

Nest temperature assessment in an American crocodile (*Crocodylus acutus*) population on the central coast of Oaxaca, Mexico

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Abstract: The temperatures at which eggs of crocodylians are incubated plays an important role in embryo survival, rate of embryonic development and sex definition. The aim of this study was to assess the nest temperatures of an American crocodile (*Crocodylus acutus*) population on the central coast of Oaxaca state in Mexico. The fieldwork was carried out from February to June 2018 at Palmasola Lagoon, Oaxaca. Ten natural nests of *C. acutus* were carefully excavated to determine clutch size. When putting the eggs back in the nests, we placed a data logger in the center of the egg mass to determine the temperature parameters in the nest chamber environment, as well as the variation in temperature during the incubation period. All nests were revisited to count the number of hatched eggs (NHE) and to determine the hatching success (HS), along with the duration of the incubation period (IP). Hatching success was 89.04%. The mean clutch size in the American crocodile nests was 30.7 ± 7.83 eggs (ranging from 17 to 46 eggs), and the mean incubation period was 77.6 ± 5.89 days. The mean nest incubation temperature throughout the reproductive season was significantly different among nests. Based on the average temperature during the middle third of the incubation period, the nests should have produced both sexes, but with a higher proportion of males. This study tried to elucidate the impact of nest temperatures during the incubation period on embryo survival, as well as hatchling sex ratio in a local climate on the central coast of Oaxaca.

Keywords: Clutch size, Embryo survival, Incubation temperature, Sex ratio

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