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Original Research Article

Ecology of the freshwater snail *Melanopsis buccinoidea* (Olivier, 1801) in Ain Al-Tamur, Kerbala Province

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A B S T R A C T

K e y w o r d s

Ain Al-Tamur, Ecology; *Melanopsis buccinoidea*;

The freshwater snail *Melanopsis buccinoidea* is widely distributed throughout the Ain Al-Tamur area in artesian springs and irrigation channels. This study provide data on the habitat with some remarks on its reproduction and community structure. The results were discussed with pertinent literature.

Introduction

The freshwater snail *Melanopsis buccinoidea* (Olivier, 1801) (Gastropoda: Cerithiimorpha, Cerithioidea, Melanopsidae) is the most common species inhabiting clear and fast running water in the Mediterranean ecozone (Amr and Abu Baker, 2004). It is a species of freshwater snail with a gill, operculum and smooth shell and known to occur in agricultural canals, ponds, streams, swamps, ditches (Farahnak *et al*., 2006), lakes, rivers and springs (Heller and Abotbol, 1997). It was assessed by IUCN as least concern (Van Damme, 2011).

The first reference to *Melanopsis* Ferussac in the Mesopotamia is in Prashad (1921), who illustrated three species, *M. costata*, *M. nodosa* and *M. subtingitana* (Naser, 2006). Only few reports on certain aspects of *Melanopsis* spp. biology had been done including Abdullah *et al*. (2000), Sheriiff and Delool (2001) Al-Bassam and Hassan (2006), and Naser (2006).

Materials and Methods

Site description

A large part of the following description is from Nature Iraq (2013). This site is located in the Arabian desert and East Sahero-xeric shrublands, sub-desert phyto-geographical zone. Ain-Al-Tamr town (N 32˚ 32́ 57″, E 43˚ 30́ 11″).is one of the two main towns lies close to Razzaza lake and situated to southwest of the lake. There are a lot of date-palm farms within the west edge of the site. The area to the south and east is shrublands. All the date

farms depend on the water of wells and rains as there is no river or canal in the area. The semi-desert areas around here feature xerophytes and halophytes but also contains recently planted date palm trees and orchards near Al-Rahaliya town. The valleys and dense plant cover (including orchards) and the flat arid/semi-desert areas on the southern parts of the lake, around the town area, might harbor considerable wildlife diversity. The most prominent irrigation systems is its springs, Ain Al-Hamra, Ain Al-Zarga, Ain Seeb (within the town) and complicated network irrigation channels through the orchards and farms. Many small spring and tens of date palm trees around composes one of many scattered small oases around the town. The water in the small springs completely disappeared by now, while the large springs in the town is decreased dramatically (fig.1). To provide enough quantities of irrigation water, authorities recently drilled four new artesian wells (fig. 2). The snail used to present in large numbers within these springs and channels.

Collection of snails and data

The snail material used in this study comprises the recently collected snails through three field trips arranged by Iraq Natural history Museum, University of Baghdad to the area on 2013. The data were taken in the field including air temperature, water temperature and salinity.

Results and Discussion

The artesian springs is a characteristic of Ain Al-Tamur area providing large amounts of rich Sulphur content of water used for agriculture and some traditional industries.

In Ain Al-Tamur area, it seems that the snail lives in rather wide range of temperature, during summer when the air temperature rises above 40 ˚C, the snail is distributed in the springs which have relatively constant temperature of 22-25 ˚C and the irrigation channels as well as other adjacent water bodies which have a range of 15-17 ˚C. At the end of autumn and in winter, when the air temperature falls down sharply, the snail decreases its distribution and retreat to spring areas which keep their preferable temperatures. This snail impacted in Ain Al-Tamur town and adjacent area by many threats such as agriculture, exploitation of groundwater, water transfer schemes and pollution of surface and groundwater. This agrees with the findings of (de Stefano, 2004). Naser (2006) mentioned that *M. buccinoidea*, which he refer to it as *M. subtingitana* is widely distributed in a variety of aquatic habitats on stones (fig.3) and certain aquatic plants like *Ceratophyllum demersum*.

Results of measuring some structural parameters of snail individuals and community structure of Ain Al-Tamur population at February and October 2013 are shown in table 1and figs. 4 and 5. The snails collected in February have larger shells in all parameters. From the range figures given in the table, it could be concluded that reproduction takes place around the year with a high peak in summer and autumn and lower peak in winter and spring.

It could be concluded that the existence of this species of snails in Ain Al-Tamur area is depended mainly on the continuity of the new four artesian wells providing water.

Table.1 Shell length, shell width, spire and aperture measurements in mm representing mean, range and standard deviation of *Melanopsis buccinoidea* collected in Ain Al-Tamur, Kerbala province.

Date of collection	Shell length	Shell width	spire	Aperture
23.2.2013	14.36364 6-20 3.533926	6.181818 3-10 1.33357	8.227273 3-11 1.908414	6.484848 3-13 2.001893
13.10.2013	11.45333 4-20 2.507173	5.242667 2-9 1.032775	6.522667 2-10 1.501833	5.08 2-8 1.127678

Fig.1 Ain Al-Hamra spring inside Ain Al-Tamur town.

Fig.2 Recently drilled artesian well in Ain Al-Tamur.

Fig.3 *Melanopsis buccinoidea* snails on rocks and stones in irrigation channel.

Fig.4 Population structure of *Melanopsis buccinoidea*, Ain Al-Tamur 23.2.2013.

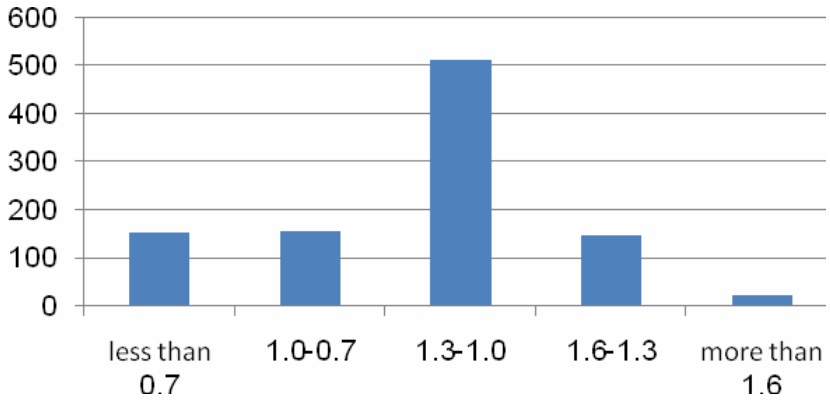
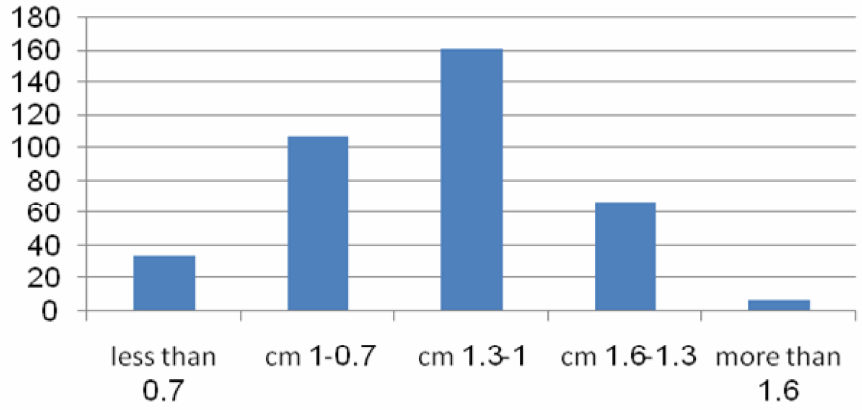


Fig.5 Population structure of *Melanopsis buccinoidea*, Ain Al-Tamur 13.10.2013.



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