THIRTEEN YEARS OF KEEPING AND BREEDING THE MADAGASCAR FLAT-TAILED TORTOISE (*Pyxis planicauda*)

EHAP

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INTRODUCTION

The critically endangered Madagascar Flat-tailed Tortoise *Pyxis planicauda* is endemic to the Menabe region on the central western coast of Madagascar[1-3].

Although research has increased in recent years, knowledge on the species' life history remains poor. To date, no information regarding reproduction in the wild exist and despite several decades of considerable efforts by renowned zoos, knowledge on the species' breeding biology is still very limited[4-6]. Consequently, breeding attempts widely remain unsuccessful and the number of captive bred individuals is low.

The EHAP project is a captive breeding project established in 2007 that aims to enhance the exchange of experiences in captive care and breeding of *P. planicauda*. To date, the projects' participants produced more than 50 hatchlings using different incubation conditions of which nine proofed to be successful. Here we summarize our experiences.

CAPTIVE CARE AND INCUBATION

The EHAP project's breeding stock consists of nine adult specimens (3,6), which are kept in mixed groups of 1,1 or 1,2 in naturally vegetated enclosures measuring 70 x 80 cm. The enclosures are equipped with a UV fluorescent tube, a Bright Sun Desert UV spot, and a fogging system to simulate a seasonal climate resembling the conditions within the species' natural habitat.

Mating takes place throughout the rainy season (October - April), but is most frequent in the beginning (Fig.1)[4]. In captivity, females produce two to four clutches with a single egg each (Fig.2)[3,6]. Eggs are collected from the enclosures, half covered with vermiculite, and transferred into an incubator (Fig.3).

Fig.1. Breeding pair of *Pyxis planicauda* mating.

Fig.2. Female *Pyxis planicauda* after egg deposition.

Fig.3. Egg half covered with vermiculite.

Fig.4. Incubators used for *Pyxis planicauda* eggs.

To match seasonal conditions of the natural environment in Madagascar, egg incubation consists of four phases (Fig. 5) including a diapause that corresponds to the dry season. While the first three phases remain stable across all incubation methods, temperature during the final phase is variable. Throughout all phases of the incubation, humidity was 85-90%.

RESULTS & DISCUSSION

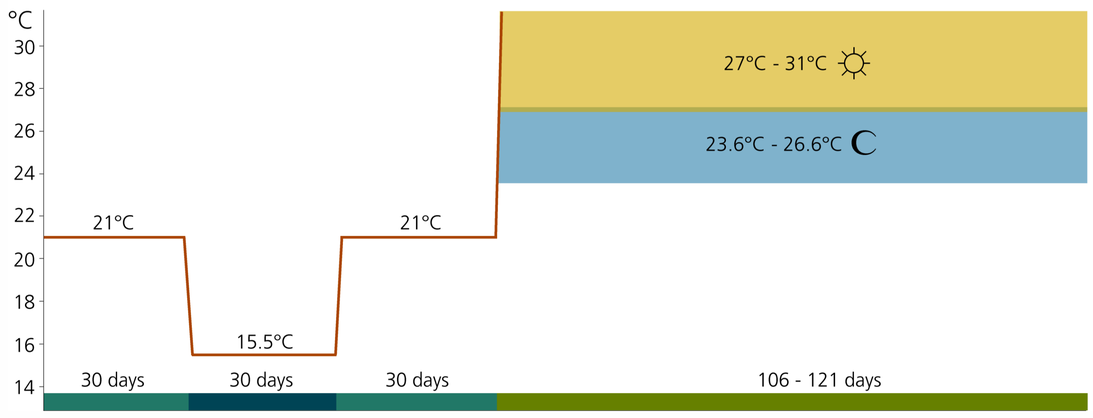

Fig.5. Range of successful incubation conditions. Yellow and blue area correspond to day and night time temperature ranges.

Table 1. The following three incubation conditions were the most successful.

Method	Temperature [°C]	Duration [days]	# Eggs	# Hatchlings	%
1	21.0 15.5 21.0 24.7 (night), 27.7 (day)	30 30 30 112 - 125	20	15	75%
2	21.0 15.5 21.0 25 (night), 30.5 (day)	30 30 30 190 - 225	39	19	48%
3	21.0 15.5 21.0 26.5 (night), 31 (day)	30 30 30 196 - 206	13	6	46%

To date, 50 *P. planicauda* hatched from a total of 102 eggs (49% hatching rate). Using the three methods listed above, 40 hatchlings emerged from 72 eggs (55%), while the remaining six incubation conditions produced only 10 hatchlings from 30 eggs (33%). However, it is uncertain whether eggs that did not hatch failed due to infertility.

Since 2008, incubation temperatures were recorded using a HOBO pendant temperature data logger set to record temperatures at intervals of 10 minutes.

Fig.6. Left) *Pyxis planicauda* hatchling emerging from its egg. Right) *Pyxis planicauda* hatchlings.

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