

SHORT COMMUNICATION

A SINISTRAL *HELICOPSIS* CF. *INSTABILIS*
(ROSSMÄSSLER, 1838) FROM ROMANIAN LOESS

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ABSTRACT: Here we report a single sinistral juvenile shell of *Helicopsis* cf. *instabilis* (Rossmässler), which was found in the Urluia loess section in south-eastern Romania. This 860 cm long profile comprises the last ca. 45 ka. Approximately six hundred conspecific dextral shells were found at various depths of the same profile.

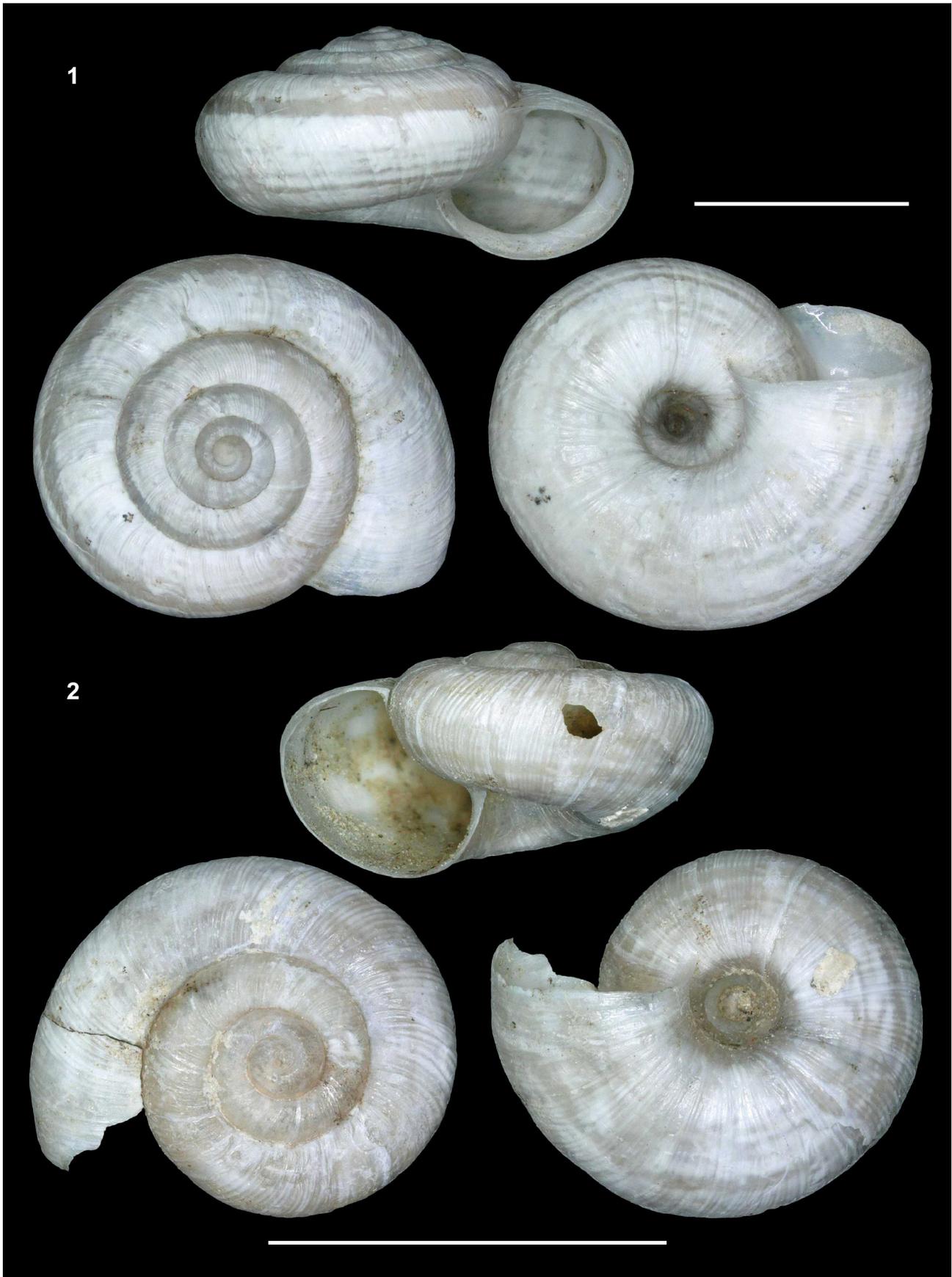
KEY WORDS: chirality, reverse-coiled shell, Geomitridae

A reverse-coiled, juvenile shell found among normally coiled ones is surprising in itself for researchers and shell collectors. However, besides being only precious specimens, they provide important insights into the evolution of whole-body enantiomorphism.

Reverse-coiled lower-rank taxa are not equally frequent among all large groups of land snails. Namely, inverse genera and species are more frequent among reciprocally copulating than non-reciprocally copulating groups. The former are in most cases flat or globular shelled snails, whereas the latter are usually snails with high-spired shells. The reason for this difference in the ratio is that the mutant gene responsible for reverse coiling undergoes stronger selection (i.e. more rapidly eliminated) in reciprocally copulating populations (ASAMI *et al.* 1998). Thus, although we can assume that the mutation rate at the left-right polarity determinant locus is equivalent in all land snail groups, we encounter reverse-coiled

shells more frequently in high-spired, than in flat or globular shelled species.

To provide further information for this topic, we report a single sinistral (Figs 1–2) shell of the genus *Helicopsis* Fitzinger, 1833 which was found during the examination of fossil shell samples from the Urluia loess section (44°05'39.9"N, 27°54'11.1"E, 125 m a.s.l) in south-eastern Romania, where we sampled an 860 cm long profile continuously every 5 centimetres in the spring of 2019; it approximately comprises the last 45 ka. The study area is located on the Southern Dobrogea Plateau which is subjected to a semiarid climate driven by the strong influence of Eurasian continental anticyclones while the Atlantic climate influence is minimal (BANDOC & PRÁVÁLIE 2015). The reported shell was found in the sampled profile at a depth of 420–425 cm, embedded in pure loess deposited under glacial conditions (presumably early Marine Isotope Stage [MIS] 2, based on OBREHT



Figs 1–2. Shells of *Helicopsis instabilis* (Rossmässler, 1838) from a loess deposit in southeast Romania: 1 – adult, dextral shell from layer 535 cm–540 cm; 2 – sinistral, juvenile shell from layer 420 cm–425 cm. Scale bars 5 mm



et al. 2017). Previous studies have suggested even more arid conditions for the study area during MIS 2 due to a strengthened Eurasian high pressure system compared to modern variability (OBREHT et al. 2017).

The *Helicopsis* species was present in nearly all samples from the topmost grass level (0 cm) until 705 cm depth. Between the depths of 710 to 860 cm *Helicopsis* was found in three samples only. Additional shell fragments from other samples between 710 to 860 cm could be identified as “*Helicoidea* sp.”, although they probably also belong to *Helicopsis*. The 860 cm long loess profile we sampled covers approximately the last 45 ka, and among the 598 *Helicopsis* shells we found, only a single one was sinistral.

Although some species received attention in the last few years in phylogenetic papers (SYCHEV &

SNEGIN 2016, DUDA et al. 2018), the taxonomy of the genus *Helicopsis* requires a revision, and identification of species is challenging. Among the species listed from Romania by GROSSU (1983) and WELTER-SCHULTES (2012), we provisionally identify our species as *Helicopsis instabilis* (Rossmässler, 1838).

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