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Articles

First record of Glycymeris taylori Angas, 1879 and two additional records of Azumapecten ruschenbergerii Tryon, 1869 and Lutraria australis Deshayes, 1855 from the north west of the Persian-Arabian Gulf

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The northwestern Persian-Arabian Gulf marine ecoregion has several bivalves recorded. The present study is to gather new bivalve distribution data from the Iraqi shore. From 2020 to 2021, three marine bivalves were found in the northwestern Arabian Gulf, Iraqi coast. *Glycymeris taylori* Angas, 1879 (family Glycymerididae) recorded for the first time from the Gulf, *Azumapecten ruschenbergerii* Tryon, 1869 (family Pectinidae) and *Lutraria australis* Deshayes, 1855 (family Mactridae). These new records illustrate the need for more concentrated marine diversity studies, particularly on bivalve groups in this biodiverse region.

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Keywords

Bivalve distribution, Iraqi coast, new records

Introduction

Mollusca constitute up to 25 % of marine benthic fauna, making them a vital aspect of world biodiversity (Appeltans 2012). The Bivalvia are found in both marine and freshwater habitats, and as filter or detritus feeders, they play a crucial part in the functioning of the ecosystem (Vaughn & Hoellein 2018). Bivalves also function as bioindicators of environmental contamination or stress (López-Rojas et al. 2020). While marine gastropods and bivalves are among the most diverse

invertebrate groups, a more complete understanding of their taxonomic make-up is needed in Iraq. Despite the fact that numerous research on the mollusks of the Iraqi marine shore have been conducted (Ahmed 1974; Al-Hassan and Al-Hasani 1985; Yasser & Naser 2021; Yasser et al. 2022; Yasser et al. 2022; Yasser et al. 2023), new records continue to be discovered regularly.

Even if these nominal taxa represented individual species the diversity is much lower than recorded from neighbouring Kuwait where Al-Kandari et al. (2020) listed 100 living species belonging to 33 families. Al-Kandari & Oliver (in prep) taking into account species recorded as dead shells they illustrate 202 species. However, compared to the nearby region of Iran, where 57 nominal bivalve taxa are listed by Papahn and Ghajari (2018), the existing lists are lacking in diversity.

This paper presents a number of species that have never been recorded from Iraq, including a first record of *G. taylori* for the Gulf.

Materials and Methods

The Iraqi shore to the northwest of the Persian-Arabian Gulf was surveyed for specimens of *G. taylori*, *A. ruschenbergerii, L. australis* from 2020 to 2021. The specimens were sampled from three sites (Fig. 1), from north west of the Persian-Arabian Gulf. Molluscs were collected from under rocks, among intertidal vegetation using dredge/or picked up by hands. The specimens were stored in 70% ethanol and submitted to the University of Basrah's Marine Science Centre (MSC) with collecting voucher numbers (506-508). Bosch et al. (1995) were used to make preliminary identifications utilizing the nomenclature and categorization system of Mollusca Base.

Result

Glycymerididae Dall, 1908 (1847)

Glycymeris da Costa, 1778

Glycymeris taylori (Angas, 1879) Fig. 2A

Material examined. 3 specimens, length = 17.0±0.12 mm; width = 16.3±0.14 mm, (MSC:506). Shell description: subcircular, orbicular, and inequilateral shell; sculpture with over 40 weak radial ribs. Shell sculpture with whitish with brown patches and weak radial ribs.

Distribution. *G. taylori* is widely distributed in Indian Ocean in Andhra Pradesh, Orissa, and in the Indo-Pacific (Ramakrishna and Dey 2010). It is the first record of *G. taylori* recoded from the Persian-Arabian Gulf at the Iraqi coast.

Habitat. It is living in clean sand shallow water (Prashad 1932), it occurs at 8 m depth.

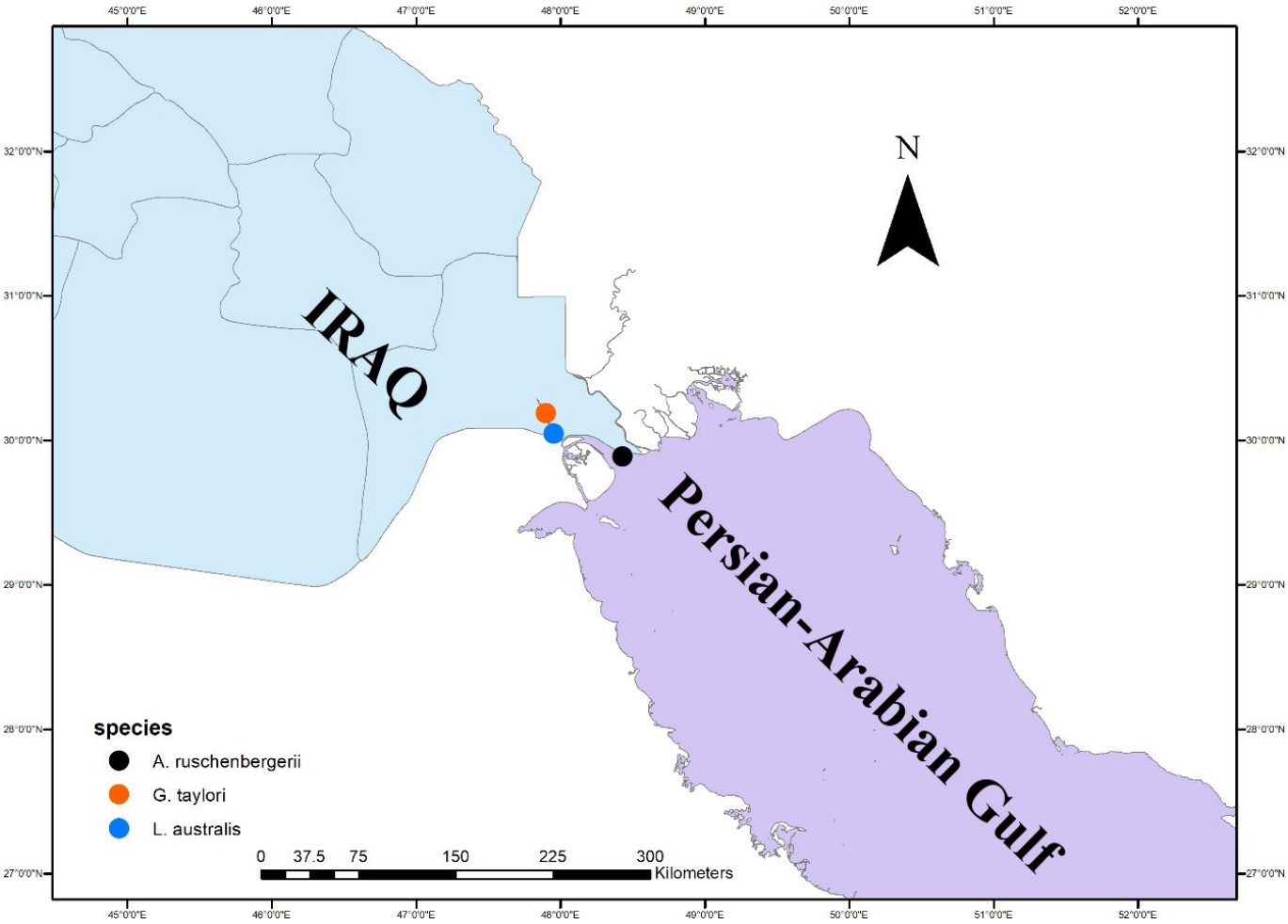

Figure 1. *Sampling sites of the bivalves from North West of the Persian-Arabian Gulf, Iraq.*

Pectinidae Rafinesque, 1815

Azumapecten Habe, 1977

Azumapecten ruschenbergerii (Tryon, 1869) Fig. 2B

Material examined. 3 specimens, length = 60.2±0.25 mm; width = 68.0±0.80 mm, (MSC:507). Shell description: *A. ruschenbergerii* is generally large shell and often with bore holes near the umbo. Surface is rough and dull. Scales on the ribs are smaller, more equal in size and colour.

Distribution. NWG, SEG (Fig. 3).

Habitat. It is living on rocks (Al-Kandari et al. 2020).

Mactridae Lamarck, 1809

Lutraria Lamarck, 1799

Lutraria australis (Deshayes, 1855) Fig. 2C

Material examined. 2 specimens, length = 122.2±0.28 mm; width = 60.0±0.5 mm, (MSC:508). Shell description: Beaks well front of the midline. The front margin is rounded and pointed, whereas the posterior-dorsal margin is concave to slightly arched. White. Periostracum is thin and

beige to brown in color.

Distribution. SEG, GO (Fig. 3).

Habitat. *L. australis* found in muddy sand offshore.

Discussion

The Iranian list compiled by Papahn and Ghajari (2018) contains 57 nominal bivalve taxa, and the number of species recorded on the south coast of Bubyan and in Khor Subiya, Kuwait exceeds 200. (Al-Kandari & Oliver in prep). These adjacent locations' differing habitat availability is likely the cause of the variation in diversity between them. More hard substrate species were recorded in the Iranian study than in Iraq because it includes exposed areas on the coast east and west of the small bay. Whereas Khor Al-Subiya has exposures of beach rock, oyster reefs, and more sand-filled compacted sediments at its mouth, Bubyan's south shore is a continuous swath of uniformly soft sediments (Yasser et al. 2022).

The marine Mollusca of Iraq have received little attention, with the most recent being a checklist of marine gastropods and bivalves (Yasser & Naser 2021, Yasser et al. 2022; Yasser et al. 2022, Yasser et al. 2023) that lists 34 and 38 species, respectively. However, another six marine bivalve species have been listed recently raising the number to 38 species from the Iraqi coast (Yasser et al. 2023).

The genus *Glycymeris* da Costa, 1778 is represented by four species in the Persian-Arabian Gulf, these species are: *G. livida* (Reeve, 1843), *G.* cf *arabica* (H. Adams, 1871), *G. pectunuclus* (Linnaeus, 1758) and *G. maskatensis* (Melvill, 1897), most these species are recorded from north west of the Gulf except *G. maskatenis* which is recorded only from the Gulf of Oman (Bosch et al., 1995). However, this study recorded for the first time *G. taylori* from the north west of the Gulf at the Iraqi coast raising the number of species belongs to the genus *Glycymeris* to five species in the Gulf.

The genus *Azumapecten* Habe, 1977 in the Persian-Arabian Gulf is only represented by one species *Azumapecten ruschenbergerii* Tryon, 1869, it is listed already from Kuwait (Al-Kandari et al. 2020).

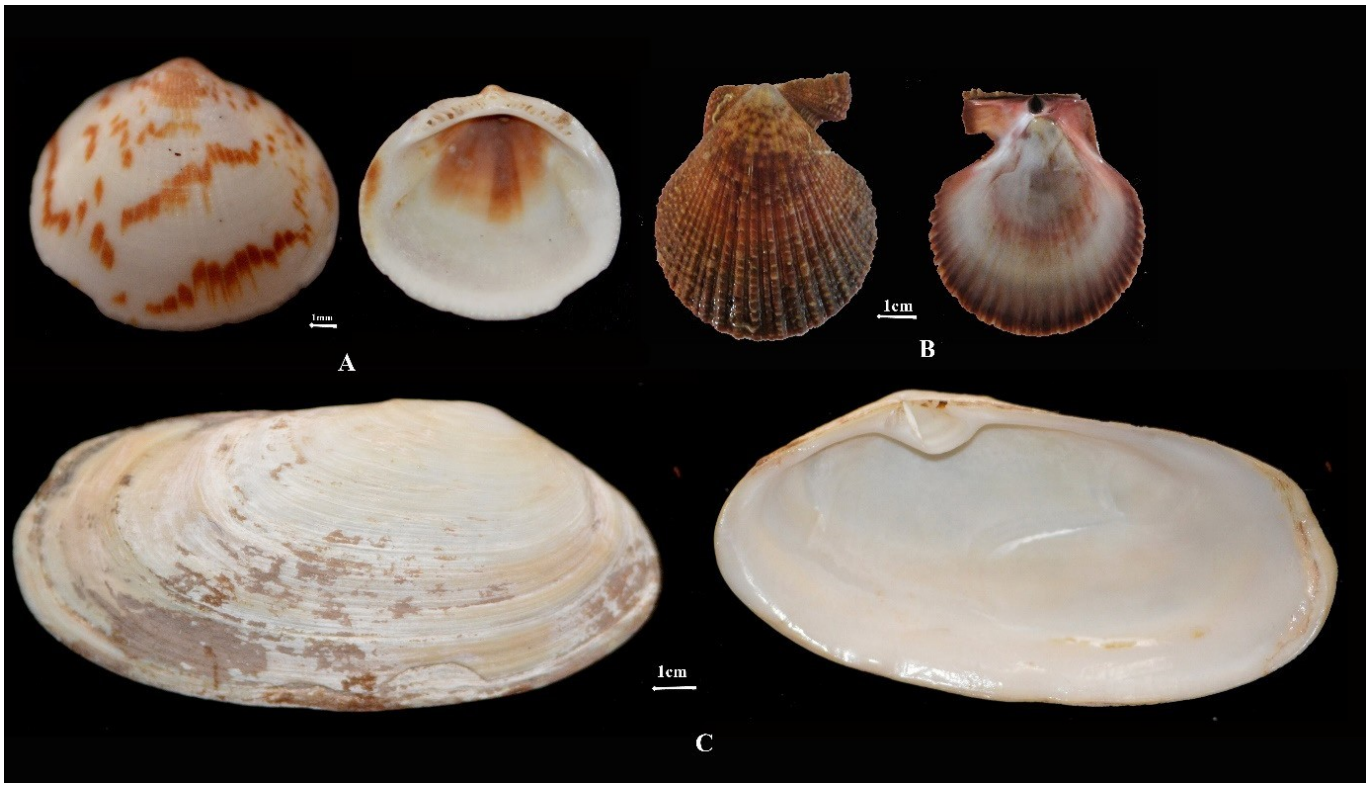

Figure 2. ***A*** *– Glycymeris taylori Angas, 1878;* ***B*** *– Azumapecten ruschenbergerii Tryon, 1869;* ***C*** *– Lutraria australis Deshayes, 1855.*

Figure 3. ***Distribution of marine bivalves in the Persian-Arabian Gulf.***

Bosch et al. 1995 depicts the species *Lutraria* (*Lutraria*) *turneri* under the name *L. australis*. This species is presumably restricted to the Red Sea, Gulf of Oman, and East Africa at least as far south as Zanzibar, but it may extend as far south as eastern South Africa. New locality for the species *L. australis* is recorded in the present study from north west of the Gulf at the Iraqi coast.

To determine if the difference between the Iranian and Kuwaiti regions with similar ecological conditions is real or an artifact of collection effort, it is necessary to do additional research and collect more specimens from the apparent lower diversity of the fauna in Iraq.

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