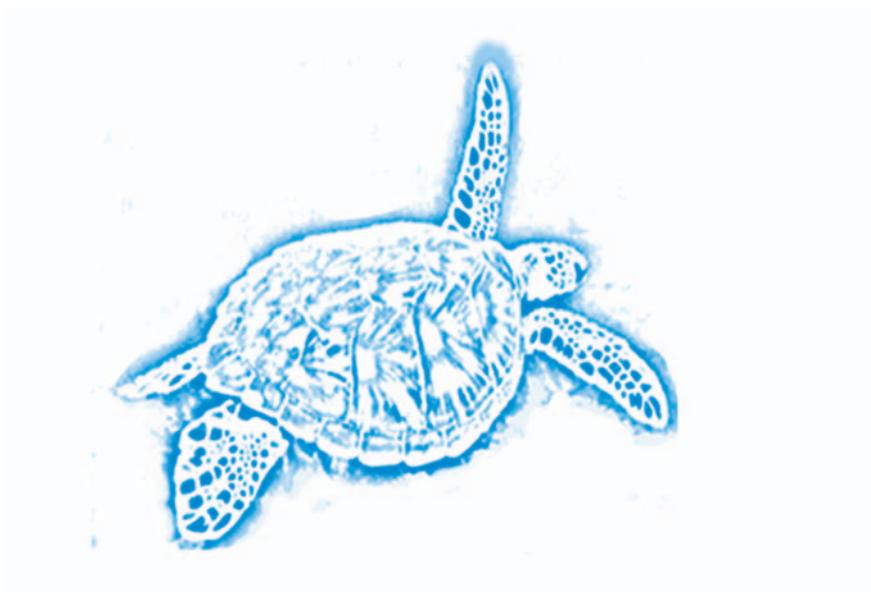


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IDENTIFICATION OF A DEVELOPMENTAL HABITAT OF THE GREEN TURTLE IN LAKONIKOS BAY, GREECE

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INTRODUCTION

The Mediterranean population of the Green Turtle *Chelonia mydas* is critically endangered (Baillie and Groombridge 1996). Nesting areas in the Mediterranean are confined in the Levantine Sea, with Turkey and Cyprus hosting about 99% of all nests (Kasperek et al. 2001). Although knowledge on nesting areas of green turtles in the Mediterranean is substantial, information on their marine habitats is rather scarce. Recently, satellite tracking of green turtles has shown a post-nesting coastal migration from Cyprus to Egypt and Libya (Godley et al. 2002). Concerning juvenile green turtles, Baran and Kasperek (1989) have suggested a restricted dispersal, in comparison to loggerheads, and Türkozan and Durmus (2000) indicated a possible feeding habitat in Fethiye (Turkey).

Green turtles in Greece are considered as rather uncommon occurrences (Margaritoulis et al. 1986). In the period 1994-2000, from a sample of 226 turtle strandings, found alive along the coasts of Greece, 8 (3.5%) were identified as green turtles (Panagopoulos et al. 2003).

The beaches of Lakonikos Bay, in southern Peloponnesus, comprise a “major” loggerhead nesting area in Greece (Margaritoulis 2000). Furthermore the bay hosts an important local fishery, mainly based at the port of Gytheion, consisting of bottom trawlers, beach seines, gill netters and bottom longliners. During the fishing period (October through May) of 1989-90 a pilot project of ARCHELON investigated the extent of incidental catch among bottom trawlers and beach seines. The relatively high number of juvenile green turtle captures in the area, suggested a developmental habitat (Margaritoulis et al. 1992). In order to collect more data on this phenomenon a systematic study on incidental catch was implemented from October 1997 until May 2000. This paper presents the results of this investigation.

METHODOLOGY

An awareness project in the port of Gytheion, initiated by ARCHELON in 1989, prepared the ground for evolving good relations with fishermen. Almost all operative

fishing vessels, in this port, were monitored during three fishing periods (October to May) from October 1997 through May 2000. On the average, 25 fishing vessels were monitored: 2 bottom trawlers, 6 beach seines and 17 gill netters and bottom longliners. Fishermen were trained as to the identification of the three possible species of marine turtles they might encounter (loggerhead, green turtle, leatherback). In case of a turtle's capture, fishermen recorded the species and the approximate location and depth of capture. Fishermen were instructed to release immediately all captured turtles, besides the ones needed recuperation.

A complementary investigation was carried out, from May 1997 until December 2000, by project personnel to record, identify and measure all turtles found stranded (live and dead) along the beaches of Lakonikos Bay. Carcasses were buried by local communities or project personnel.

RESULTS

During the three fishing seasons (October 1997 through May 2000), 188 turtles were incidentally captured from the monitored fishing vessels. Of these, 112 (59.6%) were identified by fishermen as *Caretta caretta* and 76 (40.4%) as *Chelonia mydas*. As reported by fishermen, all captured turtles were in good condition and, after recording of data, were released.

In total, beach seines effected 139 captures (73.9%), gill-netters 24 captures (12.8%), bottom trawlers 22 captures (11.7%), and bottom long-lines 3 captures (1.6%) (Fig. 1). Beach seines effected 84.2% of all green turtle captures and 67.0% of all loggerhead captures (Fig. 1).

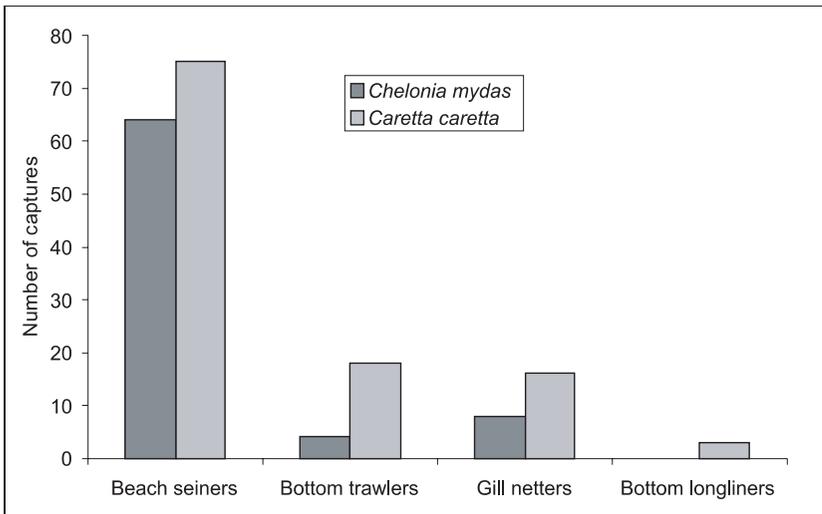


Fig. 1. Turtle captures per species and per fishing gear in Lakonikos Bay.

Spatial distribution of captures in the water column shows that the preferred depth by *Chelonia*, in relation to *Caretta*, is up to 20 fathoms (about 36 m). In deeper waters, captures of *Caretta caretta* predominate (Fig. 2).

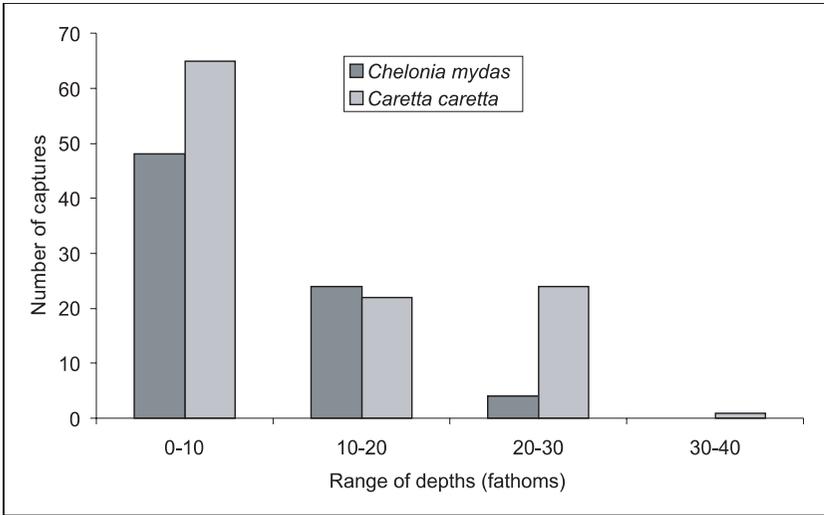


Fig. 2. Turtle captures per species and per depth in Lakonikos Bay.

The bi-monthly distribution of captures per species (combined over the years) over the 8-month fishing season, is shown in Fig. 3. In the months October and November, green turtles predominate whereas in the remaining months (December through May) loggerheads predominate. However, both species are present in the area throughout winter.

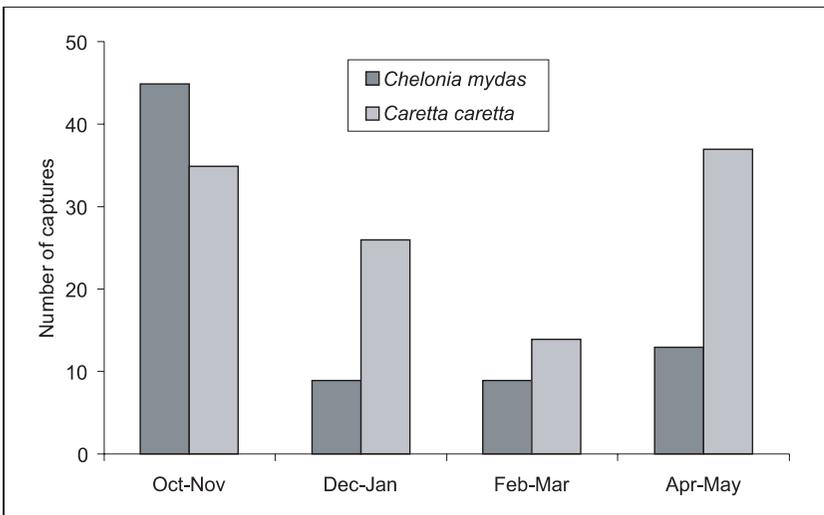


Fig. 3. Bi-monthly distribution of turtle captures per species in Lakonikos Bay.

During the period May 1997 - December 2000, 73 turtles were either found stranded (dead: 67 turtles, injured: 4 turtles), or brought to project personnel by fishermen after capture (2 turtles in good condition). Of these 73 turtles, 42 (57.5%) were identified as loggerheads, 30 (41.1%) as green turtles and 1 (1.4%) as leatherback. Sixty-nine of the above turtles (leatherback not included), measured by project personnel, gave the following Curved Carapace Lengths (CCL) per species: loggerheads 65.5 cm (range: 17.5-90.0 cm, n=41), green turtles 36.4 cm (range: 30.0-67.0 cm, n=28). Distribution of size frequencies per species is shown in Fig. 4. It must be noted, however, that the three largest green turtle individuals were found dead with large hooks and thick lines, belonging to drifting longlines, and thus they are not considered as belonging to the stock residing in Lakonikos Bay.

Analysis of stomach contents of two green turtles (CCLs: 34.5 cm and 30.5 cm), found dead in July 2000 and in August 2001 respectively, revealed almost exclusive consumption of leaves and roots of *Cymodosea nodosa*, with few leaves belonging to *Zostera marina*, both sea grass species present in the Bay.

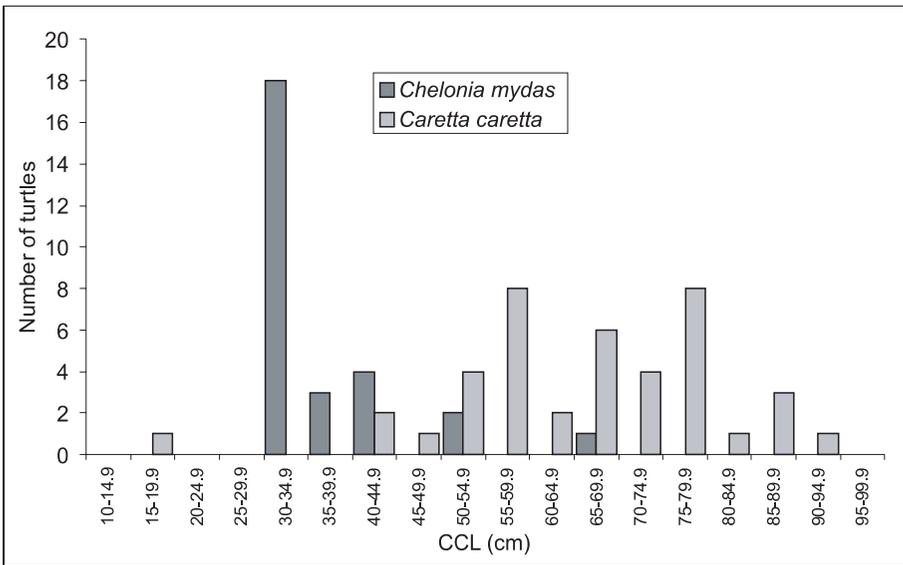


Fig. 4. Size (CCL) frequency distribution per turtle species in Lakonikos Bay.

DISCUSSION

The above work provides strong evidence of a developmental habitat of green turtles in Lakonikos Bay. Turtle species distribution recorded by fishermen on captures is similar to species distribution recorded by project personnel on strandings. As shown by captures during winter and strandings, green turtles are present in Lakonikos Bay throughout the

year. Comparison of sizes, reveal that green turtles in Lakonikos Bay belong to a narrow size class (30.0-44.0 cm, excluding the 3 largest animals, caught offshore), indicating the existence of a specific developmental habitat, which is further confirmed by the documented herbivorous diet in two specimens of the predominant size.

From the results, it is derived that green turtles in the region venture far more west of what was originally thought. Lakonikos Bay is located about 600 km west of Patara (Turkey), the westernmost nesting site of *Chelonia mydas* in the Mediterranean (Erdogan et al. 2001).

The existence of a developmental habitat of the critically endangered green turtle in Greece will certainly modify current national and EU legislation (e.g., inclusion of *Chelonia mydas* in the “priority species” of the Habitats Directive), for a comprehensive regional protection of the species.

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