

## New Record of Age at Sexual Maturity in Captivity for *Caiman latirostris* (Broad-Snouted Caiman)

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We recently published the first information about age at sexual maturity for the broad-snouted caiman (*Caiman latirostris*), based on data from our captive colony (Verdade and Sarkis 1998). The present report documents a new record for the age at sexual maturity for the species. A female (CL406, Tag USP116) hatched 19 March 1996, in turn produced her first clutch on 31 December 2000. Therefore, her age at sexual maturity was approximately five years (Table 1). Clutch size was 41 eggs, all of them fertile. They were split into four artificial incubators (designed as described by Verdade et al. 1992), incubated at the following temperatures: 28°C, 30°C, 32°C, and 34°C ( $\pm 0.5^\circ\text{C}$ ), and monitored by StowAway® TidbiT® temperature loggers ( $-20^\circ$  to  $+50^\circ\text{C}$ ). Incubation success at each incubation temperature is presented in Table 2.

The parents of female CL406 (sire CL1 and dam CL9) reached sexual maturity by the age of 10 years, being among the group of animals described previously (Verdade and Sarkis 1998). From age 55 days to age 430 days, female CL406 was raised in a greenhouse 16 m<sup>2</sup> (0.8 m<sup>2</sup> per individual) with cement pool ca. 4 m<sup>2</sup> x 60 cm deep (0.2 m<sup>2</sup> per individual). During the spring–summer

period (October through March) she was transferred to another nearby greenhouse that offered a significant microhabitat thermal variation in such a way that either the air, the water surface, or the bottom of the pool (70 cm deep) always presented the optimum temperature for crocodylians (ca. 32°C) (as described by Fincatti and Verdade 2002). She was subsequently transferred to another enclosure 64 m<sup>2</sup> (ca. 2.7–10.7 m<sup>2</sup> per individual) with a cement pool approximately 24 m<sup>2</sup> x 60 cm deep (1.0–4.0 m<sup>2</sup> per individual), and maintained at ambient temperature. CL406 belongs to the second generation (F2) of captive bred *Caiman latirostris* in Brazil. Captive propagation of the species has been conducted in order to produce breeders for caiman farms, and thereby reducing the need for capture of individuals from remaining wild populations (Verdade 2001).

*Caiman latirostris* occupies a large latitudinal range, from the border between Paraíba and Rio Grande do Norte states in northeastern Brazil to southern Rio Grande do Sul at the southernmost point of Brazil (i.e., from ca. 7° to 34°S). Great variation in growth rate and age at sexual maturity can be expected for the species, as has been reported for the American alligator (Ferguson 1985). Thus, animals exposed to warmer temperatures should grow faster and attain sexual maturity earlier than individuals under cooler environmental conditions. How much of this pattern is genetically based and how much reflects phenotypic plasticity is unknown, but our report emphasizes the possible importance of temperature on the growth and reproduction of crocodylians.

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### LITERATURE CITED

FERGUSON, M. W. J. 1985. Reproductive biology and embryology of the crocodylians. In C. Gans, F. Billett and P. F. A. Maderson (eds.). *Biology of the Reptilia*. Vol. 14. Development A, pp. 329–491. John Wiley

TABLE 1. Age at first reproduction of captive *Caiman latirostris*.

| Animal | Sex    | Date of birth    | Date of reproduction* | Age at first reproduction | SVL <sup>†</sup> (cm) | Body mass <sup>Δ</sup> (kg) |
|--------|--------|------------------|-----------------------|---------------------------|-----------------------|-----------------------------|
| CL406  | female | 10 March 1996    | 16 March 2001         | 4 yrs, 11 mos, 27 d       | 81.0                  | 19.8                        |
| CL9    | female | 01 April 1986    | 19 March 1996         | 9 yrs, 11 mos, 21 d       | 80.4                  | 24.0                        |
| CL1    | male   | 28 February 1986 | 19 March 1996         | 10 yrs, 20 d              | 101.5                 | 51.0                        |

\* CL1 and CL9 are parents of CL406.

† Date when first siblings hatched.

Δ October 1995 (CL1, CL9), August 2000 (CL406).

TABLE 2. Summary of reproduction of female *Caiman latirostris* (CL406). Clutch size 41 eggs.

| Incubation temp. °C | No. of eggs | No. of hatchlings | Incubation success (%) | Incubation periods (days) | Deaths (days 0–7) |
|---------------------|-------------|-------------------|------------------------|---------------------------|-------------------|
| 28                  | 10          | 5                 | 50.00                  | 98                        | 5                 |
| 30                  | 10          | 8                 | 80.00                  | 85                        | 1                 |
| 32                  | 11          | 8                 | 72.73                  | 76                        | —                 |
| 34                  | 10          | 8                 | 80.00                  | 74                        | 1                 |

- and Sons, New York.
- FINCATTI, C. R., AND L. M. VERDADE. 2002. Variação térmica microclimática em estufa plástica e sua aplicação para a manutenção de filhotes de jacarés. In L.M. Verdade and A. Larriera. (eds.). La Conservación y el Manejo de los Caimanes y Cocodrilos de América Latina. Vol. 2, pp.75–81. CN Editoria, Piracicaba, SP, Brazil.
- VERDADE, L. M. 2001. O Programa Experimental de Criação em Cativeiro do Jacaré-de-Papo-Amarelo (*Caiman latirostris*) da ESALQ / USP: Histórico e Perspectivas. In W. R. S. Mattos (ed.), A Produção Animal na Visão dos Brasileiros, pp.559–564. Sociedade Brasileira de Zootecnia, Piracicaba, SP, Brazil.
- \_\_\_\_\_, F. MICHELOTTI, M. C. RANGEL, L. CULLEN JR., M. M. ERNANDES, AND A. LAVORENTI. 1992. Manejo dos ovos de jacarés-de-papo-amarelo (*Caiman latirostris*) no CIZBAS / ESALQ / USP. In L. M. Verdade, and A. Lavorenti (eds.), Anais do II Workshop sobre Conservação e Manejo do Jacaré-de-Papo-Amarelo, *Caiman latirostris*, pp.92–99. ESALQ. Piracicaba, Brazil.
- \_\_\_\_\_, AND F. SARKIS. 1998. Age at first reproduction in captive *Caiman latirostris* (broad-snouted caiman). Herpetol. Rev. 29:227–228.