

Morphological study of some species of invertebrates in Al-Diwaniyah City, Iraq

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Abstract. The current study has investigated the morphological identification of some snails of Class Gastropoda in AL-Diwaniyah City in Iraq. The findings show that there are three families of studied samples, and they are Viviparidae, Thiaridae, and Melanopsidae of the species that are *Melanoides tuberculata*, *Bellamya bengalensis* and *Melanopsis nodosa*. More studies should be conducted in this regard, for the fact that normal fauna is important in terms of local fauna, and they should be kept under monitoring to avoid species extinction.

Key Words: Gastropoda, Invertebrates, Biodiversity.

1. Introduction:

It is clearly evidenced that loss of biodiversity poses a great threats to the planet, especially in aquatic environments than terrestrial ones [1]. The risk of extinction of freshwater snails in unstable environments has been reported as nearly one-third of freshwater species are in danger of going extinct [2; 3; 4]. Using benthic invertebrates are best way to reveal environmental consequences cause by human activities [5]. In Iraq, the general trend of aquatic or even terrestrial environments deteriorates [6; 7]. It has been evidenced that freshwater molluscs become worse over the past years, and much of this is due to water dryness, the building of dams, basin marshes draining and invasive species [7; 8; 9]. Compared to the fauna of neighboring nations, Iraq's freshwater mollusk fauna is taxonomically poor [10]. However, several studies have been conducted to study freshwater snails in Iraq. For example, *Bellamya bengalensis* in Shatt of AL-Arab and the Rivers of Euphrates [11]. According to [12], have point out that this species inhabits muds of estuaries. [13] have studied of snails such as *Melanoides tuberculata*, *Viviparus bengalensis*, *Melanopsis nodosa*, *Melanopsis subtingitana*, and *Melanopsis costata*. According to [14] the climate of Eastern Mediterranean is expected to be droughty and hotter due to events of high temperature; this ecological status negatively affects the existence of molluscan species. Therefore, it is important to conduct research focused on studying morphological aspects on these malacofauna. Most importantly, the local fauna of these species provides a data base for future studies and is a step toward sustainable management projects to protect natural habitats as the

natural ecological heritage of each country. This study aim to describe morphology of snails of river from Al-Diwaniyah City, middle of Iraq.

2. Sample Collection

Samples were taken from the river in Al-Diwaniyah City . In containers, gastropod snails were collected from the water using Veen Grab Sampler. After that, the samples were taken to the lab and thoroughly cleaned using tap water. After that, collected samples were kept in a solution of up to 70% ethanol before being examined and identified at the lowest level of taxonomy. Samples were then counted, classified by species.

3. Results and Discussion

The current study show that two species of molluscan snails and they are *Melanopsis nodosa*, *Bellamya bengalensis* and *Melanoides tuberculata* as listed in table (1).

Table (1) shows general studied species

Classification	No. of collected individuals	Geographical Existence
Phylum: Mollusca Class: Gastropoda Order: Architaenioglossa		
Family: Viviparidae <i>Bellamya bengalensis</i> (Lamarck, 1822)	72	Myanmar, India, and Iran [2] or even in Iraq [15]
Family: Melanopsidae <i>Melanopsis nodosa</i> (A.Férussac, 1822)	23	Regions of Palaearctic Based on [16]. Iraq and Iraq [17] Lastly, Jordan, Lebanon, Syria as well as Turkey, [18, 21].
Order: Caenogastropoda Family: Thiaridae <i>Melanoides tuberculata</i> (O. F. Müller, 1774)	42	Countries in the of southern east of Asia India as well as Malaysia, Eastern Mediterranean, Finally, Eastern part of Africa [19].

3.1. *Bellamya bengalensis* (Lamarck, 1822)

Identification:

The shell is pointed sharply and right handed, and conical or oval shape. The color of the shell is ranged between green to brown and spiral lines are dark. The number of whorls roughly 6-7. the height of the spire is approximately half the length of the shell. The aperture is ovoid in shape, and is closed with an ovoid-shaped corneous concentric operculum. *Bellamya bengalensis* can be seen in clean water that is abundant in aquatic flora is a dominant habitat, mostly found in slowly flowing rivers [22], Plate (1).



Plate (1) shows *Bellamya bengalensis*

3.2. *Melanoides tuberculata* (O.F. Müller, 1774)

Identification:

According to [20] species of *Melanoides tuberculata* the shell is thick and vary in size, turreted shell. Its whorls are rounded, but sculptured is omse species and smooth in others. Additionally, spiral or axial ribs can be characterized in sculpture. Furthermore, spinesovate apertureoperculum corneous, ridges, knobs, paucispiral or concentric for roughly marginal nucleo. Plate (2).



Plate (2) shows *Melanoides tuberculata*

3.3. *Melanopsis nodosa* (A.Férussac, 1822)

Identification:

The ribs are undulated, and the oval or spindle form is of the shell; sculpture detaches by interstices. The aperture is oval and elongated with a deep anterior canal.



Plate (3) shows *Melanopsis nodosa*

The presence of Gastropoda species in the current study shows that there is slight abundance in the river studied. The current study agrees with [7] when they state that freshwater bodies in Iraq harbor fewer species of Mollusca. The reason why is may be due to the fact that water dryness and dam building by Upstream countries. Similarly, the trend of decline macrofauna including Molluscan species of Gastropoda has been noticed in Al-Dalmaj Marsh [9]. There is no special attention has been given to this kind of water bodies in AL-Diwniyah City, causing no more literature is available for further discussion.

Conclusion:

The current study find three species of Gastropoda and they are *Bellamya bengalensis*, *Melanoides tuberculata* and *Melanopsis nodosa*. The river in Al-Diwniyah city harbors several species that may not have been highlighted or investigated, and more attention should be given. As this fauna represents normal fauna, protecting these species is the responsibility of ecological institutes.

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Ethics

The current study was conducted under the approval of AL-Qadisiyah University.

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