

Discussing the future of the studbook on *Chersobius signatus*

Report

Dwarf Tortoise Conservation
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Introduction

On 9–10 September 2023, 12 participants in the studbook on *Chersobius signatus* gathered in Langenhagen, Germany, to discuss the future of the studbook. The studbook management plan requires an update in 2023, and the discussion served to consider potential changes to the aims for the studbook, based on an evaluation of the results obtained so far.

The meeting date was selected after consultation with all studbook participants. On 30 July 2023, a discussion paper was drawn up and distributed among all studbook participants, and participants who were unable to attend the meeting were invited to send a response by e-mail. The Langenhagen meeting location was selected to equalise the travel distance for all participants. Eventually, participants originated from Belgium, Czech Republic, France, Germany, Netherlands, Poland, and Portugal. During the meeting, English was used as primary language.

Programme

The meeting programme included two evening lectures (Introduction to the dwarf tortoises, *C. signatus* in the wild, and a personal introduction of one of the participants and his husbandry of *C. signatus*) on 9 September, and the discussion and six additional lectures (Husbandry and breeding of *C. signatus* and other dwarf tortoises by four different participants, tick outbreak in an indoor population of *C. signatus*, and field studies, husbandry and breeding of *Chersobius boulengeri*) on 10 September.



Discussion

An evaluation of the studbook results shows that:

- there is no inbreeding in the studbook population despite 28 years of reproduction;
- average mortality is similar to mortality in the wild;
- mortality among the 5.5 founders imported in 2015 appears higher than mortality among previous imports of founders, albeit in part due to causes unrelated to captivity;
- several breeding couples are not reproducing as anticipated in the studbook management plan:
 - not all founders are producing 6.6 (surviving) F1 offspring;
 - not all F1 offspring produce a F2 generation;
- as many as nine breeding couples have matured and should have started reproduction in 2021–2023.

Consequently, founder genes are not uniformly distributed in the studbook population and the genes of several founders have gone extinct.

The meeting, and written responses on the discussion paper, made the following recommendations:

- Maintain the current conservation breeding aim for the studbook, given the deteriorating conservation status of the wild population, and solvable nature of the issues identified in the evaluation. This was a unanimous recommendation.
- If maintaining the conservation breeding aim would not be feasible (e.g., required permits), most participants preferred to downgrade the aim to a captive-conservation aim (i.e., managing the studbook to optimize genetic diversity without adding new founders).
- Reduce numbers of founders added to the captive population from 5.5 to 3.3 at a time, to enable all new founders to be acclimated and kept at participants who have been successful long-term. Relocate any possible long-term captive *C. signatus* already present at these locations.
- Lack of (sufficient) knowledge among some of the participants appears to be a central issue (e.g., participants are learning by doing, needlessly repeating mistakes that previous participants have already made). Implement the following to improve breeding results and (further) reduce mortality:
 - Prepare an information package for new studbook participants. This could include articles on husbandry and breeding of *C. signatus* that have been published in various languages, links to husbandry recommendations and annual reports with appendices that present information about husbandry and breeding, etc.
 - Facilitate horizontal information exchange among studbook participants; create a forum or app group that participants can use to discuss various issues related to husbandry and breeding. Preferably, this information should be retrievable using a search option at a later time.
 - Update the website of Dwarf Tortoise Conservation, and maintain it as the single portal for expert information about dwarf tortoises. It would be ideal if the forum or app group could be approached via this website.

These recommendations will be implemented in the update of the studbook management plan, and will be used to substantiate a permit application for additional founders.