

Re-description of *Gyraulus homsensis* (Dautzenberg, 1894) from Lebanon (Gastropoda: Planorbidae) with an identification key of the *Gyraulus* spp. of the Near East

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Received: 21. August 2012 / Accepted: 17. January 2013 / Available online: 14. February 2013 / Printed: xxxxxx 2013

Abstract. We recorded the presence of *Gyraulus homsensis* (Dautzenberg, 1894) in Lebanon. We compared this species with the known *Gyraulus* spp. from Lebanon and surrounding regions, and showed that this species is distinct from the other *Gyraulus* spp. known so far. We have improved the knowledge on the biodiversity in Lebanon as this species has never been mentioned from Lebanon since the original description.

Key words: *Gyraulus homsensis*, re-description, Lebanon.

The known *Gyraulus* spp. (Mollusca: Gastropoda: Planorbidae) of Lebanon are not well studied (Meier-Brook 1983, Glöer & Bößneck 2007). Previously, *Gyraulus* spp. have been described as belonging to the genus *Planorbis*, and the only *Planorbis* sp. which is not re-investigated is *Planorbis libanicus* Westerlund, 1899. Westerlund (1899: 170-171) described it as a large species with a diameter of 14 mm and a shell height of 5 mm, with 5.5 - 6 whorls. The size of this shell is typical of other *Planorbis*. Anatomically species of the genus *Planorbis* can be distinguished by the slim phallosome which is as slim as the vas deferens, while it is in *Gyraulus* of the same width as the praepitium.

In the transition area between Asia and Africa, the following *Gyraulus* spp. have been found: from Mesopotamia the species *G. euphraticus* (Mousson, 1874) and *G. huwaizahensis* Glöer & Naser, 2007, from Anatolia the species *G. argaeicus* (Sturany 1904, redescribed by Glöer & Georgiev 2012) and *G. pamphylicus* Glöer & Rähle, 2009, from Egypt *G. ehrenbergi* (Beck, 1837), from Syria *G. hebraicus* (Bourguignat, 1852) and *G. homsensis* (Dautzenberg, 1894), and from Lebanon *G. piscinarum* Bourguignat, 1852 and *G. bekaensis* Glöer & Bößneck, 2007. Up to now, only *G. piscinarum* and *G. bekaensis* have been found in Lebanon (Glöer & Bößneck 2007).

The *Gyraulus* spp. can be distinguished by the shells combined with the prostate diverticules (Meier-Brook 1983).

In nature conservation, redescrptions of species are important because we can only protect species we know. For example *Gyraulus stroemi* (Westerlund, 1881) is a species which has been ne-

glected for a long time by Western Europeans (Kennard & Woodward 1926, Meier-Brook 1983) and had been synonymized with *G. acromicus* (A. Férussac, 1807) by these authors until Glöer & Vinarski (2009) redescribed it. Since then the curator of the Natural History Museum Göteborg (Sweden) could identify many samples in the Museum's collection as *Gyraulus stroemi* and a result the distribution of this species in Sweden and Norway is better known today (von Proschwitz 2011, and pers. comm.).

The intention of this paper is (i) to improve the knowledge on the Biodiversity of Lebanon, (ii) to re-describe *Gyraulus homsensis*, and by to providing an identification key of the *Gyraulus* spp. of the Near East.

Altogether 20 river systems were surveyed (springs, brooks, rivers, ponds and lakes) and 200 sampling sites studied in Lebanon (Fig. 1).

The snails were collected from the banks of the waters with a Surber sampler and a kick net. The samples were stored in ethanol (75%) for later analysis. The dissections and measurements of the genital organs and the shells were carried out using a stereo microscope (Zeiss, Germany). The photographs were made with a digital camera system (Leica R8).

Genus *Gyraulus* Charpentier, 1837

Type species: *Planorbis albus* O.F. Müller, 1774

Gyraulus homsensis (Dautzenberg, 1894) (Fig. 2-3)

Orig.: *Planorbis homsensis* Dautzenberg (1894: 337-338, Fig. 1) (Fig. 2)

Material examined: 14 ex. in ethanol, Ammiq springs and pond, 850 asl., 33°43' N, 35°47' E, 06.05.2004 A. Dia leg. The material is deposited in coll. Dia, 2 ex. coll. Glöer.

Locus typicus: Lake Homs (Fig. 1).

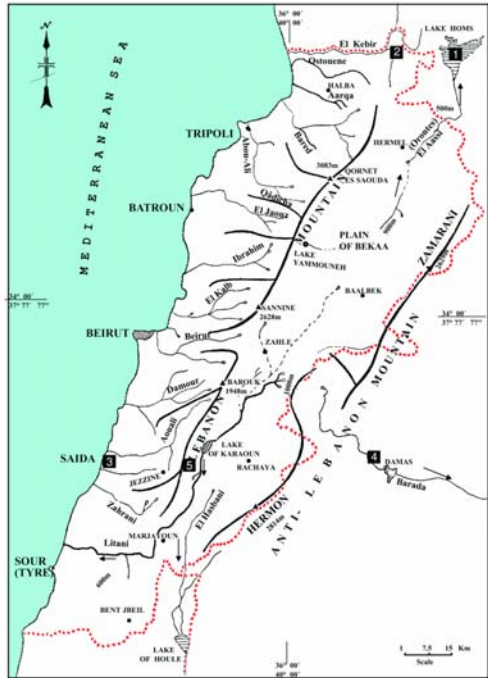


Figure 1. The sampling sites of *Gyraulus homsensis*. 1: type locality, 2-4: listed sampling sites by Dautzenberg, 1894), 5: recent sampling site.

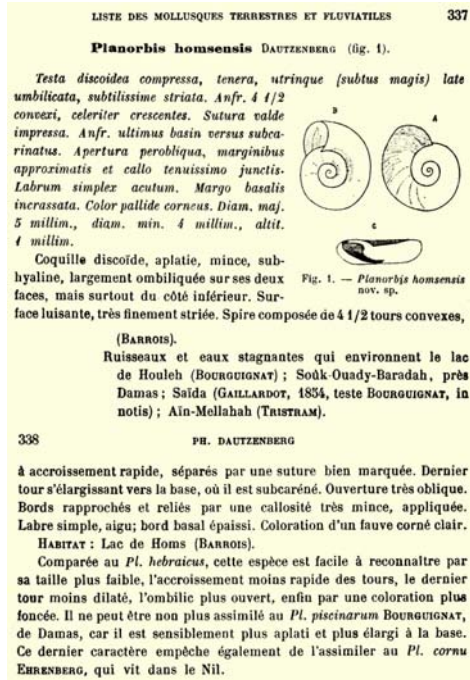


Figure 3. Faksimile of the original description of *Gyraulus homsensis*.

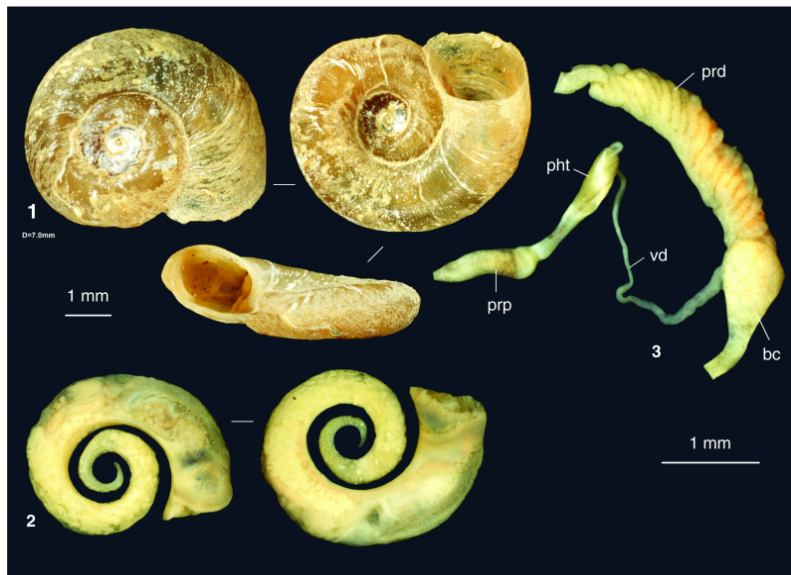


Figure 2. *Gyraulus homsensis*. (1): the shell, (2): the soft body, (3): reproductive organs. bc = bursa copulatrix, pht = phyllotheca, prd = prostate diverticula, prp = preputium, vd = vas deferens.



Figure 4. The *Gyraulus* species of the Near East. 1: *G. pamphylicus* (holotype), 2: *G. hebraicus* (paralectotype), 3: *G. euphraticus* (syntype), 4: *G. argaeicus* (topotype), 5: *G. ehrenbergi* (topotype), 6: *G. huwaizahensis* (holotype), 7: *G. piscinarum* (paralectotype), 8: *G. bekaensis* (holotype), 9: *G. homsensis*.

Re-description: The shell is horn-coloured and dull. The first whorls of the upper side are depressed, the umbilicus is broad and regularly deepened. The 4 whorls are convex, of which the last one is deflected. The diameter of the shell is 5.0 - 7.0 mm, and the height of the last whorl is 1.1 - 1.2 mm.

Anatomy: The mantle is whitish with no characteristic patterns. The phallotheca is longer than the preputium, the vas deferens is widened at the proximal end. The prostate gland bears 20-22 diverticules. The bursa copulatrix is club shaped.

Associated species: *Gyraulus bekaensis*, *Valvata saulcyi*, *Pseudobithynia hamicensis*, *P. kathrini*.

Remark: Dautzenberg described *G. homsensis* to be of a size of max. 5 mm in diameter with a shell height of 1 mm (Fig. 3). A. Dia also found specimens with a diameter of 7 mm, however all characteristics described and depicted by Dautzenberg correspond to the features of the re-described species.

Identification key of the *Gyraulus* spp. of the Near East

Because from now on the anatomy of all *Gyraulus* spp. which have been described from the Near East is known, we can provide an identification key for these species (Fig. 4).

- 1. Body whorl angled or canted.....2
- 1'. Body whorl rounded.....4
- 2. Height of the last whorl 1.4-1.5 mm, diameter

- 5.1-5.7 mm.....*G. bekaensis*
- 2'. Height of the last whorl 1.0-1.2 mm.....3
- 3. Last whorl not prominent, prostate with 9-18 diverticules.....*G. euphraticus*
- 3'. Last whorl prominent, prostate with 16-18 diverticules.....*G. pamphylicus*
- 4. Shell's max. diameter 5mm.....5
- 4'. Shell larger than 5 mm.....8
- 5. Diameter 4.1-4.4 mm, umbilicus wide, prostate diverticules 12-16, D:h = 3.7-4.0...*G. piscinarum*
- 5'. Umbilicus narrow, ratio D:h < 3.7 or > 4.0.....6
- 6. Diameter 3.0-3.5 mm, D:h = 3.0-3.5, prostate diverticules 9.....*G. huwaizahensis*
- 6'. Shell larger.....7
- 7. Diameter 5 mm, Height of last whorl 1.2 mm, prostate diverticules 11-15.....*G. hebraicus*
- 7'. Diameter 4.5 mm, Height of last whorl 1.0 mm, prostate diverticules 14-19.....*G. ehrenbergi*
- 8. Diameter 5-7 mm, height 1.0-1.2 mm, prostate diverticules 20-22, last whorl deflected.....*G. homsensis*
- 8'. Diameter 7 mm, height 2.2 mm, prostate diverticules 18-22.....*G. argaeicus*

Gyraulus piscinarum and *G. euphraticus* are widely distributed species: *G. piscinarum* from Lebanon to the Black Sea coast (Meier-Brook 1983, Glöer & Bößneck 2007) and *G. euphraticus* from Mesopotamia eastwards to Nepal (unpublished data). All the other *Gyraulus* spp. under discussion, however, they appear to be regionally restricted in their distribution.

Acknowledgement. We would like to express our thanks to Dr. David Walker and an anonymous reviewer who checked the English.

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