

# New Record of Trapeziid Crab, *Quadrella reticulata* Alcock, 1889 (Brachyura: Trapeziidae) from the Persian Gulf

R. NADERLOO and A. SARI\*

Department of Biology, Faculty of Sciences, University of Tehran, Tehran, Iran

In the present study, a trapezoid crab, *Quadrella reticulata* was found for the first time in the north of Kish Island, the Persian Gulf, Iran. Diagnostic characters of the species are figured and its world geographical distribution in the Indo-West Pacific region is considered.

**Key words:** Brachyura, Iran, Persian Gulf, *Quadrella reticulata*, Trapeziidae.

Previous studies on the Persian Gulf brachyuran crabs are confined to Heller (1861), Alcock (1895-1900), Nobili (1905 and 1906), MacGilchrist (1905), Klunzinger (1913), Stephensen (1945), Kuronuma (1974), Basson *et al.* (1977), Titgen (1982), Jones (1986), Apel and Türkay (1992), Apel (1994), Cooper (1995), Al-Ghais and Cooper (1996), Türkay *et al.* (1996), Bahmani (1997), Apel and Spiridonov (1998) and Apel and Türkay (1999).

According to these studies and Castro (2004, personal communication), this is the first record of *Quadrella reticulata* from the Persian Gulf.

Since October 2003, a series of samplings for subtidal crabs were carried out in 110 stations in the Iranian territory of the Persian Gulf. On 21 December 2003, a single female specimen (ZUTC-Brach.1075, CL = 10.8 mm, CW = 12.7 mm) was caught (on a black coral) by fishing trawler vessel Ferdous I, which belongs to the Fisheries Research Organization of Iran, in the north Kish Island, 26° 74' N, 53° 35' E, Depth 30m (Fig. 1). The specimen (Fig. 2) is deposited in the Zoological Museum, University of Tehran (ZUTC).

## *Quadrella reticulata* Alcock, 1889

(Fig. 2 and 3)

*Quadrella coronata* var. *reticulata* Alcock, 1888: 227; *Quadrella coronata* var. *reticulata* Borradaile, 1902:266; *Quadrella reticulata reticulata* Serène 1968: 89; *Quadrella reticulata* Serène, 1973: 199; *Quadrella reticulata* Serène, 1975: 519; *Quadrella reticulata* Serène, 1984: 286 & 287; *Quadrella reticulata* Galil & Takeda, 1985: 204; *Quadrella reticulata* Galil, 1986: 288 & 1988: 179; *Quadrella reticulata* Castro, 1999a: 38; *Quadrella reticulata* Castro, 1999b: 96; *Quadrella reticulata* Castro *et al.*, 2004: 56.

The examined material agrees with earlier descriptions and illustrations. The carapace is hexagonal (Figure 3A). The front (including inner orbital lobes) is wider than the posterior border of carapace and has four triangular teeth, of which medians are larger than laterals. Anterolateral border of carapace is slightly globose and poorly serrated. Epibranchial tooth is acute. The border of

\*Corresponding author: Sari@khayam.ut.ac.ir

supraorbital lobe is granular. The surface of carapace is granular except in its central portion. Anterior margin of cheliped and the immovable finger is denticulate (Fig. 3B). There are 10 triangular teeth (variable in size) along the anterior border of merus of chelipeds, of which the first four distal teeth are larger than the others (Fig. 3A & B). Two nearly small and equal teeth present on the anterior border of chelipeds basis (Fig. 3-C). Propodus and dactylus of walking legs are hairy, posterior margin of the latter bears 12 teeth, including the terminal one. Amongst these, only the teeth on the fourth walking legs are triangular in shape and larger than the others (Fig. 3D). According to Galil (1986), there are short spines on the posterior margin of propodus of walking legs. But in the material of the present study, this is spineless. There are purple lines on the chelipeds and carapace of the fresh specimens (Fig.2) which make an interesting meshwork (agreeing with description of Alcock, 1898). These purple lines fade away in preservative liquids.

The present female material looks to be larger than all other measured specimens by Alcock (1898) and Castro (1999a). It is noteworthy that, according to Castro (1999a), female individuals are larger than their mates.

In the past, specimens of *Q. reticulata* were studied from different parts of the Indo-West Pacific region. Chronologically, these are from Sri Lanka (type locality) and Andaman Islands (Alcock, 1898); Sri Lanka, Colombo and South China Sea - off Sarawak (Serène, 1973); Japan - Tanegashima (Galil and Takeda, 1985); South China Sea - near Natuna Islands and the Philippine Islands - Gulf of Davao (Galil, 1986); Red Sea (Galil, 1988); Indonesia - Ambon, South China Sea - off Sarawak and the Philippine Islands - Gulf of Davao (Castro, 1999a); Sri Lanka - Colombo (Castro, 1999a & b). Its chance discovery in the Persian Gulf is the first record of *Quadrrella reticulata* from its north-eastern range of distribution in the Indian Ocean and its nearest record to the present study is the Red Sea (Galil, 1988). Zoogeographically, *Q. reticulata* is confined to the north Indian Ocean (not yet found in the Persian Gulf and the Oman Sea) and the west Pacific Ocean.

We are very grateful to Dr. Peter Ng, Dr. Peter Castro and Dr. Bella Galil for their valuable comments and helps, and with special thanks to University of Tehran, Dr. T. Valinasab, Fisheries Research Organization of Iran and crews of Ferdous *I* fishing vessel for providing sampling opportunities.

ALCOCK A. 1895. Materials for a carcinological fauna of India. No. 1: The Brachyura Oxyrhyncha. Part II. Journal of the Asiatic Society of Bengal, 64(2): 157-291.

ALCOCK A. 1896. Materials for a carcinological fauna of India. No. 2: The Brachyura Oxystoma. Part II. The family Xanthidae. Journal of the Asiatic Society of Bengal, 65(2): 134-296.

ALCOCK A. 1898. Materials for a carcinological fauna of India. No. 3. The Brachyura Cyclometopa. Part I. The family Xanthidae. Journal of the Asiatic Society of Bengal, 67(1): 67-233.

ALCOCK A. 1899a. Materials for a carcinological fauna of India. No. 4. The Brachyura Cyclometopa. Part II. The families Portunidae, Canceridae and Corystidae. Journal of the Asiatic Society of Bengal, 68(1): 1-103.

ALCOCK A. 1899b. Materials for a carcinological fauna of India. No. 5. The Brachyura Primigenia or Dromiacea. Part II. Journal of the Asiatic Society of Bengal, 68(3): 123-169.

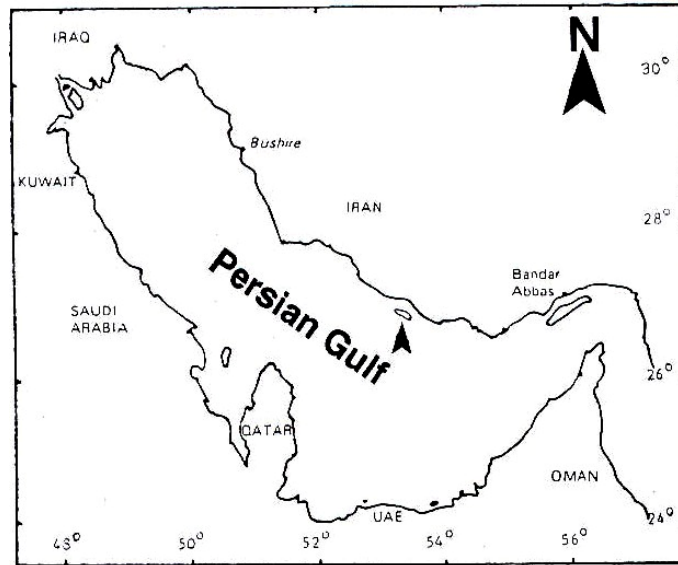
- ALCOCK A. 1900. Materials for a carcinological fauna of India. No. 6. The Brachyura Catometopa or Grapsoidea. Part II. Journal of the Asiatic Society of Bengal, 69(3): 279-456.
- AL-GHAIS S. M. AND COOPER R. T. 1996. Brachyura (Grapsidae, Ocypodidae, Portunidae, Xanthidae and Leucosidae) of Umm al Quwain mangal, United Arab Emirates. Tropical Zoology, 9: 409-430.
- APEL M. 1994. Biology, ecology and taxonomy of Brachyuran and Paguridean Crustacea. In: Establishment of a Marine Habitat and Wildlife Sanctuary for the Persian Gulf Region. Final Report for Phase II, 406-437. Jubail and Frankfurt, CEC/NCWCD.
- APEL M. AND SPIRIDONOV V. A. 1998. Taxonomy and zoogeography of the portunid crabs (Crustacea: Decapoda: Brachyura: Portunidae) of the Persian Gulf and adjacent waters. Fauna of Arabia, 17: 159-331.
- APEL M. AND TÜRKAY M. 1992. The intertidal crabs and hermit crabs (Crustacea: Decapoda: Brachyura and Paguridea) in the study area and their condition after oil spill. In: Establishment of a Marine Habitat and Wildlife Sanctuary for the Persian Gulf Region. Final Report for Phase I: 187-205. Jubail and Frankfurt, CEC/NCWCD.
- APEL M. AND TÜRKAY M. 1999. Taxonomic composition, distribution and zoogeographic relationships of the grapsid and ocypodid crab fauna of intertidal soft bottoms in the Persian Gulf. Coastal, Estuarine and Shelf Sciences: 49(Supplement A), 131-142.
- BAHMANI M. 1997. A systematic study of crabs in the intertidal zone of Hormozgan province. Iranian Fisheries Scientific Journal: 6(1), 1-6.
- BASSON P. W., BURCHARD J. E., HARDY, J. H AND PRICE A. R. G. 1977. Biotopes of the Western Persian Gulf. Dhahran, ARAMCO.
- BORRADAILE L.A. 1902. The Xanthidae and some other crabs. III. Marine crustaceans. In: J.S. Gardiner (ed.), The fauna and geography of the Maldive and Laccadive Archipelagoes being the account of the work carried on and of the collections made by an expedition during the years 1899 and 1900, 1(1): 237-271, Cambridge.
- CASTRO P. 1999a. Results of the Rumphius Biohistorical Expedition to Ambon (1990), Part 7. The Trapeziid crabs (Crustacea: Brachyura: Trapeziidae) of Indonesia. Zoologische Mededelingen, (Leiden): 73(3), 27-61.
- CASTRO P. 1999b. The Trapeziid crabs (Crustacea, Brachyura, Xanthoidea, Trapeziidae) of the Indian Ocean and the Red Sea. Zoosystema, 21(1): 93-120.
- CASTRO P. K., NG P. L. K. AND AHYONG S. T. 2004. Phylogeny and systematic of the Trapezidae Miers, 1886 (Crustacea: Brachyura), with the description of a new family. Zootaxa, 643, 1-70.
- COOPER R.T. 1995. Mangal-associated Brachyura (Ocypodidae, Grapsidae, Portunidae, Majidae and Leucosidae) from the north-eastern coastal Islands of Abu Dhabi, United Arab Emirates. Crustaceana, 70 (2): 155-179.

- GALIL B. 1986. Quadrella (Brachyura: Xanthoidea: Trapeziidae) - review and revision. *Journal of Crustacean Biology*, 6(2): 275-293.
- GALIL B. 1988. Trapeziidae (Decapoda: Brachyura: Xanthoidea) of the Red Sea. *Israel Journal of Zoology*, 34(3/4) [1986/87]: 159-182.
- GALIL B. AND TAKEDA M. 1985. Crabs of the genus Quadrella (Crustacea, Decapoda, Trapeziidae) from Japanese waters. *Bulletin of the National Science Museum (Tokyo) Series A*, 11(4), 197-207.
- HELLER C. 1861. Beiträge zur Crustacean – Fauna des Roten Meers. I. Theil. *Sitzungsberichte der mathematisch-naturwissenschaftlichen Classe der kaiserlichen Akademie der Wissenschaften Wien*, 43 (1): 297-374.
- JONES D. A. 1986. A field guide to the sea shores of Kuwait and the Persian Gulf. University of Kuwait, Blanford Press.
- Klunziger C. B. 1913. Die Rundkrabben (Cyclometopa) des Roten Meeres. *Nova Acta Academiae Caesarea Leopoldino-Carolinae Germanicum Naturae Curiosorum*. 99(2): 97-402.
- KURONUMA K. 1974. Persian Gulf fishery-Oceanography survey by the Umitaka-Marui, training research vessel, Tokyo University of Fisheries with collaboration of Kuwait Institute for Scientific Research, December 1968. *Transactions of the Tokyo University of Fisheries*, 1: 118pp.
- MACGILCHRIST A. G. 1905. Natural history notes from the R. I. M. S. " Investigator", Capt. T. H. Hening, R. N., commanding. Series III, No. 6. An account of the new and some of the rare Decapod Crustacea obtained during the surveying season 1901-1904. *Annual Magazine of Natural History*, 15(7) : 233-268.
- NOBILI G. 1905. Decapodes nouveaux des cotes d'Aravie et du Golfe Persique (Diagnoses preliminaries). *Bulletin du Museum national d' Histoire naturelle*, 11 : 158-164.
- NOBILI G. 1906. Mission J. Bonnier et Ch. Perez (Golfe Persique, 1901). *Crustaces Decapodes et Stomatopodes*. *Bulletin Scientifique de la France et de la Belgique*, 40: 13-159.
- SERENE R. 1968. The Brachyura of the Indo-West Pacific region. In: *Prodromus for a check list of the non-planctonic marine fauna of South East Asia*. Singapore Academy of Sciences, Special publication, 1 : 33-112.
- SERÈNE R. 1973. Observations sur les espèces des genres Quadrella Dana 1851 (Crustacea: Decapoda: Brachyura) et Sphenomerides Rathbun, 1898 (Decapoda: Brachyura). *Bulletin de la Société Zoologique de France*, 98(1): 191-209.
- SERENE R. 1975. Note additionnelle sur les espèces indo-pacifiques de Quadrella Dana 1851 (Crustacea, Decapoda, Brachyura). *Bulletin de la Société Zoologique de France*, 100(4), 509-521.
- SERENE R. 1984. Crustacés Décapodes Brachyours de l'Océan Indien Occidental et de la Mer Rouge, Xanthoidea: Xanthidae et Trapeziidae. Avec un addendum par A. Crosnier: Carpiliidae et Menippidae. *Faune Tropical*, 24: 1-400.

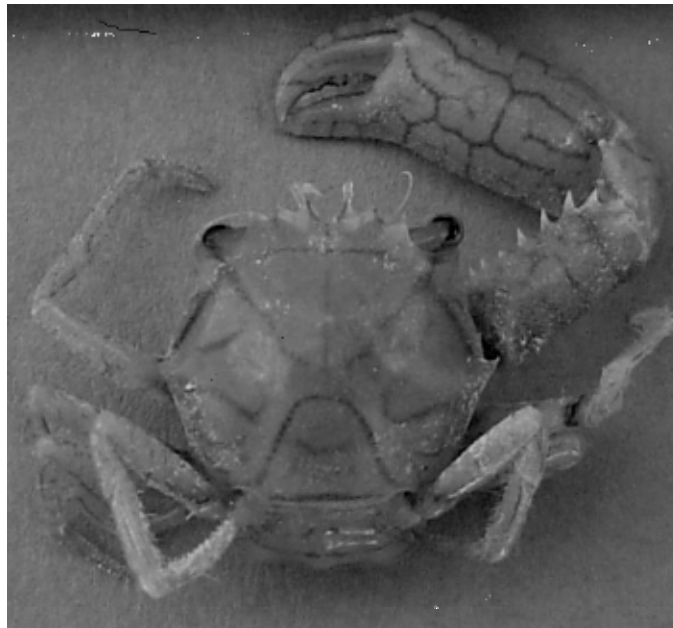
STEPHENSON K. 1945. The Brachyura of the Iranian Gulf. Danish Scientific Investigations in Iran, Part IV: 57-237. Copenhagen, Munksgaard.

TITGEN R. H. 1982. The systematics and ecology of the decapods of Dubai, and their zoogeographic relationships to the Persian Gulf and the Western Indian Ocean, Ph.D thesis, Texas A & M University, USA.

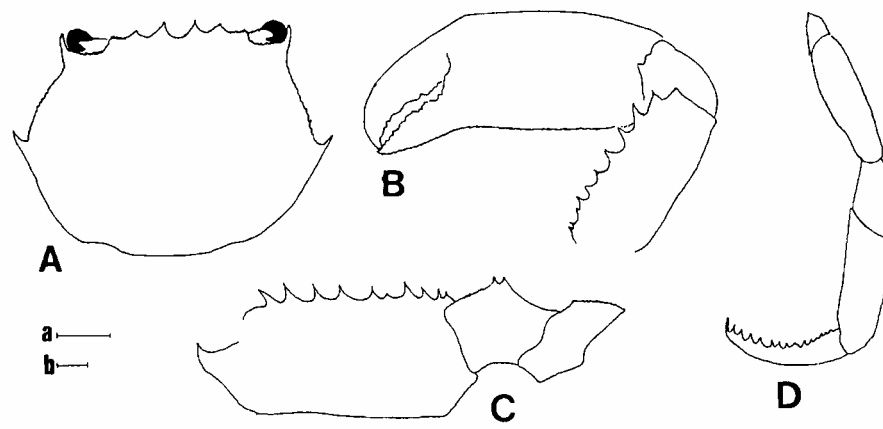
TÜRKAY M., SAKAI S. AND APEL, M. 1996. The Ocypode ghost crabs (Crustacea: Decapoda: Brachyura) of the Arabian Peninsula and adjacent regions. Fauna of Saudi Arabia, 15: 99-117.



**Fig.1.**– Sampling locality in Kish Island (arrow head), the Persian Gulf.



**FIG. 2.** – Female, *Quadrella reticulata* (CL. 10.8 mm, with autotomy on left chela).



**Fig.3.**— Female *Quadrella reticulata*. (A) Carapace dorsal view; (B) Right cheliped; (C) Basis of right cheliped (anterior side) and (D) Fourth walking leg. Scale bars 1mm: a (C); b (A, B & D).