

## First record of *Dogielius forceps* (Monogenea) on *Capoeta umbla* (Pisces, Cyprinidae) to Turkey, from Murat River

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**Abstract.** In the present study, the genus *Dogielius* and *Dogielius forceps* Bychowsky, 1936 (Monogenea) was identified in branchial filaments of *Capoeta umbla* (Heckel, 1843) (Pisces: Cyprinidae) caught from Murat River for the first time in Turkish fish parasite fauna. The study carried out monthly between March 2010 - February 2011, and a total number of 80 fish was collected. The distribution of parasitic monogenean prevalence was 37.5%, abundance 1.5 and mean intensity 4. The characteristics of the structure of this parasite species were described and shown in figures. The description and measurements of this parasite were given.

**Key Words:** Monogenea, *Dogielius forceps*, *Capoeta umbla*, Murat River.

**Özet.** Bu çalışmada, Murat Nehri (Türkiye)'nden yakalanan *Capoeta umbla* (Heckel, 1843) (Pisces: Cyprinidae)'nin solungaç filamentlerinde Türk Faunası için ilk kez *Dogielius* cinsi ve *Dogielius forceps* Bychowsky, 1936 (Monogenea) türü teşhis edilmiştir. Çalışma Mart 2010 - Şubat 2011 arasında yürütülmüş ve toplam 80 balık toplanmıştır. Parazitin yıllık dağılım yüzdesi 37.5%, görülme sıklığı 1.5 ve ortalama yoğunluğu 4 olmuştur. Parazitin türüne ait karakteristik yapıları çizimlerle gösterilmiştir. Descripsiyonu ve ölçümleri verilmiştir.

**Anahtar Kelimeler:** Monogenea, *Dogielius forceps*, *Capoeta umbla*, Murat.

**Introduction.** A survey of monogeneans from freshwater fishes of Murat River-Turkey was undertaken to investigate their diversity and host distribution patterns. A less studied monogenean species from a less known monogenean genus was collected from cyprinid fish *Capoeta umbla* (Heckel, 1843).

The monogeneans are hermaphroditic flat worms that complete their life cycle only on a single host and they commonly live as ectoparasites on the gills or body surface of freshwater and marine fishes (Cable et al 1998; Kearn 1999). A major identifying characteristic of monogenean parasite is their haptor attachment, anchors, number of hooks, copulatory organ, gonads and four eye spots. These characters exhibit a range of intraspecific genetic or phenetic variation (Harris 1988). For the first time genus *Dogielius* and *Dogielius forceps* Bychowsky, 1936 was recovered from host belonging to the Cyprinid genus *Capoeta*. Especially *Dogielius* species are reported in Asian and African parts of the world (*Dogielius molnari* Jalali, 1992, *D. junorstrema* Paperna, 1979, *D. pedaloe* Guegan & Lambert, 1990, *D. persicus* (Molnár & Jalali, 1992), *D. phrygius* Guegan & Lambert, 1990, *D. mokhayeri* (Jalali & Molnár, 1990), *D. planus* Bychowskii, 1957, *D. vexillus* Guegan & Lambert, 1990), according to Guegan & Lambert (1990), Jalali & Molnár (1990), and Jalali (1992).

In Turkey, many surveys of the monogenean parasites of freshwater fishes were carried out by Saglam (1992), Oguz et al (1996), Aydogdu et al (2000), Ozturk (2000), Aydogdu & Altunel (2002), Aksoy et al (2006), Turgut et al (2006), Soylu et al (2010), Koyun & Altunel (2007, 2010), Koyun (2011), Selver et al (2010). Those authors described more than 24 *Dactylogyrus* species in Turkey from different freshwater sources (*Dactylogyrus alatus* Linstow, 1878, *D. affinis* Bychowsky, 1933, *D. amphibothrium* Wagener, 1857, *D. anchoratus* (Dujardin, 1845), *D. ancylostylus* Chien, 1974, *D. asper*

Chien, 1974, *D. auriculatus* (Nordmann, 1832), *D. carpathicus* Zakhvatkin, 1951, *D. chalcaburni* Dogiel & Bykhovskii, 1934, *D. cornu* Linstow, 1878, *D. crucifer* Wagener, 1857, *D. difformis* Wagener, 1857, *D. difformoides* Gläiser & Gusev, 1967, *D. distinguendus* Nybelin, 1937, *D. extensus* Mueller & Van Cleave, 1932, *D. folkmanovae* Ergens, 1956, *D. fraternus* Wagener, 1910, *D. hemiamphibothrium* Ergens, 1956, *D. macracanthus* Wegener, 1910, *D. malleus* Linstow, 1877, *D. minutus* Kulviec, 1927, *D. sphyrna* Linstow, 1878, *D. vastator* Nybelin, 1924, and *D. vistulae* Prost, 1957) but they did not found in any species of *Dogielius* genus. In the present paper, we are reporting the occurrence and we are also giving the description of *D. forceps* from the gills of *C. umbla* in the Murat River.

## Materials and Methods

**Study area.** Murat River is one of the most important large and long (722 km) tributary of the Euphrates River in South East Anatolia of Turkey. The sampling areas in this study were located near Bingöl city (38.8 N, 41.05 E) (Fig. 1). The distribution area of Murat River is upper basins systems of the Euphrates and Tigris River.

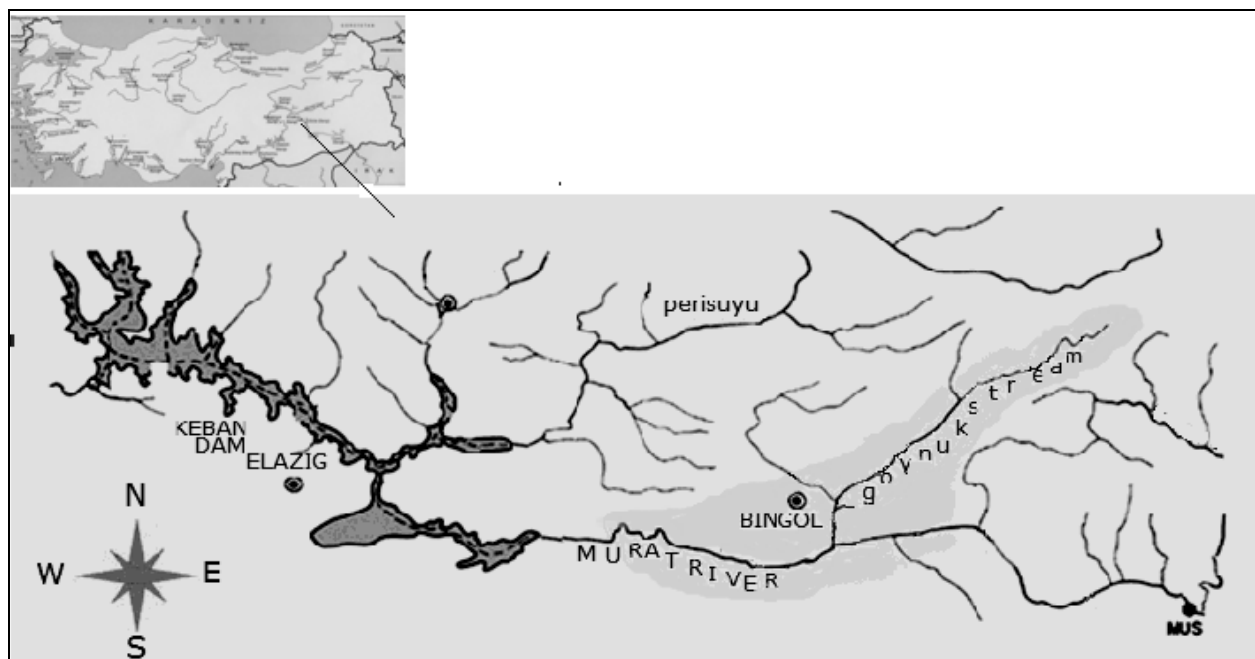


Figure 1. Study area (selected - it has been adapted from <http://aygunhoca.com>).

**Sampling.** *D. forceps* was collected from 80 specimens of *C. umbla*, during March 2010 to March 2011. The parasites were collected from gills, under stereo microscope and were placed in glycerol-gelatin, then placed under a cover slip and preserved as cover slip preparations. The monogenean species were identified microscopically. Drawing and photographing of parasite were made by using a camera Leica. The measurements of sclerotized parts were taken according to Bykhovskaya-Pavlovskaya et al (1962) and Gussev (1985). All parasitic measurements were registered in  $\mu\text{m}$ .

**Results and Discussion.** A total number of 80 *C. umbla* were examined for parasitic helminth infection. The results of this study show that, 37.5% of the examined host fishes are infected with *D. forceps* during the period of the present study. The survey showed the occurrence of one monogeneans belonging to the genus *Dogielius*. In this study *D. forceps* was found on gills of 30 specimens of the *C. umbla* from Murat river (Fig. 2 and Fig. 3). The measurement of *D. forceps* are based on 15 specimens.

**Description of the species.** Body length 340 (310-420); width 70 (60-90) usually at level of ovary. With general characters of the genus. Anchor lengths: overall length of hook (a) 50 (46-54); (b) 49 (46-54); (c) 11 (16-18). Dorsal bar length (d) 65 (59-77). Hook length

(e) 28 (26-30); copulatory apparatus large (f) 58 (56-64), vagina is oval shape (g) 17 (15-20).

In Turkey, a total of 24 species of *Dactylogyrus* were previously recorded from different species. However, before this study, this genus (*Dogielius*) and species of this genus had no record in Turkey. Therefore the registering of *D. forceps* could be considered as the first record in Turkey.

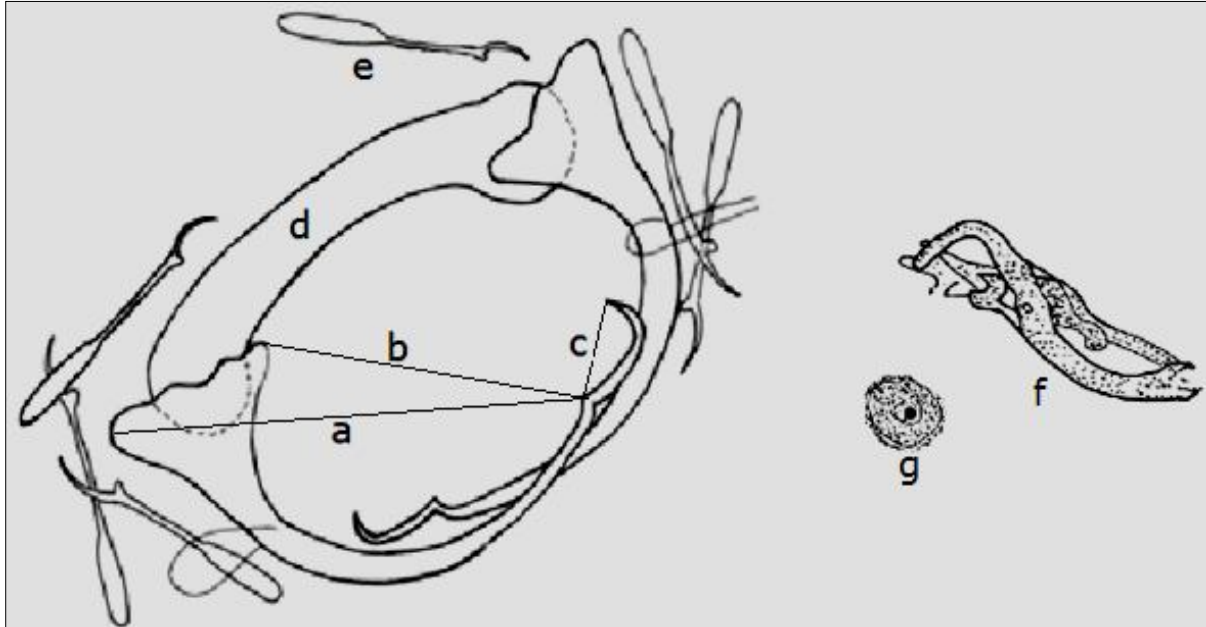


Figure 2. Schematic illustration of sclerotized parts of *Dogielius forceps*. a) outer length of anchor, b) inner length of anchor, c) blade of anchor, d) connective bar, e) marginal hook, f) copulatory organ, g) vaginal pore.

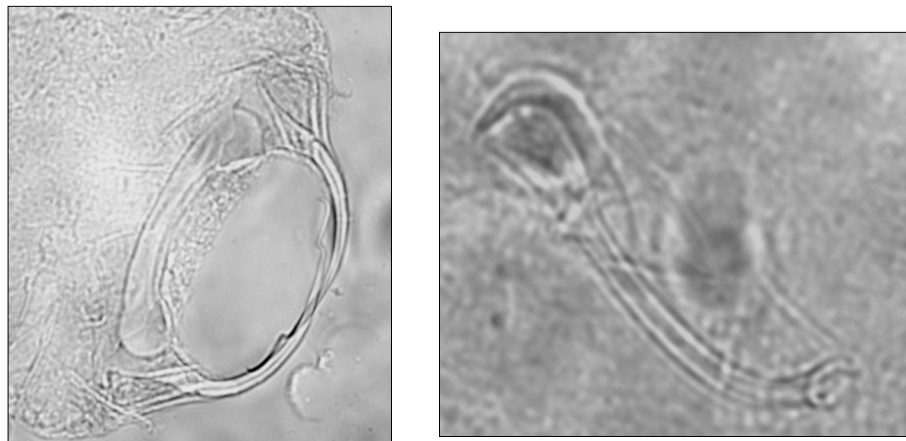


Figure 3. *Dogielius forceps* haptor and copulatory organ.

**Conclusions.** The fact that most of the species records of the *Dogielius* genus are from Iran, Iraq, Syria and African countries and they show that the evolvement area of these parasites is Asia Minor and Africa (Jalali & Molnar 1990; Jalali et al 1995; Abdullah 2005; Abdullah & Mhaisen 2005; Musilova et al 2009). The natural existence of the studied host fish *C. umbla* in Murat river system and the fresh water sources feeding the river is of great importance. In addition, the limited number of the studies on the parasites of the above-mentioned host fish increases the importance of the present study as well. Thirty of the 80 fishes investigated throughout the study were infected, and 120 *D. forceps* were recorded in total. While only some *Dactylogyrus* species from the Dactylogyridae family are observed in the Turkey fresh water fish parasites fauna, no record could be found regarding the

*Dogielius* genus. In this sense, the present research is of great importance as it is the first published study on *Dogielius forceps* in Turkey.

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