

## FIRST RECORD OF TWO BRACHURYAN CRABS *ARCANIA CORNUTA* (MACGILCHRIST, 1905) AND *CRYPTOPODIA ECHINOSA* CHIONG AND NG, 1998 FROM PAKISTAN

Muhammad Moazzam<sup>1</sup> and Quddusi B. Kazmi<sup>2</sup>

<sup>1</sup>WWF-Pakistan, B-205, Block 6, PECHS, Karachi 75400, Pakistan (mmoazzamkhan@gmail.com)

<sup>2</sup>Marine Reference Collection and Resource Centre, University of Karachi, Karachi 75270, Pakistan

### ABSTRACT

Two brachuryan crabs, *Arcania cornuta* (MacGilchrist, 1905) belonging to family Leucosiidae and *Cryptopodia echinosa* Chiong and Ng, 1998 (Family : Parthenopidae) are recorded from Pakistan for the first time. The addition of these two species will total to 21 total species belonging to two families indicating diversity of marine crab fauna in Pakistan.

**Keywords:** *Arcania*, *A. Cornuta*; *Cryptopodia*, *C. echinosa*, *C. angulata*, Arabian Sea.

### INTRODUCTION

Three species of *Arcania* i.e - *A. erinacea* (Fabricius, 1787), *A. septemspinosa* (Fabricius, 1787) and *A. undecimspinosa* De Haan, 1841 have previously been reported from Pakistan (Tirmizi and Kazmi, 1986). Similarly, one species of genus *Cryptopodia* i.e., *C. angulata* H. Milne Edwards & Lucas, 1841 was also reported from Pakistan (Alcock, 1895; Ahmad *et al.*, 1973; Tirmizi and Kazmi, (1983, 1986). During commercial shrimp operation in the offshore waters of Pakistan one species each of two genera have been reported for the first time from Pakistan coast. Present paper provides details of these species.



Fig. 1. Map of Pakistan showing collection sites.

### MATERIAL AND METHODS

Samples of crabs were from the commercial shrimp trawlers operating in the offshore waters. The details of area (Fig. 1) from these species were collected and other information was recorded. In addition, samples of crabs collected during cruises of R/V Dr. Fridtjof Nansen in 2010 (Fanning *et al.*, 2011) were also examined. The crabs were photographed using digital camera. The samples were not retained as there were no preservation facilities available on commercial shrimp trawlers.

### RESULTS

Two species *Cryptopodia echinosa* Chiong and Ng, 1998 and *Arcania cornuta* (MacGilchrist, 1905) recorded for the first time from Pakistan.

Family PARTHENOPIDAE MacLeay, 1838  
 Genus *Cryptopodia* H. Milne-Edwards, 1834  
*Cryptopodia echinosa* Chiong and Ng, 1998  
 (Fig. 1-3)

**Material examined:**

- One male collected from 125.6 km southwest of Karachi (23° 56.100N; 66°15.800E) depth 154 m on November 13, 2015 caught by a commercial trawler
- One male collected from 32km south of Kalmat Khor (25°02.35N; 64°06.90) depth 97m on November 3, 2010 on board R/V Dr. Fridtjof Nansen.



Fig. 1. *Cryptopodia echinosa* (dorsal view). specimen caught from Sindh coast on November 13, 2015.



Fig. 2. *Cryptopodia echinosa* (ventral view).

**Description:**

The specimens from Pakistan comes in conformity with description of the species and colour pattern provided by Chiong and Ng (1998) and later on by Fatemi *et al.* (2012).



Fig. 3 *Cryptopodia echinosa* (Front view) showing more swollen branchial regions.

**Remarks**

Chiong and Ng (1998) described this species based on the specimens collected from Chennai (Madras) and Kochi (Cochin) in India. Later on this species was also reported from Persian Gulf and Gulf of Oman by Fatemi *et al.* (2012). While comparing with *Cryptopodia angulate* another species which is reported from Pakistan (Tirmizi

and Kazmi, 1986) and west coast of India (Silambarasan *et al.* (2015; Trivedi and Vachhrajani (2014), it is worth noting that *C. echinosa* differs markedly in that the carapace is more triangular in shape (more pentagonal in *C. angulata*), branchial, gastric and cardiac regions of the carapace are prominently more inflated; the median gastric depression is relatively deeper, the dorsal surface of the carapace is distinctively more granulated, the postrostral region is proportionately..This species can easily be distinguished from its congeners by its more swollen branchial regions.

Tirmizi and Kazmi (1986) collected the specimens of *C. angulate* from commercial catches landed at Karachi Fish Harbour but exact location of their collection is not known. Present specimen of *C. echinosa* was collected from a depth of 154 m southwest of Karachi. Present paper fills in the gap in the distribution of this species which are known from India, Persian Gulf and Oman Sea in the Arabian Sea.

Family LEUCOSIIDAE Samouelle, 1819

Genus *Arcania* Leach, 1817

*Arcania cornuta* (MacGilchrist, 1905)

(Fig. 3 to6)

#### Material examined

- One male collected from 157 km southwest of Karachi (24°17.400N; 66°13.900E) depth 100 m on November 24, 2015 caught by a commercial trawler
- One female collected from 123 km south of Karachi (25°25.56N; 66°56.00) depth 148 m on January 16, 2016 caught by a commercial trawler.



Fig. 4 *Arcania cornuta* (Dorsal view), specimen caught from Sindh coast on November 24, 2015



Fig. 5. Male *Arcania cornuta* (Ventral view).

#### Description

The specimens of this species from Pakistan come in conformity with description of the species and colour pattern provided by Galil (2001).



Fig. 6. *Arcania cornuta* (Ventral view). Female Specimen caught from Sindh coast on January 16, 2016.

**Colour:** Carapace and chelipedmerus yolk-yellow; cheliped fingers, pereopodstinged pale violet.

**Remarks:**

This species can be readily distinguished from other species of genus *Arcania* having spiny process each on either side of the carapace at the junction between antero-lateral and postero-lateral borders. The species is also known to have infraorbital lobe not reaching frontal eaves; cheliped fingers half as long as palm. This species was originally described as *Ixoides cornutus* by MacGilchrist (1905), however, Galil (2001) reassigned it to genus *Arcania*.

This species is known from Fiji Island, New Caledonia, Japan, China, Philippines, Vietnam, Persian Gulf, Madagascar, and Mozambique Channel. Present record extends its distribution to Pakistan coast where it was found on trawl able ground on Sindh coast.

**DISCUSSIONS**

Members of families Parthenopidae and Leucosiidae were studied by Tirmizi and Kazmi (1986) who have reported 4 genera and 6 species of family Parthenopidae whereas family Leucosiidae is represented by 8 general and 13 species. Present study has one genus each in two families. One species of genus *Cryptopodia* i.e. *C. Angulata* was reported from commercial catches at Karachi Fish Harbour whereas genus *Arcania* was represented by 3 species i.e. *A. erinaceus*, *A. septemspinosa* and *A. undecimspinosa*.

None of the specimens of *C.angulata* examined by Tirmizi and Kazmi (1986), had 'large, erect definitely-placed spines', as described by Alcock (1895), for *C. angulata* var. *cippifer*, which the earlier authors synonymised with *C. angulata* var. *cippifer* and report by Tirmizi and Kazmi (1986) helped to clarify the status of Alcock's variety *cippifer*. The available evidences thus suggest that *C. angulata* is a highly variable species and now it is believed that *C. angulata* var. *cippifer* is no more than one extreme end of this variation (Chiong and Ng, 1998)

Galil (2001) listed a record of *Arcania erinacea* from Pakistan by Tirmizi and Kazmi (1986) in the synonymy list of *A. undecimspinosa*. The drawing by Tirmizi and Kazmi (1986: Fig. 20), however, clearly shows serrate meri of the cheliped and fourth ambulatory leg, which are not observed in *A. undecimspinosa*. Tirmizi and Kazmi (1986) provisionally identified other specimens from Karachi, Pakistan as *A. undecimspinosa* noting the first gonopod of the Pakistani specimen differing markedly from that of *A. Undecimspinosa* in its strong distal curvature over the distal third (Tirmizi and Kazmi 1986: Fig. 22G). Naruse (2014), reviewing this situation considered the identities of the two Pakistani species questionable.

Addition of two species will total to 21 species belonging to two families indicating diversity of crab fauna in Pakistan.

**REFERENCES**

- Alcock, A. (1895). Materials for the carcinological fauna of India, No. 1, The Brachyura Oxyrhyncha. *J. Asiatic Soc. Bengal*, 64: 157-291.
- Ahmad, M.F., S.M. Sayed, I. Karim, M.S., Niazi, T. Jawaid and M. M. Zaman (1973). Marine fauna supplement. *Rec. Zool. Survey (Pakistan)*, 4: 1-46.
- Chiong, W. L., and P. K. L. Ng (1998). A revision of the buckler crabs of the genus *Cryptopodia* H. Milne Edwards, 1834 (Crustacea: Decapoda: Brachyura: Parthenopidae). *Raffles Bull. Zool.*, 46: 157-216
- Fanning L.P., M.W. Khan, S. Kidwai and G.J. Macauley (2011). *Surveys of the offshore fisheries resources of Pakistan – 2010*. FAO Fisheries and Aquaculture. Circular.No. 1065. Karachi, FAO. 87 pp.
- Fatemi, S. M. R., T. Valinasab, P. K. Ng, and N. Ghotbeddin (2012). First record of *Cryptopodia echinosa* (Crustacea: Decapoda: Brachyura: Parthenopidae) from the Oman Sea. *Mar. Biodiv. Rec.*, 5: e52.
- Galil, B. S. (2001). A revision of the genus *Arcania* Leach, 1817 (Crustacea: Decapoda: Leucosioidea). *Zool. Meded.* 75: 169-206.
- MacGilchrist, A.C. (1905). Natural History Notes from the R.I.M.S.S. "Investigator", Capt. T.H. Heming, R.N. (retired), commanding. Ser III. No. 6. An Account of the new and some of the rarer Decapod Crustacea obtained during the Surveying Seasons 1901-1904. *Ann. Mag. Nat. Hist.* 16: 361-367.
- Naruse, T. (2014). Description of two new species of *Arcania* Leach, 1817, from the western Pacific Ocean and redescription of *A. undecimspinosa* De Haan, 1841, and *A. Elongate* Yokoya, 1933 (Crustacea: Brachyura: Leucosiidae). *Zootaxa*, 3814: 301-332

- Silambarasan, K., A. Sundaramanickam, K.Sujathaand P. Senthilkumaar (2015). First record of buckler crab *Cryptopodia angulata* (Decapoda: Brachyura: Parthenopidae) from Chennai coast (Bay of Bengal). *Ind .J. Asia-Pacific Biodiv.* 8: 102-104.
- Tirmizi, N.M. and Kazmi, Q.B. (1983). Carcinological studies in Pakistan, with remarks on species incommon to the Red Sea and the Mediterranean.*Bull.Inst.Oceanogr.Fish. (9) Mar. Sci. Red Sea*, 347-380
- Tirmizi, N. M. and Q. B., Kazm i(1986).*Marine fauna of Pakistan. 4. Crustacea: Brachyura (Dromiacea, Archaeobrachyura, Oxystomata, Oxyrhyncha)*. Publication I, BCCI Foundation Chair, Institute of Marine Sciences, University of Karachi, Pakistan, 244 pp
- Trivedi, J. N. and K. D. Vachhrajani (2014). First record of *Cryptopodia angulate* H. Milne Edwards and Lucas, 1841 from Saurashtra coast, Gujarat, India (Decapoda: Brachyura: Parthenopidae). *Check List*, 9: 897-898.

(Accepted for publication June 2016)