ASSESSMENT OF SEA TURTLES MONITORING AND RESEARCH STUDIES AT KARPAZ PENINSULA, NORTH CYPRUS

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Abstract

Sea turtle conservation and monitoring studies in North Cyprus started in 1992 in Alagadi Special Environment Protected Area (SEPA) and the scope had been increased to other sites especially the coasts of Karpaz Peninsula which also cover Karpaz SEPA and South Karpaz SEPA. At the field works in 2007, in Karpaz Peninsula, totally 123 sea turtle nests, 73 of them belonging to *Chelonia mydas* and 42 to *Caretta caretta* with 8 unidentified were determined at 13 nesting beaches, with average nest success percentages of 66.1% and %53.9 in order. In this study, consequences of efforts given to protection and monitoring of sea turtles in the area evaluated in general. Additional protection measures that must be taken at nesting habitats and conservation activities are discussed.

Keywords: Conservation, Monitoring, Turtles, Eastern Mediterranean, Biodiversity

Introduction

All sea turtle species (Chelonioidea) considered as threatened species, where the Mediterranean population of *Chelonia mydas* have been determined as critically endangered [1, 2]. Environment Protection Department (EPD) is in charge of any activities related to the protection and monitoring of the sea turtles at the Karpaz Peninsula in North Cyprus.

Materials and Methods

Nesting habitats in the Karpaz Peninsula are given in Figure 1. The data collection has been conducted in three phases. During the nesting period, nest parameters has been recorded with locations and conservative measures has been taken. In the second phase, an "indirect counting method", this is based on counting the remaining egg-shells and traces of the hatchlings after they emerge; predated eggs during the incubation and emerging periods; and the remaining under-developed eggs at the control opening of the nests, has been employed. The eggs, which have been carried to new locations (hatchery) against flood have been controlled, and checked and their success rates have been recorded with same method. During the last phase of the study, the hatchlings are monitored in the sea. The hatchlings were monitored for three hours in the marine environment to obtain information through measuring the breathing frequency in seconds, identifying directions in the sea and observing predation situation as well as behavioral patterns.

Fig. 1. Study sites in Karpaz Peninsula

Results

In this study, 42 *C. caretta* and 73 *C. mydas* nests have been identified. Additional to the identified species in nests, there are also 8 other nests (unidentified species), which have been located after hatchlings emerge or predation signs have been observed. After the field works conducted, the average success rate of the nests in the Karpaz Peninsula for *C. caretta* has been calculated as 53.9% and 66.1% for *C. mydas*. The data on the behaviors of the hatchlings in the marine environment have been obtained from 7 *C. caretta* and 24 *C. mydas* individuals. The average breathing frequency for the hatchlings of *C. caretta* has been measured at 13.4 seconds per breath, and diving depth at 0.5m. During the observation, apart from one individual, all the others swam towards the open seas. All the monitored *C. caretta* followed a natural process (incubation, emerging and entering the sea) and have managed to reach the sea; however 7 of the *C. mydas* were found in control openings and brought to the sea by researchers. *C. mydas* hatchlings were observed having an average frequency of 14.8 seconds per breath and diving to 0.4m. It was also observed that the two of the seven juveniles monitored did not behave in the normal pattern, furthermore these two hatchlings, in attempt to move forward were doing somersaults. It is suggested that, based on the under-developed nervous systems for balance and directions, their behaviors were distorted.

Conclusions

It was reported [3, 4] that the number of nests fluctuate throughout the years. Based on these data, it is possible to state that the number of nests found in 2007 is within the regular fluctuation ratio. In terms of successful hatchling, the ratio of the total number of eggs laid and the success rate of these eggs are provided in order of year for 1999 to 2006: %58, %65, %66, % 68, %62, %71, %62, and %72 [3]. In this research, *C. mydas* and *C. caretta* species have been evaluated separately. The current situation and the ratio is believed to be as a result of the *C. mydas*, which is more critically endangered and which lays eggs on Ronnas and Ayfilon more often, conservation efforts such as protection-caging and cover against predation, to be more rigorous and more effectively managed. The conservation measures cannot be implemented as effectively as in the northern beaches, which has an effect on the *C. caretta* species because these species frequent those beaches. There is a direct ratio between the less controlled beaches and a higher percentage of predation or hidden nest cases. In this research, the control openings (in order to take the stuck hatchlings, dead ones and removing the eggs) were conducted a day or two after the first emerging time. The live juveniles, in control openings, were put in the sea. Another method for control openings would be that after the natural emerging time, the nest would be controlled for juveniles stuck on the tip of the nest but left without any interference. The control opening should be conducted one week after the last observed hatchling. Even the juveniles are free from the egg shells, their developmental process continues [6]. As this research observed, the two hatchlings, which were found after a control opening, did not swim properly and the others surfaced more frequently for breathing. Even though there could be other reasons for these observations, but it is being thought that the reason for the juveniles' behavior is based on the control openings and the fact that the juveniles were left in the sea before they could complete their physical development. Hatchery operations have been carried out in the Karpaz coasts – especially in Ronnas for a long time to avoid the nests getting flooded [3, 4]. Moreover, this work is carried out by carrying the eggs from different locations of the beach to one spot. However, it is known that, the different temperatures at different points of the beach have an effect on determination of the sea turtle sex ratio [5]. There is a high probability of effecting the male-female ratio if the eggs that have been carried from several nests to one point. Furthermore, it would be safer in view of other risks not to carry all the eggs to one point only. In this respect, the recommended method would be to carry the eggs to higher ground, which is above the water-flood levels and parallel to the original nests.

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