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Europe

Germany

FIRST BREEDING OF THE PHILIPPINE CROCODILE (*CROCODYLUS MINDORENSIS*) IN EUROPE. Cologne Zoo (CZ) has long been engaged in the keeping and breeding of crocodylians. In 1980 the first worldwide zoo breeding of *Paleosuchus palpebrosus* occurred at the zoo. More recently, in mid-July 2013, the first breeding of the Philippine crocodile, *Crocodylus mindorensis*, occurred at Cologne Zoo Aquarium, which represents the first successful breeding of the species in Europe. The Philippine crocodile is one of the most endangered of the world's crocodylians, and the CSG has placed the species high on its priority list for conservation action and has recommended *ex-situ* management due to its fragile status in the wild.

The two adult Philippine crocodiles at CZ [Mindo (F), 15 years; Pinoy (M), 13 years] were imported from the Palawan Wildlife Rescue and Conservation Center (PWRCC) in the Philippines in 2006. At that time, 15 crocodiles were transferred to 6 zoos in Europe (see Banks *et al.* 2009), based on a Memorandum of Agreement which stated that they remain the property of the Philippine Government, and that the hosting institutions are obliged to support the Mabuwaya Foundation, a small non-profit organization dedicated to the conservation of the species in its natural habitat.

At first, from 2007 onwards, the two crocodiles at CZ were held in a newly created, spacious, off-exhibit facility at the CZ Aquarium. In May 2011 they were moved to a new public exhibit. In both facilities the pair was kept separated for most of the time due to somewhat aggressive behaviour. However, due to the manifold separable facility construction (Ziegler *et al.* 2011) and continued target training the pair could be selectively brought together from time to time.

First copulations occurred in early 2012, but egg deposition did not take place. Copulation between February and May 2013 was followed by egg deposition. Eggs discovered on 2 May 2013 were probably laid around 25 April 2013. The

clutch comprised 10 eggs, one of which was broken (78 x 46 mm), 4 were deformed (distorted, constricted: 67.0-83.0 x 14.0-37.2 mm) and 5 (70-74 x 41-43 mm; mean 71.7 and mean 42.2 mm) which were artificially incubated.

Artificial incubation involved 28.5-29.5°C (3 eggs) and 31.5-32.5°C (2 eggs) with humidity up to 97%. When discovered, at least two of the artificially incubated eggs showed distinct banding (ca. 25 % of the egg length) and one egg had no opaque band.

On 13 July hatchling calls were heard coming from two eggs incubated at 28.5-29.5°C (the remaining one proved to be infertile), and we opened the egg from which we heard the loudest calls. The following day the second egg was opened. Here, the hatchling had already begun pipping the egg shell on the evening of 13 July, but had failed to get out.

Total incubation time is estimated as 79 and 80 days for the two eggs respectively. Both hatchlings ("Una" and "Pangalawa") have so far proved to be healthy. The individual which hatched first had a total length of about 230 mm about one week after hatching.



Figure 1. "Una" at one month of age (13 August 2013). Photograph: Thomas Ziegler.

The two eggs incubated at 31.5-32.5°C were opened in mid-August - both contained dead embryos. One embryo was in very early stage of development, and the other was far more advanced with a total length of 164 mm (snout-vent length 91 mm, tail length 73 mm).

This event represents the first successful reproduction of the Philippine crocodile in Europe. It is a significant contribution to the European studbook (ESB) population, as it is the first breeding after the initiation of the ESB, which is coordinated by CZ (Ziegler *et al.* 2013). CZ is also engaged with ethological research on Philippine crocodiles; so far four student theses dealing with social (in particular reproductive) behaviour and spatial use have been conducted at the zoo through direct observations as well as video camera recordings, and are being processed now for publication. Prior to copulation attempts a genetic screening of Philippine crocodiles held in Europe was conducted with the assistance of Braunschweig University, to confirm purity of animals and identify (and exclude) potential hybrids from the conservation breeding program (Hauswaldt *et al.* 2013). Besides financial support

of *in-situ* crocodile conservation activities in the Philippines, CZ also implements *in-situ* natural history research with the Critically Endangered Siamese crocodile (*C. siamensis*) in Vietnam (Cat Tien National Park) and Indonesian Borneo (Mesangat Lake) (Sommerlad *et al.* 2010).

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North America

USA

2012 CHRISTMAS CROCFEST. The 2012 Christmas CrocFest, a fundraiser for crocodilian conservation, took place on 8 December 2012 at Shawn and Jen Heflick's facility in Palm Bay, Florida, USA, raising a record \$US15,000 for critically endangered Orinoco crocodiles (*Crocodylus intermedius*). CrocFest is an annual, grass-roots fundraiser supported by private individuals, businesses, and zoos, all with a common interest in conserving crocodilians. The funds raised at this year's event will be directed to Asociación Chelonia, a Madrid-based NGO that has made great progress in getting a comprehensive conservation program underway

for Orinoco crocodiles in Colombia. 100% of the funds donated go to the cause, as all event expenses are covered by organizers Shawn Heflick, Flavio Morrissiey, Colette Adams and Curt Harbsmeier.

CrocFest has evolved into a family-friendly event, and attracted some 150 attendees who were treated to live animal displays and presentations (courtesy of Gator Adventure Productions), live music (courtesy of Daniel and Lisa Parker), BBQ (prepared fresh, on-site), libations, fishing, kayaking, a silent auction and finally, a rousing live auction conducted by Joe Wasilewski and Shawn. Event-goers were also treated to a tour of Shawn's lab, where scenes in episodes of National Geographic Wild's Python Hunters have been filmed. Finally, Luis Sigler from Dallas World Aquarium timed his delivery of two juvenile Orinoco crocodiles to Shawn's facility so that CrocFest attendees could witness their uncrating and see and study Orinoco crocodiles up close!

Rapport between Joe and Shawn made for a very entertaining and profitable live auction. Everyone enjoyed great food and camaraderie while bidding on unique items, including authentic items from Colombia (provided by Asociación Chelonia), and items donated by zoos, businesses and individuals throughout Florida and other parts of the country.

We want to thank all of the individuals, businesses and zoos which supported this fundraising event, including but not limited to: Jen Heflick, Thorne Heflick, Paul Bodnar, Perran Ross, Kent Vliet, Bill Ziegler, Joe Wasilewski, Shawn Heflick, Flavio Morrissiey, Curt Harbsmeier, Colette Adams, Norman Benoit, Swamp Men: Cattail and OneBear, Iris Doyle, Emily Maple, Katrene Click, Matt Shirley, Randal Berry, Woody Woodward, Denise Abreu, Terry Cullen, Brandon Greaves, Carlos Rofa, Mike Tietgen, Josh Zarmoti, Tom Crutchfield, Patty Porter Allington, Erin Smestad, Trace Hardin, Andy Reeves, Forest Fanning, Don Kaye, Marty Penny, Shawn Tripala, Kevin Earley, Paul Owen, Robin Moniz, Kevin Oppenheimer, George Cera, Charles Alexander, Kim Titterington, Nancy and Ernie Little, Clay Ferrara, Kevin Albin, Bruce Shwedick, James Murphy, Pat Burchfield, Eric Thiss, Gary Johnson, Steve Connors, Virginia Aquarium (Mark Swingle and Chip Harshaw), Bronx Zoo (New York Zoological Society/WCS; Don Boyer), Crocodile Conservation Institute, Ellen Trout Zoo (Gordon Henley), Black Hills Reptile Gardens (Terry Phillip), Central Florida Zoo (Joe Montesano), Jacksonville Zoo (Dino Ferri), Florida Association of Zoos & Aquariums, Tampa's Lowry Park Zoo (Larry Kilmar), Busch Gardens (Mike Malden), Dallas World Aquarium (Luis Sigler), Zoo Atlanta (Dwight Lawson), Wildlife Discovery Center at Elawa Forest (Rob Carmichael), San Antonio Zoo (Bekky Muscher), St. Augustine Alligator Farm (John Brueggen), Brevard Zoo, Palm Beach Zoo, Agritoxins (Jack Facente), Incredible Pets, Indigenous Arts (David Kledzick), Metal Artz, ZooMed, C.A.R.E. Foundation, Gator Made, Gatorama (Alan Register).

About the Supported Conservation Program

Commercial hunting of the Orinoco crocodile began around

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