

# A Freak *Bittium* from the Bulgarian Black Sea Coast (Gastropoda: Cerithiidae)

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**Abstract:** The first record of tentacle abnormality (bifurcation) in the marine snail *Bittium reticulatum* found in Varna Bay (Bulgaria), Black Sea, is reported.

**Keywords:** Teratology, *Bittium reticulatum*, tentacle bifurcation, regeneration process, Black Sea, Bulgaria

## Introduction

During the zoological study of the invertebrate fauna in the breakwaters of Varna Bay (Bulgarian Black Sea coast) (Fig. 1), one abnormally-shaped (teratological) specimen of the marine snail *Bittium reticulatum* (Da Costa, 1778) was found. The present article reports this first case of such an anomaly in this snail species.

## Material and Methods

**Collecting site** (Fig. 1): Bulgarian Black Sea coast, the town of Varna, around the Vtora Buna breakwater, 43°12'29.08/16"N, 27°56'23.85/24.67"E [43.208078, 27.939958]; soft bottom (muddy, fine sand), with *Ulva rigida* C. Agardh and sublittoral seagrass beds of *Zannichellia palustris* L. and *Zostera marina* L.

The material was hand-collected on 12.08.2013 by the author while free diving to depths of 1.0–3.0 meters. The anomalous snail was photographed under a Leica EZ4 stereo microscope with a TDST – 5MP Camera equipped with TSVIEW 7 modular software specialised for image acquisition, processing and analysis. The tentacles were measured from their tip to the distal wall of the eye. The abnormal

specimen, fixed and preserved in 70% ethanol, is deposited in the collection of the author. The specimen was identified using the key by ANISTRATENKO, ANISTRATENKO (2001).

## Results

**Material examined:** 37 specimens of *Bittium reticulatum*; one of these (with shell length: 7.5 mm; shell width: 2.5 mm; aperture height: 2.1 mm; aperture width: 1.4 mm) was found to be abnormal.

**Description:** The abnormal snail has an unusual bifurcating tentacle, i.e. the left tentacle on the ventral side, close to the distal end (subapical), bears an additional process of 0.125 mm length (Fig. 2); this tentacular process can be contracted separately from the main tentacle. The right (normal) tentacle is 1.5 mm long; in comparison, the left (abnormal) tentacle is shorter (length = 1.25 mm) and has a curved distal end when fully extended.

## Discussion

This is the first record of teratology in *Bittium reticulatum*. This is the second marine snail recorded



**Fig. 1.** Bulgarian Black Sea coast, Varna Bay, the area of the Vtora Buna breakwater; the collecting spot is marked with an arrow (21.08.2009)



**Fig. 2.** *Bittium reticulatum*: head, dorsal view: the abnormal tentacle bifurcation. An arrow shows the abnormal process on the left tentacle. Scale bar = 0.5 mm

from Bulgaria found with an anomaly, after describing *Rapana venosa* (Valenciennes, 1846) with shell aberrations (SMAGOWICZ 1989, MITOV *et al.* 2003). *Nassarius reticulatus* is the third snail in the Black Sea, which was found to have abnormal tentacle bifurcation (IWANOW 1912: p. 242, figs. 5-6).

In the teratological literature, cases of atypical tentacles and ommatophores were reported in many other marine snails, i.e. in slit limpet *Hemitoma* sp., common limpet *Patella vulgata* L., 1758, blue-rayed limpet *Patella pellucida* L., 1758, Patagonian copper limpet *Nacella deaurata* (Gmelin, 1791), flat top shell *Gibbula umbilicalis* (da Costa, 1778), common whelk *Buccinum undatum* (L., 1758), mutable nassa *Nassarius mutabilis* (L., 1758), netted dog whelk *Nassarius reticulatus* (L., 1758), eastern mudsnail *Ilyanassa obsoleta* (Say, 1822), common periwinkle *Littorina littorea* (L., 1758), rough periwinkle *Littorina saxatilis* (OLIVI, 1792), yellow periwinkle *Littorina obtusata* (L., 1758), Atlantic Dogwinkle *Nucella lapillus* (L., 1758), slug-like sea snail *Onchidiopsis corys* Balch, 1910, violet nudibranch *Flabellina pedata* (Montagu, 1815), Hilton's Aeolid *Phidiana hiltoni* O'Donoghue, 1927, shag-rug aeolis *Aeolidia papillosa* (L., 1761), giant doris *Felimare picta* (Schultz in Philippi, 1836), and sap-sucking slug *Elysia viridis* (Montagu, 1804) (see FISCHER 1864, 1921, LOCKWOOD 1883, SIMROTH 1896-1907, PELSENEER 1903, 1920, 1928, DIMON 1905, VAYSSIÈRE 1910, IWANOW 1912, RUDMAN 2000) as well as the sacoglossan sea slug *Costasiella kuroshimae* ICHIKAWA, 1993 (YONOW, pers. comm.).

The cases of abnormal tentacle bifurcation are relatively rare, i.e. 1-2 specimens per 700-1000 (DUMON 1905, IWANOW 1912). Usually, the assumed cause for these anomalies is either genetic or an aberrant tissue regeneration following a mechanical traumatic event (IWANOW 1912, MILES 1961 and liter-

ature therein) caused by an attack of another animal (probably after a fish bite) or by hard substrates in the littoral zone during storms (PELSENEER 1914 and FRÖMMING 1934, after MILES 1961). That might be the case with this *Bittium* specimen reported here.

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