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Short Notes About the First Record of the Planarian *Girardia tigrina* (Girard, 1850) in Euphrates River, Mid Iraq

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Abstract: A total of 50 specimens of *Girardia tigrina* were collected from Euphrates River, Al-Kufa Region in Al-Najaf Province by using flatworm traps. The diagnosis of *G. tigrina* was depended on general morphological features, like length and color, and anatomical aspects. This species has not been documented in Euphrates River in Iraq, so, its present occurrence is considered here as the first record from this river and the second record in Iraq.

Keywords: *Girardia tigrina*, Flatworm, Planaria, Euphrates River, Iraq

Introduction

In Iraq, there are a lot of studies about zoobenthos and macroinvertebrates as they had been the most commonly used group for the assessment of water quality (Skoulikidis et al., 2009). Many stream and river assessment methods, based on macroinvertebrates which have been developed worldwide, are the preferred means of assessing aquatic quality (Arimoro & Ikomi, 2009).

Spatial variation in lotic macroinvertebrate community structure is due to a combination of intrinsic biotic community interactions, environmental conditions and historical factors (Murphy & Davy-Bowker, 2005). Freshwater invertebrates, which play a significant part in the biological dynamics of the lotic environment, play an important role in the material cycle and trophic transfers (Hussain & Pandit, 2012). The communities of aquatic invertebrates are affected by several factors related to water quality, stream morphology, food availability and quality (Oppong et al., 2021).

According to GBIF (2022) and WoRMS (2022), planarians belong to the Order Tricladida of the phylum Platyhelminthes). They are a group of widely distributed, mostly free-living flatworms. Most planarians occur in fresh waters and are sometimes seen in large masses; some species are marine, while others are terrestrial and some species obtain nourishment from bodies of other organisms (Petersen & Reddien, 2008). The body, when elongated, is soft, leaf-shaped, and ciliated. The spade-shaped head has two eyes and sometimes tentacles. The tail is pointed, the mouth is on the ventral, or lower side, often more than half-way toward the tail. A body cavity, or coelom, is absent. The pharynx, which may be protruded from the

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mouth, ends in an intestine that is usually blind. The length is usually about 3-15 mm; some grow to more than 30 cm long. Tropical species are often brightly coloured. Members of the North American genus *Girardia* are black, gray, or brown (Scimone et al., 2011).

In Iraq, Lazim et al. (1988) recorded *Girardia tigrina* for the first time in Iraq from Nawaran Spring of Arbil Province as well as 12 macrobenthic invertebrates from nine different localities from north Iraq, Jaweir & Al-Seria (2014) recorded four turbellarian species (*Gyratrix hermaphroditus*, *Stenostomum bryophilum*, *S. leucops* and *S. unicolar*) from Al-Dalmage Lake, a part of middle section for the Main Outfall Drain, south of Baghdad. Among the 85 invertebrate species in Al-Shoajh Marsh, Wasit Province, surveyed by Al-Seria & Farman (2016), four turbellarian species (*Stenostomum* sp., *Gyratrix hermaphrodites*, *Macrostomum* sp. and other unspecified turbellarian) were recorded. The aim of the present short notes is to investigate and describe *G. tigrina* in Euphrates River at Al-Kufa, Iraq.

Materials and Methods

Sampling of *G. tigrina* specimens were done during the period from December 2020 to February 2021. A total of 50 specimens were collected from three sites in Euphrates River at Al-Kufa Region in Al-Najaf Province (Figure 1; Site 1: 32.206795, 44.363617; Site 2: 32.191833, 44.347996; and Station 3: 32.112334, 44.355549) by using flatworm traps (Figure 2) on bottom of the river in between *Ceratophyllum demersum* aquatic plants. Some physico-chemical properties of the water were also done (water temperature, pH, turbidity and salinity by WTW Multi 3500i Handheld Multimeter. The diagnosis of *G. tigrina* depended on general morphological, like length and color as well as some anatomical aspects (Sluys et al., 2010).

Results and Discussion

Habitat

In temperate regions, *G. tigrina* is usually present in the bottom of wetlands (streams, ponds, marshes and lakes) and rivers. The benthic region of freshwater biomes exhibits negative photo taxis and therefore dwells. *G. tigrina* microhabitats involve the organic materials on the stream beds. The present literatures do not clearly identified the range of depth for this organism, however some studies represented that the presence of *G. tigrina* could present at 25-40 cm depth. Also, the typical temperature of *G. tigrina* present was documented between 13-25 °C (Stokely et al., 1965; Folsom & Clifford, 1978; Gee et al., 1997; Takano et al., 2007).

Table 1 shows the physiochemical properties of *G. tigrina* habitat. The surrounding environment of *G. tigrina* was: water temperature 12±2 ºC, slightly alkaline (pH= 7.8±0.3), freshwater (salinity= 0.48±0.2 ppt) and low turbidity (< 8 NTU).

These results were agreeable with some previous studies in Euphrates River (Al-Haidarey et al., 2010: Al-Ameen et al., 2017). So this habitat is very suitable of present of the recorded species (Takano et al., 2007).

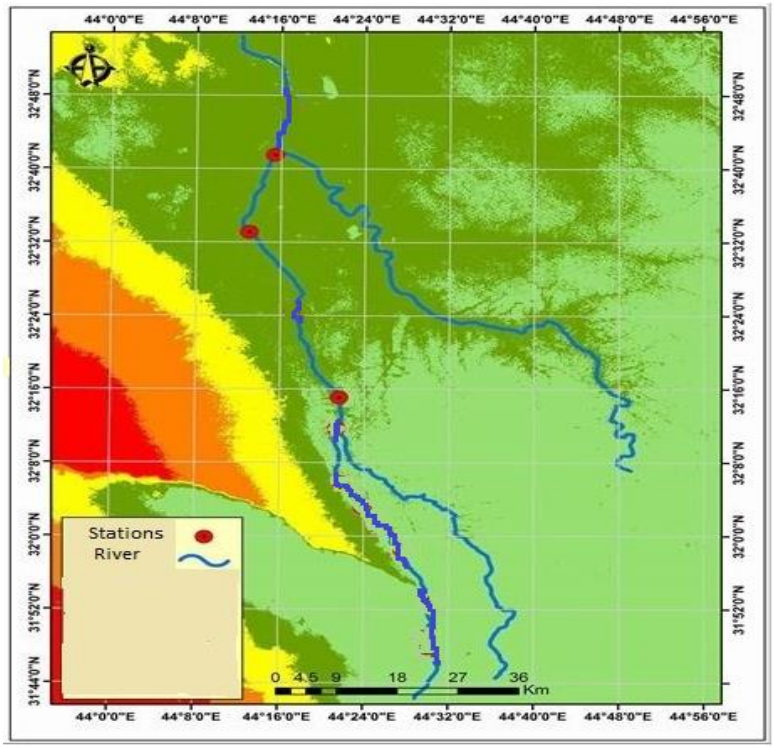

Figure 1: Map of the study site: Euphrates River, Al-Kufa, Iraq.

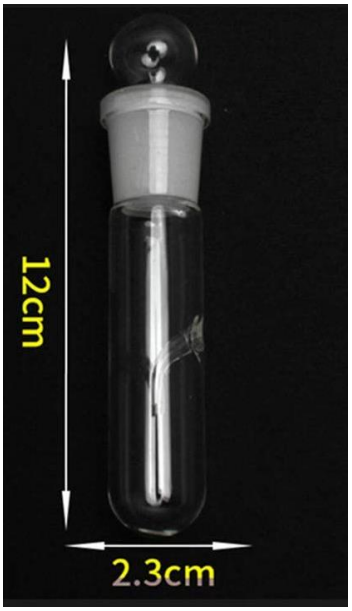

Figure 2: Flatworm traps, Brand: ha·ihe.

Table 1: The physiochemical properties of *G. tigrina* habitat.

Site	Temperature (ºC)	pH	Turbidity (NTU)	Salinity (ppt)
1	12±3	7.6±0.6	6.3±0.8	0.51±0.4
2	13±1	7.2±0.1	10±0.3	0.48±0.2
3	13±2	7.9±0.8	7.8±0.2	0.42±0.3

Morphological Description

G. tigrina is colloquially known as a flatworm, and it has a body that is flattened dorsoventrally. Additionally, the body plan exhibits cephalization, and the body surface is covered with cilia used to facilitate gliding locomotion. Sensory lobes known as auricles make the head region look triangular, and eyespots called ocelli are found on the head. In terms of coloration, the body is typically brown with white and yellow spots. The average length of *G. tigrina* is 9-15 mm, but body dimensions can vary due to the organism's ability to regenerate lost parts (Pickavance, 1971; Smales & Blankespoor, 1978; Saló & Baguňà, 1984; Sluys et al., 2010).

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