

Four New Records of Brachyurans from Pakistan

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Abstract.- Four species of brachyuran crabs are recorded from Pakistan for the first time. The pinnotherid *Indopinnixa sipunculana* Manning and Morton, 1987, represents the first record of Pinnotherelinae from the Indian Ocean. *Quadrella reticulata* Alcock, 1898 (Trapeziidae) is recorded from Pakistan for the first time. The euryplacid *Eucrate indica* Castro and Ng, 2010, is formally recorded from Pakistan for the first time, with earlier records probably confused with *E. alcocki* Ng and Davie 2002 or *E. crenata* Alcock, 1900. The xanthid *Leptodius gracilis* (Dana, 1852) is also a new record, being the second species of the genus reported from Pakistan.

Key Words: New records, Brachyura, *Indopinnixa sipunculana*, *Eucrate indica*, *Leptodius gracilis*, *Quadrella reticulata*, Pakistan Coast.

INTRODUCTION

A considerable number of dredged and hauled samples collected at depths between 3-50 meters from offshore waters in Pakistan were identified, revealing the presence of a number of interesting representatives of four families of brachyuran crabs: Pinnotheridae, Euryplacidae, Trapeziidae and Xanthidae.

Indopinnixa aff. *sipunculana* Manning and Morton, 1987
(Figs. 1-2)

Indopinnixa sipunculana Manning and Morton, 1987:543; Rahayu and Ng, 2010: 59

Material

One subadult female ?, one 1 mm in CL, 4 mm in CW (MRCC.Brac.754).

Description

Carapace regions poorly defined without a defined cardiac ridge, anterolateral border marked by a crest, border forming slender shoulder (Fig.2A). Telson rounded, spatulate (Fig. 2B) resembling that of a male. Antennae (Fig. 1C, D) as illustrated. Third maxilliped with merus relatively broad. Terminal segment of palp long, provided

with long setae on margin and on diagonal crest (Fig. 2E, E"). Chelipeds (Fig. 2F, G) subequal, dentition on fingers almost lacking. Leg 3 (Fig.2I) much stouter, leg 4 (Fig. 2H) much smaller than others. First pleopod (Fig, 2J) abruptly narrows distally, tip pointed, slightly curved.

Remarks

The pinnotherid *Indopinnixa* Manning and Morton, 1987, until recently contained two species, *I. sipunculana* Manning and Morton, 1987, and *I. mortoni* Davie, 1992. Both species were found associated respectively with sipunculids and capitellid polychaetes living on soft muddy shores or sandy mud substrates between rocks in Hong Kong (Manning and Morton, 1987; Davie, 1992). Added to the genus are two new species recently collected from Lombok, Indonesia, *I. kasijani*. Rahayu and Ng, 2010 and *I. moosai* Rahayu and Ng, 2010.

The sex of the specimen is not confirmed, as the abdomen resembles in outline that of a male and not broadened like that of a female, but the appearance of the four pleopods are the characters of a female. The first pleopods seem to be quite normal for the species. The pleopods do not seem to be feminized. This is some anomaly or it may be a dioceus specimen. It was considered a subadult female (P. Ng; personal communication with QBK).

The sediment sample from sub littoral zone of Gwadar contains sipunculids, empty molluscan shells and capitellid polychaetes and it was difficult to ascertain if the present specimen was associated

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Fig. 1. *Eucrate indica*

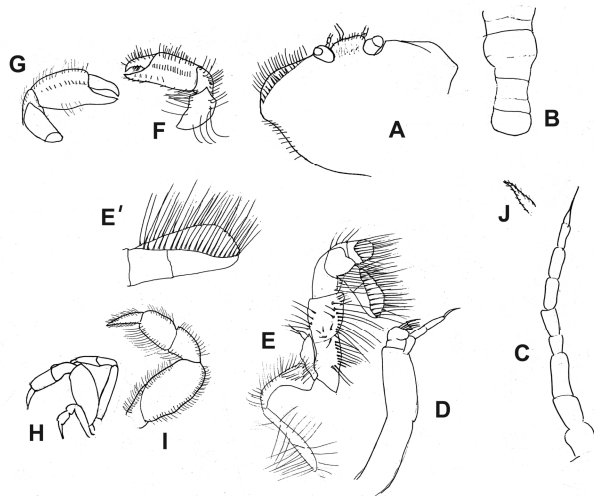


Fig. 2. *Indopinnixa* aff. *sipunculana*. A. Carapace and front; B. Abdomen; C., D. Antennae; E. Third maxilliped; E'. Same, dactylus; F, G, Right and left chelipeds; H. Leg 2-4; I. Leg 3; J. First pleopod

with any of the three. The Gwadar specimen resembles with *I. sipunculana*, but its small size and damage to its preserved body does not allow us to be certain. It is tentatively identified as *I. aff. sipunculana* Manning and Morton. Rahayu and Ng (2010) queried the taxonomy for the Indo-West Pacific members of the genus *Pinnixa*. *Pinnixa haematosticta* Sakai, 1934 and *P. penaltipedalis* Stimpson, 1858 also need to be transferred to

Indopinnixa, although both may be conspecific of *Indopinnixa* (H. Komatsu; personal communication). The subfamily Pinnothereliinae is recorded from the Indian Ocean for the first time.

Eucrate indica Castro and Ng, 2010

Eucrate alcocki - Ng and Davie 2002: 378.; Rajkumar *et al.* 2009: 832, Fig. 1. not *Eucrate alcocki* Serène, in Serène and Lohavanijaya, 1973
Eucrate crenata var. *dentata* (?) Alcock 1900: 299 [in key], 301; Sankarankutty 1966: 350
Eucrate indica Castro and Ng, 2010:20

Material

One ovigerous female 21 mm in CL, 27 mm in CB (MRCC Brac 754)

Diagnosis

Anterolateral margin armed with two teeth, excluding the external orbital tooth; the second tooth acutely triangular; the last tooth rudimentary as slight elevation; the fissures on the dorsal orbital margin indistinct; the carapace with a relatively long postero lateral border. Fifth pereopod propodus slender.

Remarks

Based on Castro and Ng (2010), the euryplacid crab was identified *E. alcocki*, which had been originally reported from Persian Gulf, India and northern Straits of Malacca. This record from Pakistan fills the gap in the range. *Leptodius* [give authority + date] is one of the common genera of xanthids of our coast, a recently collected male from Gwadar seemed to be different from the common and widely spread *L. exaratus* hence identified *L. gracilis*. This species has been reported from Southern Oman by Hogarth (1989).

This seems to be a relatively uncommon species in the region since only one male measuring 23.8mm from a trawl net from 40 m was collected from east coast of India, like the one female here collected at 54 m from Pakistan (25° 17'N 66° 429'E).

According to Rajkumar *et al.* (2009) and

Castro and Ng (2010), earlier records by Alcock (1900) and Chhapgar (1957a,b) of *Eucrante crenata dentata* Alcock 1900 from India are unconfirmed or wrong. Alcock's (1900) record cannot be confirmed as his descriptions were very brief, no colour notes were appended and no figures provided. Chhapgar's (1957a,b) record from Mumbai, seems unlikely to be *Eucrante*; the specimen he figured agrees better with *Heteroplax dentata sensu stricto* (Castro and Ng, 2010). The revision by Castro and Ng (2010) included specimens referred at present to *E. indica* from the Indian Ocean but not from Pakistan. Since Alcock's (1900) report of *E. crenata dentata* from India was merged with doubts with *E. indica* by Castro and Ng (2010), *E. crenata dentata* is also listed by Hashmi (1964) from Pakistan with no description or details. He most probably followed Alcock (1900). If his identification is correct then *E. indica* is probably not new to Pakistan but it can be concluded that the present specimen is the first confirmed record of *E. indica* in Pakistan.

Eucrante haswelli Campbell, 1969 was included in the family Goneplacidae by Tirmizi and Ghani (1988) but Castro and Ng (2010) considered this species as an euryplacid, *Trissoplax dentata* (Stimpson, 1858). Tirmizi and Ghani (1988) showed variations in carapace form among individuals in material from Pakistan and Queensland, Australia. The material reported as *E. sulcatifrons* (Stimpson) by Tirmizi and Ghani (1982) was not examined by Castro and Ng (2010) but this taxon was synonymised with *E. crenata* by these workers. There are a number of old records of *E. crenata* from the Indian Ocean but there seems to be not much material studied from the Arabian Sea. Unfortunately the specimens of *E. crenata* from Pakistan is not traceable. The illustrations reproduced here are from Tirmizi and Ghani (1982, 1988) and they appear to match *E. crenata* as defined by Castro and Ng (2010).

Colour

The colour pattern of the carapace of the present specimen is similar to that of given by Rajkumar *et al.* (2009) as *E. alcocki* from the Bay of Bengal, where the anterior fifth of the carapace is marked with four unusually shaped red spots, the rest of the surface is yellowish. Castro and Ng

(2010) noted two large, irregular, red-brown spots on the median portion of the dorsal surface of the carapace, each flanked by two smaller, vertically placed spots. The central or lateral spots may coalesce into a single lateral spot. Small red-brown spots are located.

Leptodius gracilis (Dana, 1852) (Fig. 3)

Chlorodius gracilis *Leptodius exaratus* var. *gracilis*
Miers, 1884: 530.

Leptodius gracilis de Man, 1887: 287.; Sakai, 1976: 424, fig. 223.; Serène, 1984: 182 (keys), 184, fig.107; Dana,1852: 210, pl. 26C; Dai and Yang, 1991:293, fig.155A(2),pl.37(6).

Material

One male 35mm in CL [location ?; catalogue number and museum?]

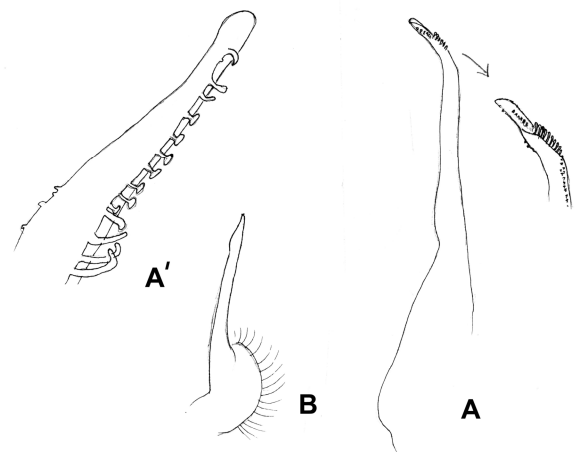


Fig. 3. *Leptodius gracilis*; A, first gonopod; A, tip magnified; B, second gonopod

Diagnosis

Carapace transversely oval, smooth, relatively depressed. Front and orbit more than half broader than carapace. Carapace about 1.6 times as broad as long. First gonopod stout, its distal portion short, spoon-shaped directed laterally and armed with 6-7 T-shaped teeth (Fig. 3A,A). Second gonopod as figured (Fig. 3B).

Remarks

The inwardly curved tip of the gonopod of *L. exaratus* (Serene, 1984; Tirmizi and Ghani, 1996) differentiates it from *L. gracilis*. Another difference is the number of T-shaped or mushroom-shaped tubercles, which are more in number in *L. exaratus* (Serene, 1984).

Quadrella reticulata Alcock, 1898
(Figs. 4-5)

Quadrella coronata var. *Reticulata* Alcock, 1898:
227; Borradaile, 1902:266

Quadrella reticulata reticulata Serène 1968: 89

Quadrella boopsis Galil, 1986: 281, figs. 4 A, B.

Quadrella reticulata Serène, 1973: 199; 1975: 519;
1984: 286 and 287; Galil and Takeda, 1985:
204; Galil, 1986: 288 ; 1988: 179; Castro,
1999a: 38; 1999b: 96; Castro *et al.*, 2004: 56;
Naderloo and Sari, 2005:63

Material

One male CL 10mm. CB 12mm. Indus Swatch Area, trawled, 60m. 28 Nov. 2010 (MRCC Brac 75)

Diagnosis

Regions poorly developed (Fig. 4), shallow to obtuse tubercles absent on the central portion of the carapace. Anterolateral margins constricted behind postorbital angles, convex, granular (Fig. 5A). Epibranchial spine separating anterior and posterior margins well-developed, curved. Posterolateral margins slightly concave. Front (Fig. 5B) cut into 4 triangular lobes; submedian lobes entire, separated by a broad V-shaped notch. Lateral lobes broad but shorter than submedian lobes. Supraorbital angle granular, granules increase in size outwardly. Inferior inner orbital spine curved, acute, exceeding lateral frontal lobes. Superior orbital margins granular, fringed with setae; inferior orbital margins as superior margins. Anterior margin of buccal frame concave, notched medially. Interantennular septum subquadrate. Thoracic sternum (Fig. 5C) medially sutured. Last abdominal somite twice as long as wide. Antennae inserted between antennular groove and inferior orbital angle. Exopod of third maxilliped rod-like. Medially sulcate, rounded

granular tooth on inner margin; proximal half of inner margin of endopod ischium tuberculate, distal inner angle prominent; inner distal angle of merus obliquely truncate. Chelipeds massive, asymmetrical (Fig. 5D); right chela half carapace length, short and stout, left (Fig. 5F) long and slender, both granular, lower margins serrate, cutting edges double margined, serrated; large tubercles present on the lower portion of the chelipeds, particularly in the large ones (Serène, 1973); ischium with one large median spine; merus more than two thirds carapace length with regular spaced large curved pointed teeth, each space occupied by a granular, tooth and gap increases distally, proximal 2 on right cheliped (Fig. 5F), and 3 on left not spaced; carpus with one anterior curved spine and one tubercle on inner margin. First ambulatory leg with thick movable spines along posterior edge of propodus. Fourteen (exapical) evenly spaced triangular teeth on posterior margin of fourth ambulatory dactylus, teeth progressively increase slightly in size toward the tip; all teeth with one additional spine on anterior edge; spines on anterior margin upto level of fourth distal teeth; 3-4 rows of spines on anterior and 8 on ventral surface. First gonopod (Fig. 5E) sinuous, distally straight, armed with backwardly directed spines, proximal most strong; second (Fig. 5H).

Remarks

Q. reticulata is not an easily recognizable species. It was earlier confused with *Q. boopsis* by Galil (1986), which is a closely related species (Castro and Ng, 2010). Based on key given by Galil (1986), it comes close to *Q. maculosa*, but detailed examination reveals that it differs from *Q. maculosa*. Castro (1999b) mentioned of the chelipeds and carapace have shallow to obtuse tubercles, the tubercles being absent on the central portion of the carapace as in our specimen. The supraorbital angles are tuberculate, with the terminal tubercle sometimes acute (but not pointed or spine-like) shape (Serène, 1973). The epibranchial tooth is acute; an acute intermediate epibranchial tooth may be found in small specimens (Castro, 1999b).

Colour

The carapace, cheliped and propodus of *Q.*

reticulata were described to be ornamented with “fine purple-brown lines which intersect to form a regular and wide meshwork” (Alcock, 1898). Borradaile (1902) described it as showing “colour in tiny purple dots”. Galil (1986; 1988) quoted colour



Fig. 4. *Quadrella reticulata*

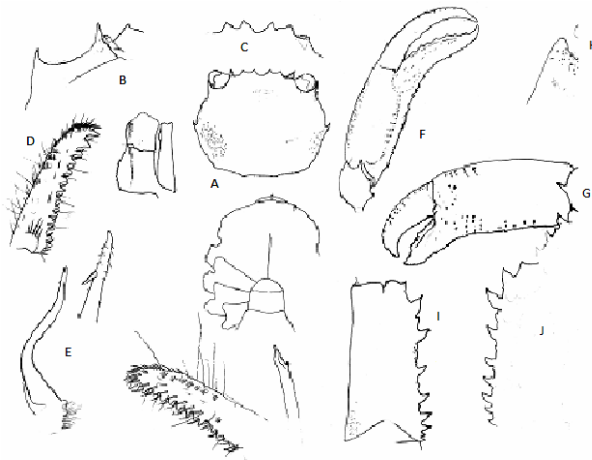


Fig. 5. *Quadrella reticulata* A, lateral teeth; B, supraorbital angle; C) infraorbital angle; D, cheliped ischium; E, leg 4 dactyl; F, Right chela; G, Left chela; H, Cheliped, anterior margin of right merus, ventral view; I, Same, inner margin; J, Same, inner margin, left chela.

described by Nobili (1906a,b) as ornamented with reddish lines. The correct identity of Nobili's specimens, however, could not be verified (Castro, 1999b). The latter gave the colour of some of the Rumphius live specimens collected from one colony of black coral (*Antipathes* sp.). In the present case we mistook the purple colour possibly because of sepia ink, as cephalopods were present in the same haul but the crab itself, according to Castro (1999b), is purple. Two other medium-size heterosexual pairs in his collection had a W-shaped band that extended between the eyes across the anterior portion of the carapace. The smallest specimens exhibited colour patterns that varied in all individuals.

For the Persian Gulf specimens Naderloo and Sari (2005) described the same meshwork of purple lines on the chelipeds and carapace of fresh specimens agreeing with the colouration of Sri Lankan specimens given by Alcock (1898). These purple lines fade away after preservation. A reticulate pattern of orange is visible on the chelipeds and a diagonal line behind each epibranchial spine and a blotch on carapace behind submedian lobes after preservation

Distribution

Q. reticulata is known from Sri Lanka (type locality) and the Andaman Islands (Alcock, 1898); Sri Lanka, Colombo and South China Sea (Serène, 1973); Japan, (Galil and Takeda, 1985); South China Sea and the Philippine Islands (Galil, 1986); Red Sea (Galil, 1988); Indonesia, South China Sea and the Philippine Islands (Castro, 1999a); Sri Lanka (Castro, 1999a,b) and the Persian Gulf (Naderloo and Sari, 2005). It has been collected from depths of 18-82 m, Females are slightly larger than their male partner. Only one pair lives on a single host coral, where they live as symbionts. This report of the species from Pakistan fill the gap in its range.

ACKNOWLEDGEMENTS

The first author is grateful to Drs. P. K. L. Ng of National University of Singapore, P. Castro of California State Polytechnic University, Pomona USA and H. Komatsu of National Museum of Nature and Science, Tokyo, Japan for helping in

identification and for making available relevant literature.

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(Received 8 August 2011, revised 5 September 2012)