

Science, snails and textbook's sloppiness

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A variety of species, both fancy and real ones, is illustrated as '*Limnaea peregra*' in genetics textbooks.

Key words: Gastropoda, *Lymnaea*, *Radix*, chirality.

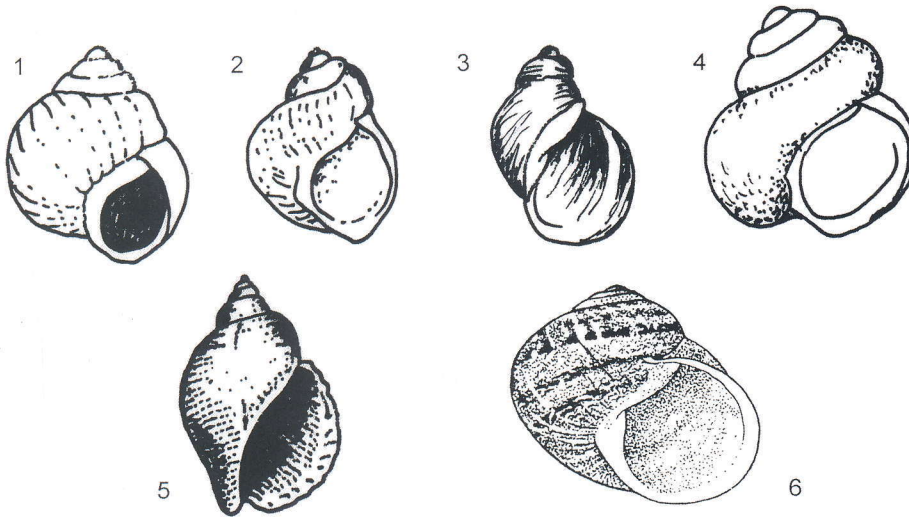
Textbooks should be exemplary in on the one hand transmitting knowledge and on the other hand exemplifying the critical attitude that is necessary to acquire sound scientific data. Nevertheless, textbooks may be rather uncritical in illustrating species or citing their names.

In an undergraduates textbook, Campbell & Reece (2002: 445) illustrate various colour forms of what is called 'marine snails (*Liguus fasciatus*)'. However, the figured shells are from the terrestrial 'Florida tree snail'. The generic name *Liguus* is correct, but the epithet, referring to the spiral bands should be spelled *fasciatus*. Such seemingly inevitable occasional errors might be more symptomatic than thought at first sight. A remarkably high number of cases of sloppiness from the perspective of a malacologist were encountered while working on only a restricted subject, the maternal effect and coiling direction in snails.

Maternal inheritance is dealt with in many genetics textbooks. The classical example concerns the coiling direction of the shell in the freshwater snail species that is usually referred to as *Limnaea peregra*. While working on the genetic basis of chirality (Hierck et al., 2005), some textbooks on the subject had to be consulted, which triggered this note. The fact that in the non-malacological literature the generic name *Lymnaea* is nearly always spelled *Limnaea*, may be considered pardonable, taking into account that taxonomists themselves are working on a stable nomenclature for about 250 years now. These days the *Limnaea peregra* of the genetics literature should be called *Radix balthica* (Linnaeus, 1758), after a period in which *Lymnaea ovata* (Draparnaud, 1805) or *Radix ovata* was the name to be used for that species.

There are many illustrations of so-called *Lymnaea* shells showing the inheritance of chirality in these snails. Obviously, it is often not considered important what species is factually illustrated, as long as it looks like a gastropod shell with a recognizable coiling direction. Several authors copied figures from earlier publications, apparently without ever consulting a competent conchologist. The following review is highly incomplete because the various figures of so-called '*Limnaea peregra*' that are referred to, are not traced back to their earliest source. There may be more variants and maybe even correct illustrations of that species in textbooks. Anyway, the general picture is clear and with it the message of this note.

It is unclear what species is represented by Strickberger (1972: 241, fig. 13-1) (fig. 3). Maybe the artist was inspired by both a *Lymnaea* species and Picasso. Wilkins (1986: 36, fig. 11.5; 37, fig. 11.6) roughly figured a shell (fig. 4) without any sculpture, with a nearly circular apertural border, which reminds of a *Viviparus* species. In shape and apertural characters rather similar shells, but more nicely drawn, with a regular, radial sculpture and somewhat *Natica*-like in shape (fig. 1), are illustrated by Farnsworth (1978: 493, fig. 20-1) and Klug & Cummings (1997: 210, fig. 8.2). Figures of shells with a more or less elongated spire and a central, basal angle in the apertural lip (fig. 2) were used by Weaver & Hedrick (1989: 418 [referring to 'The water snail *Limnae*']- 419, fig. 15.10), Tamarin & Leavitt (1990: 475, fig. 18.2), and Russell (1990: 717, fig. 22.16), who additionally (1990: 716, fig. 22.15) published a photograph of 'The snail, *Limnaea peregra*', showing a sinistral shell, which reminds of a *Physa* spec. Gardner et al. (1991: 549, figs 20.13/14) figured a shell (fig.



Figs 1-6. Shells of so-called *Radix peregra*, redrawn after 1. Farnsworth (1978) and Klug & Cummings (1997), 2. Weaver & Hedrick (1989), Tamarin & Leavitt (1990) and Russell (1990), 3. Strickberger (1972), 4. Wilkins (1986), 5. Gardner et al. (1991), 6 *Helix (Cornu) aspersa* Müller, 1774 (after Adam, 1960: 320, fig. 131) or '*Limnaea peregra*' after Fairbanks & Andersen (1999).

5) with a prominent spiral sculpture, a conspicuous siphonal notch, and a knobby inside of the apertural lip; maybe a species of Nassariidae has inspired the artist in this case.

Most interesting is the figure of what is called 'the land snail *Limnaea peregra*' published by Fairbanks & Andersen (1999: 573, fig. 18.21). The illustrated species is a land snail indeed, not a freshwater *Limnaea*. The shell is easily recognizable as *Helix (Cornu) aspersa* Müller, 1774, one of the most common European terrestrial snails (fig. 6). Since mirror image individuals of *Helix* species with their globular shells cannot mate for technical reasons, the crossing scheme in this textbook shows a biological impossibility. That scheme cannot apply to the individuals that are figured.

It remains to be investigated whether these cases of sloppiness are exceptional, or not.

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