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SHORT COMMUNICATION

A SECOND RECORD OF *KNIPOWITSCHIA BYBLISIA* AHNELT, 2011 (TELEOSTEI: PERCIFORMES: GOBIIDAE) FROM SOUTHWESTERN ANATOLIA, TURKEY

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A SECOND RECORD OF *KNIPOWITSCHIA BYBLISIA* AHNELT, 2011 (TELEOSTEI: PERCIFORMES: GOBIIDAE) FROM SOUTHWESTERN ANATOLIA, TURKEY

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Abstract: *Knipowitschia byblisia* Ahnelt, 2011 is only known from the single record from the small coastal brackish lake Köycegiz, Turkey. The present record from a brook in the city of Marmaris (Province Mugla, southwestern Turkey) is the second record of this dwarf goby. This is the western most record of this species, the first outside of the Köycegiz-Dalyan watershed and the first from fresh waters.

Keywords: Freshwater, Gobiidae, *Knipowitschia byblisia*, mediterranean region, Turkey.

Abbreviations: D - posterior interorbital pore; E - dorsal postorbital pore; F - ventral postorbital pore; SL - standard length.

Five species of the genus *Knipowitschia* Iljin, 1927 occur in western and southern continental Anatolia. Three species are known from the Anatolian Aegean watershed: *Knipowitschia caucasica* (Berg, 1916), *K. ephesi* Ahnelt, 1995 and *K. mermere* Ahnelt, 1995; two species from the Anatolian Mediterranean Sea watershed, *K. byblisia* Ahnelt, 2011 and *K. caunosi* Ahnelt, 2011 (Ahnelt 1995, 2011; van Neer 1999; Fricke et al. 2007) (Fig. 1). Except for *K. caucasica* all of the species listed above are endemic in western and southwestern Anatolia and known only from isolated habitats (Ahnelt et al. 1995; Ahnelt 1995, 2011; Turan et al. 2005).

Knipowitschia byblisia is only known from Lake

Köycegiz, an enclosed water body and a highly sensitive and vulnerable ecosystem (Bann & Basak 2013; Baloch et al. 2015). This goby was recently listed from the outflow of Lake Köycegiz (Geiger et al. 2015).

This study reports a new record of *K. byblisia*, the first record from fresh water, the first from outside of the Köycegiz-Dalyan watershed and the western most appearance of this species from the sand goby group.

Materials examined

Naturhistorisches Museum in Wien, NMW 98608, 14, one male, 18.3mm SL; three females, 25.7–26.3 mm SL; 10 juveniles, 9.0–16.9 mm SL; 14 April 1964, small brook in Marmaris (36°51'N & 28°16'E), southwestern Turkey; Josef Eiselt (Table 1; Image 1).

Diagnosis

Knipowitschia differs from all other species of the genus by the following combination of characters: (1) Canals of the head lateral line system reduced to two short postorbital canals not fused in lateral midline; (2) squamation is reduced to two patches in the axillary area and on the caudal peduncle respectively, unconnected or connected by a narrow band of scales along lateral

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Conflict of Interest: The author declares no competing interests.

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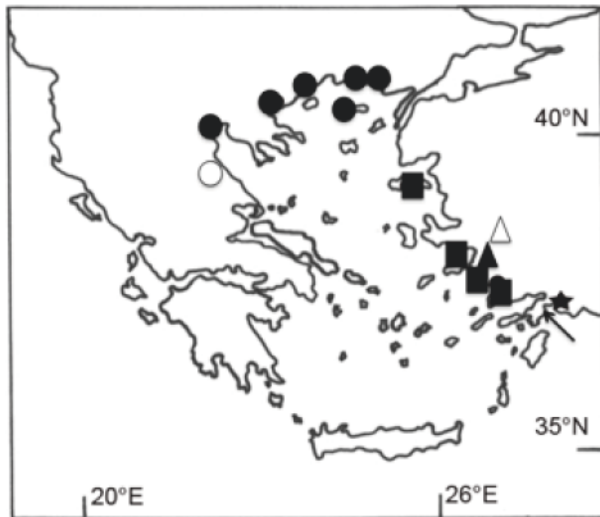


Figure 1. Geographical distribution of the genus *Knipowitschia* in the Aegean region (Mediterranean). Open circle - *K. thessala*; filled circles - *K. caucasica*; filled squares - *K. cf. caucasica*; open triangle - *K. mermere*; filled triangle - *K. ephesi*; filled star - brackish coastal lake Köycegiz, type locality of *K. byblisia* and *K. caunos*; arrow - points to Marmaris, the second record of *K. byblisia*. Modified from Ahnelt (2011).

midline; (3) caudal peduncle immediately anterior to the caudal fin naked; (4) first dorsal fin with six to seven rays. The variability of the head lateral line canals and of the squamation is shown in Table 1.

DISCUSSION

There are many threats to the fresh water fish fauna of the coastal areas of continental western Anatolia, e.g., agriculture, hydro power stations, pollution, and increasing tourism (e.g., Innal & Erk'akan 2006; Yilmaz et al. 2006). Additionally, the introduction of alien species is a threat (e.g., Barlas & Dirizan 2004; Innal & Erk'akan 2006; Taseli 2009; Özdemir et al. 2015; Tarkan et al. 2015). Nevertheless, *K. byblisia* has been recently assessed against the IUCN Red List Categories based on

the assumption that “there seems to be no or very few threats (current or potential) in Lake Köycegiz drainage affecting this species” (Freyhof 2014). Environmental pressures on Lake Köycegiz and its tributaries are manifold. They are attributed to agricultural run-off and untreated human waste (Orhan & Scheumann 2011; Bann & Basak 2013; Özelik 2015), to habitat destruction by reed belt fragmentation due to intentional burning and to increasing siltation of the lake due to erosion caused by deforestation and sand mining in rivers discharging into the lake (Bann & Basak 2013) and to the introduction of various fish species (Innal et Erk'akan 2006; Yilmaz et al. 2006). However, the the conservation status of both endemic *Knipowitschia* species should be re-studied.

It is interesting to note that the confirmed records of *K. byblisia* are based on museum material (Ahnelt 2011, this study). This highlights the importance of Natural History Museums not only as institutions crucial for the documentation of biodiversity but also important for conservation. This is especially evident in the case of *K. byblisia*, which is seemingly easily confused with *K. caucasica*, a congener repeatedly introduced in different European freshwater bodies and generally classified there as invasive (van Neer 1999; Innal et Erk'akan 2006; Harka et al. 2013; Tarkan et al. 2015). Confusion or misidentification of *Knipowitschia* species native to western and southwestern Turkey, such as *K. mermere*, *K. ephesi*, *K. caunos* and *K. byblisia* with the introduced *K. caucasica* could therefore lead to an unintended (and tragic) threat by conservation management.

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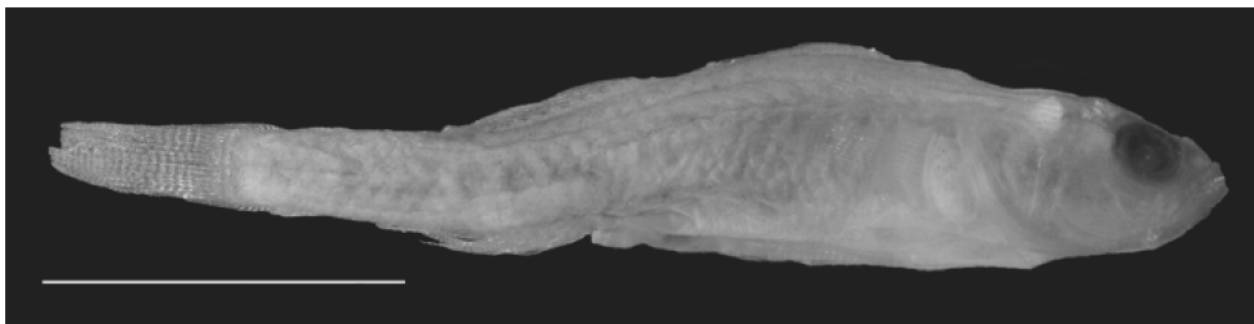


Image 1. *Knipowitschia byblisia*, female, 26.34mm SL; collected in a brook in Marmaris, southwestern Turkey, April 1964. Scale = 10mm.

Table 1. *Knipowitschia byblisia*. Variability of squamation and of postorbital canals in 14 specimens from Marmaris, Turkey. Squamation and formation of the postorbital canal starts at a size of >8.98mm SL. The three largest specimens (25.71–26.34 mm SL) are females followed by one male (18.35mm SL) and ten juveniles (16.92–8.98 mm SL). D - posterior interorbital pore; E - dorsal postorbital pore; F - ventral postorbital pore; SL - standard length. A + denotes if a character is developed.

SL (mm)	Scale patches connected	Scale patches not connected	Postorbital canal closed	Postorbital canal not closed
26.34		+	both sides; left with pores D, E, F right with pores D,F	
26.32		+	both sides; with pores D and F	
25.71	+		right side; with pores D and F	left side; open furrow
18.35		+	both sides; short; with pores D and F	
16.92	nearly all scales lost	nearly all scales lost		+
16.23	+			+
15.95		+		+
15.52		+		+
15.19	+			+
14.60		+		+
13.65		+		+
12.90		+		+
11.92		+		+
8.98	no scales developed	no scales developed	both sides no furrows	both sides no furrows

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