalized by 2016. It confirmed the presence of the species in this area, but several threats including land conversion, forest fires, fish over-harvesting and pollution were identified.

The ESB for *Osteolaemus* started to support fieldwork carried out by David Oudjani from University of Toulouse, France, on the distribution of the species in Togo, potential threats and possible restoration projects. Additionally, Agata Staniewicz from Bristol University was supported on the research of acoustic communication and its use as acoustic tracking method for population assessment on crocodile species in Gabon and Côte d'Ivoire. CREDI-ONG in Bénin did a feasibility study of farming African Dwarf crocodiles for legal selling on food markets to reduce poaching pressure on wild crocodile populations, but the results were not very promising with regard to economic feasibility.

Concerning the ESB for the Philippine crocodile, in 2016 Chester and Paignton Zoo officially resigned from the studbook, and four new participating institutions received their first Philippine crocodiles: Blue Planet-National Aquarium (Kastrup, Denmark), Crocodiles of the World (Brize Norton, UK), La Ferme aux Crocodiles (Pierrelatte, France) and Zoological Garden of Zagreb (Zagreb, Croatia). Blue Planet-National Aquarium received three young Philippine crocodiles from London, and three juveniles from Esbjerg, Crocodiles of the World received two young Philippine crocodiles from Esbjerg, La Ferme aux Crocodiles received the adult couple from Paignton, and the Zoological Garden of Zagreb received a young female Philippine crocodile from Protivin based on a separate agreement between Protivin and Zoo Zagreb. Thus, at the end of 2016 the European Studbook (ESB) contained 54 purebred, live Philippine crocodiles, distributed among 10 collections (in alphabetical order): Bergen Aquarium (1.1), Blue Planet-National Aquarium (3.3), Cologne Zoo (1.3.2), Crocodiles of the World (1.1), Danish Crocodile Zoo (2.2.10), La Ferme aux Crocodiles (1.1), London Zoo (1.1.2), Protivin Crocodile Zoo (4.11), Zoological Garden of Zagreb (0.1) and Zurich Zoo (1.1). Of these 8.11.4 (n = 23) were held in the core ESB population (crocodiles kept in EAZA zoos), and 7.14.10 (n = 31) in the extended ESB population (non-EAZA institutions, viz., Crocodiles of the World in Brize Norton, UK; Danish Crocodile Zoo in Esbjerg, Denmark; Protivin Crocodile Zoo, Czech Republic).

In 2017 two young Philippine crocodiles died at Esbjerg. According to our knowledge the following surplus juveniles (n= 19) are still available and must be placed in other zoological gardens in the future: 4 juveniles from Protivin (from 2013), 8 juveniles from Esbjerg (from 2014), 2 juveniles from London (from 2014), 4 juveniles from Cologne (from 2013 and 2015), and 1 juvenile from Protivin (from 2015). With sufficient offspring currently available and only few interested institutions participating in the project and taking over surplus Philippine crocodiles, no breeding is recommended for the time being. Optimum placement and combination not only of existing offspring, but also certain mature individuals has priority at this time. Transfers of surplus to Terrariet Vissenbjerg (Denmark) and Plzen Zoo (Czech Republic) are currently prepared.

More details can be found in the topical studbook editions:

Ziegler, T. and A. Rauhaus (2016): Philippine Crocodile (*Crocodylus mindorensis*). European Studbook (ESB), fourth edition. Cologne Zoo: 1-29.

Ziegler, T. and A. Rauhaus (2017): Philippine Crocodile (*Crocodylus mindorensis*). European Studbook (ESB), fifth edition. Cologne Zoo: 1-25.

Another paper related to the Philippine crocodile ESB is:

Rauhaus, A. and T. Ziegler (2016): Philippine crocodile (*Crocodylus mindorensis*) target training at Cologne Zoo. Crocodile Specialist Group Newsletter 35(2): 17-19.

A critical problem many crocodile programs in Europe experience increasingly is the lack of space for crocodiles under human care. The good husbandry resulting in longevity and in a high reproduction rate, leading to a high number of crocodiles available that surpass for many species the demand. Unfortunately, this applies also for very endangered species in high need of conservation breeding, such as the Philippine crocodile. A problem re-occurring more frequently in this context is the management of crocodiles in zoos that are not members of EAZA and act not in accordance with existing recommendations of programs. As these institutions mostly are not members of EAZA it is difficult to deal

with these issues that need increasingly addressing. Such cases may lead to exclusions of single institutions from programmes.

Since the last CSG report, four meetings of the EAZA Reptile TAG were held: in spring 2016 in Zagreb (HR), in autumn 2016 in Belfast (UK), in spring 2017 in Paris (F) and in autumn 2017 in Emmen (NL). Mostly updates of the programs themselves and on conservation and research projects supported by these programs were given. Additionally, the target training of crocodiles as a management tool was a major topic including the experiences with Nile crocodiles by Guido Westhoff in Hagenbecks Tierpark Hamburg and Philippine crocodiles by Thomas Ziegler and Anna Rauhaus at Cologne Zoo as well as Iri Gill at London Zoo.

See also the article by Rauhaus and Ziegler (2016) in the Crocodile Specialist Group Newsletter 35(2): 17-19.

As for species not managed in programmes, Olivier Marquis from Paris Zoo demonstrated that commitment for animals can be transferred from zoos to the wild, as he presented preliminary results of a field survey on smooth-fronted caimans (*Paleosuchus trigonatus*) and on black caimans (*Melanosuchus niger*) in the Nouragues Reserve in French Guyana. Michel Ansermet reported on successful breeding of West African crocodiles (*Crocodylus suchus*) at Vivarium Lausanne.

Ziegler, Rauhaus & Schmidt published an important article on the “Review of Crocodiles in Zoological Gardens with a focus on Europe” in *Der Zoologische Garten* (2017; 86; 18-40). This article gives an overview of the crocodile species and individual numbers kept in zoos worldwide but with a special focus on Europe. The survey revealed that 24 species are kept globally in 251 zoos with 22 species kept in 185 European zoos. Based on comparisons with similar papers from the 1970ies and 1980ies it shows a development of the collections and recommends considering a shift from very commonly kept species towards species that are in greater need of conservation support. This article can be used as effective tool for Regional Collection Planning.

A crocodile book for young people, comprising 64 pages, was published in 2017 in the Natur und Tier Verlag, Münster by Thomas Ziegler: “Entdecke die Krokodile“ [Discover crocodiles].

Organised by Ashley Percy and Agata Staniewicz in October 2016 the first European Croc Networking Meeting (ECNM) was held at Crocodiles of the World in Brize Norton, UK. It was the goal of the meeting to bring researchers, students, conservationists, private keepers, zoo staff, authorities and staff from the leather industry together and show opportunities for future projects and cooperations. The ECNM proved to be very successful and was repeated one year later in October 2017 at Krokodille Zoo in Eskilstrup. The 54 participants from 10 countries were surpassed with 60 participants from 13 countries one year later. Another follow-up meeting is planned for October 2018 in France by La Planète des Crocodiles in Civaux. These meetings give especially students the chance to find partners for research collaboration or arranging internships or even graduate projects.

From 17-19 March 2017 a reptile keeper seminar of the professional institution of zoo animal keeper (BdZ) e.V., was held at the Cologne Zoo, where the following presentation was given: Rauhaus, A. and T. Ziegler (2017): Ten years Philippine crocodiles at the Cologne Zoo: Review and outlook. One year later the same seminar was given from 16-18 March 2018 at Wilhelma Stuttgart, where Fabian Schmidt presented parent-rearing of juvenile crocodiles in zoological gardens.

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