Premating isolation reconfirmed in *Arianta arbustorum* (Linnaeus, 1758) (Gastropoda, Pulmonata, Helicidae)

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Observations on a sinistral specimen of *Arianta arbustorum* made once again clear that in this species premating isolation between mirror-image individuals is severe if not complete.

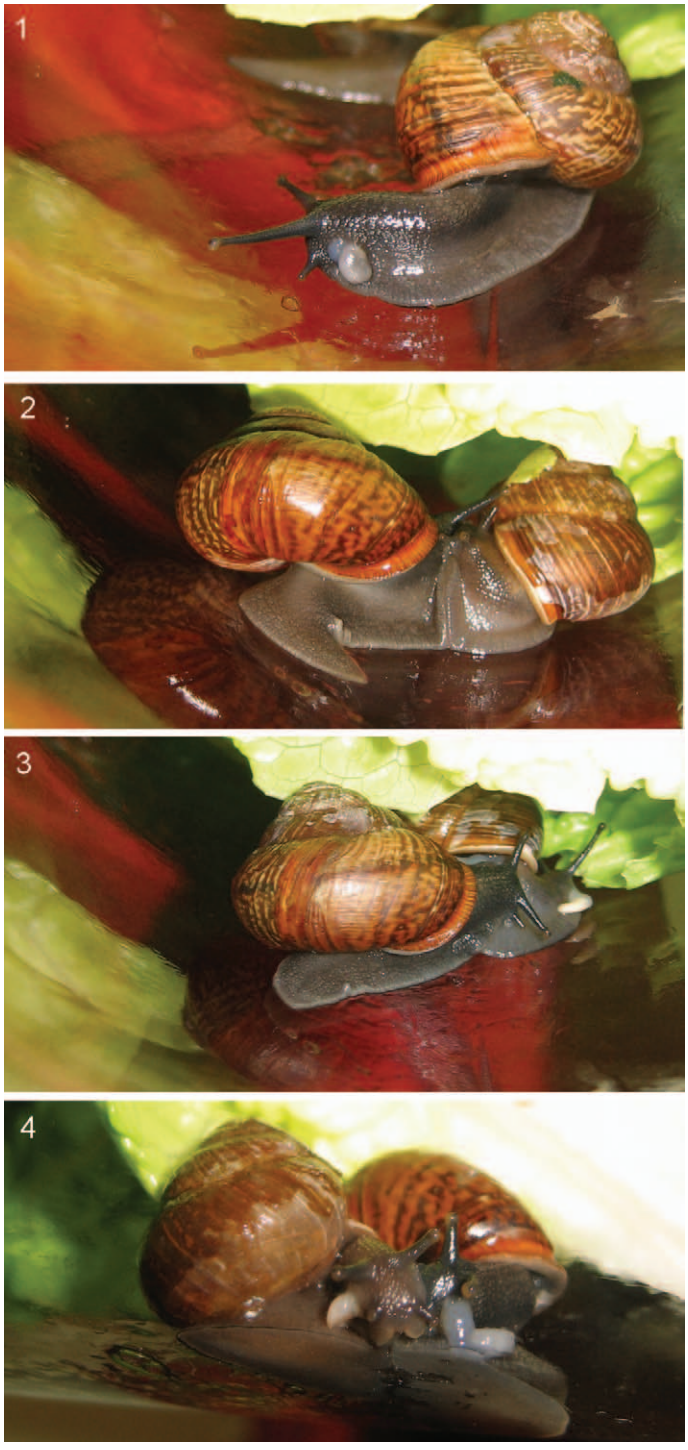
Key words: Gastropoda, Helicidae, *Arianta*, sinistrality, premating isolation, The Netherlands.

On 30.ix.2007 a single, live, sinistral individual of *Arianta arbustorum* (Linnaeus, 1758) (Figs 1-4) was found in a poplar wood in De Scheeken, in National Landscape 'Het Groene Woud', province of Noord-Brabant, The Netherlands (51°32'32 N- 05°23'10 E) (Margry, 2009; Neckheim, 2010). In conformity with a total situs inversus, the genital orifice was situated at the left side of the body (Fig. 1). Apart from chirality, the fully grown shell looks as usual in *A. arbustorum*. It is light brown, with yellow dots and an interrupted dark brown, peripheral band; it measures 18x22 mm. Three more, conspecific, dextral snails were collected at the same locality and were also kept in captivity.

The sinistral snail seemed to be more active than the conspecific dextral individuals, which were frequently approached by the aberrant specimen, but always without achieving a copulation (Figs 2-4). Without producing any eggs, the sinistral animal died in July 2008. Its shell is kept in the collection of the first author (nr. 20070930.1.2).

For many gastropod species mirror-image specimens have been mentioned in the literature for some considerable time (Clessin, 1873; Pelseneer, 1920). Recently, Neckheim (2010) summarized such findings for The Netherlands. Only rarely live specimens are recorded and is interchiral copulatory behaviour described. Standen (1892) reported interchiral reproductive isolation for *Cornu aspersum* (O.F. Müller, 1774) and Meisenheimer (1912: 131) did so for *Helix pomatia* L., 1758, in a literary text (translated from German): "...for days and weeks the animals fatigue each other in courtship, without achieving a final copulation". Hesse (1914) mentioned that in *H. pomatia* and *C. aspersum* the globular shells are in the way when mirror-image individuals try to copulate. On the basis of personal observations, Janssen (1966) described the same for *A. arbustorum*, adding that the sinistral individual was most active. According to thorough observations by Asami et al. (1998), there is a strongly reduced, but not complete premating isolation between sinistral and dextral individuals in *Bradybaena similaris* (Férussac, 1821), which is another species with a globular shell.

Many authors (e.g. Schilthuizen & Davison, 2005; Asami et al., 2008; Okumura et al., 2008) have mentioned that among gastropods with slender shells, that are clearly higher than broad, interchiral copulation is possible albeit in a more or less severely hampered way.



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Figs **1-4**. *Arianta arbustorum* (L., 1758) from De Scheeken, in National Landscape 'Het Groene Woud', province of Noord-Brabant, The Netherlands. **1**, sinistral snail with partly extended genitalia (genital orifice at its left side); **2**, sinistral snail approaching the dextral one frontally; **3**, sinistral snail mounting the backside of the dextral one (with partly extended genitalia); **4**, both snails at rest, with extended genitalia, after an unsuccessful copulation attempt. Photographs by C.J.P.J. Margry.