



**- SHORT COMMUNICATION -**

**Occurrence of the exotic shell-bearing *Bulla ampulla*, Linnaeus, 1758 (Mollusca, Gastropoda) in the Gulf of Antalya**

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**Abstract**

*Bulla ampulla*, belonging to Bullidae family, is a marine gastropod species with bulb. Members of Bullidae family are distributed in tropical and temperate waters. It is usually found in habitats of sand, mud, gravel, green algae and sea bottoms, at intertidal flats, on tide-pond sand at depths of up to 70 m. For another scientific study conducted at Konyaalti beach (36.883522° N, 30.678739° E), while doing scuba diving at a depth of 15 m; *Pinctada radiata*, *Venus verrucosa*, *Chama pacifica* shells and two *Bulla ampulla* shells were found near the octopus nest. Shell of our species was measured as H:53,61 and 46,23mm, color; Brown greenish with two dark bands and shell elongate. The biodiversity of the exotic species of the Gulf of Antalya has slightly increased with the presence of this species.

**Keywords:**

*Bulla ampulla*, Exotic, Gastropod, Gulf of Antalya

**Article history:**

Received 27 January 2018, Accepted 30 May 2018, Available online 10 October 2018

**Introduction**

*Bulla ampulla*, belonging to Bullidae family, is a marine gastropod species with bulb. Members of Bullidae family are distributed in tropical and temperate waters. It is usually found in habitats of sand, mud, gravel, green algae and sea bottoms, at intertidal flats, on tide-pond sand at depths of up to 70 m (Malaquias and Reid, 2008). These living creatures that are active at night are usually buried in muddy grounds during the day. Members of the Bullidae and Haminoeidae families are fed micro-herbivorous with diatom, detritus and algal materials in the mud substrate (Marin *et al.*, 1999).

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Because of the all members of the *Bulla* genus have a similar shell structure, there are some confusions in the taxonomy of the species. *Bulla ampulla* shell is light ovoid spherical and can reach 6- 7 cm length. The shell structure is thin and fragile, color; amber or pink, gray-brown or greenish-brown colored, slightly brilliant. The rear dark Brown and light Brown patterns on the shell (Sabourin *et al.*, 2014).

*Bulla ampulla* are distributed in the Mediterranean, Red Sea, Indian Ocean (East Africa coast, Madagascar, Sri Lanka and Indian coasts), Atlantic Ocean to West Africa, Pacific Ocean (Philippines, Indonesia, Vietnam). It is estimated that it has introduced the Mediterranean ecosystem via Suez canal.

*Bulla ampulla* has hermaphroditic reproductive feature. Color of of *Bulla ampulla* egg varies from yellow to range. *Bulla ampulla* lays egg by forming a long gelatinous line on objects such as sea grass in the sea. Bullidae species have a wide variety of habitats. Because of its nocturnal feature, the *Bulla ampulla* is housed in a nest covered with mucus buried during the day (Macnae, 1962). The night becomes active.

### Material and methods

For another scientific study conducted at Konyaaltı beach (36.883522° N, 30.678739° E) (Fig. 1), while doing scuba diving at a depth of 15 m; *Pinctada radiata*, *Venus verrucosa*, *Chama pacifica* shells and two *Bulla ampulla* shells were found near the octopus nest. These shells were removed and brought to the laboratory of the Faculty of Fisheries of Akdeniz University. Here, the shell size, width and diameter by a caliper and the species was identified.

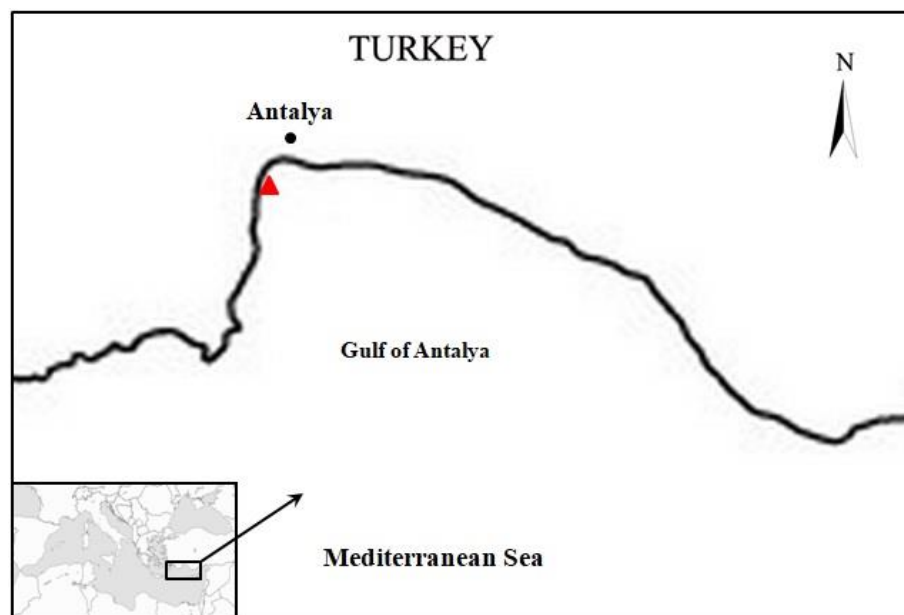


Figure 1. Map of study area

## Results and Discussion

There are a large number of shells of gastropod species, commonly eaten by octopods, near the octopod nests. Two different gastropod shells were found around the octopod nest located on Konyaalti Beach. These shells were collected and the morphological examinations were carried out to reveal that these shells belonged to *Bulla ampulla*, the marine gastropods (Fig.2). Morphologically examined shell characteristics are given in table 1.

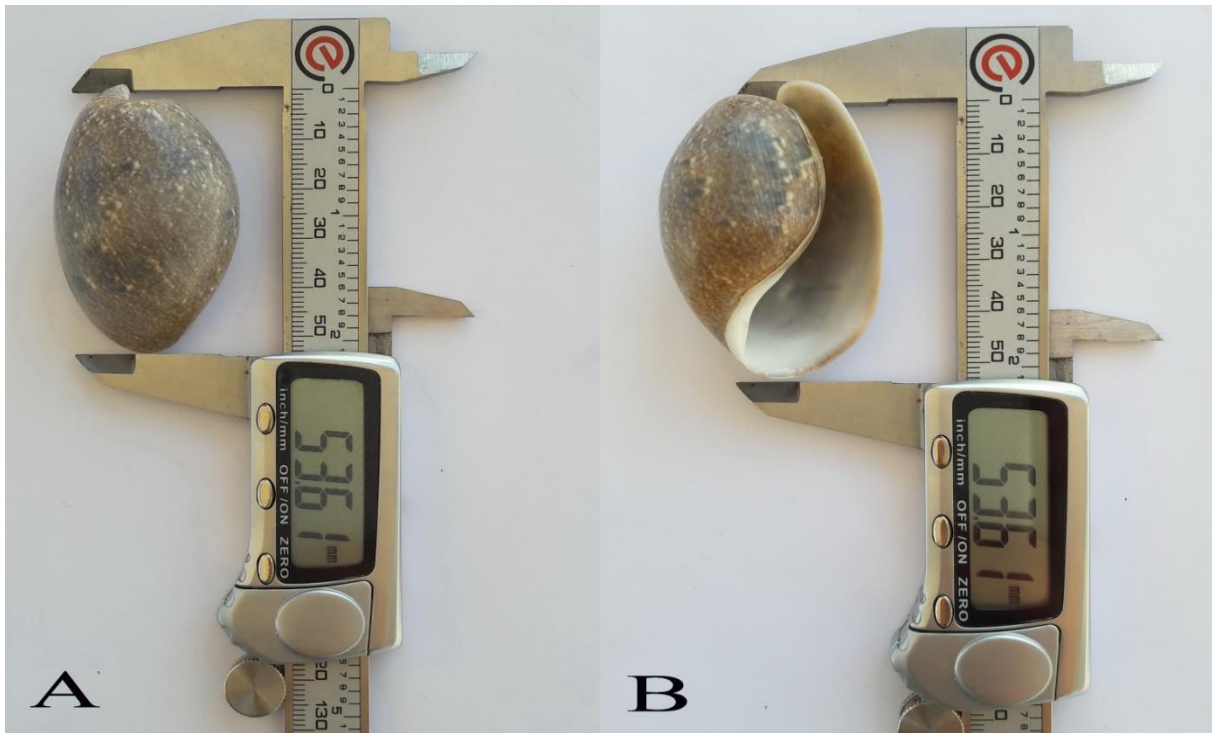


Figure 2. Shell of *Bulla ampulla*

Table 1. Some features of *Bulla ampulla* shells

N	Shell size (H) mm	Shell height (h) mm	Shell thickness (mm)
1	53.61	36.28	1,3
2	46.23	31.31	1,01

Konyaalti is a famous beach for tourism in the Gulf of Antalya. Konyaalti beach is a highest level in terms of underwater biodiversity due to existence of a living habitat, accommodation and nutrition environment. In October 2017 on the Konyaalti Beach (36.883522° N, 30.678739° E) a shell-bearing gastropoda was observed on the sandy-gravelly bottom at depths of 15 m in the octopus burrow.

According to Zenetos *et al.*, (2011) this shell-bearing *Bulla ampulla* and *B. arabica* are very similar. It can be misidentified. However, their anatomies are different and the molecular phylogenetics clearly distinguish these both species (Malaquias and Reid, 2008). However, the difference between *B. ampulla* and *B. arabica* is in the color and appearance of the shell. *B. arabica* is smaller (max. H ~ 40 mm) than *B. ampulla* (max. H ~ 60 mm) and color of shell; pale to brownish or greenish, with two or three dark spiral bands, sometime axial zigzag stripes (Malaquias and Reid, 2008).

Shell of our species was measured as H:53,61 and 46,23mm, color; Brown greenish with two dark bands and shell elongate. Shell-bearing gastropoda was identified as *B. ampulla* according Malaquias&Reid (2008). *B. ampulla* was stored in the Akdeniz University, Fisheries Faculty Museum. Previously, *B. ampulla* has been found in Üçadalar by Yokes and Rudman, (2004). It could be misidentified because of the lack of data about shell size, color and not photographed.

### Conclusions

*B. ampulla* is belonging to Bullidae family, opisthobranch gastropoda (order Cephalaspidea)(Malaquias&Reid, 2008). These species do not occur sympatrically, while *B. arabica* is originated from the Red Sea and Arabian Peninsula, the species *B. ampulla* is a broader from Indo-West Pacific distribution (Yokes and Rudman, 2004). Generally, there is a lack of data about this gastropoda species. This study is a source for the working about this gastropoda in the future.

The biodiversity of the exotic species of the Gulf of Antalya has slightly increased with the presence of this species.

### References

- Macnae, W. (1962). Tectibranch Molluscs from Southern Africa. *Annals of the Natal Museum*, 15(16), 183-199.
- Malaquias, M. & Reid, D.G. (2008). Systematic revision of the living species of Bullidae (Mollusca: Gastropoda: Cephalaspidea), with a molecular phylogenetic analysis. *Zoological Journal of the Linnean Society*, 153(3), 453-543.
- Marin, A., Alvarez, L. A., Cimino, G., & Spinella, A. (1999). Chemical defence in cephalaspidean gastropods: origin, anatomical location and ecological roles. *Journal of molluscan studies*, 65(1), 121-131.
- Rudman, W. B. (1971). Structure and functioning of the gut in the Bullomorpha (Opisthobranchia). Part 1. *Herbivores*. *Journal of Natural History*, 5, 647-675.
- Sabourin, N., Huet, & S., Quintin, C., *În* : DORIS, (24/10/2014) : *Bulla ampulla* Linnaeus, 1758, (<http://doris.ffessm.fr/ref/specie/1240>)
- Yokes, B., & Rudman, W. B. (2004). Lessepsian opisthobranchs from southwestern coast of Turkey; five new records for Mediterranean. *Rapp Réunions Comm Int Explor Sci Mer. Méditerr*, 37, 557.
- Zenetos, A., Katsanevakis, S., Poursanidis, D., Crocetta, F., Damalas, D., Apostolopoulos, G., Gravili, C., VardalaTheodorou, E., & Malaquias, M. (2011). Marine alien species in Greek Seas: additions and amendments by 2010. *Mediterranean Marine Science*, 12(1), 95–120.

