

Embryonic communication and synchronous hatching in *Caiman latirostris* eggs

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Abstract: Synchronous hatching by embryonic communication occurs in many reptiles. Embryos can hatch prematurely, accelerate or retard development, or metabolically compensate for heart rate (HR) adjustments. However, this field is even unknown in crocodilians. The aim was to identify if there is hatching synchronization in *Caiman latirostris* eggs and embryonic communication pathway that facilitates it. Four nests were used (2 early and 2 late) and a total of 127 eggs that were divided into a combined eggs treatment and a control. The combined treatment consisted of incubation of eggs from different nests and stages of development in contact with each other and the control with the remaining eggs of each nest. During incubation, HR were measured every 7 days. After hatching, unabsorbed yolk (V) was measured, and incubation period (IP), duration (HD) and hatching events (HE) were determined. Results of the combined eggs treatment, embryos exhibited higher HR compared to the control on day 14 and 21 of incubation ($P = 0.0001$; $P = 0.0003$). The V was observed in only two nests and did not differ between treatments ($P = 0.66$, $P = 0.48$). The IP of the early embryos in the control was lower than in the mixtures ($P = 0.003$). In addition, one of the late clutches had a lower PI in the mixtures compared to the control. The HD and HE did not differ between treatments ($P = 0.37$, $P = 0.29$) although they decrease in the control (early embryos had HD less than 2 days). Our data suggest that there is some developmental control by *C. latirostris* embryos, mediated by HR adjustments, to hatch together with their incubation partners and that synchronization is even stronger between embryos from the same nest.

Keywords: Heart rate, Eggs, Embryonic communication, Synchronous hatching

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