Are the head of hatchling females and males similar? a Geometric morphometry approach

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Abstract: Studies of crocodilians cephalic region are relevant in fields of ecology, systematics, evolution, and conservation. In addition, these studies have the potential to be applied to sexing of individuals, which would allow sexual discrimination of hatching to be as effective as they are for adult crocodiles and could replace current sexing techniques (surgical examination of gonads and histological cuts). In this study we analyzed the cephalic region of *Caiman latirostris* neonates using geometric morphometry tools, with the aim of determining if there are morphological differences associated with hatchling sex. We collected 11 clutch and incubated at a constant 32°C (males and females producing temperature), which would allow us to evaluate if there is sexual dimorphism in the cephalic region in dorsal view of hatchlings. We used canonical variate analysis and a principal component analysis for data analysis. When analyzing the data from all the clutches together, we found no differences between males and females. However, when we analyzed clutches including the sites as grouping variable, we registered sexual dimorphism in hatchlings, and also, we observed differences on hatchling morphology from different sites. Our results suggest that geometric morphometry technique allows, through analysis of dorsal images of cephalic region, a reliable sexing of the hatchlings, without having to sacrifice the animals for the internal gonads inspection or waiting for the growth of the individuals.

Keywords: Broad snouted caiman, Cranial morphology, Sexual dimorphism

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