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New Record of Hermit Crab *Diogenes alias* MxLaughlin and Holthus, 2001 (Decapoda: Anomura; Diogenidae) from NW Arabian Gulf

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Abstract: *A hermit crab species Diogenes alias (Decapoda: Anomura: Diogenidae) has been recorded for the first time in the waters of the northwestern Arabian Gulf. This study is important because it completes a series of records of species from the biodiversity of the Iraqi coastal waters.*

Keywords: *Biodiversity, Endominant Crabs, Iraqi invertebrates.*

I. Introduction

Hermit crabs are a superfamily of the decapod crustaceans that currently comprises more than 1100 species of wide distribution around the world (McLaughlin *et al.,* 2010). Representing an important portion of many intertidal and sub tidal communities, hermit crabs display a very important role in the marine trophic chain (Fransozo & Mantelatto, 1998). Hermit crab fauna of the Persian Gulf, Strait of Hormuz and the Gulf of Oman are poorly known. Identification and distribution of hermit crabs have been the subject of a number of papers in this region. Earlier field works and surveys conducted within the Persian Gulf (Jones, 1986; Apel, 2001; Kazmi *et al.,* 2007; Naderloo *et al.,* 2012).

The family Diogenidae represents six species namely *Areopaguristes perspicax* (Nobili, 1906), *Clibanarius signatus* Heller, 1861, *Dardanus lagopodes* (Forskål, 1775), *D. tinctor* (Forskål, 1775), *D. avarus* Heller, 1865, *D. tirmiziae* Siddiqui & McLaughlin, 2003, (Seyfabadi *et al.,* 2013). 10 hermit crab species were recorded belonging to 3 families (Coenobitidae, Diogenidae, Parapaguridae) belonging to 6 genera. One of these species represents the first records in the Gulf of Aden (Dardanus lagopodes (Forskål, 1775). The dominant hermit crab on sandy shores was Coenobita scaevola (Forskål, 1775), while the dominant hermit crab in rocky shores was Clibanarius signatus Heller, 1861 (Al-Hindi, 2024). This study is one of more than 14 previous studies in which we recorded new species in the waters of the Iraqi coast, including: (Al-Khafaji et al., 2017; Al-Khafaji et al., 2019; Al-Maliky et al., 2020a ; Al-Maliky et al., 2020b ; Al-Maliky et al., 2023 ; Al-Maliky et al., 2024a, b, c).

The result of the presence of new species within the biodiversity resulting from climate change in the waters of the Iraqi coast in particular and the waters of the Arabian Gulf in general.

II. Materials and methods

The samples were collected from the Iraqi coastal area at coordinate point 29°50’21” N48°38’47’’E in the waters of the northern Arabian Gulf and were preserved using alcohol at a concentration of 70-80% in the laboratory. The samples were diagnosed based on: Kazmi & Siddiqui, (2006).

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III. Results and discussion

Key of Species

Antennal flagellum setose. Finger tips of P .1 pointed ..... Genus Diogenes Dana, 1852 1

1. Intercalary rostriform process well-developed and marginally anned with spinules 2

2. Antennal acicles distinctly bifurcate 3

3. Carapace longer than broad. Left hand of P .1 when fully extended not inclined inwards 4

4. Propodus of left P.II with a row of prominent spines on lateral view; outer surface of palm of left P. I with irregular unarmed or weakly spinulous area near upper margin ----------*Diogenes alias* MxLaughlin and Holthus, 2001

Systematics

Order: Decapoda

Suborder: Anomura

Family: Diogenidae Ortmann, 1892

Genus: *Diogenes Dana, 1851*

***Diogenes alias* MxLaughlin and Holthus, 2001**

Material examined: eight specimens only.

Measurements: Total length from (4.0 to 8.0) cm.

Localities: Arabian Gulf: 8 specimens: Basrah coast, 29°50’21” N48°38’47’’E.

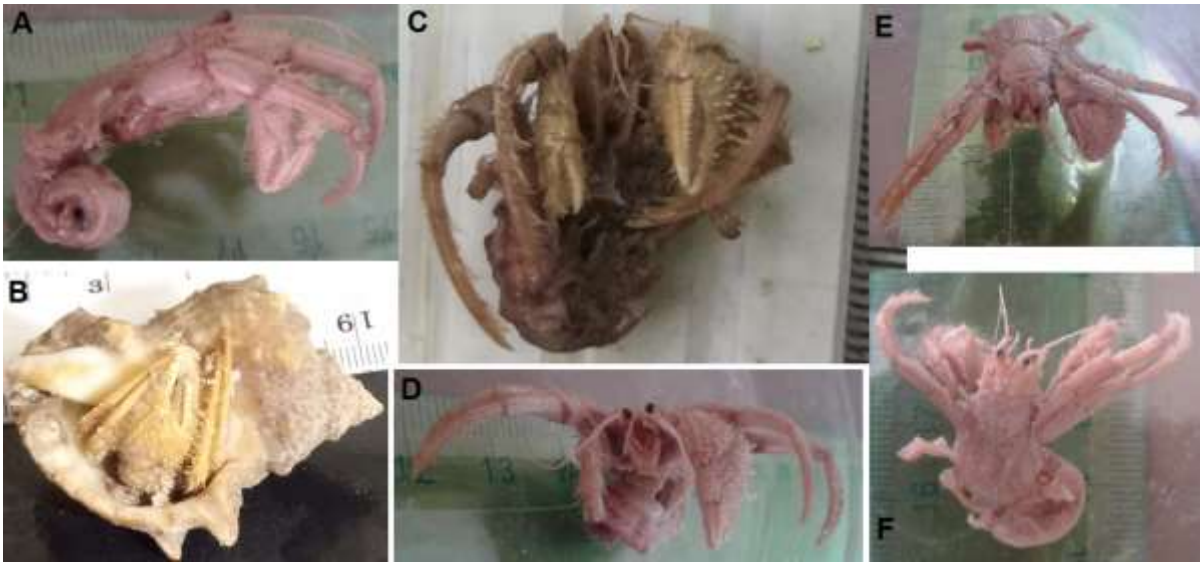

Figure 1. shows A-F, *Diogenes alias*; distinctive parts, and B, shows in one of the gastropods, 5-8 cm.

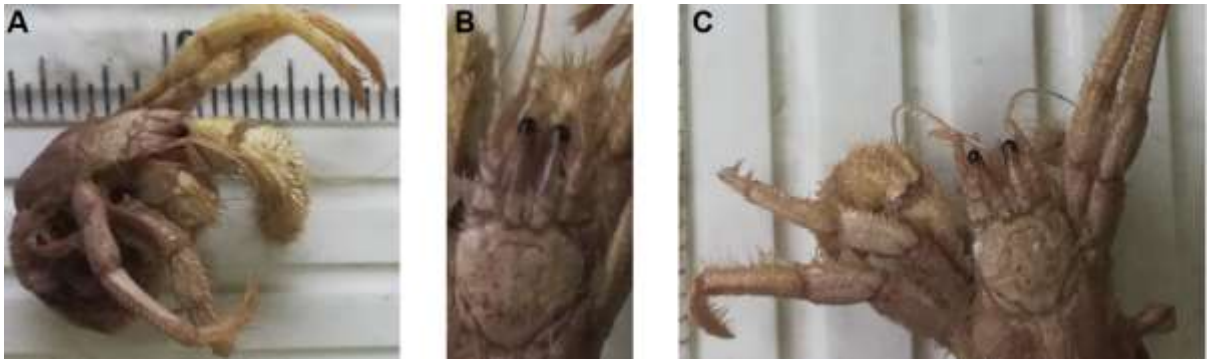

Figure 2. Showss A-C, *Diogenes alias*; parts of the eyes and tentacles.

The species was identified morphologically based on the length of the eyestalk compared to the long and short tentacles as well as the shape of the head, (Fig. 1, 2).

Most species of hermit crabs have smooth, spirally curved abdomens, unlike the calcareous abdomens of most crustaceans. The abdomen of a hermit crab is very delicate and vulnerable to injury, so the crab uses one of its gastropods (Fig. 1B) to protect its abdomen. Its abdomen has evolved to shrink and fit into the cavities of various shells. [7] As the hermit crab grows in size, it must find another shell that is more suitable for its size. Some species use hard objects to hide in, such as corals, polychaetes, and fossilized sponges. The hermit crab is named for its hermit-like lifestyle. [8] Hermit crabs may compete for the best shell and may use a system of alignment, where a crab gives a shell that no longer suits it to a smaller crab, who replaces it with its old shell, which it gives to a smaller crab.

Habitat: More in the intertidal zone of sandy and muddy beaches and sometime in sublittoral zone of coral reef beaches.

IV. Reference

1. Al-Hindi, A. (2024). Hermit crab (Crustacea: Decapoda: Anomura) in Aden Coasts at the Gulf of Aden with a new record. Electronic Journal of University of Aden for Basic and Applied Sciences 5(2):155-162. DOI:10.47372/ejua-ba.2024.2.348.
2. Al-Khafaji, K.K., Al-Maliky, T.H.Y. & Al-Maliky, A.M.J. (2019). First record of the crab, *Droippe quadridens* (Fabricius, 1793) (Brachyura: Dorippidae), from the Iraqi coastal waters of the NW Arabian Gulf, with notes on the occurrence of seven species of crabs in the region. Arthropods 8(4): 118-126.
3. Al-Khafaji, K.K., Al-Waeli, A.A. & Al-Maliky, T.H. (2017). New records of xanthid crabs *Atergatis roseus* (Rüppell, 1830) (Crustacea: Decapoda: Brachyura) from Iraqi coast, south of Basrah city, Iraq. Arthropods 6(2): 54-58.
4. Al-Maliky, T.H.Y. (2020). New records of Leucosiid crabs Lyphira perplexa Galil, 2009 (Crustacea; Decapoda; Leucosiidae) in the northwestof the Arabian Gulf, Iraq. OCEAN LIFE, 3 (2): 1-3.
5. Al-Maliky, A.M.J. Al-Khafaji KK, & Al-Maliky, T.H.Y. (2021). First record of *Octopus vulgaris* (Cuvier, 1797) (Octopodidae) in the Iraqi coastal waters, NW Arabian Gulf. Journal of Applied and Natural Science, 13(3), 1048 -1051. https://doi.org/10.31018/jans.v13i3.2815.
6. Al-Maliky, T.H.Y., Raghad Zaidan Khalaf, R.Z. & Zeini, A.H. (2023). First record of peregrine shrimp *Metapenaeus stebbingi* Nobili, 1904 (Crustacea, Decapoda: Penaeidae) in the Iraqi waters, North-West Arabian Gulf. Baghdad Science Journal. 20(4): 1194-1199.
7. Al-Maliky, T.H.Y., Al-Sheraa, A.S., Hashim, M.S., Salbok, H.A.Z. & Zine, A.H. (2024b). New record of *Paphia textile* (Gmelin, 1791) (Family: Veneridae Rafinesque, 1815) in the waters of the Iraqi coast. American Journal of Sciences and Engineering Research. 7(4): in press.

8. Al-Maliky, T.H.Y., Hashim, M.S., Abdul Karim, Z. & Jabbar, I.M.A. (2024c). New record of the squid *Sepia pharaonis* Ehrenberg, 1831 in the waters of the Northwestern Arabian Gulf. American Journal of Sciences and Engineering Research. 7(4): in press.
9. Al-Maliky, T.H.Y., Shakir, Z.K., Intisar MA Jabbar, I.MA. & Salbok, A.Z. (2024a). New record of a gastropod Nassarius gayii Kiener 1834 in the Northwest Arabian Gulf. Int. j. adv. multidisc. res. stud. 4(4):1312-1313.
10. Al-Maliky, T.H.Y., Ukash, A.W., Al-Maliky, A.M.J., Zeini, A. & Pereira, R.l. (2020). First record of *Hiplyra elegans* (Gravier, 1920), (Crustacea; Decapoda; Leucosiidae) in the northwest of the Arabian Gulf, Iraq. Revista Meio Ambiente e Sustentabilidade, 9(19): 8 p.
11. Apel, M. (2001). Taxonomic and Zoogeographic der Brachura, Paguridae und Porcellanidae (Crustacea: Decapoda) des Persisch-Arabischen Golfes. PhD Thesis, Johann Wolfgang Göthe University, Frankfurt am Main.
12. Fransozo, A. & Mantelatto, F. L. (1998). Population structure and reproductive period of the tropical hermit crab *Calcinus tibicen* (Decapoda: Diogenidae) in the region of Ubatuba, São Paulo, Brazil. Journal of Crustacean Biology 18(4):738-745.
13. Jones, D.A. (1986). A field guide to the sea shores of Kuwait and the Persian Gulf. University of Kuwait Blandford Press, Poole, Kuwait: 192 pp.
14. Kazmi, Q.B. & Siddiqui, F.A. (2006). An Illusrated key to the malacostraca (Crustacea) of the Northern Arabian Sea. Pakistan J. of Marine Ssciences, 15(1): 11-79.
15. Kazmi, Q.B., Siddiqui, F.A. & Kazmi, M.A. 2007. Range Extension of Diogenes karwarensis Nayak & Neelakantan, 1989 and a Report on *Dardanus tinctor* Forskål, 1775 (Crustacea: Decapoda: Anomura: Diogenidae) from the Persian Gulf. Turkish Journal of Zoology, 31 (2007): 95-98.
16. McLaughlin. P.A., Komai, T., Lemaitre, R. & Rahayu, D.L. (2010) Annotated checklist of Anomuran decapod crustaceans of the world (exclusive of the Kiwaoidea and families Chirostylidae and Galatheidae of the Galatheoidea) Part 1 –Lithodoidea, Lomisoidea and Paguroidea. Raffles Bulletin of Zoology, Supplement, 23, 5–107.
17. Naderloo, Reza & Türkay, M. (2012). Decapod crustaceans of the littoral and shallow sublittoral Iranian coast of the Persian Gulf: Faunistics, Biodiversity and Zoogeography 3374, pp. 1-67 in Zootaxa 3374 (1) on page 25.
18. DOI: 10.11646/zootaxa.3374.1.1, http://zenodo.org/record/5253502.
19. Seyfabadi, J., M.M.Z. & Mahvary, A. (2013). Littoral hermit crabs (Crustacea: Decapoda: Anomura) of Larak Island, Persian Gulf, Iran. Iranian Journal of Animal Biosystematics 9(2):99-107.