Article

First record of terrestrial snail *Eobania vermiculata* (O.F. Müller, 1774) (Gastropoda: Helicidae) from Basrah areas, Iraq

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Abstract
Specimens of the terrestrial gastropod *Eobania vermiculata* (O.F. Müller, 1774) were collected from two locations (Hareerregion and Al-Khoraregion) in Basrah city, Iraq, during the period from March 2015 to April 2016. Some notes on the morphological features of this species and photographs were provided to confirm the identification of the snail. The results found that it is the first record of this land snail *E.vermiculata* in Basrah city.

Keywords first record; terrestrial gastropod; *Eobania vermiculata*.

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1 Introduction

Mollusca are the second largest phylum of the animal kingdom, forming a major part of the world fauna. The gastropoda is the only class of mollusca which have successfully invaded land. They are one of the most diverse groups of animals, both in shape and habit. Among gastropods, land snails (subclass: Pulmonata) are one of the most numerous with almost 35,000 described species of the world. The Phylum mollusca are probably the third most important animal group after the arthropods and vertebrates (South, 1992).

E. vermiculata (O.F. Müller, 1774) is a large land snail species, with a maximum shell width of 33 mm. The species occurs in a variety of habitats, usually in dry vegetation, in hedgerows, gardens, vineyards and agricultural fields, often in coastal areas. Reproduction takes place in spring and autumn. About 60 to 80 eggs are laid in the soil. Adult snails hibernate in a hole in the soil and develop an epiphragma. Juveniles usually hibernate under stones or leaves (Kerney and Cameron, 1979; Welter-Schultes, 2012).

E. vermiculata is a circum-Mediterranean species. Its native range extends from Spain to Turkey in Europe and along the North-African coast at least from Morocco to Libya, although it is absent as a native species in the SE of the Mediterranean region, the species has been introduced into several European countries, including Germany, Hungary, and the Netherlands. The populations also occur in the USA, Australia, Japan, South Africa, Egypt, Saudi Arabia, Jordan, and Iran (Kerney and Cameron, 1979; Petney and Huset ,1992; Mienis,

2002; Ueshima et al., 2004; Roll et al., 2009; Herbert, 2010; Welter-Schultes, 2012; Puizina et al., 2013; Soes, 2014).

Little is known about the land snails of Iraq. Most of our present knowledge is based on old literature (Germain, 1921; Pallary, 1939; Biggs, 1959; Najim, 1959). As far as southern Iraq is concerned, very limited studies addressed the land snails of this area, however, recent studies recorded additional four species to Basrah area (Abdul-Sahib 2005; Al-Khafaji, 2009; Naser, 2010). Neubert (1998) presented an outstanding monograph on the freshwater and land snails of the Arabian Peninsula, where 70 species of land snails recorded.

This species which is belonging to the family (Helicidae) were considered as the most dangerous snail pests. Several investigations have been done to control these snails (Kassab and Daoud, 1964; Godan, 1983; El-Okda, 1984; El-Deeb et al.,1999). This specie perhaps was introduced to middle east and the Arabian Peninsula through human activities and now it has beenrecordedin different parts of middle east in addition to Arabian Peninsula including Egypt, Saudi Arabia, Qatar and Oman (Neubert, 1998; AL-Khayat, 2010; Desoky et al., 2015).

These snails were considered as disadvantage creatures to the environment which they live in, they cause damage to the vegetables, they nibble the lettuce, the celery, the cabbage, etc. Thus, they are considered as economical detriment animals.

The present study records the land snail *E.vermiculata* in two stations in Basrah for the first time, and gives some information on this snail in Iraq.

2 Materials and Methods

Thirty two specimens of the land snail *E. vermiculata* were collected from Hareer region (30°34'43.52"N 47°44'3.93"E) and Al-Khoraregion (30°37'18.43"N 47°43'37.54"E) during the period from March 2015 to April 2016. The measurements of the height, width, aperture height and aperture width of the shells were recorded. The specimens were kept under laboratory conditions on moist soil with some lettuce for feeding. Living specimens were sorted, classified, and described with notes on their distribution in Basrah city (Fig. 1). All samples were collected by hand from an area of 1 m^2 with 3 replicates in each sampling process. Specimens were cleaned, and the width and total height and length of each was measured from the umbo to the ventral edge of the shell to the nearest millimeter using a vernier caliper. The identification of the taxa was based mainly on the work of Neubert (1998). They were identified according to the keys given by Smith and Kershaw (1979) and Godan (1983). After 24 h, the water was decanted and replaced with 70% ethanol for preservation. The snails with complete soft parts were identified, whereas for studying the morphology of the collected shell of this species, each shell was carefully cleaned and the visceral mass was removed according to Frandsen (1983). After that, the shell of snail was photographed (Fig. 2.).

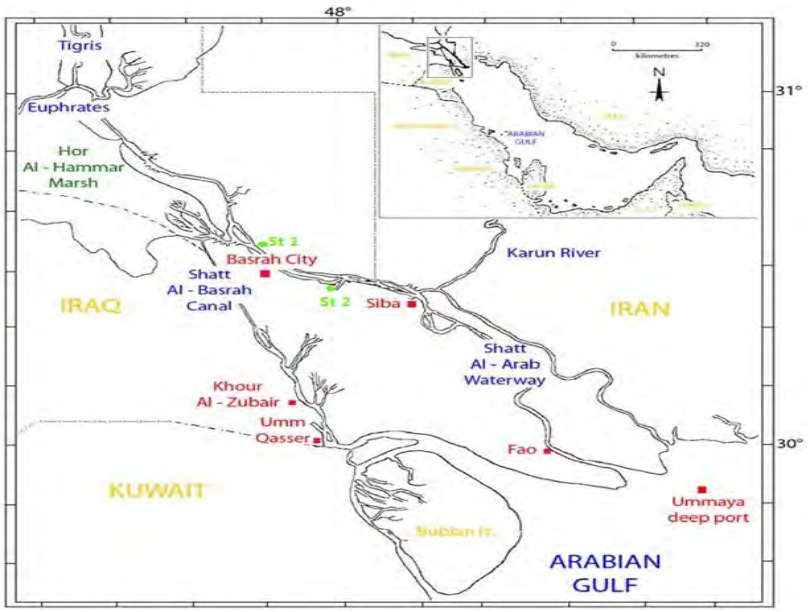

Fig. 1 Map of study areas.

3 Results and Discussion

3.1Taxonomy

Class: Gastropoda

Subclass: Pulmonata

Order: Stylommatophora

Super family: Helicacea

Family: Helicidae

Eobania vermiculata (Müller, 1774)

3.2 Shell description

Maximum shell height of 18 mm and maximum shell diameter of 33 mm, appearing almost spherical. Underside creamy white with glossy earlobe-shaped aperture. The sides are banded with 2 honey-colored bands and 2 creamy white and striated bands (Figure 2). The teleoconch is cream with recurved pale brown rim.Generally, the shell is creamy white to faint yellow. There are up to five brown spiral bands, which are often fused. Nearly maroon brown specimens may occur. Usually, white axial flames interrupt the bands thus producing an alternating pattern of bright and dark colours on the surface of the shell.

3.3 Remarks

Only one sample was encountered, the specimen resembles species *Helix aspera*, but it differs in shell pattern, banding, and color.

3.4 Measurements (n=32)

Mean Shell height (X=11.67, SD=0.322), shell width (X=16.37, SD=0.190), aperture height (X=7.12, SD=0.243) and aperture width (X=6.34, SD=0.176).

3.5 Distribution and habitats

Widespread in the Mediterranean region, it is spread easily by human activities. In the Gulf states, it was reported from WadiHanifa in central Saudi Arabia (Mordan, 1980).listed this species from Saudi Arabia, Qatar and Oman from various habitats. (Al-Khayat, 2010).

E. vermiculata is the fourth new record of the land snails in Basrah, after *Monacha abstructa* (Abdul-Sahib, 2005), *Xeropicta mesopotamica* (Al-Khafaji, 2009), and *Allopeas gracilis* (Naser, 2010) are collected from

Basrah city, Hareer region and Khora region, both regions are rural and lie at the Shatt Al- Arab river, agricultural nature, many different types of vegetables are grown there in wide distance areas, irrigated by the Shatt Al- Arab river.

Both living and Shells of *E. vermiculata* were collected directly from the soil of the farms and the grasses herb plants, closely to the Shatt Al-Arab. In the Hareer region *E. vermiculata* is associated with the other land snails.

Fig. 2 The species *E. vermiculata*.

4 Conclusion

The finding of *E. vermiculata* is not surprising to our region since the species is widely distributed in the Arabian Peninsula, and due to the fact that this species can easily distributed by human activities. One more reason, the climate in the Arabian Peninsula is similar to that of the southern Iraq, where as humidity dominates in Basrah areas. The present record adds to the land snail fauna of Iraq.

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