AFRICAN HERP NEWS

Number 48 AUGUST 2009

CONTENTS

ISSN 107-6187

African Herp News

Newsletter of the Herpetological Association of Africa

Number 48 **AUGUST 2009**

African Herp News No. 48, pp. 8 — 14

CAPTIVE PROPAGATION OF *PYTHON ANCHIETAE* IN NAMIBIA

Herbert JAUCH

PO Box 96179 Windhoek, Namibia.
E-mail: helu@mweb.com.na

INTRODUCTION

The Angolan python (*Python anchietae*) is still a relatively rare snake in both private and public collections, although the species has successfully reproduced in both the USA and Europe (Branch and Griffin, 1996; Cimatti, 2001). Breeding *Python anchietae* was (and still is) primarily a commercial venture as the snakes were sold for about U$10 000 ten years ago. Today, *Python anchietae* is sold by private overseas breeders for about U$2 000 and prices are likely to decline further as more captive-bred specimens become available.

A captive breeding programme for *Python anchietae* was established at the Transvaal Snake Park, South Africa, in 1986 but little success has been achieved. Despite several copulations there was no successful reproduction (Branch and Griffin, 1996). However, a female collected in North-Western Namibia in August 1971 laid five eggs in early December. They were incubated at 28 – 30° C and after 68 – 70 days, four hatchlings emerged. They measured 428 – 465 mm in total length (Patterson, 1978).

In its native range in Southern Africa, *Python anchietae* is not bred for commercial purposes due to the strict legal protection the species enjoys in Namibia. To date, only two cases of successful captive breeding in Namibia are known. The first occurred in the Swakopmund Snake Park in 2002 (Cunningham and Hebbard, 2002) and the second successful captive reproduction was achieved by the author in co-operation with Mike Griffin from Namibia's Ministry of Environment and Tourism in 2005.

This article highlights the insights gained from the captive propagation of the species within its home range.

CAPTIVE BREEDING IN NAMIBIA

The Swakopmund Snake Park keeps three adult *Python anchietae* (one male and two females) in a large display cage with sandy soil and decorative rocks. Some under-floor heating is provided but the climatic cycle in Swakopmund differs significantly from the temperature conditions in *Python anchietae*'s natural range. Mating was observed on several occasions and on 20 November 2001, four eggs

were deposited. They measured between 73 x 34 mm and 95 x 42 mm. The eggs were artificially incubated at about 28° C and after 81 days one egg was snipped. A fully formed embryo was found, with much egg yolk still evident. The yolk was absorbed within a week but the python died within the egg. One egg was infertile but two hatchlings emerged after 92 – 94 days. They measured 490 and 510 mm. They had to be force-fed initially as they did not show any interest in the small mice offered. They sloughed for the first time at about four months of age (Cunningham and Hebbard, 2002). The juveniles remained reluctant feeders and grew relatively slowly (Stuard Hebbard, personal communication).

Captive maintenance

Our breeding group consisted of five adult specimens of *Python anchietae* obtained in 1996 and 1997. The male measured 110 cm and weighed 850 g while the four females ranged in size from 130 – 150 cm and weighed 1180 – 1300 g. All had been collected in the wild. In May 2000, a second male of 115 cm length was added to the collection with a view of reproducing the pythons and gaining insights into their reproductive behaviour.

In 1998 and 1999, the pythons were kept in indoor cages that were 100 – 150 cm long and 45 – 60 cm wide and 45 – 60 cm high. These cages were constructed with wood, had sliding glass in front, and partial floor heating ("flexil" heating pads) that was controlled through a thermostat (Biotherm). The thermostat allowed a drop of 8 – 10°C between day and night time temperatures. In order to simulate the natural temperature cycle as closely as possible, temperatures ranged from 14 – 24°C during the winter months (June, July) increasing gradually from August onwards to reach a high of 24 – 32°C in December and January. Due to the high outdoor temperatures, the floor heating was switched off from October to April. All animals readily accepted mice and rats (dead or alive) as food.

In line with outside conditions, our animals were kept under fairly dry conditions during the dry season from May to December, with humidity ranging from 20 – 40%. Cages were sprayed more frequently in line with natural rainfall patterns between January and April, when humidity levels reached 40 – 60%.

Our *Python anchietae* were kept in separate cages from December to July. After the cool winter period, the males were placed in the females' cages for periods of 5 to 15 days from August onwards. At times, both males were kept with one female; at other times two males and two females were kept together or one male with two females. The snakes were rotated in the hope of increasing mating success. Due to the secretive nature of the snakes and the hiding places provided in their enclosures, no mating could be observed and no eggs were laid in the first two years.

Outdoor cage

Between 2000 and 2003, we changed our breeding strategy. Our pythons were kept in Windhoek, which falls into the species' most southern range. We thus decided to construct an outdoor enclosure covering a floor area of 180 cm x 200 cm with vari-

ous natural hiding places. We thus exposed the snakes to natural weather conditions. However, due to the severe cold winter conditions between June and August, with night temperatures occasionally dropping to freezing point, the animals were kept in indoor cages during that time at temperatures of 14 – 24°C. In August, temperatures were increased to around 28°C during the day, and from September onwards the males were kept with two or three females in the outdoor cage. During the hot summer months, temperatures reached up to 35°C in the day and the snakes became active after sunset. On very hot days the pythons occasionally were found lying in the water container, probably to cool off. On other occasions, *Python anchietae* avoided water and disappeared into its hiding places when the cage was sprayed. After spells of strong summer rains, *Python anchietae* was found basking during the day. On cloudy days, the pythons could be observed outside their hiding places in the late afternoon.

Egg deposition

The first eggs were laid in December 2001. The females and males had been placed together first in the indoor cages in August and September and then again in the outdoor cage during October and November. Although we once again could not observe mating, one of the females refused food in November. She was then placed in a separate indoor cage which contained a plastic container filled with moist vermiculite to facilitate the egg deposition. However, the female did not use the plastic container and instead deposited her eggs under a flat rock in her cage. She coiled around her eggs and was ready to strike at anything that came near her (Fig. 1). The eggs seemed slightly dehydrated and measured 55 – 76 mm in length and 27 – 43 mm in width. Four of the eggs were similar in size while two were extraordinarily large, measuring 76 x 42 mm and 62 x 43 mm respectively. These large eggs were also partly deformed, with a "nipple-shaped" end.

All eggs were transferred into an incubation container with moist vermiculite and kept at temperature of 31 – 33°C. After five weeks the eggs had turned mouldy brown and the large eggs started turning green. One of them was opened and contained a dead, slightly developed embryo. The other eggs were also opened a few days later and contained no embryos at all. Thus it seemed that only one of the eggs had been fertile.

The next set of eggs was laid in 2003. During that year, some snakes were kept in the indoor cages after the winter months, while others were transferred to the outdoor cage in October. One of the females that was with a male in an indoor cage between mid-September and mid-October 2003, and then in the outdoor cage from 7 November – 12 December, appeared to be gravid. On 17 December she refused the mice on offer which she had accepted without hesitation before. She was then transferred to an indoor cage with partial floor heating that ensured constant temperatures of about 28°C. By 24 December she had not yet deposited her eggs and a plastic container with moist vermiculite was left in the cage to enable her to lay her eggs. When we returned from our holidays, we found that heavy rainfall had partly

flooded the snake room and tragically some water had entered the cage of the gravid female. She had deposited six eggs which had been destroyed by the water in the egg box.

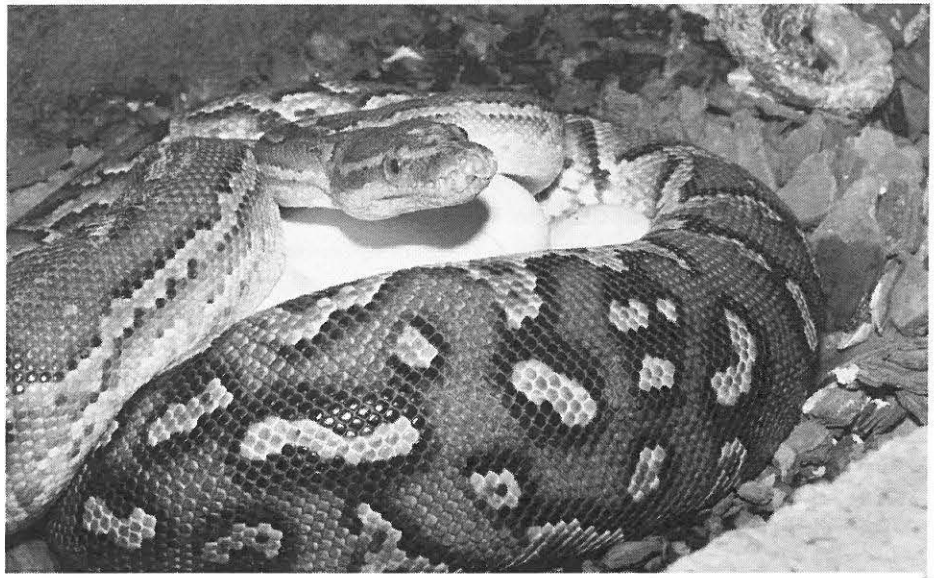

Fig. 1. *Python anchietae* coiled around her eggs. Photo: Herbert Jauch

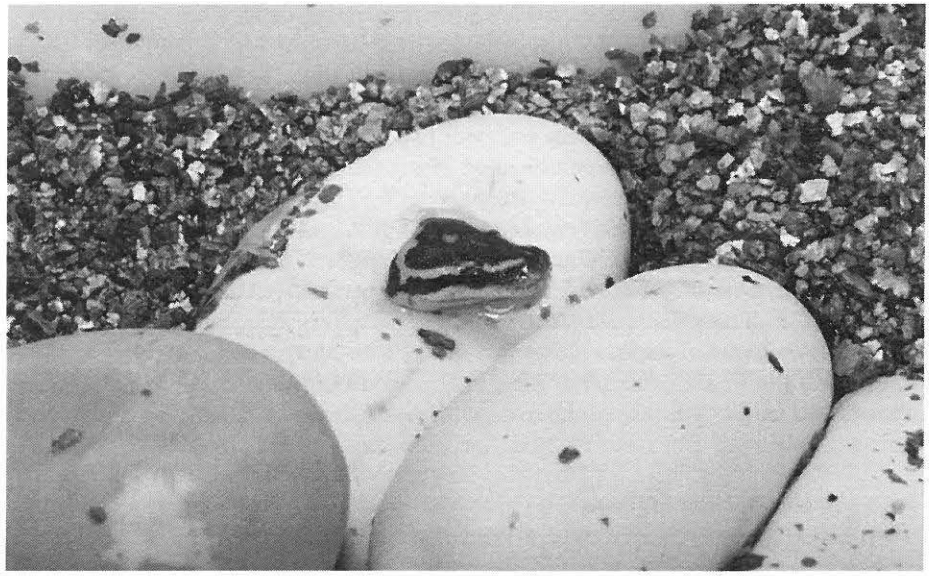

Fig. 2. *Python anchietae* hatching. Photo: Herbert Jauch

Successful reproduction

In 2004, we finally managed to breed *Python anchietae* successfully. All our snakes were kept indoors from April onwards. Temperatures were gradually reduced from 20 – 28°C in April, to 16 – 26°C in May, and 14 – 24°C during June and July. In August temperatures were increased again, reaching 18 – 29°C in September. On 24 August our largest male was introduced to the female that had laid eggs in 2001. In mid-September the smaller male was added to the pair, followed by an additional female a week later. All four snakes remained together until mid-October when temperatures reached 32°C during the day.

By the end of October the female that had laid eggs in 2001 refused food, which was a certain sign of gravidity. The female was placed in a separate cage and was once again offered a plastic container with moist vermiculite. On 25 November she deposited six eggs in her hiding place and once again ignored the vermiculite box, as she had done in 2001. She curled around her eggs, which were carefully removed and placed in an incubator with moist vermiculite at temperatures of 30-33 C. The eggs measured 85 – 98 mm in length and 40 – 50 mm in width. The female repeatedly returned to the place where she had deposited her eggs and curled around the spot as if she was incubating. She refused food and was then placed into another container, where she accepted food immediately.

After 50 days of incubation, one egg had turned green and was opened. It contained a fully developed but dead embryo. After 55 days, the first hatchling emerged, after cutting the egg open near the centre of the egg (fig. 2). The snake remained in the egg for another 2 days before finally leaving the shell. During the following 2 days another 3 hatchlings emerged, while one eggs contained a fully formed but dead snake. Thus incubation took 55 – 57 days until the eggs were slit open. The hatchlings left the eggs 57 – 59 days after egg deposition.

Growth of hatchlings

The four hatchlings measured 48 – 51 cm and weighed 67 – 69 g. They were placed in small plastic containers with wet paper towel; a water dish and a hiding place (bark) which they accepted readily. They shed their skin the first time after 10 – 12 days and readily accepted fuzzy mice. Raising the young snakes was easy and after five months they had reached a length of 60 – 62 cm and weighed 74 – 81 g. At the age of three years they had reached a length of 98 – 108 cm and weighed 419 – 608 g. One of the hatchlings (a female) grew slower than its siblings as it refused food during the winter months, while all others accepted food throughout the year. Only one of the hatchlings was male.

During the first five months, we measured food intake and compared it to the growth and weight increase of the snakes. The results are summarised in Table 1.

	Sex	Food intake in g	Weight increase in g	Weight increase as % of food intake	Growth in cm
Hatchling 1	Female	161	79	49.1	12
Hatchling 2	Female	148	74	50.1	13
Hatchling 3	Female	161	77	47.8	11
Hatchling 4	Male	164	42	41.8	13

Table 1: Growth compared to food intake during the first 5 months.

Growth and conversion of food into body weight was fairly consistent amongst the four hatchlings. However, the male ratio of 41.8% conversion was lower than those of the females which recorded close to 50%. This could be a reason why female *Python anchietae* tend to be larger than males, although our sample of only one male hatchling is too small to draw a conclusion.

Amongst our adult specimens we observed a difference in size and weight between males and females. After 10 years in captivity our adult females reached 155 – 160 cm in length and weighed between 2190 and 2463 g, compared to our males which only reached 130 – 140 cm in length and weights of 1356 – 1944 g.

Further breeding attempts

We continued our breeding attempts as in the previous years and obtained two further sets of eggs from two different females in 2006. One of the females deposited three eggs on 19 November. They were relatively small, measuring 58 – 64 mm in length and 32 – 36 mm in width. They turned green after a few days, as they were infertile. The other female laid six eggs on 24 November. Four of them were small (55 – 59 mm x 37 – 38mm), while two were fairly large (87 x 46mm; 72 x 48mm). Only the larger eggs were fertile and were incubated in moist vermiculite at 30 – 33°C. One of the eggs turned green in early January, after about 40 days of incubation. It contained a small, dead embryo. The remaining egg was slit open on 21 January (after 59 days of incubation) and then cut open four days later. It contained a fully developed but dead embryo.

The low fertility rate amongst the last set of eggs seems to indicate that our adult specimens have reached the end of their reproductive lives. As we obtained these pythons as adults 10 – 12 years ago, they are likely to be well over 17 years of age.

We will now focus on breeding with our hatchlings of 2005 and some unrelated males to avoid inbreeding.

CONCLUSION

Python anchietae is a fairly docile snake and relatively easy to keep in captivity. The python easily accepts rodents as food and can tolerate night temperatures as low as 12°C during winter. Annual temperature cycles seem crucial to induce reproduction, and males do not display any antagonistic behaviour towards each other. Mating takes place between August and October, while eggs are laid between November and January.

Even when *Python anchietae* is kept under suitable conditions, breeding success is by no means guaranteed, as we discovered over the last ten years. Eggs should be incubated at fairly high and consistent temperatures of 30 – 33°C. This will ensure healthy hatchlings that can be raised trouble free. Incubation at lower (sub-optimal) temperatures may still produce hatchlings but these tend to be weaker and more reluctant to feed.

REFERENCES

BRANCH, W.R., & GRIFFIN, M., 1996. Pythons in Namibia: Distribution, Conservation and Captive Breeding Program. *In*: Strimple, P.D. (ed). *Advances in Herpetoculture*: pp. 93-102. Stanford, California: IHS.

CIMATTI, E., 2001. Anchieta's Dwarf Python *Python anchietae*. *Reptilia* **18**: 62 – 66.

CUNNINGHAM, P.L., and HEBBARD, S., 2002. *Python anchietae*. Angola or Anchieta's Dwarf Python. *African Herp News* **35**: 8-9.

PATTERSON, R.W., & ERASMUS, H., 1978. Hatching of Anchieta's Dwarf Python, *Python anchietae*. *International Zoo Yearbook* **18**: 99-101.

NATURAL HISTORY NOTES

REPTILIA: SQUAMATA; SAURIA

GEKKONIDAE

***Rhoptropus barnardi* Hewitt, 1926**
Barnard's Namib Day Gecko

REPRODUCTION

Rhoptropus barnardi is known from the Namib Desert from Central Namibia to southwest Angola (Branch, 1998: *Field Guide to Snakes and other Reptiles of Southern Africa.* Struik, Cape Town). There is a report from a field guide that clutches of two eggs are laid in communal nesting sites in May to June (Branch, 1998: *op. cit.*). The congener *Rhoptropus bradfieldi* deposited two eggs (in the field) in October 2008 (Barts & Ballandat, 2009: *African Herp News* **47**: 39 – 40). In this note I add information on *R. barnardi* reproduction including new dates for egg production, the first information on the testicular cycle, and minimum sizes for male and female reproductive activity.

Eighteen *R. barnardi* from Namibia in the Natural History Museum of Los Angeles County (LACM), including eleven males (mean SVL = 43.5 mm ± 3.2 SD, range = 38 – 48 mm), five females (mean SVL = 43.6 mm ± 1.3 SD, range = 42 – 45 mm), and two juveniles (mean SVL = 34.5 mm ± 3.5 SD, range = 32 – 37 mm) collected in October and November 1972, June 1976, and March 1977, were examined. Localities: **Erongo Region**: LACM 77637, 77640 – 77643, 77645 – 77648, 77650 – 77656; **Kunene Region**: LACM 127473, 127474.

For histological examination, the left testis was removed from males to study the testicular cycle and the left ovary was removed from females to check for the presence of vitellogeneis (yolk deposition) and/or corpora lutea. Counts were made of oviducal eggs or enlarged ovarian follicles (> 4 mm in length). Slides were stained with Harris haematoxylin followed by eosin counterstain. Histology slides were deposited at LACM. An unpaired *t*-test was used to compare male versus female body sizes (SVL) using Instat vers. 3.0b, Graphpad Software, San Diego, CA.

There was no significant size difference between male and female mean body sizes (unpaired *t*-test, $P = 0.924$).

The only stage observed in the testicular cycle was sperm formation (= spermiogenesis) in which the seminiferous tubules are lined by groups of spermatozoa or metamorphosing spermatids. This condition was observed in March ($n = 1$), June ($n = 1$) and October-November ($n = 7$). The smallest reproductively active male meas-