

## Snails and knights on an island (Gulf of Fethiye, Türkiye)

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**Abstract:** Fifteen species of land snails were found on the small Şövalye Island north of Fethiye in southwestern Türkiye. All calcareous rocks on the island have been introduced as building materials over the centuries, which suggests that most, if not all, snails have also been introduced. The island is believed to have been inhabited by the Knights Hospitallers during the 15<sup>th</sup> century. It was hypothesized previously that the Knights may have carried the snail *Levantina* from the Middle East to southwestern Türkiye. The absence of *Levantina* on Şövalye Island introduces a little chink in the stated hypothesis.

**Keywords:** biodiversity, introduced species, *Albinaria*, *Levantina*

**Zusammenfassung:** Fünfzehn Arten von Landschnecken wurden auf der kleinen Insel Şövalye nördlich von Fethiye im Südwesten der Türkei gefunden. Alle kalkhaltigen Felsen auf der Insel wurden im Laufe der Jahrhunderte als Baumaterialien eingeführt, was darauf schließen lässt, dass die meisten, wenn nicht alle Schnecken, ebenfalls eingeführt wurden. Es wird angenommen, dass die Insel im 15. Jahrhundert vom Ritterorden der Johanniter bewohnt wurde. Es existiert die Hypothese, dass die Ritter die Schnecken der Gattung *Levantina* aus dem Nahen Osten in den Südwesten der Türkei gebracht haben könnten. Das Fehlen der *Levantina* auf der Insel Şövalye wirft einen kleinen Schatten auf diese Hypothese.

**Schlüsselwörter:** Biodiversität, eingeführte Arten, *Albinaria*, *Levantina*

### Introduction

I present an annotated list of the land snails of Şövalye Island that extends across the entrance to the harbor of Fethiye in southwestern Türkiye (Fig. 1). The significance of my findings is twofold. First, the island has an area of ~0.15 km<sup>2</sup> and its baserock is peridotite (Şenel, 1997). Such a small island without naturally occurring calcareous

rocks would not be expected to have more than one or two indigenous land snail species, but my survey recorded 15 species. Second, the name of the island, from the French *chevalier*, is the Turkish word for “knight” in reference to the supposed occupation of the island by the Knights Hospitallers (Knights of St. John of Jerusalem) perhaps during the early 15<sup>th</sup> century. The Knights Hospitallers have been hypothesized as having introduced the snails in the genus

*Levantina* from the Middle East to the coastal areas of southwestern Türkiye and the nearby islands (Schütt 1983; Glaubrecht 1993). Thus, the presence or the absence of *Levantina* species in places that were inhabited by the Knights Hospitallers, including the subject island, would provide evidence for or against that hypothesis.

Fig. 1: Simplified map of the Gulf of Fethiye. Circles mark the locations around the Gulf where land snails were collected and *Levantina* was absent. Map: A. Örstan







Fig. 2: Collection locations on Şövalye Island. **A, B:** Remains of a building and a wall where *Albinaria* was found and from where soil samples were taken. **C:** Mosaics next to the walkway along which *Eobania* was abundant. **D:** Private garden with many shells (white objects on the soil) of *Monacha* and *Cernuella*. Photos: A. Örsan

## Materials and methods

The survey of the land snails of Şövalye Island took place on 3 and 4 October 2024. Visual searches were conducted by myself and my wife who is a keen observer of especially large snail species. We searched for snails in the wooded central area occupied by scant ruins (36.6510° N, 29.1014° E) as well as in the developed areas in the northeast and the southwest arms of the island. I also took two soil samples (each ~300 ml) for smaller species. One soil sample was from the remains of what may have been a large building, perhaps a fort, and the other one was from the ruins of a wall located about 100 m northwest of the former (Fig. 2A, B). Subsequently, the specimens from the two locations were combined. Species names follow Molluscabase ([molluscabase.org](https://molluscabase.org)). Voucher specimens for four of the species collected on Şövalye Island have been deposited in the Carnegie Museum of Natural History, Pittsburgh, PA, USA (CM 188820-188823).

## Results

The 15 species of land snails found on Şövalye Island are listed in Table 1. *Eobania vermiculata* was the most widespread species; its shells were especially abundant along the walkway that connects the northeast and the southwest tips of the island (there is no vehicular traffic on the island). *Pleurodiscus balmei* shells were present at the ruins (Fig. 2A, B). Only one shell each of *Mediterranea hydatina* and *Eopolita protensa* was found. Below are additional remarks on some of the species.

Table 1: Land snail species collected on Şövalye Island.

<i>Albinaria forbesiana</i> (L. Pfeiffer, 1846)
<i>Cecilioides veneta</i> (Strobel, 1855)
<i>Cernuella virgata</i> (Da Costa, 1778)
<i>Cochlicella</i> cf. <i>acuta</i> (O. F. Müller, 1774)
<i>Eobania vermiculata</i> (O. F. Müller, 1774)
<i>Helix nucula</i> Mousson, 1854
<i>Metafruticicola redtenbacheri</i> (L. Pfeiffer, 1856)
<i>Monacha</i> cf. <i>ocellata</i> (J. R. Roth, 1839)
<i>Orculella ignorata</i> Hausdorf, 1996
<i>Mediterranea hydatina</i> (Rossmässler, 1838)
<i>Eopolita protensa</i> (A. Férussac, 1832)
<i>Pleurodiscus balmei</i> (Potiez & Michaud, 1838)
<i>Rumina decollata</i> (Linnaeus, 1758)
<i>Rumina saharica</i> Pallary, 1901
<i>Truncatellina</i> sp.



***Albinaria forbesiana*.** This is a conchologically variable species and the taxonomic standings of the three subspecies currently listed in Molluscabase with respect to the nominal subspecies *A. forbesiana forbesiana* are not clear. An additional complication is the status of *Albinaria basalifera* Neubert, 1992 of the Bozburun Peninsula in the

north, which is conchologically similar to *A. forbesiana*. Pfeiffer (1846, 93) gave the type locality of *Clausilia forbesiana* simply as Lycia, the historical name of southwestern Türkiye. Forbes was barely more specific and noted his collection locality of the type specimen(s) as “maritime Lycia” (Spratt & Forbes 1847: II:72). The ship Forbes was attached to, HMS Beacon, anchored off Fethiye for some time in 1842. This gave Forbes opportunities to go on collection trips around Fethiye (Spratt & Forbes 1847: I:2). It is quite likely that *C. forbesiana* was collected at a location along the shores of the Gulf of Fethiye. I found *A. forbesiana* only at the ruins near the approximate center of the island (Fig. 2A, B). The specimens are similar in dimensions (but not in rib densities) to *A. forbesiana* shells from the west coast of the Gulf of Fethiye, but are smaller than those from the ruins of Cadyanda located northeast of Fethiye at an altitude of 650 m (Fig. 3A-C).

***Cochlicella cf. acuta*.** Only one juvenile shell and one apex fragment of *Cochlicella* were found. I identified them tentatively as *Cochlicella acuta* by comparing their shapes with those of intact shells of that species from elsewhere.

***Monacha cf. ocellata*.** The *Monacha* specimens collected on the island are identified tentatively as *Monacha ocellata* pending further study.

***Rumina decollata* and *Rumina saharica*.** These two species are often found syntopically in western Türkiye. I assigned the empty shells collected on the island to either one of the species using their diameters following Örstan & Yildirim (2022).

***Truncatellina sp.*** Only two shells were found. The taller shell (1.7 mm) had a slight swelling on its upper columella, while the shorter one (1.5 mm) had a distinct columellar tooth (Fig. 3D, E). A recent revision of *Truncatellina* reported only toothless *T. cylindrica* and *T. haasi* from Türkiye (Kneubühler et al. 2020). *Truncatellina* shells with columellar teeth have been found before in southern Türkiye (Örstan & Yildirim 2022). Further discussion of the taxonomic placement of these *Truncatellina* is outside the scope of the present study.

No *Levantina* was found on the island. Adult *Levantina* shells, being about the same size as adult *E. vermiculata* and *H. nucula*, would certainly not have escaped two searchers' attention had they been present on the island. Juvenile *Levantina* shells are distinctly keeled and can thus be distinguished easily from juvenile *Eobania* or *Helix*, which have round peripheries. In addition, during ongoing surveys started in 1998 I have so far not found *Levantina* at any location around the Gulf of Fethiye either (Fig. 1).

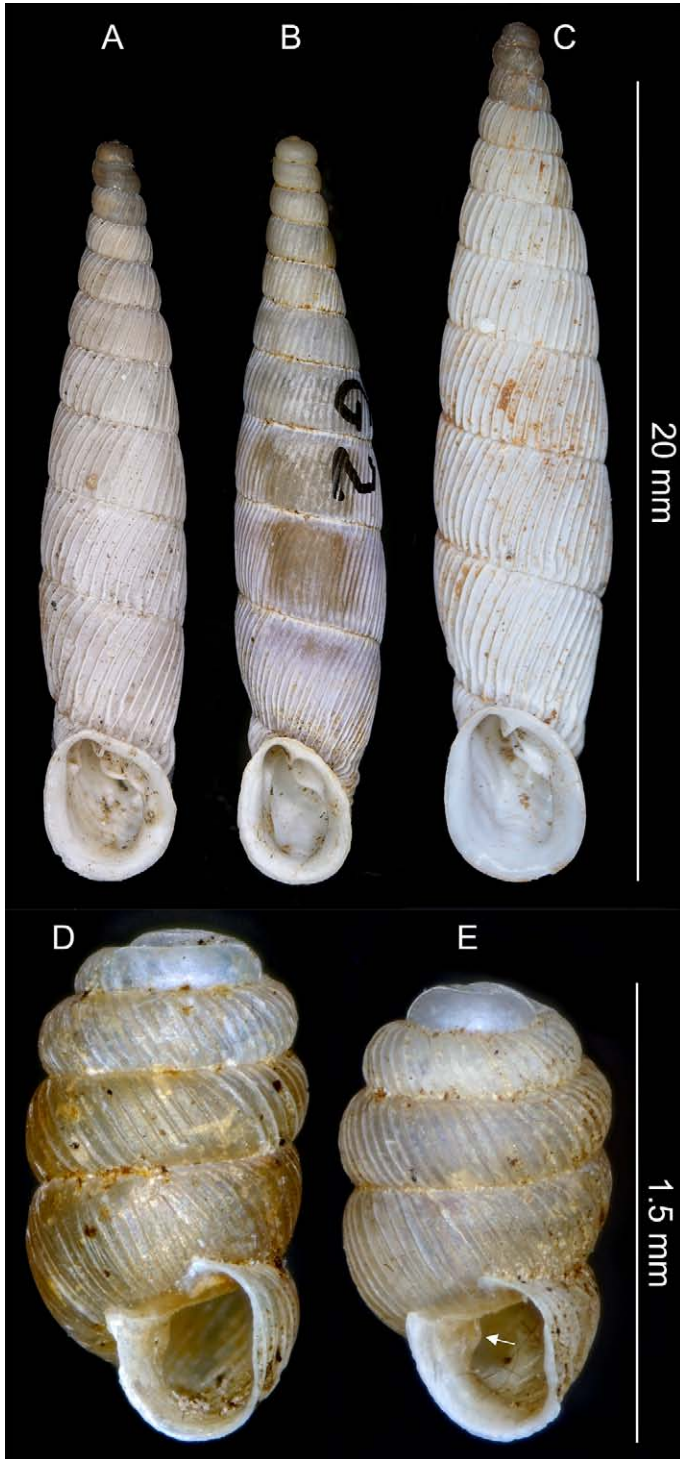


Fig. 3: *Albinaria forbesiana* specimens from different locations. **A:** Şövalye Island. **B:** West coast of the Gulf of Fethiye. **C:** Ruins of Cadyanda. *Truncatellina* specimens from Şövalye Island. **D:** Shell with a slight swelling on its upper columella. **E:** Shell with a columellar tooth (arrow). Photos: A. Örstan

## Discussion

According to the compilation of Welter-Schultes & Williams (1999), small limestone islands in the Aegean Sea (0.07 km<sup>2</sup> to 0.28 km<sup>2</sup>) had 5 to 13 land snail species. Likewise, on a small (0.012 km<sup>2</sup>) limestone island near the larger island of Kastellorizo Mylonas et al. (2019) found 13 species. On the other hand, Şövalye Island (~0.15 km<sup>2</sup>) had 15 species. However, comparison of Şövalye Island without naturally occurring calcareous rocks with limestone islands is only partially meaningful. Land snails are scarce in noncalcareous areas of southwestern Turkey (Örstan & Yildirim 2020). Therefore, Şövalye Island would not be expected to have more than one or two indigenous land snail species. The land masses closest to the island are also peridotite, now covered partly with alluvium (Şenel 1997); even when the island was connected to the mainland in the past, the diversity of its land snail fauna would have been poor. Limestone and marble currently present on the island have been introduced as building materials during the last 1,500 years or so. I suspect that most, if not all, snail species on the island have also been introduced. Some of the snail species, for example, *Albinaria*, were most likely carried to the island on the calcareous rocks used for construction, while the edible *Eobania* and *Helix* may have been brought for food. The two *Rumina* species are believed to be non-native to Türkiye and are common in archeological ruins (Örstan & Yildirim 2022), although how they were originally transported is not known. The recent construction of hotels and houses on the island appears to have introduced additional species. The gardens alongside the houses were planted with various ornamental trees and shrubs brought from the mainland, which were undoubtedly contaminated with snails. In one of the gardens many empty *Monacha* and *Cernuella* shells littered the ground (Fig. 2D). Considering that the number of land snail species currently present on Şövalye exceeds the total species found on limestone islands of similar areas, the number of snail species the island can carry has probably reached saturation. More species may be introduced in the future, while some species that are now present in small numbers may go extinct but the total number will probably stay about the same as it is now.

The genus *Levantina* has a complicated taxonomic history and a peculiarly disjunct distribution (Ketmaier & Glaubrecht 2015; Korábek et al. 2022). Briefly and without going into the taxonomic details, conchologically and genetically similar taxa are present in Israel, Jordan, Rhodes and a few smaller nearby islands as well as along the western (but not the southern) coast of Türkiye. This distribution pattern more or less matches the sojourns of the Knights Hospitallers as they moved westward from the Middle East to Rhodes and the western Anatolian coast during the 14<sup>th</sup> century (Luttrell 1999). This led to the hy-

pothesis that *Levantina* may have been carried as food by the Knights Hospitallers and introduced to the locations where they are now present in the Aegean region (Schütt 1983; Glaubrecht 1993).

The ruins on Şövalye Island consist of the remains of several tall walls (Fig. 2A, B), some partially buried mosaics (Fig. 2C) and scattered marble pieces. There are also submerged remains all around the island, indicating the rise of the sea level during the last 1,400 years (Kizildağ & Özdaş 2021). Foss (1994) attributed the remains on the island and in the city of Fethiye (ancient Telmessus) to the Byzantine period without mentioning the Knights Hospitallers. One might therefore think that the association of the island with knights is a recent ploy, perhaps created to attract tourists to the small hotels on the island. In fact, the island has two other names, Fethiye Island and Eski Megri (Old Megri). However, the use of the name Chevalier or Cavalier (from Italian *cavalliere* also meaning “knight”) for the island in 19<sup>th</sup> century texts and maps attests to the historicity of its connection with the Knights Hospitallers (for example, Hoskyn 1842, map; Texier 1849, 186). Moreover, the Knights’ presence in Makri (= Megri; previous names of Fethiye) is supported by contemporary accounts of their skirmishes with Turkish forces in that area (Luttrell 1999).

Since the available historical evidence indicates that the Knights Hospitallers occupied various locations around Fethiye, if *Levantina* were present on the island (or elsewhere in the area), this would provide support for the hypothesis that the Knights Hospitallers introduced *Levantina* to the Aegean area. Ironically, the lack of *Levantina* is but a minor piece of evidence against the stated hypothesis. Şövalye Island may simply have been one location where the Knights did not bother to bring snails; after all, they were probably more occupied with their military pursuits than worrying about whether or not they had snails to eat. Nevertheless, in my opinion, the perplexing distribution of *Levantina* remains unsolved. Perhaps, the answer has more to do with paleogeography than with snail-carrying knights.

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