

THE MORPHOLOGICAL DIFFERENCES BETWEEN INDIVIDUALS LIVE AND DEAD GREEN TURTLES (*CHELONIA MYDAS*) HATCHLINGS ON SAMANDAG BEACH IN TURKEY

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Abstract

This paper provides information about morphological differences between individuals live and dead green turtles (*Chelonia mydas*) hatchlings on Samandag beach in Turkey. A total of 146 hatchlings, taken equally from both live and dead, were examined for the morphological differences. The dead hatchlings had smaller all carapace length, fore limb length, hind limb length from both side and lower weight than live hatchlings.

Keywords: *Turtles, Eastern Mediterranean*

Introduction

Body size and shape have important physiological, evolutionary and ecological for sea turtles [1]. The morphology of hatchlings can increase or decrease possibility of their surviving [2]. Generally bigger hatchlings are more talented swimmer and can escape from predators [3]. Hatchling's morphology of sea turtles can be affected from both genetic and maternal characteristic and environmental factors [3,4]. The differences among the size of the hatchling sea turtles can be caused from the structure of hydric and thermal characteristics of surroundings of nest in incubation duration [4,5]. The aim of this study was to evaluate morphological differences between individuals' live and dead green turtles (*Chelonia mydas*) hatchlings on Samandag beach in Turkey.

Material and methods

Data were collected on Samandag Beach (36° 7.500' N 35° 55.100' E) Northern Mediterranean Sea in Turkey during the 2008 and 2009 nesting seasons. A total of 146 hatchlings, taken equally from both live and dead, were measured and 8 measurements were taken (Figure 1) using manual callipers accurate to 0.1 mm. Measures of straight carapace length (SCL), straight carapace width (SCW), curved carapace length (CCL), curved carapace width (CCW), fore limb length (FLL) from both left and right, hind limb length (HLL) from both left and right, weight between live and dead hatchlings were compared [6,7].

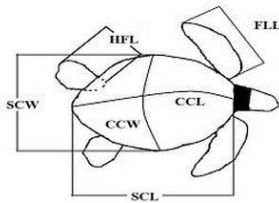


Fig. 1. Measures of straight carapace length (SCL), straight carapace width (SCW), curved carapace length (CCL), curved carapace width (CCW), fore limb length (FLL) from both left and right, hind limb length (HLL) from both

Results and Discussion

The dead hatchlings had smaller SCL ($U= 960,00$, $Z= -6,73$, $P= 0,000$), SCW ($U= 1002,00$ $Z= -6,553$, $P= 0,000$), CCL ($U= 1722,00$, $Z= -3,726$, $P= 0,000$), CCW ($U= 1272,00$, $Z= -5,524$, $P= 0,000$) and lower weight ($U= 875,00$, $Z= -7,040$, $P= 0,000$) than live hatchlings (Table 1). Furthermore, there was significant difference between hatchlings from those in hatchlings from both FLL and HLL for both side, dead hatchlings had smaller left FLL ($U= 972,00$, $Z= -6,699$, $P= 0,000$), right FLL ($U= 923,00$, $Z= -6,901$, $P= 0,000$), left HLL ($U= 1863,00$, $Z= -3,213$, $P= 0,001$) and right HLL ($U= 1850,00$, $Z= -3,274$, $P= 0,001$) than live hatchlings (Table 1).

Peters and Verhoeven (1992) [8] found that there was a significant difference between the sizes of live and dead the loggerhead turtles and suggested that smaller hatchlings were weaker. Similarly, Ozdemir et al. [2] have found that carapace of loggerhead dead hatchling is smaller for SCL and their weightiness is less than loggerhead live hatchling. Whereas; Loughron et al. (2000) [9] found that there was no significant difference between live and dead hatchlings for SCL, SCW and weight of the green and loggerhead turtles. The larger size may

allow hatchlings to escape gape-limited predators, swim faster and to successfully handle larger prey items hatchlings i.e "the bigger is beter" [10]. Generally bigger hatchlings can escape from predators [3]. However, survival of hatchlings can affect negative effect such as its time to leave from the nest of hatchlings, pollution status on beach and amount of light.

Tab. 1. Summarized statistics of the variables taken for live hatchlings and dead

	LIVE HATCHLINGS				DEAD HATCHLINGS			
	N	MEAN	SD	MIN-MAX	N	MEAN	SD	MIN-MAX
SCL	73	4.47	0.15	4.10-4.80	73	4.19	0.25	3.60-4.70
SCW	73	3.46	0.19	3.10-4.00	73	3.17	0.26	2.60-3.80
CCL	73	4.82	0.17	4.40-5.20	73	4.68	0.22	4.20-5.20
CCW	73	4.05	0.15	3.70-4.30	73	3.88	0.19	3.40-4.30
LEFT-FLL	73	4.21	0.14	3.80-4.50	73	3.95	0.26	3.00-4.50
RIGHT-FLL	73	4.21	0.14	3.80-4.50	73	3.94	0.26	3.00-4.40
LEFT-HLL	73	2.30	0.10	2.10-2.50	73	2.21	0.17	1.80-2.60
RIGHT-HLL	73	2.30	0.09	2.10-2.50	73	2.21	0.17	1.80-2.60
W	73	19.3	1.61	16-23	73	16.43	2.35	12-22

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