

# ESF *Cuora trifasciata* & *Cuora cyclornata* Studbook



Photo by Torsten Blanck

## Annual Report 2011

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## Introduction:

*Cuora trifasciata* forms the second oldest member of the genus *Cuora*, being described by Bell in 1825. *Cuora trifasciata* has a long history of usage in the traditional Chinese medicine and many myths rank around it. This turtle is known as the “golden coin turtle” in Chinese language, already indicating a rather special status. Since about 20 years, it is claimed that consuming jellies and extracts from this turtle is capable of curing cancer, and this partly resulted in an enormous increase in its commercial value, with animals now selling for many thousands of Euros each. Because of this high value, the species is currently being farmed by the thousands and there is also a high demand for wild breeding stock in east Asia. Unfortunately, its supposedly magical curing power and its extremely high value driven by trade and the demand of breeding farms has led to its demise in the wild. While populations previously seemed to tolerate low-volume collection for centuries, the last three decades of intense collecting and massive habitat destruction and degradation have brought the species to the brink of extinction in the wild.

In the early 2000s it was recognized that specimens from different origin showed differences regarding morphology and phenotypy. This led to a detailed study which included genetic research resulting in the splitting of this species into two: *Cuora trifasciata*, now being endemic to southern China, and *Cuora cyclornata*, distributed in Vietnam, Laos and barely reaching into southern China. This description has led to some controversy, with some researchers not accepting this split, believing that hybridization has occurred within this genus. However most current genetic research substantiates the split and indicates possible further splitting in future.

The aforementioned commercial farms usually produce a mixture of different genetic lineages and this is also true for most other captive collections. Less than 10 specimens per year are still encountered on the Chinese mainland, with a possible last stronghold in Hong Kong, where in recent years illegal trapping has led to a sharp decline and even there less than 5 are being found a year now. In Vietnam and Laos no specimens has been seen by a scientist in the last few years. Prices have skyrocketed to more than 20,000€ being paid for an adult wild caught male in China, since the farms so far mainly produce females because of high incubation temperatures. Furthermore, wild-caught animals are said to have more curative medicinal powers. In recent years, owning this species seems to have become a kind of investment and status symbol in China rather than a medicine which it used to be for centuries.

Due to the high demand and value of this species, its survival in the wild is unlikely even with effective law enforcements within its range. The survival of this species relies on captive assurance colonies and increasing breeding efforts of genetically pure groups, as carried out jointly by Kadoorie Farm and Botanic Garden and Agriculture, Fisheries and Conservation Department, Hong Kong Special Administrative Region Government as well as the EAZA and ESF and just starting within the AZA too. These assurance colonies are vital in order to preserve the future of these species in order to maintain options for possible future repatriation efforts.

Both species mentioned are also part of an extensive *Cuora* DNA research at present carried out by the universities of Potsdam and Hamburg as well as another project in the USA. The former one is a joint project by TSA, ESF, ZGAP and the IFTC breeding center in Munster. This research is partly funded by the Turtle Conservation Fund (TCF).

The *Cuora trifasciata* Studbook was founded in 1998 and was initially maintained by Marcel Walz but suddenly had fallen into a deep sleep. In 2008 the Studbook was reinitiated by Torsten Blanck and Elmar Meier. Since, with the exception of the Data from Zoological Institutions, no data of the former Studbook was available, it was rebuilt from scratch. *Cuora trifasciata* / *Cuora cyclornata* are usually hardy species in captivity and were imported into Europe in quite some numbers in the 1960-1980's, especially *Cuora trifasciata*. This led to the believe that several hundred specimens must still exist in captivity.

## **2. Studbook population:**

As of January 2012 the total living studbook population consists of 56.105.119 (280) specimens. This is currently divided into 6 genetically and morphologically differentiated groups: *Cuora trifasciata* Clade A (Guangdong, eastern Guangxi, Fujian & Hongkong, China); *Cuora trifasciata* Clade B (Hainan Island, China); *Cuora cyclornata cyclornata* (central Vietnam, Laos); *Cuora cyclornata cf. cyclornata* (northern central Vietnam); *Cuora cyclornata meieri* (northern Vietnam, southwestern Guangxi, China), *Cuora trifasciata* Clade C (unknown origin); Hybrids (hybrids of *Cuora trifasciata* Clades, *Cuora cyclornata* clades and *Cuora cyclornata x Cuora trifasciata*); unknowns (not yet genetically assessed). The number of wild founders is as follows:

In comparison to 2005 (Struijk & Woldring, 2005) – (16.23.13 (52)) the number of registered (live) specimens increased by a factor of nearly 6. The number of members increased from 8 to 48 participants. The hatching rate of 1-3 hatchlings a year has increased to 45 in 2011, the as of yet most productive year for the studbook.

## **3. Locations:**

In January 2012 the number of participants counts 48 collections from 8 European countries (Austria, Germany, Netherlands, UK, Italy, Spain, Switzerland, France) including 11 zoos (Munster, Whipsnade, Chester, Bristol, Corsica, Amsterdam, Hamburg, Köln, Barcelona, Chavornay and Rotterdam).

## **4. Births:**

During 2011, 3 specimens of *Cuora cyclornata cf. cyclornata*, 1 specimen of *Cuora cyclornata meieri* were born at the Munster Zoo. 7 Specimens of *Cuora trifasciata* Clade B were born in Zoo Rotterdam. 4 *Cuora cyclornata cf. cyclornata*, 3 *Cuora trifasciata* Clade A, 20 *Cuora trifasciata* unsampled origin specimens and 7 *Cuora trifasciata* Clade A x B hybrids were produced by private breeders.

## **5. Imports & Additions:**

5 adult female *Cuora trifasciata* Clade A, 2 adult and 2 subadult *Cuora cyclornata cyclornata* females were imported from Hong Kong in October 2011 and placed with a private participant and Zoo Münster. This was likely the first legal import of these two species since their inclusion into CITES in 2000. 1 *Cuora trifasciata* male was donated to a private participant, 1.1 *Cuora trifasciata* were purchased by a private participant, 0.1.1 *Cuora trifasciata* were sold from a former private participant to a new private participant. 8 private participants with a total of 34 specimens joined to the studbook.

## **6. Deaths & other losses:**

During 2011 one death of an adult male and one death of an adult hybrid female was reported. The female was killed by another female of smaller size. This shows the aggressivity of some specimens and the necessity to keep specimens separated from each other. 1 adult *Cuora cyclornata cyclornata* male, 1 adult *Cuora trifasciata* male, 4 adult *Cuora trifasciata* female, 7 *Cuora trifasciata* juveniles and 2 hybrid *Cuora trifasciata* juveniles from three former private participants were sold to Hong Kong by the owners and are thus lost for the studbook. This is especially bad for *Cuora cyclornata cyclornata*, since this male was one of only two males of this subspecies existing in Europe. A harsh loss. The increasing prices in China are tempting and form a risk for the studbook.

## **7. Transfers:**

During 2011 several transfers were carried out within the studbook. 1 CB male *Cuora cyclornata cf. cyclornata* specimen was transferred from the Munster zoo to 1 private participant, 3 male *Cuora trifasciata* were transferred between private participants. 10 juveniles *Cuora trifasciata* were exchanged between participants and 2 captive bred *Cuora trifasciata* clade B specimens were transferred from Zoo Rotterdam to a private participant.

## **8. Discussion:**

While barely any information on the former *Cuora trifasciata* Studbook was present when the current team reinitiated it, great progress was made in the last 3 years in including almost all European specimens into the studbook. Furthermore almost all individual specimens are at least morphologically identified and photographed; nearly 50% have been genetically sampled. One issue that needs to be improved is the breeding success.

The studbook keepers maintain good contacts with the TSA *Cuora* coordinator Ray Farrell, as well as the TSA Animal Manager Cris Hagen and with Paul Crow and Gary Aedes of Kadoorie Farms. A TSA/IUCN Workshop on the genus *Cuora* in Gangkou, China in May 2011 was initiated by Torsten Blanck and Cris Hagen to bring farmers, scientists, conservationists, officials and private breeders to one table, which already

shows some first good success. Another Asian turtle IUCN/TSA/WCS Workshop in Singapore in February 2011 (in which Torsten Blanck participated) concluded that the genus *Cuora* should be placed into CITES Appendix I. This will certainly make international studbook programs and exchanges difficult and it is questionably in our opinion if this really helps the last few remaining specimens in the wild.

The increasing prices and demand in Asia for most *Cuora* species and here especially for *Cuora trifasciata* and *Cuora cyclornata* is a major problem these days. Several keepers in the US and Europe have already sold their specimens, both adult breeders and offspring to Hong Kong and Japan. This is certainly understandable considering the monetary value but a serious and harsh loss for studbook projects.

### **9. Activities planned for 2012:**

1. Drafting and publishing a husbandry-, Identification- and breeding guideline.
2. Search for additional studbook specimens. This point is slowly improving since probably most remaining specimens in European captivity are managed in the studbook now. We are aware of about 50 specimens that are not yet included into the studbook and estimate that possibly another 20-30 exist in yet unknown collections exist.
3. An International Workshop specifically dealing with these two species in Zoo Münster to discuss best practices for keeping, breeding and differentiating these two species.
4. In March 2012, the *Cuora cyclornata* breeding group from Kadoorie Farms, Hongkong will be transferred to Zoo Münster, Zoo Colone and private participants, forming the first major transfer of a *Cuora* species between international institutions.
5. In order to maintain genetic diversity, specimens will be exchanged with US facilities keeping these species. One male of Clade A from the Behler Center (Ojai, California, USA) is expected to arrive in Rotterdam this spring, one male of Clade C was sent from Rotterdam to Behler in 2010, to complete the breeding group of this Clade at Behler.
6. Further Genetic sampling of specimens maintained in the studbook. A special focus on wild caught stock is essential. At least 32 specimens will be sequenced in 2012. 55 specimens were sequenced in 2011. So far nearly 110 specimens have been sequenced.
7. Finding solutions for hybrids – As of now, more than 100 specimens maintained in European collections are intraspecific hybrids, this is more than 1/3 of the existing stock. Since hybrids are of no real use for conservation projects and are difficult to manage in the future, solutions need to be found for this group. This will be a major discussion point during the planed workshop.

8. Proceed further in forming pure breeding groups. To the current knowledge, 4 private participants remain with non-pure breeding groups, producing hybrid offspring. This needs to be changed.

9. International Studbook – For two species that are ranked as two of the most critically endangered turtle species on the planet it is essential to maintain a wide genetic diversity as long as we still have wild caught founder animals. For this an international studbook will be an essential task.

10. Improve breeding success by providing guidelines and create a studbook Mailing list for active information exchange. The Mailing list will include the most complete Library available for these species.

30.01.2012 – Torsten Blanck – *Cuora trifasciata* & *Cuora cyclornata* Studbook keeper