

A new record of the freshwater clam, *Anodonta vescoiana* Bourguignat, 1857 (Mollusca: Bivalvia) from Al-Ezz River, Iraqi Marshes

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ABSTRACT -The first record of the bivalve *Anodonta vescoiana* Bourguignat, 1857 has been done in this paper. This bivalve was collected from Al-Ezz River in Al-Umara marshes, it is considered as benthic, freshwater clam. The measurement values attempt to define the shape of each bivalve and established the finer characters for this species in the marshes.

INTRODUCTION

The occurrence and distribution of bivalves is lesser than the gastropods and had a relatively short fossil history, appearing in the estuarine faunas in the middle to late Jurassic (Keen and Casey, 1969). Some new evidence concerning the phylogeny of Unionida (Graft, 2000) contradicts the largely accepted phylogenetic scheme proposed by Parodiz and Bonetto(1963) based exclusively on larval types.

The colonization of freshwater Bivalve habitats from marine environments is a phenomenon closely related with evolution of brooding (Graf and O'Foighil, 2000). All freshwater Unionida developed some kind of brood protection as a way to overcome the disadvantage of having an extremely fragile free planktonic larva in highly unstable environments. As a result, sphaeriids and corbiculids abandoned the planktonic larval stage changing to a direct mode of development of offspring, which are brooded within the demibranchs; as a consequence, their dispersal capacity is significantly reduced (Ituarte, 2006). Among the Unionida, a relatively short brooding period within branchial pouches is followed by a peculiar larval stage (either glochidium or lasidium according to the taxa) parasite on fishes, which represent an alternative way of dispersal (only few Unionids have secondarily recovered the direct development without parasitic phase) (Parodiz and Bonetto, 1963; Graf and O'Foighil, 2000). Interestingly, species forming glochidia are cosmopolitan; whereas those forming lasidia (i.e., Mycetopodidae, *Anodonta vescoiana*) are restricted to south America and Africa (Wachtler *et al.*, 2001).

The ecological aspects of some bivalves in Shatt Al-Arab region (the classification, population dynamic, density, reproduction, feeding and respiration) have been studied by different authors (Ahmed, 1975; Abdul-Sahib, 1989; Abdul-Sahib *et al.*, 1995; Abdul-Sahib *et al.*, 2000).

The aim of the present paper is to throw some light on this freshwater bivalve in Al-Ezz River in the middle marshes, its occurrence, description and size which were not done before in this river.

STUDY AREA

Al-Ezz River was excavated in December 1992; it is located in the lower-Tigris basin between the latitudes $31^{\circ} 05'$ and $31^{\circ} 70'$ at north and longitude, $46^{\circ} 06'$ and $47^{\circ} 13'$ at east (Fig. 1). It fed by two canals named Al-Buteira and Al-Majer Al-Kabeer. The river starts from Al-Umara to the Euphrates at Al-Qurna with a total of 98 km, the average width ranging between 1200-2000 meter, the total area reaches about 160 km² and a mean annual discharge is 7 billion cubic meters of water (1993-1999). The river surrounded by soil banks (Al-Mahmood, 2000).



Fig. 1: Space map showing the studied station in Al-Ezz River, the Iraqi marshes.

MATERIALS AND METHODS

The specimens of this clam were collected from Al-Ezz River/ the marshes, brought alive to the laboratory; selection has been made for the complete animals (shell not broken or eroded). The bivalves selected for measurements were boiled gently in 5% sodium hydroxide to be cleaned, then washed with water and dried. Measuring the total shell length, in (mm) was done by using vernier caliper to the nearest 0.02 mm (Plate 1). Then the total wet weight (shell and flash) and the shell weight (the empty shell) (Plate 2), were measured by using microbalanus type Sartorius.

Some specimens were preserved in 5% formalin and sent to the British Museum for identification.

RESULTS AND DISCUSSION

Taxonomy:

Class: Bivalvia

Subclass: Palaeoheterodonta

Order: Unionoida

Super family: Unionacea

Family: Mycetopodidae

Genus: *Anodonta*

Anodonta vescoiana Bourguignat, 1857



Plate 1. The exterior and interior of the shell of *Anodonta vescoiana*



Plate 2. The viscera of the bivalve *Anodonta vescoiana*

Table 1: Linear shell measurements (mm) of the *Anodonta vescoiana*

Characters (mm)	Range	X	± Sd	S ²	n
Shell length	63.5-102.5	77.179	9.191	84.4789	58
Shell width	41.4-63.2	51.174	5.407	29.2360	58
Length/width	1.41-1.65	1.507	0.056	0.00316	58
Shell height	31.5-52.3	38.002	4.859	23.6058	58
Length/height	1.89-2.25	2.026	0.109	0.01179	58

Table 2: The total weight measurements (mg) of *Anodonta vescoiana*

Total weight (mg)	Range	X	± Sd	S ²	n
Wet weight	9.93- 84.72	28.353	16.121	259.9	45
Shell only	8.69-37.88	15.98	8.245	67.976	13

Anodonta vescoiana is the rarest bivalve in our area and has a large, thin inflated shell. It is indicative of the quietest lacustrine environments. It is obviously noticed from the mean values of shell measurements in Table (1) that this bivalve has a triangular shape much similar to the shell width and shell height of *Corbicula fluminea* and *Corbicula fluminalis*, but, *Anodonta* is the largest one (maximum shell length is about 102.5 mm). The large size and post-mortem accumulation (lag deposit) of the shells of Unionacea may cause an overestimation of their number in some marsh channels even though their preferred environments are the quiet (lotic) lake and the muddy bottoms which are rich in *Typha*.

From Table (2) we could see that this bivalve has a very light shell in weight and the weight of *Anodonta* related mostly to the flesh in contrast with that the two brackish water clam *C. fluminea* and *C. fluminalis* the shell of *Anodonta* are easy to break by hand, for the latter two species have entered the inland waters between middle and end of the Jurassic era. The thick-shelled *C. fluminea*, *C. fluminalis*, *Unio tigridis* and *Pseudodontopsis euphraticus* as well as the thinner *Anodonta* shells are not often transported far from their habitat in life. Only high-energy lake shores and river banks may harbor a few displaced valves of *Corbicula* (Jones, 1986), *Anodonta* is a large pearly bivalve living in muddy substrates and it is the rarest bivalve in the marshes if compared with *Unio tigridis*, the two species of *Corbicula* and *Pseudodontopsis euphraticus*.

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التسجيل الأول لمحار المياه العذبة

Anodonta vescoiana Bourguignat, 1857

(نواعم: ثنائية المصراع) في نهر العز، الأهوار العراقية

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المستخلص تم تسجيل ثنائي المصراع *Anodonta vescoiana* Bourguignat والذي جمع من نهر العز ضمن أهوار محافظة ميسان للمرة الأولى في العراق. ويعتبر هذا المحار من محارات المياه العذبة القاعية. وقد تم تثبيت قيم القياسات المترية الدقيقة له في الأهوار.