

# The effect of relocation on the morphology of Green Turtle, *Chelonia mydas* (Linnaeus, 1758), hatchlings on Samandağ beach, Turkey

(Reptilia: Cheloniidae)

Bektaş Sönmez, Cemal Turan, Şükran Yalçın Özdilek

**Abstract.** We studied the impact of nest relocation in Green Turtles, *Chelonia mydas* (Linnaeus, 1758), on hatchling morphology at Samandağ, Turkey, and examined 350 hatchlings taken equally from both natural nests and relocated nests. The nuchal, vertebral and costal series were the most variable and the supracaudal scutes were almost stable for the hatchlings in both groups. There were significant differences in all sets of nuchal, costal and marginal except vertebral scutes between hatchlings from natural and relocated nests. Hatchlings from relocated nests also had a smaller straight carapace width and lower weight than hatchlings from natural nests. Furthermore, hatchlings from relocated nests had smaller left and right fore limb lengths than hatchlings from natural nests. There were significant differences between both nests in incubation duration and moisture content. Relocation thus has a negative effect on hatchling morphology and consequently on the fitness of hatchlings. The smaller size of hatchlings (with scute variations) results in reduced fitness. In spite of the relocation of nests being an important protection technique, it has a negative effect on the morphology and probably on the viability of hatchlings.

**Key words.** *Chelonia mydas*, morphology, nest relocation, conservation, Samandağ beach, Turkey, Mediterranean Sea.

## Introduction

The relocation of the sea turtle nests is an important protection technique on beaches where natural hatching is low or non-existent due to predation, tidal inundation and erosion, and poaching of the eggs and the hatchlings of sea turtles (GARCIA ET AL. 2003, TÜRKOZAN & YILMAZ 2007). It has been suggested by some scientist that relocation of the nests has positive effects on the hatching success (DUTTON et al. 2005, MAZARIS et al. 2005). According to MORTIMER (1999), relocating nests should be considered as a last resort in protection plans because in relocated nests there are potential negative effects such as changing sex ratio (GODFREY & MROSOVSKY 1999) and lower hatching success than in other natural nests (LIMPUS et al. 1979, MORTIMER 1999, TALBERT et al. 1980). In addition, nest relocation in the long term may distort gene pools (MROSOVSKY 2006). Another result of relocating nests is morphological differences in the turtles. It has been shown that there is an effect from moving eggs just after oviposition in Kemp's Ridley Turtles (*Lepidochelys kempii* (Garman, 1880)) on carapace scute variation (MAST & CARR 1989), and it was found that the vertebral and marginal series were the most variable, the costal series showed less variability, and the nuchal scute was extremely stable. SUGANUMA et al. (1994) also found in Green Turtle (*Chelonia mydas* (Linnaeus, 1758)) hatchlings in Japan that the rate of central and lateral carapa-