

New data on the species of the genus *Cochlicopa* (Gastropoda, Pulmonata)

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ABSTRACT. Structural peculiarities of male reproductive tract of *Cochlicopa lubrica* (Müller, 1704) enable to assume that reproduction takes place all over the warm period. The male genitalia condition referred to as *lubrica*-type is a spermatogenesis (male) phase. Spermatophore of *Cochlicopa lubrica* is described. Anatomical investigation confirms that *C. repentina* is a synonym of *C. lubrica*.

evidence was presented that self-fertilization is the main but not a single breeding mode of *Cochlicopa* [Ambruster, Schlegel, 1994]. It was unknown whether these species possess spermatophores.

The purpose of the present study was to find out what are *lubrica*-type male genitalia; whether a spermatophore exists and what is the duration of reproduction period. The investigation was carried out in Tula region, Central Russia. During the investigation about 320 specimens of the two *Cochlicopa* species have been dissected.

Introduction

According to the last guide to Pupillina molluscs [Schileyko, 1984], three *Cochlicopa* species occur in Eastern Europe: *Cochlicopa lubrica* (Müller, 1774), *C. lubricella* (Porro, 1838) and *C. nitens* (Gallenstein, 1852). The species can be easily distinguished by shell size. Genital organs of the genus, as in most Pupillina, are characterized by the presence of a peculiar appendix in the male tract. The penial appendix serves as a reservoir of autosperm that enters it immediately before the copulation. During mating the autosperm enters the cavity of the spermatophore formed. The latter is transferred into the diverticle of spermatheca of the partner [Schileyko, 1984].

In central Europe one more species was distinguished: *C. repentina* Hudec, 1960. It is similar to *C. lubrica* conchologically but differs from it anatomically. According to Falkner [1992] and Kornishin [1994], the difference between the two species is that the distal male tract of *C. lubrica* is much larger and the penial appendix contains autosperm. However, Ambruster [1994] showed that there are gradual transitions between the two species. Moreover, enzyme analysis showed that *C. lubrica* and *C. repentina* exhibit almost no isozymic differentiation and therefore should not be considered as separate species [Ambruster, Schlegel, 1994]. Similar differences in the male tract occur in populations of *C. nitens* [Ambruster, 1993] and it was suggested that "*lubrica*-type" (after Falkner, 1992) genitalia in this species are in the phase of reproductive maturity.

There are some problems of these species reproductive biology. Based on allozymic analysis, an

Material

Cochlicopa lubrica (Müller, 1774)

292 specimens of *Cochlicopa lubrica* from 26 localities were examined. They were collected as follows: 12 specimens from Belousov Park, Tula, on April 12, 2001; 11 specimens from Michurino Settlement: 3 on April 15, 2003, 1 on April 19, 2003, 1 on April 22, 2003, 1 on April 29, 2003, 3 on August 8, 2003, 2 on October 2, 2003; 11 specimens from Kitayevka village on April 26, 2001; 4 specimens from Belaya Gora urochische on May 4, 2002; 10 specimens from Malaya Yelovaya village on May 9, 2001; 19 specimens from Yasnaya Polyana settlement: 3 on 4 September 2001 and 2; 4; 5; 5 specimens on May 17, 2001 (different populations); 8 specimens from Sakharovka village on May 19, 2001; 6 specimens from Shatovo village: 2 on May 3, 2003, 1 on May 26, 2003, 3 on June 1, 2003; 4 specimens from Dedilovskiy vyseky village on June 2, 2002; 6 specimens from Zakharinskiy Lesostepnoy Complex on June 6, 2002; 6 specimens from Dvoryaninovo village on June 26, 2003; 5 specimens from Malakhovo village on July 4, 2003; 1 specimen from Khryashch village on July 15, 2003; 8 specimens from Mishnevo village on July 16, 2003; 24 specimens from Vodyanoye Pole Wood, Kulikovo Pole museum-reserve: 11 on July 14, 2001, 13 on July 21, 2003; 2 specimens from Buchalki village on July 21, 2003; 11 specimens from Pyatilovka village on July 16, 2001; 9 specimens from Nenashevo village on August 20, 2003; 24 specimens from Komsomolskiy settlement: 12 on July 19, 2001 and 12 on September 5, 2001; 45 specimens from Shcheglovskaya Zaseka near Dachnyy settlement on July, 23 2001; 7 specimens from Barsuky village on July 20, 2001; 17 specimens from Pushkino village: 5 on July 6, 2001, 5 on May 12, 2003, 5 on June 17, 2003, 2 on August 27, 2003; 19 specimens from Orlovo village: 7 on September 12, 2001, 4 on April 26, 2003, 8 on May 10, 2003; 12 specimens from