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Notes on a sinistral specimen of Nesopupa bisulcata (Jickeli) (Gastropoda Pulmonata: Vertiginidae) from Kenya

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A sinistral shell of *Nesopupa bisulcata* from near Homa Bay on the eastern shores of Lake Victoria in Kenya is the first such abnormality recorded for the species. It represents the common type of shell with five apertural denticles. The shell is one of a lot of six, so that it obviously represents a population with sinistral shells. The taxonomic implications of this are briefly discussed.

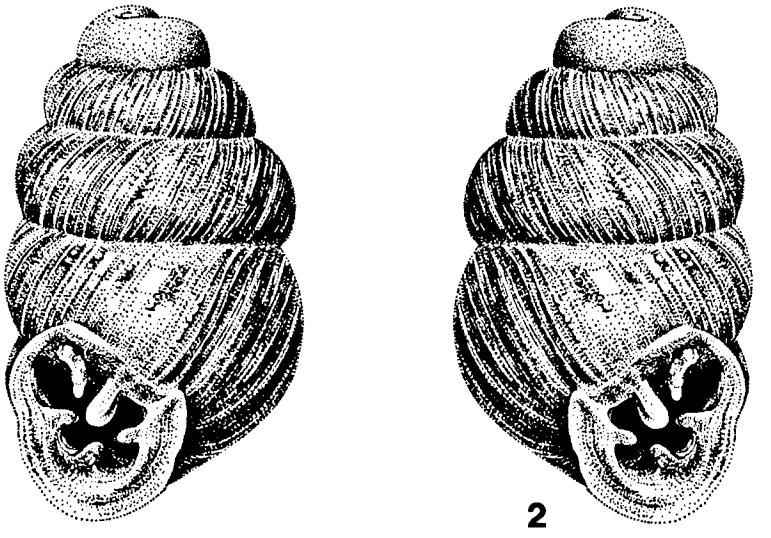
Key words: Gastropoda Pulmonata, Vertiginidae, *Nesopupa*, sinistrality, isolating mechanisms, Kenya.

Among the papers left by Dr. William Adam (1909-1988), late curator of molluscs of the Institut Royal des Sciences Naturelles de Belgique (IRSNB), Brussels (Belgium), there is a fine drawing made in 1984 by his professional artist, Mrs. Jacqueline van Melderen-Sergysels, of a sinistral specimen of *Nesopupa bisulcata* (Jickeli, 1873) (fig. 1). Thanks to the cooperation of Dr. J.L. van Goethem, the successor to Dr. Adam, the shell in question was easily traced in the Brussels Museum. It is labelled as having been collected by M. Pickford at Bala, Homa Bay, on the eastern shores of Lake Victoria in western Kenya, on 17 May 1983, and was identified as *N. bisulcata* by Dr. Adam in 1984.

The history of the specimen is as follows. The second author received a sample of six *Nesopupa* shells, all sinistral, from the above locality from Mr. M. Pickford. One of these was sent to Dr. Adam, who replied (in litt., 18.X.1984) "I should like to know if you allow me to describe it as a new species." Verdcourt wrote on 26.X.1984 and sent the other five specimens, which were acknowledged by Dr. Adam in a letter dated 6.XI.1984; however, the specimens in question have not been traced in the Brussels Museum. The letter shows that Dr. Adam changed his mind and considered the specimens sinistral shells of *N. bisulcata.*

The perfect specimen (fig. 1) measures 1.59 x 0.94 mm, ratio length/major diameter 1.70, length last whorl 0.94 mm, aperture height x width 0.62 x 0.56 mm, and has slightly less than 4¾ whorls. The aperture has five denticles. Seen in mirror image (fig. 2), the shell seems perfectly normal and compares well to e.g. the series of figures in Adam (1954, figs. 12D-J). As far as known, this is the first recorded sinistral specimen of the species under discussion.

Sinistral specimens of species with dextral shells among *Nesopupa* are rare. No mention is made of such shells in Dautzenberg (1914), or Pilsbry (1918-1920, 1922-1926), for which reason the specimen under discussion is put on record.



Figs. 1-2. Sinistral shell of *Nesopupa bisulcata* (Jickeli) from Bala, Homa Bay, Kenya (IRSNB), actual length 1.59 mm (fig. 2 printed in mirror image). Drawing by Mrs. J. van Melderen-Sergysels, photograph by A. 't Hooft, Leiden University.

Normal sinistral chirality does occur widely in the family Vertiginidae, mostly on the species level, but sometimes also on the (sub)generic level (Zilch, 1959: *Truncatellina, Vertigo, Lyropupa, Cylindrovertilla, Nesopupa*). It is also fairly common among the closely allied families Orculidae, Chondrinidae and Pupillidae. Pilsbry (1920: 298, 333; 1926: 227) enumerates only two sinistral species in the genus *Nesopupa*, viz. *N. infrequens* Cooke & Pilsbry, 1920 (Hawaii) and *N. norfolkensis* (Sykes, 1900) (Norfolk I.), both products of remote island radiations. The latter species is the monotype of the subgenus *Nesopuparia* Pilsbry, 1926, which, incidentally, is not based on the sinistrality of the shell.

Abnormal sinistrality has been shown to occur occasionally among other vertiginids, e.g. *Vertigo substriata* (Jeffreys, 1833) (Standen, 1905). Obviously it is a rare phenomenon as e.g. Pokryszko (1990: 139) who studied a profuse material of vertiginids in Poland, did not come across any reversed specimen.

It is evident that the specimen discussed here represents a population with sinistral shells, as shown by the presence of five more reversed specimens. Among the accompanying comparatively diverse malacofauna no dextral specimens of *N. bisulcata* were found. This poses the question whether this population represents a species of its own; if this is indeed the case, then it would have nomenclatorial implications. Sinistrality might imply instantaneous reproductive isolation because of the virtual mechanical impossibility of breeding with dextral specimens. Reference should be made to Gittenberger (1988), who has elaborated on the possibilities of sympatric speciation in such cases.

The similarity to normal, dextral shells of *N. bisulcata* as regards size and shape, sculpture and apertural dentition (fig. 2), is such that, for the time being, the single shell examined is considered a reversed specimen of this species.

Published records of *N. bisulcata* in Kenya are scarce. Adam (1957: 7) simply reports "Kenya", while Verdcourt (1983: 208) gives Shimoni (s.n. "*N.* cf. *bisulcata*") and "Rumuruti to Mt. Kenya" [s.n. "*N. iota*" (Preston, 1911), a synonym of *N. bisulcata*)]. The Homa Bay record extends the Kenya range westward for some considerable distance.

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