

## Short Communication

# The First Record of a Scalariform Shell of *Metafruticicola berytensis* (Pfeiffer, 1841) from the West Bank in the Occupied Palestinian Territories

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**Abstract:** specimen of *Metafruticicola berytensis* (Pfeiffer, 1841) was found in Ajoul Village in the Ramallah district in the occupied Palestinian territories – West Bank with Scalariform. This is considered the first record of this malformation for this species. This specimen was collected during a survey to study the land snail of the West Bank between 2015 and 2018 by the Palestine Institute for Biodiversity and Sustainability.

**key words:** *Metafruticicola berytensis*, shell abnormalities, Palestine, West Bank.

## Introduction

Shell abnormalities in snails (marine, freshwater, and terrestrial snails) have been a matter of concern and interest for several malacologists and researchers for a long period of time (HarTmann, 1841–1844; Rossmässler, 1853; Meisenheimer, 1912; Drozdowski, 1962; Koralewska-BaTura, 1997; Jackiewicz *et al.*, 1998 and 1999).

Snail shell malformations have been described in several cases in both of the aquatic snail species (Jackiewicz, 1972 and 2000; Checa and Jiménez-Jiménez, 1997; Okumura *et al.*, 2008; Zuykov *et al.*, 2011 and 2012) and the terrestrial snail species (Okumura *et al.*, 2008; Książkiewicz, 2011). Several factors have been stressed and considered as tools to explain snail shell malformation and abnormalities; these include genetic abbreviation related to radiation (Bloszyk *et al.*, 2015), disturbances during the embryonic development phase, population density, and parasitic infections (Bidwell *et al.*, 1986; Panova *et al.*, 1999; Żbikowska

and Żbikowski 2005; Zuykov *et al.*, 2011 and 2012). According to malacologists, snail shell malformation is classified into two major types which have been intensively studied over the years: sinistral (deviato sinistrorsa) and scalariform (deformatio scalaris) (Checa and Jiménez-Jiménez, 1997; Okumura *et al.*, 2008; Zuykov *et al.*, 2012; Dépraz *et al.*, 2009; Bloszyk *et al.*, 2015; Foon and Marzuki, 2022).

The land snail *Metafruticicola berytensis* (Pfeiffer, 1841) is a species of the family Hygromiidae. This species has a wide range of distribution across Turkey, the eastern tip of Cyprus, Syria, and Lebanon reaching as far as central Palestine (Bank *et al.*, 2013).

The genus *Metafruticicola* was revised in the Mediterranean basin by Bank *et al.* (2013), and nowadays the *Metafruticicola fourousi* is considered as a synonym for *Metafruticicola berytensis*. It usually inhabits mountain slopes with low vegetation covers. It is considered a widespread and quite an abundant species to be found mainly under stones, in piles of stones and under shrubs; This species is categorized as a Least Concern according to the IUCN (Triantis, 2013).

Having a unique variety of geography, climate, and habitats, Palestine plays a role in the great diversity of land snails in a small distributional area. However, climate change could be a future force in the decline of the majority of the land snail species (Amr *et al.*, 2018).

Between 2015 and 2018, the Palestine Institute for Biodiversity and Sustainability (PIBS) and the Palestine Museum of Natural History (PMNH) conducted several field trips to study the Malcofauna of the West Bank

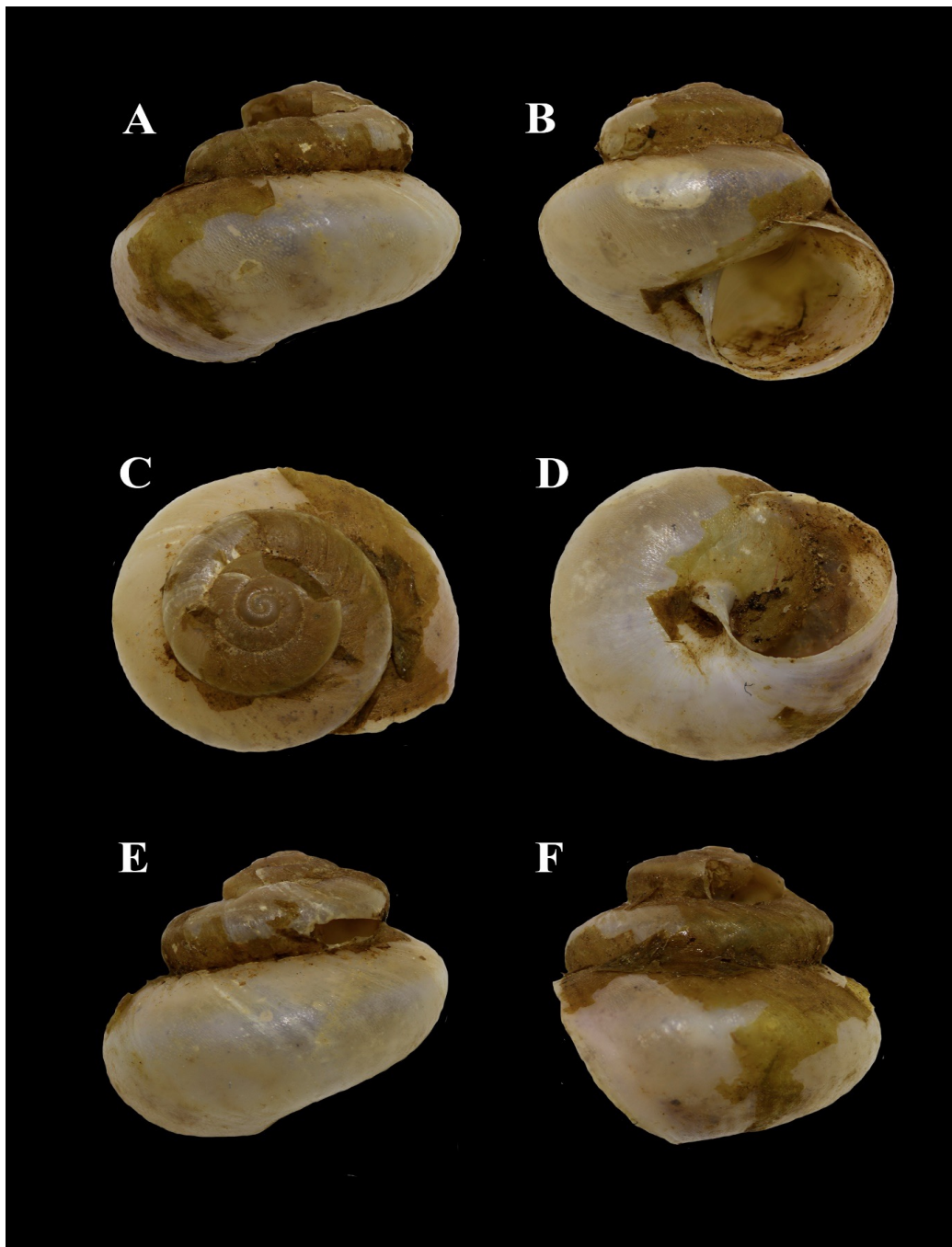
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and visited more than 140 locations. This came under a project funded by the Internal Research Grant at Bethlehem University and constituted a part of the author's master's thesis.

#### Location Under Study

All specimens were collected by hand from the field and were deposited at the PMNH . A specimen of the *Metafruticicola berytensis* (Figure 1) species with a scalariform shell

was collected on February 28, 2017, by the author from Ajoul village (N: 32°01'05.9" E: 35°10'58.9") near Rawabi city in the Ramallah district. However, the specimen was found dead, and only the shell remained under an oak tree among the leaf litter. Ajoul village falls in the Mediterranean phytogeographic zone, with an elevation of 872 ASL, receiving an annual rainfall ranging from 500 to 600 mm per year.



**Figure 1.** *Metafruticicola berytensis* (Pfeiffer 1841). **A:** Posterior view, **B:** Anterior view, **C:** Dorsal view, **D:** Ventral view, **E:** Left lateral, **F:** Right lateral. Snail width = 11.4 and height = 10.2 mm.

## Description of the Normal Shell

Normal *Metafruticicola berytensis* shells are medium in size, reaching up to 20 mm in height and 25 mm in diameter. Number of whorls 5-6, Protoconch covered with radial folds, while other whorls are covered with tubercles arranged in vertical or diagonal rows. Umbilicus narrow and deep. Aperture rounded with the lip folded outwards (Heller, 2009).

## Description of the Scalariform Shell

The abnormal *Metafruticicola berytensis* shell shows a scalariform condition, it has thickened bands (whorl) in the third and fourth whorl, and its arrangement resembles the rungs of a ladder. The snail shell exhibits five whorls, with the width of 11.4 mm, and a height of 10.2 mm.

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