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CAPTIVE BREEDING OF THE CAIMAN LIZARD, *DRACAENA GUIANENSIS*

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INTRODUCTION

Amazonian Caiman Lizards or Jacuruxi are among the most impressive saurians in the world (the generic name refers to a small dragon). With the total length over one metre, they are among the largest and most remarkable representatives of the family Teiidae. Caiman Lizards are well-known for their dietary specialisation, feeding on snails, and for their imposing crocodile-like appearance. However, knowledge of their natural history is surprisingly poor. A summary of recent knowledge on the morphology, distribution, habitat and natural history of Caiman Lizards is given by Avila-Pires (1995).

Caiman Lizards are internationally protected by CITES (Appendix II). They are very rarely exported as live animals. However, they are exploited to supply leather for the shoe trade (Sprackland 1992). They are only very rarely kept in captivity (Conant 1955, Werler 1970, Vanderhaege 1971). The latter two authors reported successful captive reproduction. However, in both cases, the eggs obtained for artificial incubation were deposited by recently imported females, apparently gravid when caught. The present paper gives information on the successful long-term keeping of Caiman Lizards and full reproduction in captive conditions. A preliminary report on the Caiman Lizards in Prague Zoo was given by Rehák (1995).

DESCRIPTION, DISTRIBUTION AND NATURAL HISTORY

Caiman Lizards are large, powerfully-built lizards, well adapted to semi-aquatic and semi-arboreal modes of life, and to snail-eating. The body is cylindrical, the tail compressed with a double dorsal crest, and representing about two-thirds of the total length. The eyes are positioned dorsolaterally, the lower eyelid thick and completely opaque, the tympanum superficial and easily visible. Dorsal scales bear large tubercles forming longitudinal rows. Limbs are well-developed, pentadactyle and fully-clawed.

Caiman Lizards show cryptic colouration. They are greenish, the dorsal surface and sides of the head with reddish areas, especially around the eyes. Colour photographs of Caiman Lizards are shown by Rehák (1995, 1996).

In spite to their name, the occurence of Caiman Lizards in the Guianas is doubtful (the type locality Cayenne, French Guiana, was corrected to Amapá, Brasil, north of Rio Araguari, by Hoogmooed and Lescure, 1975). Although Sprackland (1992) mentioned Caiman Lizards as common in much of South America, precise locality data are very few - Avila-Pires (1995) gives only 17 localities, including some that are uncertain. The known distribution of *D. guianensis* is along the Amazon valley eastward up to the Brasilian states Maranhao and Amapá westward up to Amazonian Colombia, Ecuador and Peru. Amazonian Caiman Lizards seem to be ecologically restricted to the courses of the main rivers of the Amazon basin.

Like locality records, observations on wild Caiman Lizards are very scant, and autecology and ethology of the species remain mostly unknown. *D. guianensis* is semi-aquatic and semi-arboreal. It is known to feed on snails - the shells are crushed with strong molariform teeth and shell fragments are expelled with the well-developed tongue. There are no field observations on reproduction apart from old (1897, 1902) observations by Goeldi (see Avila-Pires 1995) of two eggs (average length of 74.5 mm, average width 38.25 mm) found in a cavity in a termite nest.

Origin: Two males and one female of *D. guianensis* have been held at Prague Zoo since 22 August 1995. Subsequently, another male, kept separately, was imported to the Zoo. All animals originated from the vicinity of Iquitos, Peru.

Size, weight, growth:

The total lengths of the two original males at 10 January 1999 were 1108 mm (SVL = 403mm, tail 705mm) and 1015mm (420 + 595, tail regenerated). Their weights were 3085g and 3790g respectively. The female measured 968mm (325+407mm, tail tip incomplete), with a weight of 1373g. The growth of Caiman Lizards is rapid in younger animals. When imported, the males measured only 70-71cm and female 63cm. The increase in total length of the male with the complete tail was 30cm in the first year, but the later increase was slower - only 9cm in two following years.

Note on tail regeneration:

One of males suffered an injury to his tail after the importation. Consequently, he lost a large part of his tail. However, his tail completely regenerated within one year. So, in contrast to other large teiids like Tupinambis, Caiman Lizards have the ability to regenerate broken tails.

Sexual difference:

The female is smaller and, when compared to males, has a relativelly narrower head. The colour of the head in males is reddish, and in females greenish, with red colour restricted to areas around the eyes. Cloacal probes penetrated about 6-7cm into the hemipeneal pockets of males, while the female's tail base pockets are only about 2cm deep.

Note to the colouration:

Some physiological color change was observed - the colouration became darker at lower temperatures. Prior the shedding, the colouration is less vivid.

Food:

Caiman Lizards readily accept both living and dead (thawed frozen) Roman snails *(Helix pomatia)*. Usually, they are fed dead snails every second day, each lizard eating about 3-7 adult snails. Aquatic gastropods *(Ampullaria)* are also eaten, although Roman snails are prefered. Shells are crushed between the rear teeth, and their large fragments expelled by tongue movements while smaller fragments are swallowed (Figure 1). Smell plays the major role in food detection - offered snails elicit a typical tongue activity, both above and below water. The tongue is constantly flicked in and out, in the same manner as snakes and goannas, while the lizard moves about locating the snails. Our Caiman Lizards did not accept non-shelled gastropods *(Arion)*. Faeces are deposited exclusively in the water.

Enclosure:

The three Caiman Lizards shared the exhibit enclosure of 530 x 160 x 225cm. Half of the bottom is a water basin with a maximum depth of 60cm. The remaining part of the bottom is covered by a half-metre deep layer of peat/sand mixture. The rear wall consists of artificial rocks with large pockets for plants. Several stronger branches sit in the inner space of the enclosure.

Illumination is artificial, consisting of five halogen tubes (300 W) and four fluorescent tubes (20W), all shining for 12 hours a day, and two Osram Ultra Vitalux lamps (300 W) shining only 6 hours a day (1000-1600 hrs).

Temperature gradients in the terrarium are from 25 to 45°C. Even higher temperatures (up to 50°C) are on the heating plate on the bottom. Water temperature is about 27°C.

Daytime activity:

Caiman Lizards are diurnal. They spend the night sleeping in the wall pockets for plants, or in burrows they construct in the substrate. During the day, they spent most of their time on the branches and in the wall pockets,

basking near the Vitalux lamps (Figure 2). The greatest amount of movement (climbing, swimming, walking) is observed in the afternoon. They are good climbers, using their strongly clawed limbs and powerful tail, which is somewhat prehensile. Caiman Lizards are excellent swimmers and divers. They swim by undulation of the entire body and tail, especially the latter. The limbs are pressed against the body while the lizard is swimming. Before diving, they breathe out, and consequently they can spend a prolonged period under the water, walking or resting.

Defense:

When frightened, Caiman Lizards jump into the water and keep pressed to the bottom. When a potential threat (human hand) gets close, Caiman Lizards perform very fast lateral movements of the tail and head with open-mouthed jaws.

Social and sexual behavior:

Most of the year, the males are often together in close body contact, basking together and sleeping in the same cavity, while the female keeps away, remaining hidden for the most of the time.

We have never observed any antagonistic encounters or signs of aggression between the males. In contrast, both of the males are frequently observed to chase the female, who tries to escape in the water. The male then tries to return her to the shore. Such interactions are very dramatic - chasing is associated with the male biting the female's tail and limbs, sometimes resulting in a motionless posture on the ground or in the basin with the male holding the female in his jaws, with closed eyes, which can last for over an hour. Although some zoo visitors, when observing this posture, have reported that one lizard wants to kill the other, these encounters never caused any visible damage to female.

In spring 1997, the female's activity was very low. She spent most of the time in her burrow and stopped feeding. In September 1997, the males changed their behaviour, living in separate cavities. The female moved to one of the males, and he was tolerant to her at that time. Sometimes the male held the tail or foreleg of the female, but her response was friendly without any attempt to escape. During this period the female fed intensively. The other male ignored the couple. In November, the female left the first male and moved to the second male. They cohabited until egg deposition in January 1998. The egg deposition was folloved by a three week period of intensive feeding by the female. Subsequently, the behaviour of the males and female returned to the usual pattern as described above.

No copulation was observed during the mating period. However, next autumn an interrupted copulation was observed. After chasing and biting, the male caught the female in the basin and held her forelimb firmly in his mouth while copulating in typical saurian posture with the tail base beneath the female's tail. After ten minutes, this behaviour was interrupted due to disturbance from zoo visitors.

Reproduction:

On 10 January 1998, the female dug out a cavity in one of plant pockets and laid four very large eggs (70-74 x 31-34mm, 43.0-47.50g). Measurements were taken within 24 hours of laying-before placing the eggs in the incubator. In comparison to published data, the size of the clutch was rather low (Werler, 1970, reported 7 eggs, Vanderhaege, 1971, reported 5 eggs). The eggs were white, dry and in mutual contact but not adherent. The female did not defend her clutch. Eggs were incubated on slightly damp vermiculite at 29-30°C. Two eggs, apparently infertile, were removed on 9 February and 18 March. The third egg died on 7 June, with a deformed embryo discovered inside. On 20 June, after 161 days of incubation a healthy lizard hatched from the final egg.

Juvenile:

The hatchling (total length 391mm, SVL 151mm, tail length 240mm, weight 122g)

resembled a small adult with the female type of head colouration. For its rearing, an enclosure 50 x 30 x 32cm was used, with a dish filled with water, branches, and lamp and temperature regime similar to the adults. Its first food, the small gastropod Cepea was taken at 19 days. In contrast, Vanderhaege (1971) reported two young refusing Cepea but accepting small aquatic gastropods. Later, the young started to accept chopped Roman snails.

LITERATURE

Avila-Pires, T C S. 1995. Lizards of Brazilian Amazonia (Reptilia: Squamata). Zool. Verh. Leiden 299: 1 -706.

Conant, R. 1955. Saurian shell crusher. Nature Magazine, February. 2pp.

Hoogmooed, M S. & Lescure, J. 1975. An annotated checklist of the lizards of French Guiana, mainly based on two recent collections. Zool. Meded. 49(13): 141-171 + pl.

Rehak, I. 1995. Tajemny teju *Dracaena guianensis*. Akvarium terarium (Praha) 38(12): 44-47.

Rehak, I. 1996. Teju *Dracaena guianensis*. Akvarium terarium (Praha) 39(1): 2.

Sprackland, R G. 1992. Giant Lizards. T.F.H. Publications, Neptune City. 288pp.

Vanderhaege, M. 1971. Reproduction en captivite de *Dracaena guianensis* Daudin, 1802. Aquarama (Strasbourg) 5(15): 28.

Werler, J E. 1970. Notes on young and eggs of captive reptiles. Int. Zoo Yrbk (London) 10: 105- 116.

Figure 1 The fragments of the broken shell are expelled with the help of the tongue.

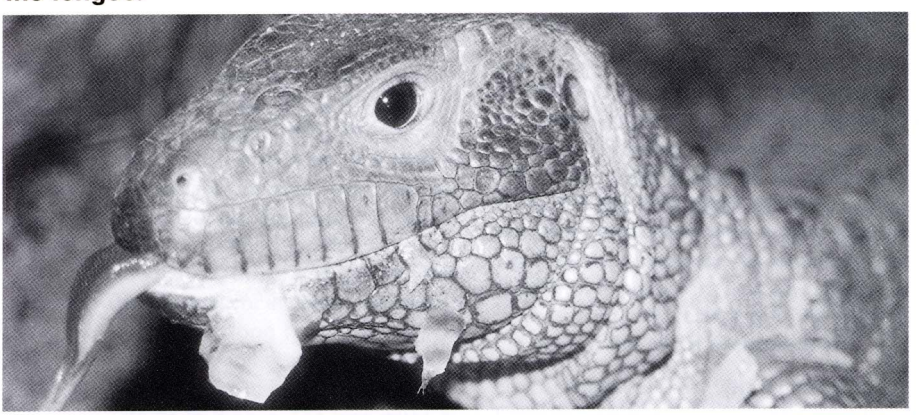

Figure 2 *Dracaena guianensis* basking near the Osram Ultra Vitalux lamps.