REDESCRIPTION OF PLANORBIS AGRAULUS BOURGUIGNAT, 1864 (GASTRORPODA: PLANORBIDAE).

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Abstract  Syntypes of Planorbis agraulus Bourguignat, 1864 are compared with a recently collected Planorbis sp. which could be indentified as P. agraulus, too. So we can provide the anatomy of the species under discussion for the first time. Comparisons with data in the literature showed us that P. agraulus is possibly not in Italy and thus is not conspecific with Planorbis moquini Requien, 1848. So the question arose which Planorbis spp. live in Italy.

Key words  Planorbis agraulus, Planorbis moquini, redescription, anatomy, syntypes

INTRODUCTION

Planorbis agraulus Bourguignat, 1864 is only a poorly known species. Regarding Westerlund (1885: 78) P. agraulus occurs in Algeria, Sicily, and Sardinia. Germain (1908: 255) mentioned this species but synonymised it with Planorbis numidicus Bourguignat, 1864. More recent authors like van Damme (1984: 36) believes that “Conchologically P. agraulus Bgt., P. numidicus Bgt. and P. bronndeli Raymond, recorded by Bourguignat (1864), are very similar and probably identical”, while Brown (1994) did not mention this species and Kristensen (1985) neither.

P. agraulus seems to be a widespread species in the Mediterranean. Giusti (1968: 243) mentioned this species from many sampling sites in Montecristo, Algeria, Sicily, Sardagna, and Argentario and used the name Gyraulus agraulus for this species. Meier-Brook (1983: p. 36) pointed out that, regarding the anatomy depicted by Giusti (1968: 243), this species should be a member of the genus Planorbis. Later on, Giusti et al. (1995: 184) mentioned this species as a synonym of Planorbis moquini Requien, 1848 from the Maltese Islands. Thus it was believed that Planorbis moquini and Planorbis agraulus are conspecific and widely distributed in the Mediterranean region.

MATERIAL AND METHODS

The snails were collected with a sieve from the springs of the study area, ca. 25 km southeast of Guema (Northeastern Algeria) (Fig. 1). The samples were put into 75% ethanol. The dissections and measurements of the genital organs and the shells were carried out using a stereo microscope (ZEISS); the photographs were made with a digital camera system (Leica R8).

To clear the taxonomic status of the Planorbis agraulus species described by Bourguignat we borrowed the syntypes from the Muséum d’Histoire Naturelle, Genève. Voucher specimens of recently collected material of Planorbis agraulus is stored in the Zoological Museum Hamburg (ZMH 51206).

STUDY AREA

A characteristic feature of the majority of ponds in North Africa is their transient nature due to seasonal drought. North-Eastern Algeria and surrounding areas have a typical Mediterranean climate and a practically unexplored wetland complex.

RESULTS

In his paper of 1968 (243, Fig. 2) Giusti depicted the anatomy of Planorbis agraulus but not the shells. In 1995 Giusti et al. (185, Figs 125-127) depicted the anatomy but the prostate was missing in this figure though the prostate diverticula are a very important feature by which Planorbidae can be distinguished (Meier-Brook, 1976, 1983). The shell is not depicted by Giusti (1968) but by Giusti et al. (1995: 183, Figs 123-124) which looks distinct from P. agraulus from Algeria. Girod et al. (1980: 52, Fig. 29) depicted a drawing of the shell
as well as the anatomy which is distinct from the drawing of Giusti (1968) as well as Giusti et al. (1995) because the phallotheca is shorter. Thus the identity of Planorbis agraulus is uncertain.

We compared syntypes of P. agraulus from Bourguignat’s collection with a Planorbis sp. from two sampling sites of Algeria with the result that both are conspecific with P. agraulus. Thus we could study the anatomy of Planorbis agraulus for the first time and redescribe this species.

Among the lots of Planorbis agraulus of Bourguignat’s collection one misidentified sample exists of which the species collected in Sicily is distinct from G. agraulus, but the shells are a little similar to Gyraulus laevis (Alder, 1838). The Planorbis spp. from Algeria and the Mediterranean region have often been confused with G. laevis but dissections revealed that the species from Mediterranean islands belong to the genus Planorbis (Meier-Brook 1983: 38).

Genus Planorbis O.F. Müller, 1773

Type species Planorbis planorbis (Linnaeus, 1758)

Planorbis agraulus Bourguignat, 1864

Type locality “Environs de Mostaghanem, dans les eaux tranquilles et un peu marécageuses.”

Description The shell is dark horn-coloured, and the 3.5 – 4 whorls are regularly rounded with a deep suture. The first whorls are deep and the underside is wide umbilicated. With the rounded and swollen whorls the under side it resembles Valvata cristata O.F. Müller, 1774. The aperture is slightly ovate in the juveniles and becomes more ovate in adult shells (Figs 3.1, 3.2). The last whorl is a little descended. The diameter of the shell is 3.5 – 4 mm, and the height of the last whorl is 0.8-1.0 mm.

Animal The animal is dark grey, the mantle pigmentation is diffuse without any patterns.

Anatomy The prostate gland bears 18-24 diverticula, the penis sheath is up to twice longer than the praeputium, the proprostast duct is long, the bursa is sphaerical to elongate club shape with a relative long bursa duct.

Fig. 2 The sampling sites of Planorbis agraulus. 1: Ain Damous (N 36°25.350'E 007°51.367'523.34masl) and Ain Feid-El-Bagr (N 36° 25.555' E 007° 51.386', 323.70 m asl).
**Discussion**

Comparing the anatomy of *Planorbis aagraulus* and the drawing of *Gyraulus aagraulus* in Giusti (1968: 243, Fig. 2) it shows that both species are distinct. There are differences in the prostate diverticula (18-24 in *P. aagraulus* vs. 10 in *G. aagraulus* sensu Giusti) and the phallotheca of *G. aagraulus* sensu Giusti is as long as the preputium, in *P. aagraulus* it is twice longer. The drawing of *Planorbis aagraulus* sensu Giusti et al. (1995: 185, Fig. 126) shows no prostate so the number of diverticula cannot be compared but the photographed shells of *Planorbis aagraulus* sensu Giusti et al. (1995: 183) are obviously distinct from *P. aagraulus* Bourguignat. Thus we can say that the *P. aagraulus* from Montecristo and Maltese Islands are distinct from *Planorbis aagraulus*.

Which small Planorbidae live in Italy is unknown. In Bourguignat’s collection we found a misidentified *P. aagraulus* collected in Madonie (Sicily). Maybe such a species has been confused with *G. laevis* (see Fig. 6) but the aperture of *G. laevis* is more circular than the aperture of *Planorbis* sp. from Sicily (Fig. 6).

In recent literature (Girod et al. 1980, Giusti et al. 1995, Cossigniani & Cossigniani 1995) only *Planorbis moquini* (Requien, 1848) of the small *Planorbis* spp. is mentioned from Italy. Regarding Giusti et al. (1995: 184) *Planorbis aagraulus* is a junior synonym of *Planorbis moquini*. Considering the anatomy of *P. aagraulus* (Fig. 5) we can state that *P. aagraulus* is not a synonym of *P. moquini*, if the *Planorbis* sp. in Italy is conspecific with *P. moquini* in fact.
Fig. 4  The shell of *Planorbis agraulus*. 1-2  *P. agraulus* from Ain Feid-El-Bagrat, Algeria (leg. S. Bouzid, 24.08.2006).

Fig. 5  The animal and Anatomy of *Planorbis agraulus*. - bc = bursa copulatrix, bd = bursa duct, pht = phallotheca, pr = prostata, prd = prostata duct, prp = praeputium, st = stylet, vd = vas deferens, v = vagina.

Fig. 6  *Cyraulus laevis* and *Planorbis* sp. from Sicily. 1 *Planorbis* sp., 2 *Cyraulus laevis*. (Hamburg, Germany)
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REFERENCES