

Repatriation of Philippine Crocodiles from Europe for Reintroduction into the Wild

Photo: The Philippine crocodile team at Cologne Zoo (left) with Cologne Zoo's transfer coordinator Bernd Marcordes (outermost right) and transport crates for Dodong and Hully. © J. Nicolaudius



Thomas Ziegler¹, Theo B. Pagel¹, Rainier Manalo², Vicente Mercado², Nermalie Lita³, Anson Tagtag³

¹Cologne Zoo, ²*Crocodylus Porosus Philippines Inc*, ³Biodiversity Management Bureau, Department of Environment and Natural Resources, Philippines

The Philippine crocodile (*Crocodylus mindorensis*), endemic to the Philippines, is among the world's rarest crocodylians, with only about one hundred individuals remaining in the wild. It is listed as critically endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Due to its precarious status in the wild, the IUCN Crocodylian Specialist Group (CSG) has recommended *ex situ* management for the species.

Following the Memorandum of Agreement with the Philippine Department of Environment and Natural Resources (DENR) and zoos in the USA, Australia, and Europe, international breeding programmes for this species were established.

For conservation breeding in Europe, 15 young crocodiles were transferred in 2006 from the Palawan Wildlife Rescue and Conservation Center (PWRCC) based on a Memorandum of Agreement between the DENR, Biodiversity Management Bureau (BMB), and the Danish Krokodille Zoo. In 2009, 10 of the 15 Philippine crocodile hatchlings were transferred to other European zoos.

The first Philippine crocodile conservation breeding programme in Europe was officially initiated in April 2012, when the European Studbook (ESB) was established by the European Association of Zoos and Aquaria (EAZA), administered by Cologne Zoo, Germany. The goal of the ESB was to build up a reserve population in Europe.

Since its first breeding in Europe, which took place at Cologne Zoo in Germany in July 2013, further breeding successes in Europe occurred in the Czech Republic (Protivín Crocodile Zoo), the UK (ZSL London Zoo), and Denmark (Krokodille Zoo). Due to these recent breeding successes, the number of Philippine crocodiles within the ESB has increased from 15 individuals initially, held in six institutions, to 52 individuals distributed among 12 institutions.

Genetic screening of the Philippine crocodiles held in Europe was undertaken in cooperation with Omaha's Henry Doorly Zoo, USA, and the Zoological Institute of the Technical University of Braunschweig, Germany, eight years ago. These and further tests were necessary to demonstrate the genetic purity of the ESB individuals, as molecular studies had revealed the existence of phenetically indistinguishable hybrids between Philippine crocodiles and saltwater crocodiles (*Crocodylus porosus*) among farms in the Philippines, putting the origin and purity of farm-held crocodiles in question.

During recent field research conducted by Crocodylus Porosus Philippines Inc. (CPPI), a new population was discovered in the South of the Philippines. To support the few remaining natural populations, namely to restock Philippine crocodiles in their natural habitats, CPPI was on the search for purebred individuals. CPPI, a not-for-profit NGO, is committed to the sustainable use of commercially farmed saltwater crocodiles and the research and conservation of the two crocodile species (*C. mindorensis*, *C. porosus*) in the Philippines. Thus, the genetic testing of the European population was very timely to support and replenish the few remaining wild populations of Philippine crocodiles in natural habitats.

CPPI visited Cologne Zoo in June 2019 to inspect potential ESB individuals for the first repatriation. CPPI selected Hulky and Dodong, two crocodiles that hatched in the Cologne Zoo in July 2015.

The hatchlings occurred from a natural breeding event, which allowed the Cologne Zoo's Philippine crocodile team to observe and document the parental care and breeding behaviour, such as mouth transfer and nest guarding behaviour of this elusive species. Dodong and Hulky grew up under their mother's care and are thus well socialised and perfectly suited for repatriation.

After a formal agreement between the German Federal Agency for Nature Conservation and the DENR, Philippines, the transfer of the crocodiles was organised by Cologne Zoo's animal transfer

coordinator, Bernd Marcordes, in coordination with the animal travel agency, Gradlyn, at Frankfurt Airport, a company specialised in the transfer of exotic animals.

Initially, Hulky and Dodong were to depart in March 2020; however, the Covid-19 pandemic thwarted the plan a few days before the transfer was due to happen. It took nine months to find a new transfer option.

Hulky and Dodong finally departed from Cologne Zoo on 14 December 2020 and arrived the next day at the DENR National Wildlife Research and Rescue Center, Ninoy Aquino Parks and Wildlife Center, Philippines. After an acclimation period, they will build up a genetically pure colony in the Philippines for subsequent reintroduction into the wild.

This is another successful example of the One Plan Approach to conservation supported by the IUCN and aimed at developing integrative strategies to combine *in situ* and *ex situ* measures with groups of experts for species conservation. This example shows that conservation breeding projects, coordinated by scientifically led zoos, can actively support *in situ* conservation measures in the country of origin. DENR, in collaboration with CPPI, has plans for further repatriation of offspring from the European conservation breeding programme to the Philippines, as there is sufficient space and suitable habitat in the South for supplementing the wild population of Philippine crocodiles.



Photo: Dodong next to transport crate. © A. Rauhaus

Inset Photo: Meeting at Cologne Zoo, June 2019. From left to right: Vicente P. Mercado (President CPPI), Rainier Manalo (Program Director CPPI), Prof Theo B. Pagel (CEO and Cologne Zoo Director), Prof Dr Thomas Ziegler (Philippine crocodile ESB keeper, Cologne Zoo). © A. Rauhaus

The Philippines Assistant Secretary for Climate Change and concurrent Director of BMB, Ricardo L. Calderon, welcomed the repatriation of the Philippine crocodiles from Europe with high hopes that they shall contribute to enhancing the species' wild population.

The Philippine crocodile also plays a primary role in the 'Species of the Year' campaign 2021, which aims to raise awareness about the threats and conservation needs of lesser-known wildlife species kept in zoos, as well as raise funds for conservation projects working directly with these species. You can read more about this annual campaign in this magazine.

We sincerely hope that the crocodile Species of the Year campaign 2021 will be successful and that the zoo community can broaden *in situ* conservation efforts based on their *ex situ* engagement, which is the rationale behind the One Plan Approach of improving conservation efforts by integrating species conservation planning across a range of partnerships/ stakeholders.

References

Hauswaldt, J. S., Vences, M., Louis, E., Brennemann, R. & T. Ziegler (2013): Genetic screening of captive Philippine crocodiles (*Crocodylus mindorensis*) as prerequisite for starting a conservation breeding program in Europe. - Herpetological Conservation and Biology 8(1): 75-87.

Manalo, R. I., Binaday, J. W. B., Baltazar, P. C., Corvera, M. D. & C. J. C. Ladiana (2019): New population record of Philippine crocodile (*Crocodylus mindorensis*, Schmidt, 1935) in southern Philippines. - Crocodile Specialist Group (CSG) Newsletter 38(4): 7-10

Schneider, M., Klein, B., Krämer, D., Knezevic, K., Tiflova, L., Vogt, S., Rauhaus, A., van der Straeten, K., Karbe, D., Sommerlad, R. & Ziegler, T. (2014): First observations on the courtship, mating, and nest visit behaviour of the Philippine crocodile (*Crocodylus mindorensis*) at the Cologne Zoo. - Journal of Zoo and Aquarium Research 2(4): 123-129.

Ziegler, T., Hauswaldt, S. & M. Vences (2015): The necessity of genetic screening for proper management of captive crocodile populations based on the examples of *Crocodylus suchus* and *C. mindorensis*. - Journal of Zoo and Aquarium Research 3(4): 123-127.

Ziegler, T. & A. Rauhaus (2015): Induced natural breeding of the Philippine crocodile (*Crocodylus mindorensis*) at the Cologne Zoo. - Crocodile Specialist Group (CSG) Newsletter 34(3): 9-11.

Ziegler, T., van der Straeten, K., Rauhaus, A., Karbe, D. & R. Sommerlad (2013): First breeding of the Philippine crocodile (*Crocodylus mindorensis*) in Europe. - Crocodile Specialist Group (CSG) Newsletter 32(3): 15-16.



Photo: Dodong submerged, in December 2020, a few days before repatriation. © T. Ziegler

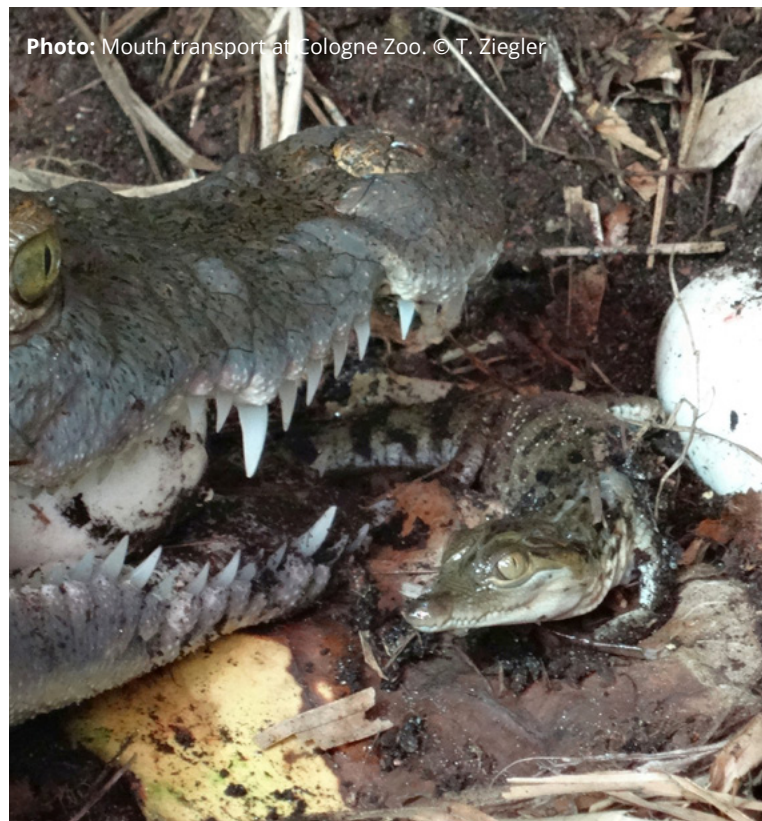


Photo: Mouth transport at Cologne Zoo. © T. Ziegler



Photo: Habitat and release site at Siargao Island Protected Landscapes and Seascapes.

© R. Manalo/ Crocodylus Porosus Philippines Inc

Announcing the Species of the Year Campaign 2021

Viktorija Michel

Project Coordinator Zootier des Jahres

German-speaking zoos have announced that the species in focus for this year's Species of the Year (Zootier des Jahres) campaign is endangered crocodiles.

The annual campaign was launched to raise awareness of the threats and conservation needs of lesser-known wildlife species kept in zoos and to raise funds for conservation projects working directly with these species.

Seven of the at least 26 species of crocodylians are currently listed as critically endangered on the IUCN Red List of Threatened Species, among them the Cuban crocodile (*Crocodylus rhombifer*), Philippine crocodile (*Crocodylus mindorensis*) and Siamese crocodile (*Crocodylus siamensis*). They are under immense threat from habitat loss, hybridisation and intensive hunting for their skins.

Crocodiles are fascinating animals but are often not perceived as such by many people.

Unfortunately, they are predominantly neglected by large species conservation organisations.

To finally place crocodiles in the limelight, they were chosen for the title 'Species of the Year 2021'. During the yearlong campaign, German-speaking zoos will be engaged in lobbying activities for this captivating

species and simultaneously collect funding to support three *in situ* conservation projects:

- Cuban crocodiles in the Zapata Swamp in Cuba – Global Wildlife Conservation
- Philippine crocodiles on Siargao Island in the Philippines – Crocodylus Porosus Philippines Inc.
- Siamese crocodiles in Kalimantan, Borneo – Yayasan Kolaborasi Inklusi Konservasi

In Cuba, the project brings Cuban crocodiles back from the brink of extinction by implementing identified priority conservation actions by the IUCN SSC Crocodile Specialist Group, including efforts to increase population numbers via reintroduction and by tackling poaching, in combination with close monitoring of wild Cuban crocodiles in the Zapata and Lanier swamps.

In Siargao Island, the project aims to establish a Philippine crocodile semi-wild breeding facility for future release programmes and community nature-based education. The breeding programme will be supported with Philippine crocodiles bred in European Zoos.



While in Borneo, the project team is searching for remnant populations of the Siamese crocodile in East-Kalimantan using environmental DNA.

The Species of the Year campaign was founded in 2016. The first species chosen was the leopard, followed the next year by the cockatoo and then the Asian box turtle. In selecting a suitable animal for the title, the sequence of fur, feathers and scales is used. In 2019 a new cycle began with the gibbon, followed by the hill mynah and the crocodile.

Over the past few years, the campaign has been able to develop a positive image nationwide. It presents, in particular, the species protection and conservation breeding work of zoos, i.e. the *in situ* and *ex situ* components of the IUCN One Plan Approach to Conservation, for zoo visitors.

This is the very first German inter-association campaign that enables not only the major zoological institutions but also the smaller ones to sensitise their visitors to the important field of biodiversity through a joint *in situ* conservation project.

With easily understandable and tangible examples, the campaign promotes the critical work of zoos and other partners in species conservation.

In order to achieve as much as possible for the species in focus, in the form of public relations work and concrete species conservation measures, four partners who are active in species conservation have joined forces. The main campaign partners are the Zoological Society for Conservation of Species and Populations (ZGAP), the institutions and members of the Deutsche Tierpark-Gesellschaft e.V. (DTG), the Association of Zoological Gardens (VdZ) and the Community of German Zoo Patronisers (Gemeinschaft der Zooförderer, GdZ).

Zoological gardens as a driving force in species conservation

Many zoos in Germany, Austria, Switzerland, Netherlands and Luxembourg take part in this annual campaign by installing posters, organising events, generating media coverage and informing their visitors about the importance of conservation work for the selected species.

The success of the campaign is achieved by providing visitors with unique experiences to engage with

zoo animals, which take on the important role of ambassadors for their endangered species living in the wild. Species conservation and environmental education are one of the main tasks of modern zoological institutions. Together, the zoos in German-speaking countries reach more than 42 million zoo visitors every year.

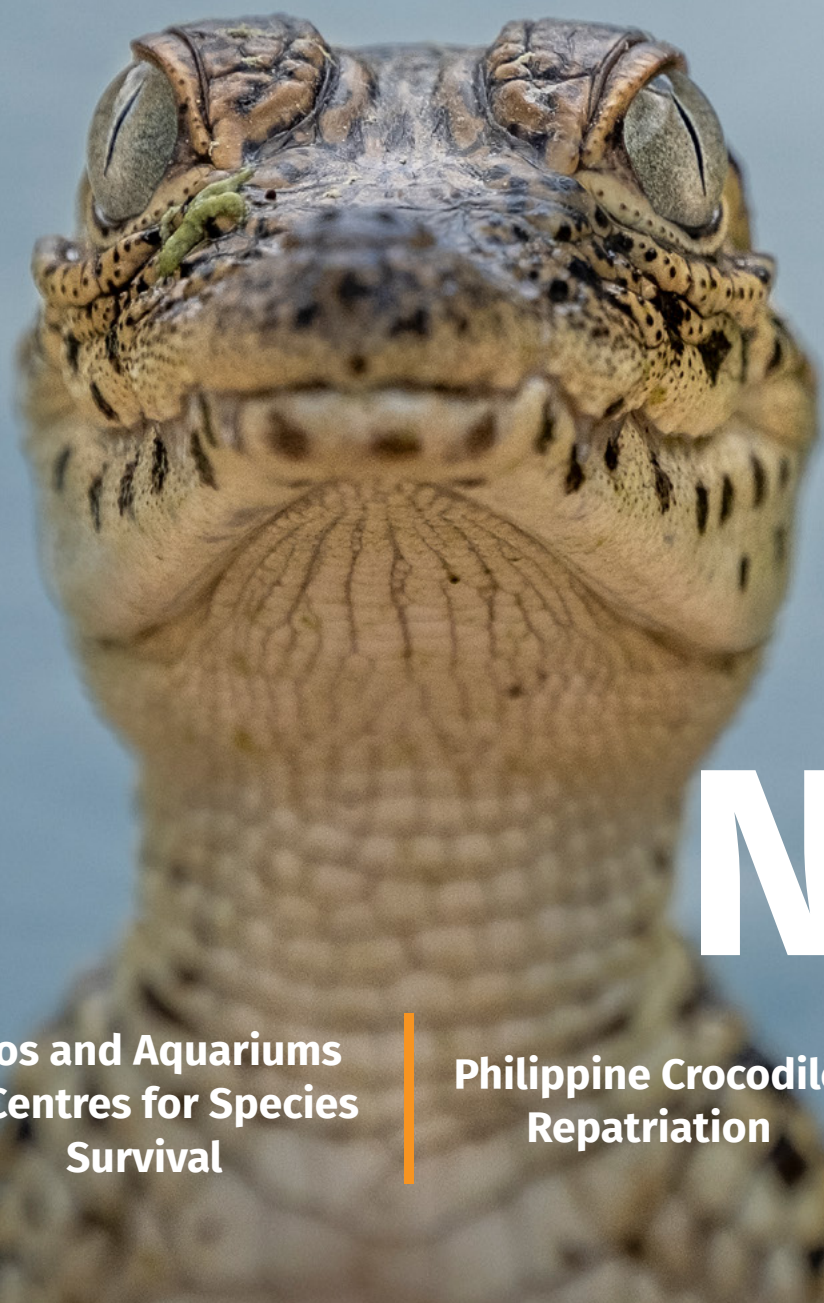
We sincerely hope that this years' crocodile campaign, and its much-needed conservation projects, will be as successful as previous Species of the Year Campaigns.



Photo: Gustavo Sosa from the captive breeding facility in Zapata Swamp cradles a young Cuban Crocodile under the water.
© Robin Moore/Global Wildlife Conservation



Photo: Adult Philippine crocodile.
© Crocodylus Porosus Philippines



NEWS

**Zoos and Aquariums
as Centres for Species
Survival**

**Philippine Crocodile
Repatriation**

**German-speaking Zoos
Announce Species
of the Year**