

INFLUENCE OF NEST DEPTH ON INCUBATION AND EMERGENCE OF LOGGERHEAD TURTLES

Samir Martins, ¹, Elena Abella², Osear López³, Maite Ikarán³, Adolfo Mareo², and Luis F. López.Jurado³

¹ ISECMAR, Sao Vicente, Cabo Verde

² Estación Biológica de Doñana CSIC, Sevilla, Spain

³ Universidad de Las Palmas, Gran Canaria, Spain

The depth at which turtle eggs incubate is influenced by environmental parameters that affect embryonic development. Incubation temperature and humidity can strongly influence incubation time, hatching success, hatchling size or sex ratio. Therefore, the depth at which nests are reburied

is a key factor for the success of nest relocation programs. One hundred and eight loggerhead (*Caretta caretta*) nests were incubated in standard conditions and at different depths in a hatchery in a Boavista beach (Cabo Verde) so as to evaluate the influence of nest depth on incubation. Doomed nests (nests with low chances of survival) were relocated to a hatchery and buried at different depths (35, 40, 45, 50 and 55 cm). Eighteen nests were placed at each of the selected depths and monitored until hatching. Incubation temperature was recorded continuously within nests at every depth. We also placed 18 nests (in the hatchery) at the same depth at which they were laid by the female *in situ*. Information about incubation time and temperature, hatchling size and the effects of nest depth on these parameters are provided. Incubation duration was strongly affected by nest depth, with mean values that differed up to 5 days between 35 and 50 cm depth nests. In general, deeper nests incubated longer. This could have a direct effect on sex ratio. Percentage of females hatched from each nest was estimated using Mrosovsky *et al.* (1994) and Marcovaldi (1994) models. Incubation at 35 cm can produce 89.4-97.7% females, whereas incubation at 50 cm could produce around 62.4-64.9% females. Survival in deeper nests (60%) was generally higher than in shallower nests (45%) but differences between mean success values at different depths were not significant. Additionally, nest depth appeared to have an influence on emergence behavior. Deeper nests enhanced a synchronous emergence resulting in a higher number of hatchlings emerging simultaneously. A positive correlation between the number of hatchlings in the largest emergence and nest incubation depth was found ($r=0.220$; $F=4.434$; $p=0.038$; $n=89$). Thus, more numerous emergences could enhance hatching survival by satiating predators or limiting time available to capture multiple prey.