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Spatial variations of loggerhead hatchling sex ratio along the eastern and western loggerhead turtle nesting beaches (Dalyan and Goksu delta) in Turkey

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Loggerhead nest and sand temperatures were recorded in the beaches of Dalyan and Goksu delta during the 2010 nesting season, from the end of May, approximately, till mid August. The majority of the nests was recorded in June and July, being the peak nesting season. The sex ratio of dead hatchlings and embryos was determined by gonad observation while for the other hatchlings it was estimated by measuring the nest temperature and analyzing the incubation duration as well as the period of emergences asynchrony. Sand and air temperatures were not directly related to nest temperatures. Air temperatures were warmer on eastern beaches while nest temperatures did not change accordingly. Sand temperatures were much more variable according to sandy, shady and stony areas. The sex ratio of hatchlings obtained from dead hatchlings showed remarkable differences between beaches zones and nest depths. Dead hatchlings collected from the first and last nest emergences were also different in sex ratio with a higher number of females in the emergences occurred during the first night and a higher number of males in the last night emergences. On Dalyan beach, the most western loggerhead nesting beach in Turkey, the temperature of 24 nests was analyzed, the temperature of 16 nests during the middle third of the incubation period measured more than the pivotal temperature (~29 oC), in which numbers of male and female hatchlings are equal to each other. The overall sex ratio was 61% females on Dalyan beach. The temperature of one green and 10 loggerhead turtle nests was recorded on Goksu delta, the most eastern loggerhead nesting beach in Turkey. Temperatures of the middle third of the incubation period were analyzed. Temperatures of 10 nests during the middle third of the incubation period were more than pivotal and 81% of the hatchlings were calculated as females. Sand temperatures at nest depths were also recorded in order to set up Hatchery sites and it was observed that they were warmer further inland than those closer to the sea. In this study, we found that the western nesting beaches of Turkey produced more male hatchlings while the beaches towards the east had a relatively high proportion of female hatchlings. Dalyan beach is an important nesting ground not only in terms of annual nest number but also in terms of relatively high proportion of male hatchlings.