Gyraulus huwaizahensis n. sp. – a new species from Mesopotamia, Iraq (Mollusca: Gastropoda: Planorbidae)

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> Abstract

We continued our recent malacological investigations in Mesopotamia in order to increase our knowledge on the malacological fauna of this region. In the course of this we found a Gyraulus sp. that was hitherto unknown, Gyraulus huwaizahensis n. sp. To investigate if this is a new species in fact, we referred especially to the comprehensive paper of MEIER-BROOK (1983) as well as type material of other Gyraulus species that live in this region.

> Key words

Gyraulus, Gyraulus huwaizahensis n. sp., Mesopotamia.

Introduction

In former times the important studies of ANNANDALE (1918, 1920) contained records of Gyraulus euphraticus (Mousson, 1874) as well as G. convexiusculus (Hutton, 1849). ANNANDALE & PRASHAD (1919: 54) mentioned G. convexiusculus as a widely distributed and common species with a geographical range from Lower Mesopotamia through Eastern Persia, Afghanistan and Northern India to Upper Burma, French Indo-China, China, and the Malay Archipelago, and this species has been listed by AHMED, M. M. (1975: 28, fig 31) for Iraq, BROWN & WRIGHT (1980: 349, and fig. 2e–f) for Saudi Arabia as well as by NEUBERT (1998: 357) for the Arabian Peninsula. More recent papers mention in addition Gyraulus ehrenbergi (Beck, 1837) (NAIM 1959: 160) from Iraq and Gyraulus iraqensis Pallary (HARRIS 1965: 526), however, the latter species’ name does not exist. According to the paper by MEIER-BROOK (1983: 51–52) G. hebraicus (Bourguignat, 1852) and G. piscinaram (Bourguignat, 1852) are distributed over a range from Syria and from Lebanon, respectively, to Turkey, so these species are possibly distributed in Mesopotamia, too.

Recent papers like the one by PLAZIAT & YOUNIS (2005) are, however, not helpful either, because they use species names like Gyraulus albus (O. F. Müller, 1774), a species not distributed in Iraq, as well as Gyraulus intermixtus (Mousson, 1874), which belongs to the genus Planorbis (see MEIER-BROOK 1976).

It is in fact not known which Gyraulus species are recently living in Iraq. The purpose of this paper is to provide a contribution to the knowledge on the genus Gyraulus in Iraq and to describe the new species Gyraulus huwaizahensis.
Material and methods

The snails were collected with a sieve, and the samples were put into 75% ethanol. The dissections and measurements of the genital organs and the shells were carried out using a Zeiss stereo microscope with an eyepiece-micrometer; the photographs were made with a Leica R8 camera system with a digital adapter. The type material is stored in the Zoological Museum of Hamburg (ZMH).

The sampling area

The marshes lie in the delta of the Tigris and Euphrates rivers (fig. 1) and extend over an area of more than 1500 km² (THESIGER 1964). The eastern and central marshes draw their water from the Tigris (Al-Huwaizah marshes and central marshes, respectively). The western marsh, Al-Hammar marshes, get their water through numerous canals from the Euphrates and eventually discharges into the Shatt Al-Arab.

Results

To determine the Gyraulus sp. collected by Murtada D. Naser we had to compare the species with the presently known Gyraulus spp. of this region. Thus we had to examine type material of these species, and because syntypes of G. convexiusculus were not available, we used the material of Meier-Brook’s collection, which contains some lots from different countries.

The species name Gyraulus iragensis Pallary, which was used by Harris (1964: 526), could not be found in the papers of Pallary. The only species name iragensis Pallary, 1939, belongs to the genus Bithynia (Pallary 1939: 76). This paper has been cited by Harris (1964: 526), and Gyraulus piscinaram listed by Pallary (1939: 73) is missing in Harris’s species-list, so we believe it came in erroneously.

Genus Gyraulus Charpentier, 1837

Typusart: Planorbis albus O. F. Müller, 1774

Remark: Gyraulus species are left coiled but the under side is the functional upper side of the snail. In the following description we refer to the functional sides.

Gyraulus ehrenbergi (Beck, 1837)

Planorbis ehrenbergi Beck, 1837; loc. typ.: Alexandria, Egypt (topotype: Fig. 2)

Description: The 3.5 convex whorls strongly increase with a deep suture. The shell is glossy to silky with a slightly angled periphery, underside concave, and first whorl on both sides deep umbilicate. The surface of the shell is smooth with fine growth lines. Measurements: Diameter = 4.5 mm, height of last whorl = 1.0 mm.

Penis sheath longer than praeputium, bursa elongate club type, prostate gland with 14–19 long diverticles.

G. ehrenbergi is an African species, which has no close affinity to the western Asiatic species (Meier-Brook 1983: 53). Regarding Brown (1994: 186) as well as Van Damme (1984: 37) it is endemic for the Lower Nile.

Gyraulus hebraicus (Bourguignat, 1852)

Planorbis hebraicus Bourguignat, 1852; loc. typ. Bahr-el-Houlé (Syrie) (paralectotype fig. 5.3)

Description: The 4 rather flat whorls strongly increase. The shell is glossy with a slightly angled periphery, both sides slightly concave. The surface of the shell is smooth with fine growth lines. Measurements: Diameter = 4–5 mm, height of last whorl = 1.2 mm.

Penis sheath longer than praeputium, bursa of club type, prostate gland with 11–15 diverticles (Meier-Brook 1983: 52).

Remark: According to Meier-Brook (1983: 52) the anatomy of G. hebraicus studied by him, is equal to G. euphraticus, thus it is possible that “euphraticus [is] a junior synonym of G. hebraicus”.

Fig. 1. The sampling site of Gyraulus huwaizahensis n. sp.
Gyraulus piscinarum
(Bourguignat, 1852)

*Planorbus piscinarum* Bourguignat, 1852; loc. typ.: Baalbeck (Lebanon) (topotype fig. 5.2)

**Description:** The 3.5 convex whorls increase strongly and regularly. The slightly transparent shell is glossy corneous with a rounded periphery, under side deep and widely umbilicated. The surface of the shell is smooth with fine growth lines. The upper side of the whorls, especially the body whorl, are slightly ribbed. Measurements: Diameter = 4.1–4.4 mm, height of last whorl = 1.0–1.2 mm (Glöer & Bössneck 2007).

Ratio of penis sheath : praeputium is variable, bursa of spherical tadpole type with a long duct, prostate gland short with 12–16 long diverticles (Glöer & Bössneck 2007).

**Gyraulus euphraticus** (Mousson, 1874)

*Planorbus devians* Porro var. *euphratica* (Mousson, 1874); loc. typ.: Samava, Euphrates (paralectotype figs. 3, 5.1)

**Description:** The 4.5 slightly convex whorls increase regularly. The shell is glossy with an angled periphery and looks similar to *Anisus*. The surface of the shell is smooth with fine growth lines. Measurements [mm]: Diameter = 6–7 mm, height of last whorl = 1.0 mm.

Penis sheath longer than praeputium, bursa spherical club type, prostate gland long with 9–18 diverticles (Meier-Brook 1983: 49).

**Remark:** Regarding Meier-Brook (1983: 48) the original lots contain shells of extreme conchological variation with transitional shell forms (fig. 3).

**Gyraulus convexiusculus**
(Hutton, 1849)

*Planorbus convexiusculus* Hutton, 1849; loc. typ.: Candahar (Afghanistan) (fig. 4)

**Description:** The 3.5–3.75 convex whorls increase strongly. The shell is glossy with a rounded to angulated (only last whorl) periphery. The surface of the shell is smooth with fine growth lines. Upper side deeply umbilicated, under side is slightly convex. Measurements: Diameter = 4–5 mm, height of last whorl = 1.0 mm.


**Remark:** *G. convexiusculus* has already been studied by Baker (1945: 275, pl. 19, fig. 1–3) who depicted the anatomy of *G. convexiusculus* from Calcutta, which corresponds to the results of Meier-Brook (1983: 56).
Gyraulus huwaizahensis n. sp.

Material examined: 15 ex. from loc. typ.
Holotypes: Shell height 1.0 mm, diameter 3.5 mm, ZMH 51056.
Paratypes: 2 ex., ZMH 51057, the rest is in the collection of Peter Göler or are destroyed by dissections.
Locus typicus: Al-Huwaizah Marshes (31.3412 °N, 47.3011 °E) near Al-Amarah city.
Habitat: Gyraulus huwaizahensis n. sp. lives on submerged aquatic plants (Ceratophyllum demersum) syntopically with Bithynia spp., Radix spp. and Physella acuta.
Etymology: Named after the region Al-Huwaizah Marshes, where the species lives.
Description: The light to light-corneus shell is glossy and transparent with fine growth lines. Three and three quarter regular convex whorls with a clear suture increase very rapidly from 2nd to 3rd whorl with a ratio of 0.29. The periphery is rounded in juveniles, angled in the adults with a small periostracal fringe. The last whorl is not deflected. Both sides of the shell are slightly convex. The shell is small to medium-size, 3.0–3.5 mm in diameter and 1.0 mm in height.
Animal: The animal is light grey with one row of distinct small black spots (fig. 6.2). The phallotheca is shorter or as long as the praeputium (fig. 6.3) with a swelling at the distal end of penis sheath. Bursa spherical tadpole type with a long duct, the prostate gland bears 9 long and fleshy diverticula. Some of the dissected specimens have been infected, thus neither a prostate gland nor a bursa copulatrix could be found in these.
Differential diagnosis: Concerning the shells, Gyraulus euphraticus and G. hebraicus are larger than G. huwaizahensis, and their shells are growing regularly. The prostate diverticula in G. euphraticus as well as in G. hebraicus are shorter and not flushy as in G. huwaizahensis. The under side of G. hebraicus is deeply umbilicated, while that of G. huwaizahensis is not, and G. hebraicus appears in contrast to G. huwaizahensis like an Anisus.

The shell of G. piscinarum has a rounded periphery, the pigmentation of the mantle is diffuse, the prostate gland bears more diverticles than G. huwaizahensis. The whorls of G. convexiusculus increase rapidly in a regular way, the prostate gland bears narrow diverticles, the bursa is of elongate club type, in contrast to G. huwaizahensis.

G. ehrenbergi is a larger species with a diameter of 4.5 mm, almost lacking any pigment, the praeputium is much smaller than the phallotheca (pr : prp = 1.9), the prostate is longer, the bursa shape is distinct, and it is an endemic species to the Lower Nile.

Discussion

The Balkans as well as the Near East is a hot spot of evolution. There live some Gyraulus spp. which are widely distributed like G. piscinarum or G. convexiusculus, on the other hand many species are endemic like G. ehrenbergi or Gyraulus spp. in ancient lakes of the Balkans. So it is not surprising to find a new Gyraulus species in Mesopotamia.

With reference to Meier-Brook (1983: 48) there exists a conchological variation in Gyraulus euphraticus, but the two extreme shell forms depicted by him are possibly of two distinct species (fig. 3, 5.1) because they can be separated into two groups, the “Anisus”-like type and the “Gyraulus”-like type (fig. 7). It is not at all unusual to find two Gyraulus spp. living syntopically, e.g. in Central Europe the widely distributed and ubiquitous species G. albus/G. crista or in Montenegro two distinct endemic Gyraulus spp. which exist in Säsko Lake (Göler & Pešić 2007) syntopically.

It is unknown, which species have been depicted by Annandale & Prashad (1919: 53, fig. 7 A+B), Considering the displayed scale, G. euphraticus sensu Annandale & Prashad (1919: 53, fig. 7A) has a diameter of ca. 10 mm and G. convexiusculus sensu Annandale & Prashad (1919: 53, fig. 7B) a diameter of ca. 9 mm. None of the Gyraulus spp. discussed here are of this size, and Meier-Brook (1983: 55) raises the question “whether Annandale & Prashad examined Planorbis namus Sowerby”. If we assume that the scale displayed in the figure is wrong due to a misprint and we take only shells’ shape into consideration, Annandale & Prashad’s fig. 7B could show G. convexiusculus, and
under the assumption that *G. huwaizahensis* n. sp. examined by us are aberrant specimens, the new species could be in Annandale & Prashad’s fig. 7A. Thus this species cannot be *G. euphraticus* because of the distinct anatomy. However, in every case *G. huwaizahensis* is a new species in fact.
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References


