

***Viviparus acerosus* (Bourguignat, 1862) (Gastropoda: Viviparidae), a new exotic snail species for the Dutch fauna**

D. Menno Soes^{1*}, Peter Glöer² and Anton J. de Winter³

¹Bureau Waardenburg, Culemborg, The Netherlands

E-mail: menno.soes@gmail.com

²Schulstrasse 3, 25491 Hetlingen, Germany

E-mail: gloer@malaco.de

³National Museum of Natural History "Naturalis", P.O. Box 9517, 2300 RA Leiden, The Netherlands

E-mail: winter@naturalis.nnn.nl

*Corresponding author

Received 15 February 2009; accepted in revised form 14 March 2009; published online 15 April 2009

Abstract

Viviparus acerosus, a Central European species originally inhabiting the Danube drainage system, is reported for the first time from The Netherlands. The species is commercially sold for gardens ponds or aquaria, from which they may have escaped or have been released. On account of its resemblance with the two native *Viviparus* species the species is easily overlooked.

Key words: *Viviparus acerosus*, *Viviparidae*, exotic species

There are two indigenous species of River Snail in The Netherlands, *Viviparus viviparus* (Linnaeus, 1758) and *V. contectus* (Millet, 1813). In 2006 a large population of another viviparid species (Figure 1) was encountered in the Dutch city of Dordrecht. Their shells differed from those of both native species in the shape of the apex, the convexity of the subsequent whorls, and in the length and arrangement of the periostracal hairs on the top whorls of juvenile specimens (mostly eroded in adults). Identification was difficult due to unclear and contradicting descriptions in the literature (cf. Falkner 1989; Falniowski et al. 1998; Glöer 2002) and the presence of various other more or less similar species of *Viviparus* and related genera in, especially, southeastern Europe and Asia. Shells of *Bellamya* (*Cipangopaludina*) *chinensis* (Reeve, 1863), and *B. (C.) japonica* (von Martens, 1861), Asian viviparid species introduced in North America, are somewhat similar (especially *B. japonica* by its acute apex), but differ, among others, by their

unbanded shells and different pattern of hairs on the first whorls (Smith 2000). On the basis of literature information and comparison with material in private collections and in the National Museum of Natural History Leiden, the species was identified as the Danube River Snail, *V. acerosus* (Bourguignat, 1862). In Europe, *V. acerosus* especially resembles *V. ater* (Cristofori & Jan, 1832). This European species has a southern Alpine distribution, but has been introduced in the Bodensee lake in southern Germany (Glöer 2002). *Viviparus ater* differs from *V. acerosus* by the (virtual) absence of apical hairs, the more regularly wound apical whorls, and by the body whorl in juvenile shells being angulate rather than rounded (Glöer 2002).

A large population of *V. acerosus* was found in a man-made, standing water body in a built-up area in southeastern Dordrecht (prov. of Zuid-Holland, 51°47'24.57"N - 4°41'03.39"E). This water body (Figure 2) is about 150 m long and 20 m wide, and up to 1.5 m deep. The abundant submerse vegetation is dominated by Nuttall's

Waterweed (*Elodea nuttalli* (Planchon) H. St. John) and Rigid Hornworts (*Ceratophyllum demersum* L.). Snail density was high in 2007 and 2008 with locally up to 30-40 adult specimens per square meter. Adult specimens were found in more open sites crawling on the bottom, juveniles were also found among plants.

In 2007 a single fresh shell of *V. acerosus*, still with its operculum, was found on the southern bank of the Wantij, three kilometers from the site in Dordrecht (51°48'58.46"N - 4°41'02.98"E). Incidental sampling in this small tidal river as yet didn't yield additional specimens.

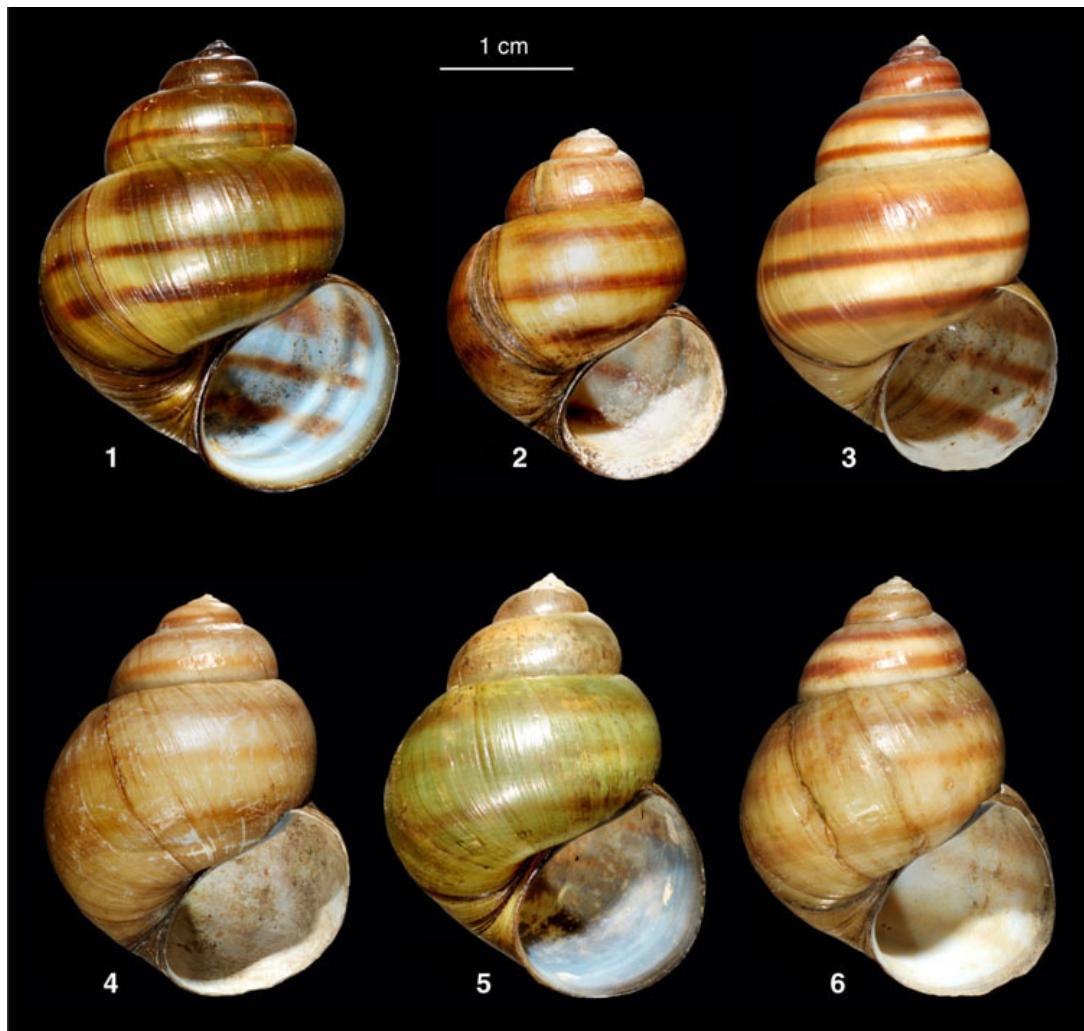


Figure 1. The *Viviparus*-species of Central Europe, including a Dutch specimen of *V. acerosus* from Dordrecht (number 5). 1: *V. contectus* (Hamburg, Vier- and Marschlande), 2: *V. viviparus* (Hamburg, Alster), 3: *V. ater* (Bodensee), 4-6: *V. acerosus* (4, 6: Hungary, 5: The Netherlands). Photograph by Peter Glöer

River snails of the genus *Viviparus* are large and attractive animals with shell sizes sometimes exceeding 50 mm. The native species remain somewhat smaller (up to 45 mm, rarely exceeding 50 mm in *V. contectus*). In the Netherlands *V. acerosus* is available from garden centers and pet shops for use in garden ponds

and aquaria. Generally the animals offered for sale are *V. acerosus*, an inhabitant of the Danube drainage system, rather than the indigenous species *V. viviparus* or *V. contectus*. Experiences in garden ponds shows that *V. acerosus* can survive in the Dutch climate and often reproduces fast.



Figure 2. The Dutch locality in the southeastern part of Dordrecht (prov. of Zuid-Holland) inhabited by a population of *V. acerosus*. Photograph by Menno Soes

Accidental escape or deliberate release from a garden pond or aquarium seems the most likely explanation for the occurrence of *V. acerosus* in Dordrecht. The fact that it readily reproduces in garden ponds suggests that this species, once escaped, can easily spread. The site at Dordrecht is connected to other water systems and the finding of a specimen in a nearby river suggests that spreading may already have taken place. It is likely to go unnoticed due to its strong resemblance to the native species.

The impact of this species outside its natural range is difficult to predict. From the information on its ecology available it is hardly possible to assess to what extent it will compete with the two indigenous *Viviparus* species.

Within its natural range, *Viviparus acerosus* lives largely sympatrically with *V. contectus*, but at least in Hungary and Austria *V. viviparus* is absent. Reports by Falniowski et al. (1993) and Porter and Ribi (1994) on occasional hybridization among viviparid species, suggests that introgression is another possibility.

Voucher specimens are present in the collection of the National Museum of Natural History, Leiden.

Acknowledgements

Both anonymous reviewers are thanked for their useful suggestions.

References

- Glöer P (2002) Die Süßwassergastropoden Nord- und Mitteleuropas. Bestimmungsschlüssel, Lebensweise, Verbreitung. Die Tierwelt Deutschlands 73 Teil. Conchbooks, Hackenheim
- Falkner G (1989) *Viviparus ater* am deutschen Bodensee-Ufer. Heldorfia 1(5/6): 188-189
- Falniowski A, Kozic A, Szarowska M (1993) Two common European viviparid species hybridize. American Malacological Bulletin 10: 161-164
- Falniowski A, Fialkowski W, Szarowska M, Mazan K (1998) Shell biometry characters in species discrimination and classification within the genus *Viviparus* (Gastropoda: Architaenioglossa: Viviparidae). Malakologische Abhandlungen 19: 29-45
- Porter A, Ribi G (1994) Population genetics of *Viviparus* (Mollusca, Prosobranchia): homogeneity of *V. ater* and apparent introgression into *V. contectus*. Heredity 73: 170-176 [doi:10.1038/hdy.1994.116](https://doi.org/10.1038/hdy.1994.116)
- Smith DG (2000) Notes on the taxonomy of introduced *Bellamya* (Gastropoda: Viviparidae) species in northeastern North America. The Nautilus 114: 31-37