

Notes on the variability of *Marstoniopsis scholtzi* (A. Schmidt, 1856),  
with its possible taxonomic implications (Prosobranchia, Hydrobioidea)

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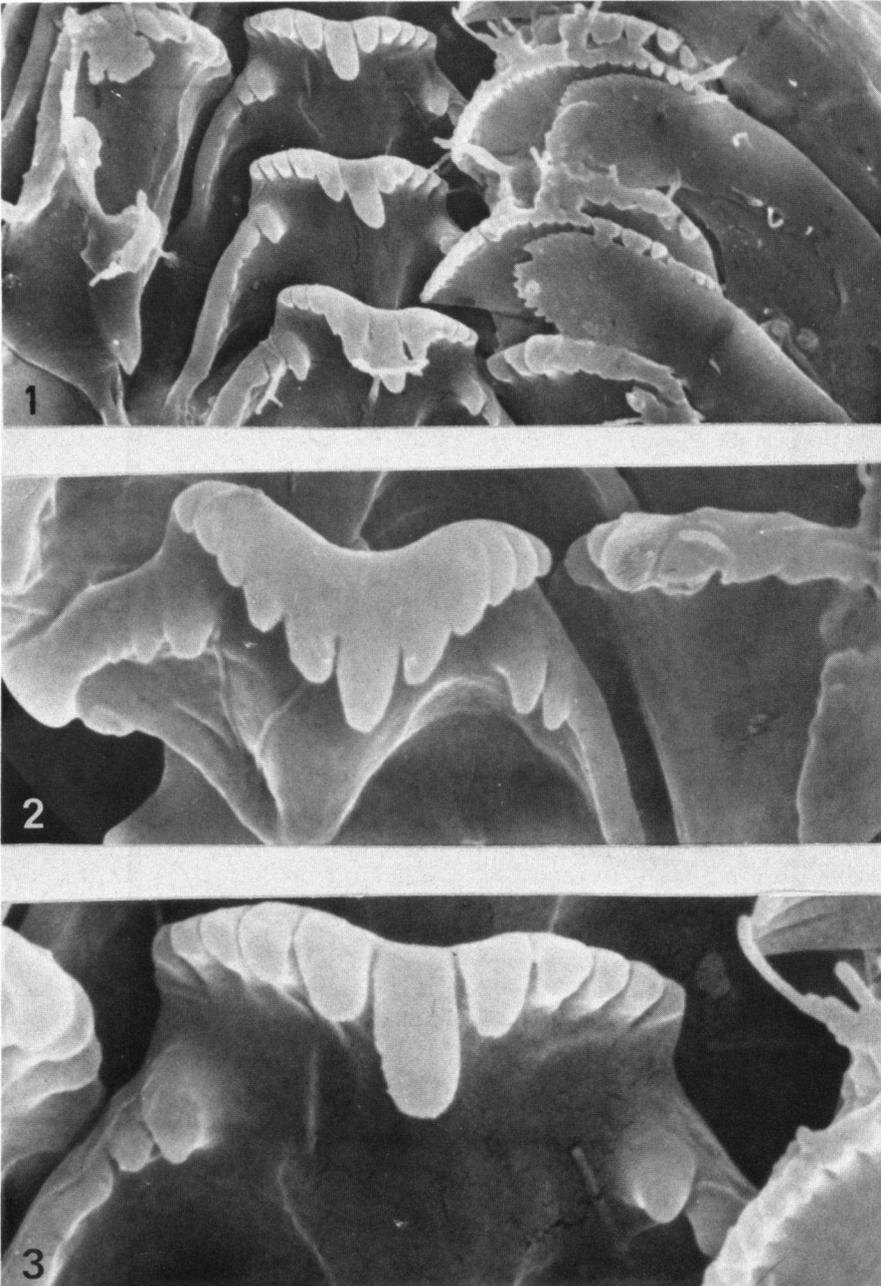
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According to the recent revision of Boeters (1973), two species of the genus *Marstoniopsis* Van Regteren Altena, 1936, occur in Europe: *M. scholtzi* (A. Schmidt, 1856) and *M. insubrica* (Küster, 1853). Whereas *M. insubrica* is limited in its distribution to relatively few localities in the alpine lakes of northern Italy (Boeters, 1973; Giusti & Pezzoli, 1980), *M. scholtzi* is characterized by a wide, Central European-Baltic range (Jaeckel, 1962), from Great Britain and the Netherlands, across northern Germany and Scandinavia, to Ladoga Lake in the western U.S.S.R. It must be pointed out that previous papers (Johansen, 1918; Krull, 1935; Van Regteren Altena, 1936; Boeters, 1973; Giusti & Pezzoli, 1980) have not described the anatomy of these species (especially that of *M. scholtzi*) in sufficient detail for systematic purposes.

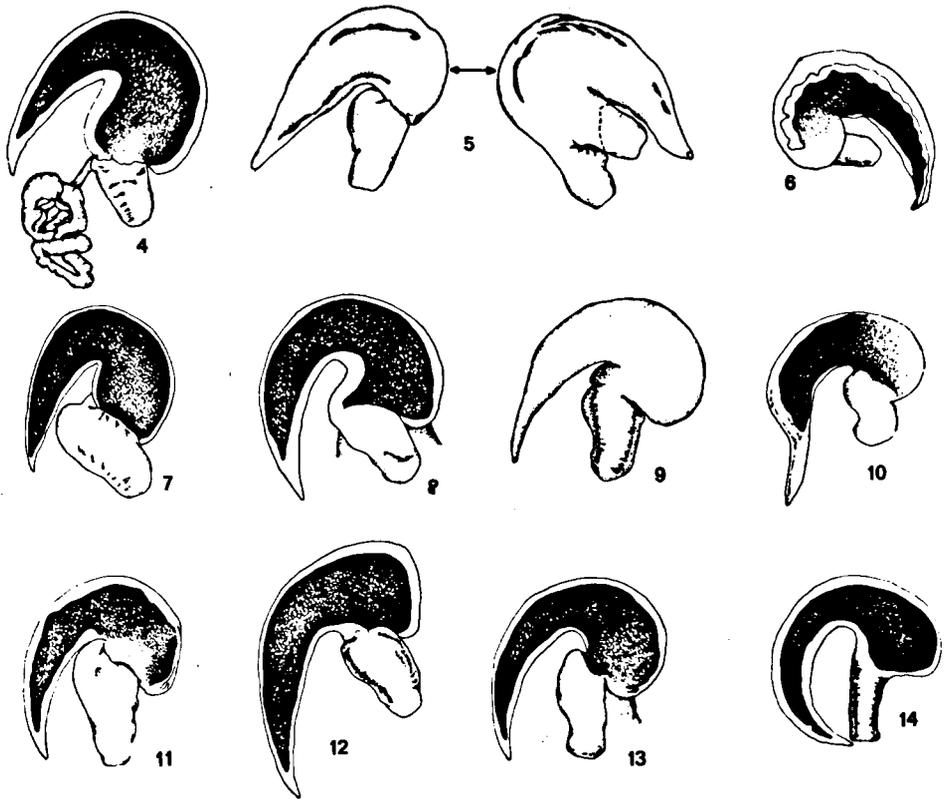
During my study of Polish *M. scholtzi* I have found that the Polish specimens differ from those described from western Europe and, in addition, that their variability approaches that described in the literature (Boeters, 1973; Giusti & Pezzoli, 1980) for *M. insubrica*. The material I have studied was collected in Sniardwy Lake (a shallow lake in northeastern Poland, the largest in the country), Wigry Lake (deep, oligotrophic), Gardno Lake (large, shallow, close to the Baltic Sea), Radunia River, and a pond near Ispina (Niepołomice Forest, southern Poland). Among these localities Sniardwy Lake and the pond near Ispina are of special interest. In the former *M. scholtzi* does not occur close to the shore but is abundant (I have collected several hundred specimens) on *Elodea canadensis*, at a depth of 5-6 m; the pond near Ispina is the southernmost locality in Poland. Thanks to Mr. L.J.M. Butot I also had the opportunity to study *M. scholtzi* from the Netherlands (Mijntjes, municipality of Voorst, Province of Gelderland, leg. F.F. Repko). Unfortunately, I have not succeeded in obtaining specimens of *M. insubrica*, but a comparison of my data with those in the relevant literature may be of interest.

The variability of the shells of Polish *M. scholtzi* is somewhat restricted. The specimens from the Netherlands as compared to the Polish ones, are a little smaller, with less convex whorls and thinner shell walls. These differences are not particularly marked, but are as marked as the differences between *M. scholtzi* and *M. insubrica*. The radulae of Polish *M. scholtzi* (figs. 1-3) are characterized by the presence of three basal cusps on both sides of the central tooth. Giusti & Pezzoli (1980) found only one cusp in *M. insubrica*, but according to the literature (Johansen, 1918; Krull, 1935; Van Regteren Altena, 1936) in western European *M. scholtzi* 1-2 basal cusps have been observed, so that the range of variability of the two species obviously shows an overlap.

The variability of the verge (figs. 4-14) is considerable. The arm including the outlet of the vas deferens is usually much larger than the one with the outlet of the flagellum. The



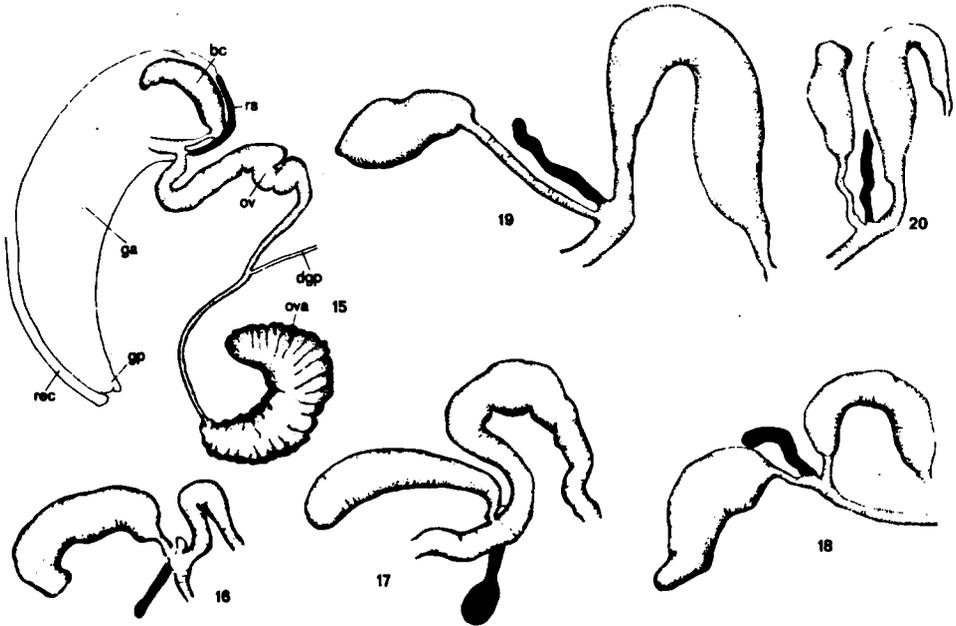
Figs. 1-3. Radulae of *Marstoniopsis scholtzi* from Poland, Gardno Lake. Enlargement: (1) 1500 X, (2) 3200 X, and (3) 4800 X.



Figs. 4-14. Verges of *Marstoniopsis scholtzi*: 4-13, Poland, Sniardwy Lake (4, with the flagellum; 5, ventrally and dorsally); 14, The Netherlands, Mijntjes, municipality of Voorst, Province of Gelderland.

former is slender and slowly narrowing towards the narrow and acute apex, and very darkly pigmented. The arm with the outlet of the flagellum is usually distinctly smaller and without any pigmentation; it has the shape of a slightly tapering cylinder. The variation is most strongly shown by the shape and proportions of the arm with the outlet of the flagellum. In the Dutch specimens this arm is proportionally more narrow and slender than in the Polish ones, similar to that shown by Boeters (1973), whereas the verges of Polish specimens are rather similar to those figured for *M. insubrica* (Boeters, 1973; Giusti & Pezzoli, 1980). Taking the above range of variation into consideration, one might conclude that the copulative organs of *M. scholtzi* and *M. insubrica* are identical.

The descriptions of the female reproductive tract of *M. scholtzi* are fragmentary, especially as regards the shape and location of the receptaculum seminis. According to my data (figs. 15-20), the receptaculum seminis is situated at the typical position of  $rs_1$  as defined by Radoman (1973: 5), as in *M. insubrica* (vide Giusti & Pezzoli, 1980). It is long and narrow and sometimes inflated at the end. The loop of the oviduct is strongly thickened. The bursa copulatrix is straight, J-shaped, U-shaped or irregular, and joins the



Figs. 15-20. Female reproductive organs of *Marstoniopsis scholtzi*. 15, Poland, Gardno Lake: bc, bursa copulatrix; dgp, gono-pericardial duct; ga, albuminoid gland complex; gp, female opening; ov, the loop of the oviduct; ova, ovary; rec, rectum; rs, receptaculum seminis - 16-20, the complex of bursa copulatrix, receptaculum seminis and the loop of the oviduct: 16-17, Poland, Gardno Lake; 18, Poland, Sniardwy Lake; 19-20, The Netherlands, Mijntjes, municipality of Voorst, Province of Gelderland.

accessory gland complex. In the Polish specimens the duct of the bursa is markedly short, but in the Dutch specimens it is longer, its length being ca. equal to that of the bursa. The recorded geographical variation in the female reproductive organs of *M. scholtzi*, as compared to the data on *M. insubrica* of Giusti & Pezzoli (1980), in which only the receptaculum seminis seems to be somewhat shorter, indicates a lack of essential differences in the structure of the female reproductive organs between these two species.

The recorded variation of *M. scholtzi*, which may be of a geographical nature, includes all the features distinguishing the two European representatives of the genus *Marstoniopsis*. *M. scholtzi*, though rare in many regions, has a continuous distribution, and there are no other data suggesting that the name includes more than one species. At the same time the range of variation of *M. scholtzi* overlaps, even covers in part, that of *M. insubrica*. Thus it appears that there might be only one species of *Marstoniopsis* in Europe, which, according to the International Code of Zoological Nomenclature, should be called *M. insubrica* (Küster, 1853). A final decision, however, should be based on a much more detailed study of abundant material of both nominal taxa.

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SAMENVATTING

In de recente literatuur wordt aangenomen dat er in Europa twee *Marstoniopsis* soorten voorkomen: (1) *M. scholtzi* (A. Schmidt, 1856), in uiteenlopende wateren van Groot-Brittannië via Nederland, Scandinavië, N. Duitsland en Polen tot in W. Rusland, en (2) *M. insubrica* (Küster, 1853), in enkele alpiene meren in N. Italië.

De variatie in kenmerken van huisjes, radulae en genitalia wordt beschreven aan de hand van Poolse exemplaren van *M. scholtzi* en vergeleken met materiaal uit Nederland en gegevens uit de literatuur. Ook literatuurgegevens aangaande *M. insubrica* worden in de beschouwingen betrokken. Er werd een grote variatie in kenmerken vastgesteld en duidelijke verschillen tussen *M. scholtzi* en *M. insubrica* konden daardoor niet worden aangetoond. Het is dan ook niet onmogelijk dat er in feite slechts één *Marstoniopsis*-soort in Europa zal blijken voor te komen. Deze soort zou dan de oudste naam, *M. insubrica*, moeten dragen.