



## The First Record of *Chaetogaster limnaei limnaei* Baer 1827 (Annelida: Clitellata) on *Pseudobithynia yildirimi* (Gastropoda: Prosobranchia) from Northwest of Turkey

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### Abstract

In this study, the presence of the *Chaetogaster limnaei limnaei* Baer, 1827, regarded as ectocommensal on the freshwater Mollusca, was observed on the pallial cavity of *Pseudobithynia yildirimi* Odabaşı *et al.*, 2013. This is the first time the presence of *C. limnaei limnaei* on the *Pseudobithynia* genus has been reported. Despite the nonhazardous character of the epizoic worm, its ultra-structural and population level of damage on the narrow-range endemic host should be well measured.

**Keywords:** *Chaetogaster limnaei limnaei*, *Pseudobithynia yildirimi*, ectocommensal.

### *Pseudobithynia yildirimi* (Kuzeybatı Türkiye) üzerinde *Chaetogaster limnaei limnaei* Baer, 1827 (Annelida: Clitellata)'in ilk kaydı

### Özet

Bu çalışmada, tatlısu Molluskaları üzerinde ektokommensal olarak yaşadığı bilinen *Chaetogaster limnaei limnaei* Baer, 1827 *Pseudobithynia yildirimi* Odabaşı *et al.*, 2013'nin manto boşluğunda gözlenmiştir. *Pseudobithynia* genusu üzerinde *C. limnaei limnaei*'nin varlığı ilk kez bildirilmiştir. Zararsız-epizoik olan bu oligoketin, üzerinde yaşadığı endemik canlının dokusal özellikleri ve populasyon yapısı üzerindeki etkileri belirlenmelidir.

**Anahtar Kelimeler:** *Chaetogaster limnaei limnaei*, *Pseudobithynia yildirimi*, ektokommensal.

### Introduction

A number of ectocommensal Clitellata–Naididae species inhabiting on various freshwater animals have been addressed by the studies of Brinkhurst and Jamieson (1980); Righi (1984); Brinkhurst and Marchese (1991); Corbi *et al.* (2005). There are two different subspecies of *C. limnaei* commonly accepted in the literature: *C. limnaei limnaei* and *C. limnaei vaghini*. The latter is considered as an endoparasite due to settlement in the renal system and feeding on kidney cells of the host (Gruffydd, 1965) while *C. limnaei limnaei* lives on the body surface of the host, mainly in the mantle or pulmonary cavity attaching with its caudal suction cup (Stoll *et al.*, 2013; Buse, 1974; Ibrahim, 2007). The association between *Chaetogaster limnaei limnaei* Baer, 1827 and various species of molluscs has also been reported (Anderson and Holm, 1987; Buse, 1974; Barbour, 1977; Corbi *et al.*, 2005; Martins and Alves, 2010).

*C. limnaei limnaei* has been reported form a great number of freshwater gastropod species from limited number of freshwater bivalve species so far. *Bithynia tentaculata* is the only species hosting *C. limnaei limnaei* in the family Bithynidae (Young, 1974) which has high diversity and widespread distribution in Europe. Nevertheless, there are no detailed data available issued on parasite-host or commensal-host relationships between this clitellate species and Bithyniidae members. In this study, the first time occurrence of *C. limnaei limnaei* on the *Pseudobithynia* genus is reported.

### Materials and Methods

A topotype lot of *Pseudobithynia yildirimi* deposited under the code of COMULM–G 0027 at the Limnology Museum of Çanakkale Onsekiz Mart University in ethanol 75% were examined under stereomicroscope (Olympus SZX7). The

*Chaetogaster limnaei limnaei* (Clitellata) examined in this study is deposited at the Limnology Museum of Canakkale Onsekiz Mart University, under the catalog number of COMULM–C 009, Çanakkale – Turkey.

Tuzla Stream is the type locality of *P. yildirimi*, located at Biga Peninsula – northwestern Anatolia, Marmara Region of Turkey (Figure 1). The 52 kilometer long stream rises from the Kaz Dağı and the species is a lowland inhabitant of this stream (Anonymous, 2007; Odabaşı et al., 2013).

## Results and Discussion

A total of 31 individuals of *Pseudobithynia yildirimi* were dissected within this study to reveal the occurrence of *C. limnaei limnaei*. Of the total snails dissected, 21 were female and 10 were male. The *C. limnaei* was observed in the pallial cavity of only 4 mature female snails (Figure 2). Number of the worms varied from 2 to 8 depending on the size of the shell. Several individuals of accompanying freshwater snails at the sampling location including *Valvata* sp.,

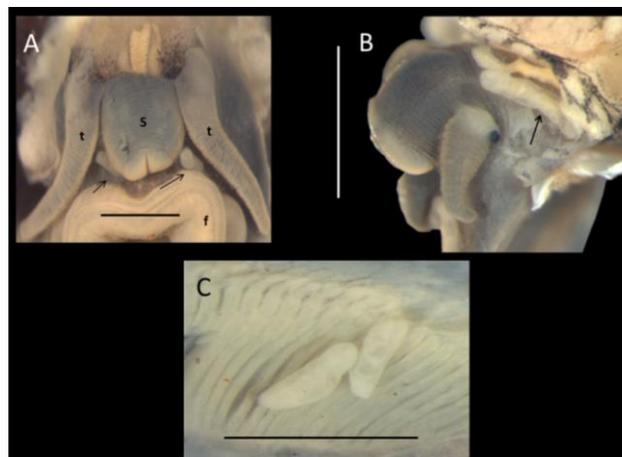
*Melanopsis buccinoida*, *Planorbis intermixtus* and *Physa acuta* were also inspected for *C. limnaei* infestation, but no evidence was found to show the same association.

*C. limnaei limnaei* attaches itself to the mantle cavity and pulmonary cavity of the host and feeds on microorganisms, such as protozoa, rotifers and algae (Michelson, 1964; Fried et al., 2008; Stoll et al., 2013), hence it is regarded as a commensal (Young, 1974). However, its effects on freshwater snails have rarely been measured. In this context, an experimental study conducted by Stoll et al. (2013) showed that the relationship between *C. limnaei limnaei* and *Physa acuta* can be described as epizotic antibiosis at high infestation rates, due to the fact that hosts had lower growth rates and productivity. Gamble and Fried (1976) reported that histological evidence of disruption of their host snail's mantle epithelium associated with worm setae.

The fact that *Pseudobithynia yildirimi* Odabaşı et al., 2013 is a narrow-range endemic inhabiting the lowland portion of the stream which receives wastes



**Figure 1.** The map shows the study area where the *P. yildirimi* lives as narrow range endemic.



**Figure 2.** *Chaetogaster limnaei limnaei* on *B. tentaculata* (A), *P. yildirimi* (B) and gill tissue of the *B. tentaculata* (C). (Arrows indicate *C. limnaei*, scale bar: 1 mm., t: tentacle, s: snout, f: foot).

from different settling areas makes this species vulnerable to extinction (Odabaşı et al., 2013). On the other hand, effects of *C. limnaei* infestation over the species' biotic parameters and population trends are not known. Thus, the monitoring studies on the endemic snail population are strongly recommended.

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