

Cuora trifasciata EAZA specimens, DNA results and future management.

Introduction :

DNA analyses were carried out during 2007 and results are known since December 2007. This provisionally report will be used for a discussion to be held soon by Elmar Meier, Jens Poschadel, Torsten Blanck, Harry Rotmans and Henk Zwartepoorte. With the outcome of this discussion cooperation between several EAZA institutions will be possible to proceed and specimens will certainly have to be exchanged.

Reason for DNA research:

Cuora trifasciata is an endangered Asian fresh water turtle species. The species is imported in reasonable large numbers from China and Vietnam during the 8ties and 9ties. International pet market prices increased during the last two decades to sometimes several thousand US\$. Due to heavy collecting for the pet trade and from the early 8ties also by collecting for human consumption in China the species now faces extinction in the wild.

In China the species is farmed for national use. Origin of founder animals however is probably unknown.

The specimens kept by EAZA zoos and privates within the EU vary in age, but are probably more than 20 years old in some cases. Reproduction occurred in Munster, Rotterdam and Chester. Within the private sector breeding is reported, however not in detail and the status of the adults as well as the offspring is unknown.

As EAZA and ESF subscribe the policy that breeding in captivity has to be done with the aim of a possible future reintroduction the exact species, subspecies, DNA type status has to be known for pure breeding purposes.

Recent publications by Blanck and McCord on new subspecies and even species level within the *C. trifasciata* complex supported the already existing plans of a DNA research to begin with the EAZA specimens. Morphological differences within the 6 EAZA institutions were already recognized. Meier in particular already pointed out these differences on several occasions. During the mating season in March over the last few years at the Rotterdam Zoo not all specimens of the group of 7 adults mated with each other being a possible sign of difficult origin.

To enlarge the breeding possibilities within EAZA in 2006 10 specimens were bought from Dr. Michael Reimann by Munster, Chester and London.

The total number of specimens kept by EAZA institutions counts according to ISIS.

The total number of specimens offered to Jens Poschadel for analyses counts 31.

The total ESF population is unknown at present; the studbook keeper was totally inactive for several years. He is recently replaced by Torsten Blanck.

The DNA results:

The participating EAZA institutions are: Chester, London, Munster, Hamburg, Amsterdam and Rotterdam.

As already suspected the results of analyses were rather various and in one case very odd.

Within the 31 specimens 4 clades were recognized; clade A divided into clade A and a clade C. *aurocapitata/pani/trifasciata*, clade B and clade C. One morphologically 100% certain *C. trifasciata* was analysed as a *C. zhoui*!!! This specimen is analysed twice.

All analyses were done on saliva samples. Interesting thing was that 5 zoos have different clades in their collections. Only Hamburg has clade B.

Clade C is only kept by Munster.

Consequences:

Within the Rotterdam Zoo collection I again photographed all specimens and I compared the morphological features with the DNA results but also with the outcome of the very interesting discussions Elmar and I had during the last months.

The intention is to discuss the results with the group of people mentioned above first before we publish the results into a wider group. The outcome of the upcoming meeting (planned this month) together with recommendations for exchange of specimens will be done very shortly after that.

There are a few very good possibilities within the 31 specimens indicating that at least 5 zoos have to cooperate in this for the achievement of genetically healthy reproduction. The sexes of the Hamburg animals are not known at present.

The 1999 and 2005 breeding results of the Rotterdam Zoo are from clade B founder animals. The 2007 breeding results of Chester Zoo are a mixture between clade A and B. The status of the offspring of the Munster Zoo has to be researched yet with help of Elmar's administration. But before we draw hasty conclusions; let's wait for the discussion results first.

Question to Chester, London and Amsterdam to photograph their specimens again. I did photograph them at the moment we collected them at Reimann's house in 2005. But I had to do that very hasty without proper administrating and only carapace and plastron photos were made. For proper comparison photos of side of the head (left side please), carapace, plastron and from the left marginal side (see examples below of one Rotterdam Zoo specimen).

The Munster Zoo specimens will be photographed by me this month.

The DNA results and the outcome of the upcoming planned discussion could be the basis for further DNA analyses of additional *C. trifasciata* specimens and perhaps a wider DNA research on the *Cuora* genus.

Elmar already started photographing and measuring his Munster Zoo *C. zhoui* and *C. aurocapitata* and he and I did his 30 *C. mccordi* on December 21; I did the Rotterdam Zoo *C. mccordi* this week.

This way we hope to index, collect data and administrate all *Cuora* specimens with exception of *Cuora amboinensis*.



Cuora trifasciata

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