



## Terrestrial snails of Ha'il region, Saudi Arabia

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### Abstract

The present study reports five new terrestrial snails to Ha'il region. The zoogeographical origin of these species is reported here. The species belongs to five families, each family has only one genus: Subulinidae, *Rumina*; Ferussaciidae, *Cecilioides*, Hygromiidae, *Monacha*; Helicidae, *Eobania*, and Pupillidae, *Pupoides*.

**Keywords:** terrestrial snails, first record, Ha'il, Saudi Arabia

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### Introduction

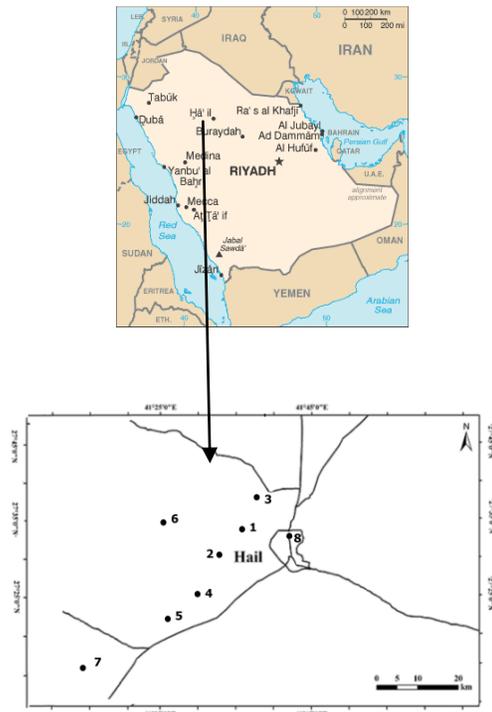
Several studies on land snails of Saudi Arabia and Arabian Peninsula were carried out Martens (1889), Jousseume (1889, 1890, 1899), Pallary (1925 & 1928), and Connolly (1941). The most recent study on land snails of Saudi Arabia was conducted by Neubert (1998) reporting 11 species new to science and seven species new to the snail fauna of Saudi Arabia. Most previous studies were carried out in the eastern and western parts of Saudi Arabia; while the northern part of Saudi Arabia, especially the Ha'il region remains unstudied. The aim of this work was to survey the terrestrial snail fauna in Ha'il region to pave the way for future taxonomical ecological studies.

### Materials and Methods

Empty shells were collected from eight localities in Ha'il region (figure 1); these are Al- zayton Garden (27°33'5"N 41°41'54"E), Wasmi Dam (27°30'33.76"N 41°34'45.29"E), Ukdah Dam (27°31'56.42"N 41°35'45.73"E), Al- Nagbeen Dam (27°37'16.59"N 41°36'49"E), Tuwarin Dam (27°34'34"N 41°26'23.73"E) Mawqaq Dam (27°16'1"N 41°13'42"E), and other two dams in the south west of Aja mountains (27°25'43.46"N 41°31'14.72"E) and (27°22'18.09"N 41°26'10.93"E). Shells were cleaned, the largest length and width of each shell were measured. Specimens were collected over three periods: from February through June 2010, from March

through June 2011, and in October 2011. Species were identified according to Neubert (1998). Some samples were sent to Prof. Dr. Zuhair Amr in Jordan as well as some Photos to Dr. Ekie Neubert in Germany for identification verification.

**Fig. 1.** Distribution of terrestrial snails in Ha'il, 1: Ukdah Dam, 2: Wasmi Dam, 3: Al- Nagbeen Dam, 4, 5: Two dams in the south west of Aja mountains, 6: Tuwarin Dam, 7: Mawqaq Dam, and 8: Al-zayton garden.



## Results

The specimens collected were found to belong to five species of five different genera. These species were *Monacha obstructa*, *Eobania vermiculata*, *Rumina decollata*, *Pupoides coenopictus*, and *Cecilioides acicula*. The most dominant species was *P. coenopictus*, it was collected from the organic soil in the dams, in sympatry with *C. acicula* which showed lesser occurrence than the former. The other three species were found in one location at Al-zayton garden where *M. obstructa* was prevailing.

### Annotated checklist

Family Hygromiidae

Genus *Monacha* Fitzinger, 1833

*Monacha obstructa* (Pfeiffer, 1842)

**Fig. 2.** *Monacha obstructa*



### Distribution

This species is widely distributed in southern Turkey, Syria, and Palestine. According to Neubert (1998) this species was located in the oases in Saudi Arabia. Recently this species was recorded in Qatar (Al- Khayat 2010). It is recorded for the first time in Ha'il.

### Remarks

The shell is small in size has a height of 5 mm and a diameter of 11 mm, it is ear shaped with a half moon shaped aperture, and the whorls are rounded. The species color is milky white (Fig. 2).

Family Helicidae

Genus *Eobania* (Hesse, 1913)

*Eobania vermiculata* (Müller, 1774)

### Distribution

The species is widely distributed in the Mediterranean basin; it was recorded in Wadi Hanifa in

central Saudi Arabia, Asir Mountain and Taif (Mordan 1980 and Neubert 1998). Recently the species was recorded in Qatar (Al- Khayat 2010). It is recorded for the first time in Ha'il.

### Remarks

The shell has a height of 15 mm and a diameter of 30 mm, a 4.5 rounded whorls which have white and brown bands, the underside of the shell is milky white, and a lip is present inside the aperture (Fig. 3).

**Fig. 3.** *Eobania vermiculata*



Family Subulinidae

Genus *Rumina* (Risso 1826)

*Rumina decollata* (Linnaeus 1758)

### Distribution

The species is widespread in the Mediterranean region, and was recorded for the first time in Saudi Arabia from Taif by El-Wakil et al 2011. It is recorded for the first time Ha'il, and gives a second record to the Arabia Peninsula.

### Remarks

The shell has a height of 30 mm and a diameter of 12 mm. It is narrowly rimate, cylindrical or cylindrical-tapering, truncated, and closed by a spiral convex plug at the summit. It is thin, irregularly striate, usually showing some spiral lines or vertical punctures. It has 4-6 whorls with a blunt end. The aperture is ovate and the outer lip is simple, more or less thickened within (Fig. 4).

Family Pupillidae

Genus *Pupoides* (Pfeiffer, 1854)

*Pupoides coenopictus* (Hutton, 1834)

*Distribution*

The species is widely distributed in the eastern provinces of Saudi Arabia, Yemen, Sudan, Eritrea, Djibouti and adjacent areas of Ethiopia and from several localities in Oman. It is recorded for the first time in Ha'il.

*Remarks*

The shell is 4.5- 5 mm in height and 1.5 – 2 mm in diameter, has 6-7 whorls, some shells are brown in color and some are white. The shells are covered by fine axial growth lines, and the aperture is semi-circular (Fig. 5).

**Fig. 4.** *Rumina decollata*



**Fig. 5.** *Pupoides coenopictus*



Family Ferussaciidae

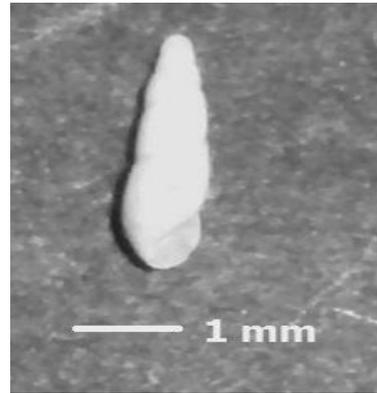
Genus *Cecilioides* Férussac, 1814

*Cecilioides acicula* (Müller, 1774)

*Distribution:* The species is widely spread in Europe. It was recorded from Asir mountain region for the first time in Saudi Arabia by Neubert (1998). It is recorded for the first time in Ha'il, and a second record for the Arabian Peninsula.

*Remarks:* The shell is 5 mm in height and 1 mm in diameter, it is long and narrow, has 4-5 whorls, and the aperture is oval and narrow at the base (Fig. 6).

**Fig. 6.** *Cecilioides acicula*



**Discussion**

The five land snail species recorded in the Ha'il region are exotic; their introduction was through human activity. The most recent survey made on the land and freshwater snails was made by Neubert (1998) reporting 70 land species and 27 freshwater species, 11 of them were recorded new to science and seven species new to the snail fauna of Saudi Arabia. According to Neubert (1998), the malacofauna of the Arabian Peninsula is divided into several groups which invaded Saudi Arabia these groups are (the Palearctic, the Afro-tropical, and the Saharo-Sindian). As shown in Table 1, the Palearctic group comprises species and genera that are well-known representatives of the western Palearctic.

Within this group, *Monacha obstructa*, *Eobania vermiculata*, *Rumina decollata* and *Cecilioides acicula* were recorded in Ha'il for the first time. *Monacha obstructa* and *Rumina decollata* belongs to the Levantine fauna that spread from Syria and Jordan southward to the Arabia Peninsula. The Saharo-Sindian group comprises a few species that are known from a vast area, from northern

Africa and the Arabian Peninsula to the Middle East and northern India. It comprises the holo-Saharo-Sindian group, including *Pupoides coenopictus* and *Zootecus insularis* (Neubert, 1998). The former species was recorded in Ha'il

during the present study for the first time. Introduction of allochthonous vegetation, particularly in private gardens, recreational areas, or along roadsides, supports successful settlements of alien faunal elements (Neubert, 1998).

**Table 1.** Introduced terrestrial snail species in Ha'il, with date of the first record and zoogeographical origin\*

Species	Date	Saharo-Sindian (holo)	Palaearctic West	Lev.	Afro-tropical	Introduced West
<i>Monacha obstructa</i>	February 2010		•			
<i>Eobania vermiculata</i>	February 2010				•	•
<i>Rumina decollata</i>	February 2010		•			
<i>Pupoides coenopictus</i>	June 2010	•			•	
<i>Cecilioides acicula</i>	October 2011				•	

\*Zoogeographical origin modified from Neubert (1998)

### Conclusion

Five snail species were recorded for the first time from several localities of Ha'il; two of them were second record to the Arabian Peninsula. The introduction of the exotic species in Saudi Arabia including snails seems to increase which is noticed in the Ha'il region.

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