TÜBİTAK

Turkish Journal of Zoology

http://journals.tubitak.gov.tr/zoology/

Short Communication

Turk J Zool
(2015) 39:
© TÜBİTAK
doi:10.3906/zoo-1411-35

New distributional record of *Chelonibia testudinaria* (Linnaeus, 1758) from the island of Gökçeada, northern Aegean Sea, Turkey

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Received: 19.11.2014 • **Accepted/Published Online:** 05.08.2015 • **Printed:** 00.00.2015

Abstract: A total of 420 specimens of *Chelonibia testudinaria* (Linnaeus, 1758) were found on two dead loggerhead turtles (*Caretta caretta*) washed ashore on the island of Gökçeada (northern Aegean Sea). The species is reported for the first time from the Turkish coast of the Aegean Sea and is the second record since 1982 for the Turkish Seas.

Key words: *Chelonibia testudinaria*, Gökçeada, new distributional record, northern Aegean Sea

Chelonibia testudinaria (Linnaeus, 1758) is a cosmopolitan species of barnacle common in warm seas and all over the Mediterranean as an epibiont of marine turtles and other hosts (Newman and Abbott, 1980; Koukouras and Matsa, 1998; Zardus et al., 2014). *C. testudinaria* is the most often reported sea turtle barnacle and it has been commonly found on *Caretta caretta* (Linnaeus, 1758) (loggerhead) and *Chelonia mydas* (Linnaeus, 1758) (green turtle) dating as far back as the Miocene epoch (Blick et al., 2011). The barnacle is considered an obligate commensal with narrow host specialization and is reported from all species of sea turtles (Zardus et al., 2013). Relini (1980) has noted that this species is also rarely found on inanimate objects. The effects of epibionts on marine turtles are poorly known. Zardus et al. (2013) conducted a worldwide molecular phylogenetic survey of *Chelonibia*. They found four species (*C. testudinaria*, *C. patula*, *C. manati*, and *C. caretta*); apart from *C. caretta* these are genetically indistinguishable. The three taxa are morphotypes of the same species and synonymized under *C. testudinaria*.

The only record known to date from Turkish seas is from the eastern Mediterranean coast (Geldiay et al., 1982). *C. testudinaria* has been reported from *C. caretta* from the Strymonikos Gulf (Aegean Sea, Greece) (Koukouras and Matsa, 1998). The geographical distributions recorded for *C. testudinaria* in the Mediterranean Sea are given in Table 1. In the present study, *C. testudinaria* is reported for the first time from the Turkish coast of the Aegean Sea.

Description: *C. caretta*, five pairs of lateral scutes, anterior pair touching the precentral scute, two claws on each flipper (Fischer et al., 1987). *C. testudinaria*, the aperture is oval, exceeding in length one third of the longer basal diameter. The mandibles have five teeth. The shell is strong, conical, and depressed, with more or less deep notches on it (Gruvel, 1965).

In September 2014, two dead loggerhead turtles (*C. caretta*) washed ashore on the island of Gökçeada in the northern Aegean Sea, Turkey (Figure 1). I carefully analyzed the body of the turtles completely. It was not clear how long the turtles' carcasses had stayed in the sea before becoming stranded. Firstly the weights were measured with handheld luggage scales. The turtles were measured according to Bolten (1999). Measurements were taken either with calipers (straight-line measurements) or with a flexible tape measure (curved measurements). Straight carapace length (SCL) is measured from the anterior edge of the carapace to the posterior tip of the supracaudals. Also anterior and posterior locations are on the same side of the carapace. Straight carapace width (SCW) is measured at the widest point; there are no anatomical reference points.

Chelonibia barnacles were photographed and counted and their diameters were measured with calipers to the nearest 0.1 mm. *Chelonibia* barnacles are usually oval rather than round and so measurements are taken of the longest axis, called the rostro-carinal length. The number of *Chelonibia* individuals and morphological analysis of both turtles are given in Table 2.

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Table 1. Locality records of *C. testudinaria* in the Mediterranean Sea.

Localities	References
Aegean Sea	Koukouras and Matsa, 1998; Kitsos et al., 2003, 2005; Present study
Eastern Basin	Monod, 1931; Geldiay et al., 1982
Ionian Sea	Margaritoulis, 1985; Gramentz, 1988; Rawson et al., 2003; Casale et al., 2004
Adriatic Sea	Zavodnik, 1997; Casale et al., 2004
Sicily Channel and Western Basin	Graments, 1988; Casale et al., 2004

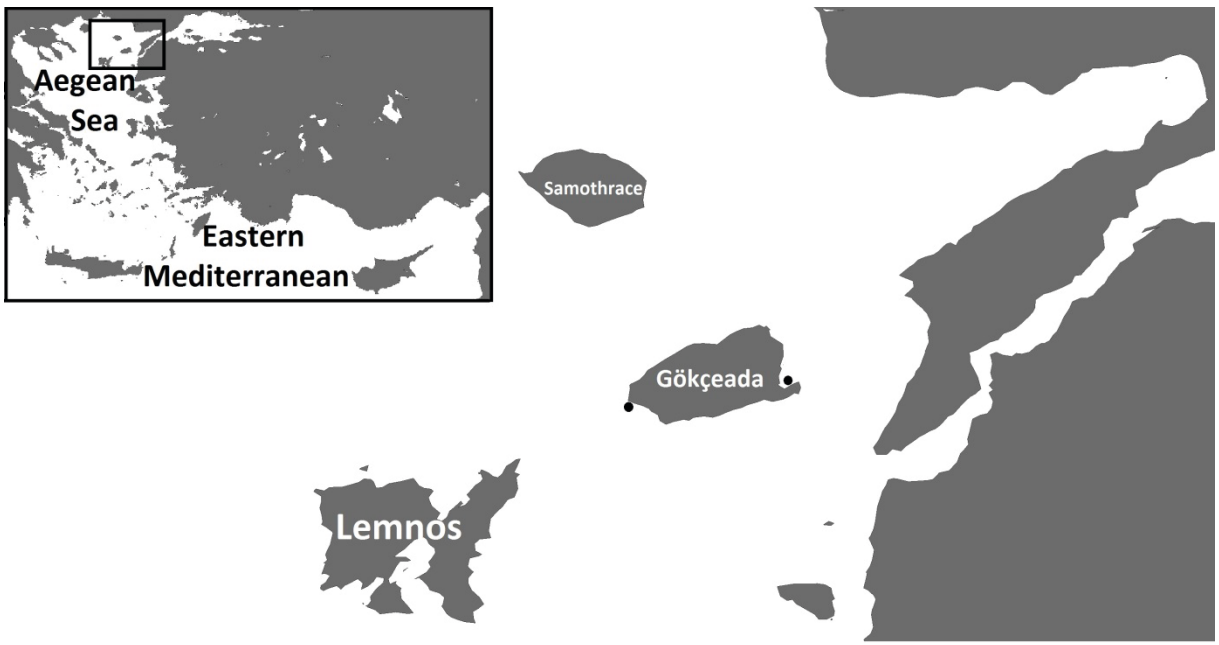

Figure 1. Sampling locations of *Cheloniabia testudinaria* from two dead *Caretta caretta* (circle).

Table 2. Morphometric measurements and weight of dead turtles and their number of *Chelonibia* individuals.

	Caretta caretta						*Chelonibia testudinaria*			
	CCL (cm)	SCL (cm)	SCW (cm)	CCW (cm)	W (kg)	Sex	Number of individuals		Their diameters (mm)	
							Skin	Carapace	max	min
Turtle C1	82	76	35	42	33.2	♀	–	6	59.1	38.2
Turtle C2	68	63	23	29	26.4	♀	12	402	44.5	2.8

CCL, Curved carapace length; SCL, Straight carapace length; SCW, Straight carapace width; CCW, Curved carapace width; W, Weight.

C. testudinaria was found on turtle C1 (n = 6) and turtle C2 (n = 414). Turtle C1 had only six barnacles, all large and only on the carapace (Figure 2a); on the other hand, a large number of *Chelonibia* barnacles, their diameters ranging from 2.8 mm to 44.5 mm, were counted on various parts of turtle C2's body, carapace, and skin (Figure 2b). The majority of epibiont communities tend to aggregate on the carapace (Frick and Pfaller, 2013). In addition, the distribution of the barnacle on loggerheads nesting was significantly nonuniform (e.g., Frick et al.,



Figure 2. *Chelonibia testudinaria* and their host *Caretta caretta* (a, Turtle C1; b, Turtle C2).

1988; Gramentz, 1988; Pfaller et al., 2008). In the present study, *C. testudinaria* was reported for the first time from the Turkish coast of the Aegean Sea.

Acknowledgments

I thank the Gökçeada fisherman who apprised us of the dead turtles. We also thank Paolo Casale for identification of the barnacle.

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