



Re-description of the *Pseudamnicola lindbergi* Boettger 1957 (Gastropoda: Hydrobiidae)

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ABSTRACT

In this study, conchological and anatomical characters of the topotypes of *Pseudamnicola lindbergi* Boettger 1957 living in Elbistan, Pınarbaşı spring have been studied. Detailed male anatomy of the species was examined for the first time in which only shell morphology was given before. Findings were compared with the Boettger's original description and other *Pseudamnicola* spp. of Turkey.

Keywords: *Pseudamnicola lindbergi*, re-description, anatomy, topotype

ARTICLE INFO

RESEARCH ARTICLE

Received : 05.06.2017

Revised : 27.09.2017

Accepted : 12.10.2017

Published : 29.12.2017



DOI: 10.17216/LimnoFish.319188

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Pseudamnicola lindbergi Boettger 1957'nin Yeniden Tanımlanması (Gastropoda: Hydrobiidae)

Öz: Bu çalışmada, Elbistan, Pınarbaşı su kaynağında yaşayan *Pseudamnicola lindbergi* Boettger 1957'nin topotip örneklerinin konkolojik ve anatomik karakterleri çalışılmıştır. Daha önce sadece kabuk morfolojisi gösterilen türün erkek bireylerinin ayrıntılı anatomisi ilk defa incelenmiştir. Bulgular Boettger'in orjinal tanımlamasıyla ve Türkiye'nin diğer *Pseudamnicola* türleriyle karşılaştırılmıştır.

Anahtar kelimeler: *Pseudamnicola lindbergi*, yeniden tanımlama, anatomi, topotip

How to Cite

Gürlek ME. 2017. Re-description of the *Pseudamnicola lindbergi* Boettger 1957 (Gastropoda: Hydrobiidae). LimnoFish 3(3):183-186. doi: 10.17216/LimnoFish.319188

Introduction

The genus *Pseudamnicola* is distributed in the West-Mediterranean, North-Africa, East-Mediterranean in Bulgaria, Greece, Turkey and Middle East (Glöer et al. 2010). In Turkey, thirteen species, two subspecies and one fossil species of *Pseudamnicola* have been reported so far. The represented species are; *Pseudamnicola macrostoma* Küster 1852, *Pseudamnicola kotschy* Frauenfeld 1856, *Pseudamnicola elbursensis* Starmühlner and Edlauer 1957, *Pseudamnicola lindbergi* Boettger 1957, *Pseudamnicola geldiyana* Schütt and Bilgin 1970, *Pseudamnicola bilgini* Schütt and Şeşen 1993, *Pseudamnicola intranodosa* Schütt and Şeşen 1993, *Pseudamnicola vinarskii* Glöer and Georgiev 2012, *Pseudamnicola marashi* Glöer, Gürlek and Kara 2014, *Pseudamnicola merali*

Glöer, Gürlek and Kara 2014, *Pseudamnicola goksunensis* Glöer, Gürlek and Kara 2014, *Pseudamnicola gullei* Glöer, Yıldırım and Kebapçı 2015, *Pseudamnicola kayseriensis* Glöer, Yıldırım and Kebapçı 2015, *Pseudamnicola natolica* Küster 1852, *Pseudamnicola natolica smyrnensis* Schütt 1970 and *Pseudamnicola elongata* Taner 1973 (Geldiay and Bilgin 1969; Paydak 1976; Bilgin 1980; Yıldırım 1999; Glöer and Georgiev 2012; Glöer et al. 2014; Glöer et al. 2015). In addition, *Pseudamnicola elbursensis* Starmühlner and Edlauer 1957 and *Pseudamnicola kotschy* Frauenfeld 1856 species were recorded from Southeastern Anatolia region by Paydak (1976: 31-35) but the existence of this Iranian species in Turkey is not certain. *Pseudamnicola macrostoma* Küster 1852 was

recorded from İzmir (Geldiay and Bilgin 1969; Bilgin 1980) and its drawings in the article seems to belong to member of the family Bithyniidae. I think these three species needs to be dissected again.

Pseudamnicola lindbergi was described by C. Boettger in 1957. Only shell morphology was included in the study and there is no information about the detailed anatomy of the species until today. This study is aimed to determine male anatomical characters of the *Pseudamnicola lindbergi* Boettger 1957 for the first time.

Materials and Methods

Samples were collected from Elbistan, Pınarbaşı spring originating from the Ceyhan river in 2015 (Figure 1). They were living on stones and aquatic plants. They preserved in plastic tubes including 80% ethanol. Dissections and measurements of the shells and genital organs were carried out using a stereo microscope (Olympus SZX7) and photographs were taken with a digital camera system (Olympus DP26). The topotypes are deposited in private collection of the author. Comparisons were made according to Boettger (1957).

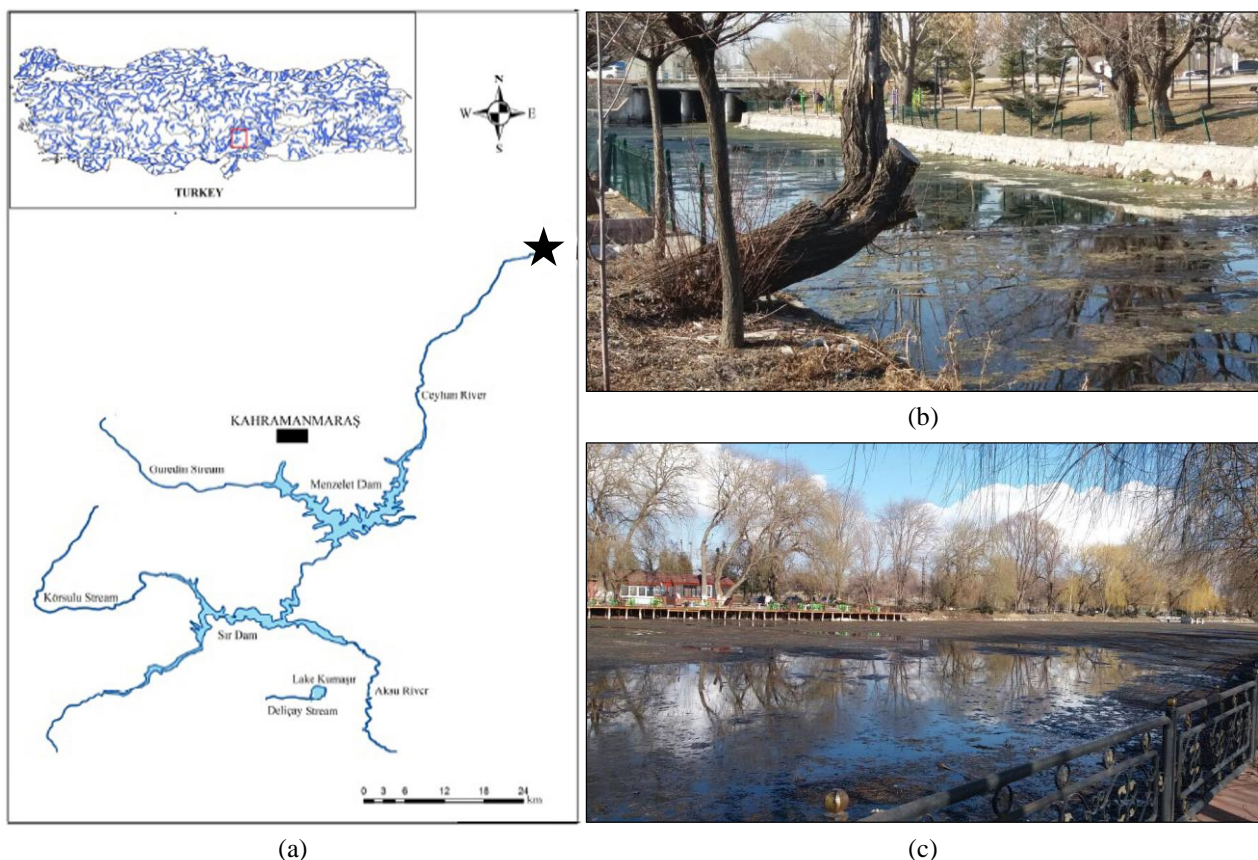


Figure 1. Study area (a) Locality of the *Pseudamnicola lindbergi* (b-c) Photos of the Elbistan Pınarbaşı spring

Results

Genus: *Pseudamnicola* (Paulucci 1878)

Pseudamnicola lindbergi (Boettger 1957:69, abb:1)

Material examined: 16 exx. From type locality.

Type locality: Kahramanmaraş, Elbistan, Pınarbaşı spring, 16.07.2015, M.E.Gürlek leg. [1153 m asl, N 38°10'53.07" E 37°13'08.50"]

Description: Shell height 2.81 mm, width 1.83 mm. Aperture height 1.34 mm width 0.97 mm (topotype). The yellowish shell conical with 4-4.5 whorls which are nearly straight with a weak suture. The umbilicus slit-like. Aperture ovoid, angled at the top and clear whitish peristome at the columella. Mantle and head

dark colored, eye spots visible. The operculum dark yellow (Figure 2).

Male genital morphology: The whitish penis long, triangular and warped to the distal part.

Habitat: Natural spring water. The specimens were collected from stones and aquatic plants.

As a characteristic feature of the genus, the penis is seen in a triangular structure and has a conical shell shape. *Pseudamnicola lindbergi* is similar to other *Pseudamnicola* species living in Turkey as shell morphology especially *Pseudamnicola merali* and *Pseudamnicola kayseriensis*. But *P. lindbergi* has a different penis shape. Its penis is also triangular but warped to the distal part

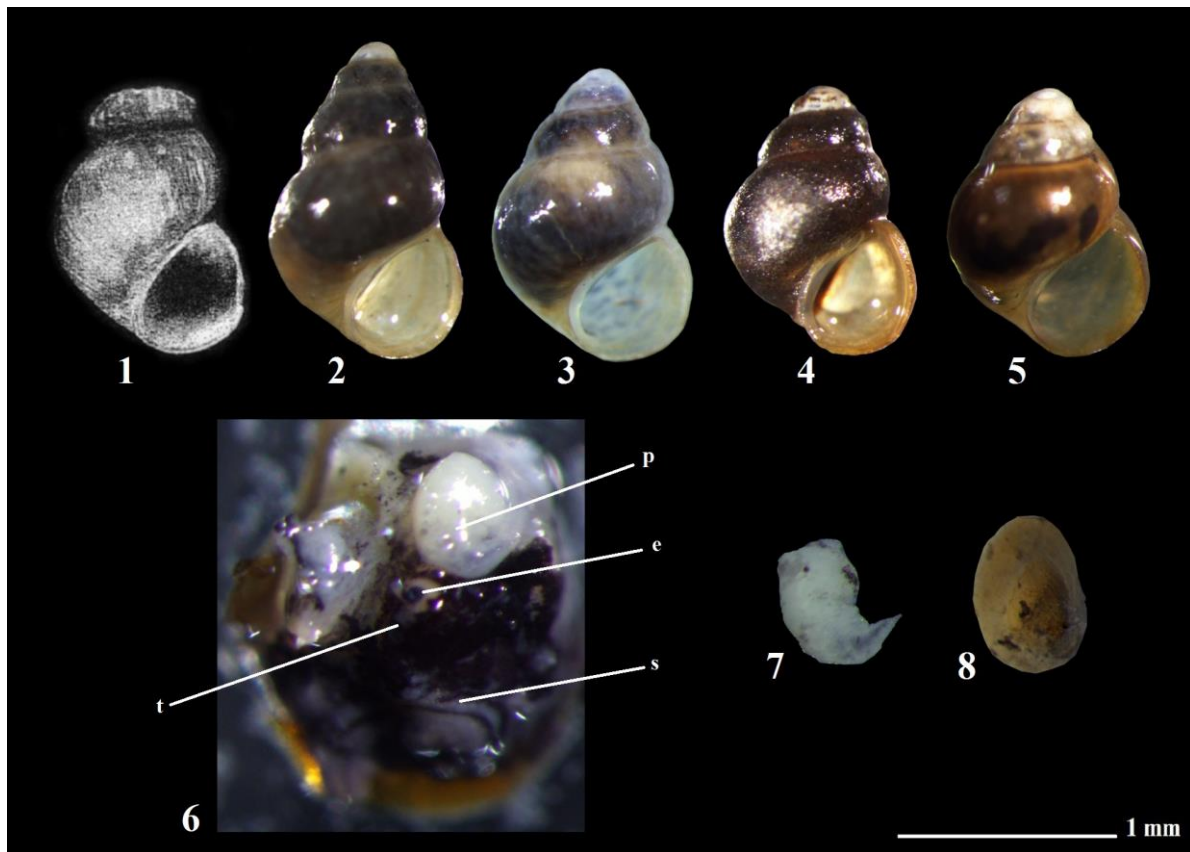


Figure 2. Shells and soft parts (1) Facsimile photo of the *Pseudamnicola lindbergi* Boettger (1957: 69). (2-5) topotypes of the *Pseudamnicola lindbergi* (6) Penis in situ (7) Penis (8) Operculum [Abbreviations: p = penis, e = eye spot, s = snout, t = tentacle]

Discussion

In the description of Boettger (1957), it is said that the apex is undergoing corrosion that's why the shell with 3 sutures (Figure 2, Figure 3). Corrosion was also found in the apexes of the topotypes, but not so much as in Boettger's type species. This explains why the topotypes sutures are 4-4.5 whorls. Götting

(1963), recorded the *P. lindbergi* from Bursa Uludağ but Schütt and Bilgin (1970) reported that this species belongs to the genus *Bythinella* on the basis that the study of Schütt 1965. The reason of all this confusion can be that the photograph of the holotype which has corroded apex. Because the shell is similar to genus *Bythinella* in this photo.



Figure 3. The facsimile of the original description of *Pseudamnicola lindbergi* Boettger (1957: 68,70)

Another information that needs to be corrected, in the original description it is given that the type locality is in the province of Malatya ('Ausfluß aus der Höhle Punar Bachi bei Elbistan (Vilayet Malatya)') (in Turkish vilayet=province). But today Elbistan is not in Malatya, it is in Kahramanmaraş

province borders.

There are many other endemic species with poorly known anatomical and morphological characters in Turkey. Its need to be redescrptions besides new descriptions to understand taxonomic situations of the species clearly.

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