
| RESEARCH ARTICLE

First Record of the Alien Rocky Crab *Actea savignii* (Milne Edwards, 1834) from Iraqi Marine Waters

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| ABSTRACT

This study reports the first occurrence of the rocky crab *Actea savignii* (Milne Edwards, 1834) in Iraqi marine waters, representing a new addition to the decapod fauna of the northwestern Arabian Gulf. Two specimens of the Rocky crab *Actaea savignii* were collected from Iraqi coastal waters between 2013 and 2015 during a scuba diving project of the Marine Science Center, University of Basrah. This species is a new record for our region, and it is globally known as an alien out of its habitat. In the field, the crab specimens were photographed before being preserved in plastic containers filled with 95% ethanol and labeled with the collected date and region, then transferred to the laboratory for further examination. We photographed the crab species and identified them by using dissecting and compound microscopes, depending on morphological characters, as in Karhan *et al.* (2013), Ahyong (2024), and DecaNet eds. (2026). The study concluded that some species of Xanthidae crab were recorded in the Iraqi marine waters, which may refer to their ability to adapt to a new region in the Arabian coastal of the Gulf as alien species, especially *Actea savignii*. The study highlights the need for continuous biodiversity assessments and monitoring programs in Iraqi marine environments to detect and manage non-native species. The documentation of *A. savignii* contributes to the growing inventory of marine biodiversity in the region and provides a baseline for future ecological and biogeographical investigations.

| KEYWORDS

Actaea, Alien species, Crab, Iraqi coastal

| ARTICLE INFORMATION

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1. Introduction

Although some species of the Xanthidae family have been found in the Iraqi marine waters since the 1990s (Personal communication), recently some species of this family have been recorded by (Khafaji *et al.*, 2017b; Al-Khafaji *et al.*, 2019; Karim *et al.*, 2022). However, further studies are needed, due to the newly discovered coral reef rock in the regional coastal area of Iraq, where most of the fauna of benthos invertebrates are still unknown. In the Persian/Arabian Gulf, Apel (2001) listed about 22 species in it, whereas in the Mediterranean Sea, which is teeming with invasive species, six alien species of Xanthidae were recorded for the first time in Lebanon and Turkey's rocky shores between 2006 and 2011 (Brockerhoff and McLay 2011, Crocetta 2015).

Karhan *et al.* (2013) reported the first record of the alien species *A. savignii* from the Mediterranean Sea in Haifa Bay and Mersin between 2010 and 2011. Many species of Brachyuran crab are common in coral rocks, where they move slowly and hide away to avoid danger; however, they are more active at night. This group is among the most

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poisonous crabs, but they don't bite or sting to introduce their toxins. In Singapore, these crabs are prohibited from being caught or eaten.

IUCN listed several species of Xanthidae crabs among the threatened species, because of their sensitivity to pollution and trawling by local people.

Because of the limited information, this study aims to document the diversity of macroinvertebrates in the Iraqi coastal waters, especially for alien species.

2. Materials and Methods

Two specimens of the crab *A. savignii* were collected from the coral rock area (the coral reef discovered from Iraqi marine waters near the Iraqi oil Port (N °29 '37 00 and E 048 '48 00) in 2015 during a cruise achieved by the Iraqi-German scuba diving team, on depths between 10-15 m. A survey for benthic invertebrates as part of a diversity study in the Iraqi marine waters, and another specimen was recently collected from the same area in 2024.

In the field, the crab specimens were photographed before being preserved in plastic containers filled with 95% ethanol and labeled with the collected date and region, then transferred to the laboratory for further examination. We photographed the crab species and identified them by using dissecting and compound microscopes, depending on morphological characters, as in Karhan *et al.* (2013), Ahyong (2024), and DecaNet eds. (2026).

3. Results and Discussion

3.1. Systematic

Kingdom: Animalia

Phylum: Arthropoda

Class: Malacostraca

Order: Decapoda

Suborder: Pleocyemata

Infraorder: Brachyura

Family: Xanthidae

Subfamily: Actaeinae

Genus: *Actaea* De Haan, 1833

Species: *Actaea savignii* (H. Milne-Edwards, 1834)

Synonym *Cancer savignii* Milne Edwards, 1834

3.2. Remarks

The total body length of the spiny-legged rocky crab *A. savignii* is about 13 and 17 mm, and the width is 22 and 28 mm. The morphological features are as follows:

The outer shape appears as a solid mass with regular granular nodules or tubercles, colored creamy brown or reddish brown. The front edge is strongly curved, about 0.35 times the width of the shell, with two lobes on the wavy front edge; a wide V-shaped notch separates the lobes. The entire underside is densely covered with dense tubercles, with flat and dense protuberances of various sizes, partly simple and partly petal-like, and the front lateral edge is slightly curved and divided into four indistinct rounded nodules, while the front edge is barely noticeable. The rear lateral edge is shorter and slightly concave; it is straight and bears a prominent row of tubercles. The claws are almost equal in size and robust, and are also covered with dense protuberances. The fingers

are noticeably shorter; the proximal part of the movable finger is densely covered with flat protuberances and bears two to three larger protuberances forming teeth.

The walking legs are also densely covered with tubercles, with larger conical protuberances on the upper surface of the dactyls and merus (the largest part of the leg, often featuring a distinguishing characteristic between species), and end with spined claws used for digging.

Cheliped fingers and walking legs show a similar pattern, although the Cheliped fingers of the first pair of legs are highly enlarged and stout, ending in short, straight claws that are bluish-brown or purple and white serrated on the inside edges in males (Fig.1).



Figure 1: *Actaea savignii* from coral rock in the Iraqi marine waters

Fig. 2 shows the Gonopoda, which is the specific part of the male genital organs, representing a diagnostic characteristic used to distinguish between the crab species. It seems elongated, carries a dense tuft of hair at the tip, and the base also bears branched setae.

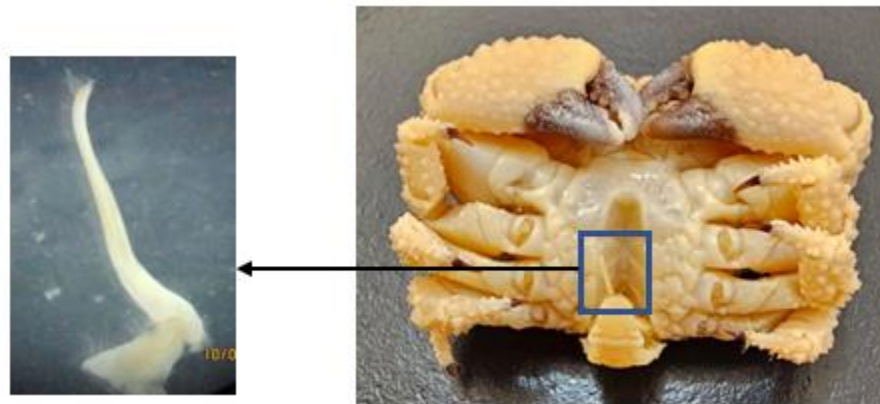


Figure 2. Gonadopod of the crab male *Actaea savignii* from coral rock in the Iraqi marine waters

3.3. Distributions

The *Actaea* genus was recorded in a limited region around the world, especially in the Indo-Pacific region, the eastern Coast of Africa, east to Japan, and on the east coast of Australia. However, *Actea savignii* was confirmed recorded as an alien species in the Red Sea, Suez Canal, as well as Madagascar (Serène, 1984) and the Philippines (Poppe, 2015); Our record for *A. savignii* species in Iraqi marine waters is the first for the Persian/Arabian Gulf region since that date.

4. Conclusion

This study provides the first documented record of *Actea savignii* (Milne Edwards, 1834) in Iraqi marine waters, thereby extending the known biogeographical range of this xanthid crab into the northwestern Arabian Gulf. The

presence of this species, alongside other members of the family Xanthidae, underscores the increasing occurrence of non-native or range-expanding decapod crustaceans in the region. Such occurrences may be attributed to a combination of ecological adaptability, changing environmental conditions, and anthropogenic vectors such as shipping and ballast water discharge.

The successful establishment of *A. savignii* suggests a notable capacity for ecological plasticity, enabling the species to tolerate and adapt to the physicochemical conditions of Iraqi coastal habitats. This finding raises important ecological considerations, particularly regarding potential competition with native benthic fauna, alterations in community structure, and broader ecosystem impacts that may arise from its continued spread.

Furthermore, this record highlights the necessity for systematic biodiversity monitoring and taxonomic surveys in Iraqi marine ecosystems, which remain relatively underexplored. Enhanced surveillance efforts, coupled with molecular identification techniques and long-term ecological assessments, are essential to accurately track species introductions and evaluate their ecological consequences.

In conclusion, the detection of *Actea savignii* in Iraqi waters not only contributes to regional faunal inventories but also emphasizes the growing importance of marine bioinvasion studies in the Arabian Gulf. Future research should focus on population dynamics, pathways of introduction, and the ecological interactions of this species to inform effective management and conservation strategies.

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