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NEW RECORD OF EXOTIC LAND SNAIL *RUMINA DECOLLATA* (LINNAEUS, 1758) IN IRAQ

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ABSTRACT. A new record of the species *Rumina decollata* in Iraq when studying the terrestrial snail community in Diyala Governorate, as it was recorded in 5 sites with different densities for the period from October 2021-May 2022.

1. INTRODUCTION

Biodiversity itself is a relatively recent concept that was used for the first time in late 1980s [1] and, it has been defined in different ways, but simply it is the diversity of life, and soil biodiversity is generally defined as the diversity of living organisms in the soil and the ecological communities that are part of it, and this includes diversity within species, between species and ecosystems [2]. Biodiversity and the many ecosystem functions and services it supports are subject to large and often rapid changes throughout the world, as changes in species distribution and abundance affect all aspects of biodiversity [3]. The Gastropods is one of the most common and, widespread among the varieties of the phylum Mollusca, as it includes about 80% of its species, and it lives in aquatic and terrestrial environments, and this class includes approximately with about 60,000 to 80,000 living species [4] in addition to this large number of the diverse species, there are still undescribed and undiscovered species, because taxonomists consider the morphology of the exoskeleton only as special characteristics of these gastropods, and also the lack of taxonomic experts to study the richness in diversity and distribution of snails [5]. *Rumina decollata* called as the cut (bevelled shell) snail is a predatory European invasive terrestrial snail and belongs to the family Achatinidae, its origin from Mediterranean region in Europe and North Africa, it has been introduced all over the world in the early 1800s [6] *R. decollata* is known to prey on other mollusks, so used as a biological control agent for the brown garden snail *Cornu aspersum*. Although it is also considered a plant pest [7], It has been an agricultural pest in non-native areas, where it has been documented to cause damage in farms in Mexico [8], Cuba [9], and Brazil [10]. With regard to human and animal health, *R. decollata* can serve as an intermediate host for the number of rat nematodes *Angiostrongylus malaysiensis* and and *Angiostrongylus cantonensis* [11].

Keywords. *Rumina decollate*, land snail, Iraq's snail, Iraq's exotic species
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2. MATERIALS AND METHODS

The samples were collected monthly for the period from October 2021 to May 2022 from five restrict in Diyala governorate of Iraq: Baqubah, Al-khalis, Miqdadiyah, Khanaqin, and Mendeli, the samples were collected manually from among the plants and under the leaves of the accumulated plants or from above the small plants located within one square meter [12], and placed in plastic bottles with a capacity of 100 ml [13]. As for the soil samples, they were collected at a depth of (5-15) cm, according to what was stated in [14].

The samples of snails collected from the study sites were diagnosed using Dissecting Microscope type Heerbrugg Model Wild-M3B to species depending on the characteristics of the shell shape, colour, dimensions, shape and direction of its opening [6], the diagnosis was confirmed by the Natural History Museum /University of Baghdad. The physical and chemical factors were measured for each of the study sites by conducting standard soil tests.

1. RESULTS AND DISCUSSION

The shell of *Rumina decollata* is characterized by being calcareous, thick, spindle and elongated, of moderate size, with an average height of 15 individual reached to 26.5 mm and a diameter 10.2 mm (Figure 1). The shell colour of this species is medium brown, i.e., from light grey to dark brown. 5 slightly convex whorls with a surface sculptured with irregular growth lines, and the opening is oval with a simple peristome. The examined specimens showed the black body and the feet pale olive grey. It was found from the monthly averages of population density (Figure 2).

The highest value of *R. decollata* density was 142 ind/m² it recorded in Khanaqin restrict [15] which is located to the east of Iraq and has borders with Iran.

It was abundance in urban areas, this due to the availability of food in addition to the distance from predators [16], were confined to humid area, farmland, and in plant nurseries, this species introduced with imported vegetables ornamental plants.

The current study, showed that this species found in environmental conditions represented by a temperature that ranged between 7.9-37.1 °C, while the pH values were neutral and weak alkaline ranged between 7.0-8.7 and the salinity ranged between 0.1-8.73. In addition to them, the percentage of soil moisture ranged between 1.4-20.64%, while the organic matter ranged between 1.6-8.2%, and the calcium content ranged between 5.2-12.2 mg/kg, and the soil was classified as a loam soil.

The lowest density was recorded at 2 ind/m² in the Mendeli site, due to the increasing in salinity in the upper layer of the soil in those areas, which has an adverse effect on the density of land snails, where the electrical conductivity

recorded between 6.8-8.8 cm/ms and this is due to the dependence of those areas on well water for irrigation.

In conclusion, *Rumina decollata* was recorded as a new record to Iraq molluscan fauna, which is considered one of the invasive species that entered the country through the import of plants and fruits. Its importance is due to its predatory and harmful effects on mollusk populations, causing environmental imbalances.

FIGURE 1. *Rumina decollata*

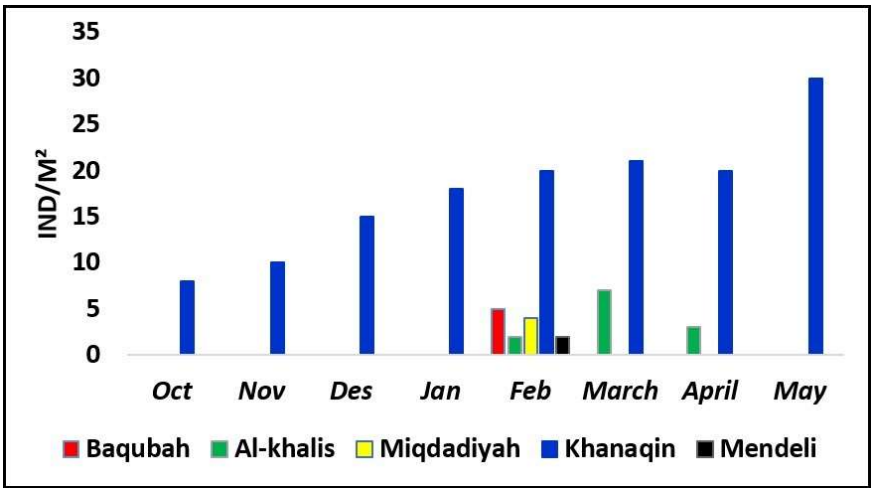

FIGURE 2. Density of *Rumina decollata* (ind/ $m^{2)}$ in study sites through the study months'

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Author Contribution Statements RH-specimen collection, Environmental data analysis. KH.F-specimen identification, data analysis, manuscript writing and editing

Declaration of Competing Interests The authors declare no conflict of interest.

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