

A checklist of marine anomurans (Crustacea: Decapoda) of Pakistan, northern Arabian Sea

FEROZ A. SIDDIQUI AND QUDDUSI B. KAZMI

Marine Reference Collection and Resource Center, University of Karachi, Karachi-75270, Pakistan
(qbkazmi@mrcrc.ku.edu.pk)

Abstract

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A checklist of marine Anomura from Pakistan is presented. A review of the literature showed that the anomuran fauna comprises 45 species representing 16 genera and six families arranged in three superfamilies. The family Diogenidae is best represented, with 23 species in five genera; the families Coenobitidae and Paguridae each have a single genus with three species in the former, and two species in the latter; the family Porcellanidae has 15 species in seven genera; whereas the families Albuneidae and Hippidae are each represented with one species. The list contains information on habitat and geographical distribution.

Keywords

Crustacea, Anomura, Pakistan, checklist

Introduction

The potential for exploitation of biological resources of the northern Arabian Sea and Pakistan coastal waters has been recently recognised (Thompson and Tirmizi, 1995). The resources of this region are subjected to considerable human pressure. The invertebrate fauna is poorly known and hence the human effects on the fauna are difficult to assess. Although there have been a few attempts to investigate and document the diversity of anomurans (Mustaquim, 1972; Tirmizi and Siddiqui, 1981, 1982; Tirmizi et al., 1982, 1989) there is urgent need to update this information. The checklist of the Crustacea Decapoda and Stomatopoda (Tirmizi and Kazmi, 1983) now needs revision in light of additions and changes to species of *Diogenes* (McLaughlin and Holthuis, 2001).

The present paper is a checklist of the anomurans from intertidal or subtidal regions of the Pakistan coast. Families are listed according to the classification of Martin and Davis (2001) with genera and species alphabetical within each family. The list is based on information provided by scientists working in Pakistan and from literature. Each record is followed by information on habitat and geographical distribution, and its first report in the literature. * denotes a new record from the region.

Checklist

Superfamily **Galatheaidea** Samouelle, 1819

Porcellanidae Haworth, 1825

Ancyllocheles Haig, 1978

Ancyllocheles gravelei (Sankolli, 1963). Pakistan; west coast of India; Gulf of Mannar; Australia. Under stones, in small pools to a depth of about 16 m (Tirmizi et al., 1982).

Enosteoides Johnson, 1970

Enosteoides ornatus (Stimpson, 1858). Pakistan; Korea; China; Hong Kong; Vietnam; Gulf of Thailand; Singapore; Japan; Australia. Under stones (Tirmizi et al., 1982).

Pachycheles Stimpson, 1852

Pachycheles natalensis (Krauss, 1843). Western Indian Ocean; Pakistan; Africa; Oman. In rock crevices near low water mark. (Mustaquim, 1972).

Pachycheles tomentosus Henderson, 1893. Western Indian Ocean; Pakistan; western India; southern India; South Africa; Madagascar; Red Sea; Gulf of Aden; Persian Gulf. In holes and crevices of rocks near low water mark (Mustaquim, 1972).

Petrolisthes Stimpson, 1858

Petrolisthes boscii (Audouin, 1826). Indo-West Pacific; Pakistan; Taiwan; Hong Kong; Gulf of Thailand; Japan; Australia; Oman; Red Sea; Persian Gulf. In rocky pools under stones, and in sand near low water mark (Mustaquim, 1972).

Petrolisthes lamarkii (Leach, 1820). Indo-west Pacific; Pakistan. Under large stones (Mustaquim, 1972).

Petrolisthes leptocheles (Heller, 1861). Pakistan; India;

Somalia; Red Sea; Gulf of Aden; Oman; Persian Gulf. Under stones (Mustaquim, 1972).

Petrolisthes ornatus Paulson, 1875. Pakistan; Gulf of Kutch; India; Sri Lanka; Comoro Island; Madagascar; Mozambique; Zanzibar; Red Sea; Gulf of Aden; Gulf of Oman; Persian Gulf. Under stones (Mustaquim, 1972).

Petrolisthes rufescens (Heller, 1861). Pakistan; Indo-west Pacific; Pakistan; Gulf of Kutch; eastern Africa; Nicobar Island; Madagascar; Comoros; Somalia; Red Sea; Gulf of Aden; Persian Gulf. Under stones (Mustaquim, 1972).

Pisidia Leach, 1820

Pisidia dehaanii (Krauss, 1843). Pakistan; India; Bay of Bengal; South Africa; Oman; Persian Gulf. Under stones from small pools (Mustaquim, 1972).

Pisidia delagoae (Barnard, 1955). Pakistan; South Africa; Oman. Under stones in small pools (Tirmizi et al., 1982).

Pisidia gordonii (Johnson, 1970). Pakistan; India; Australia; South Africa; Red Sea; Gulf of Aden; Persian Gulf. Sublittoral, occasionally found in littoral zone under stones (Tirmizi et al., 1989).

Polyonyx Stimpson, 1858

Polyonyx hendersoni Southwell, 1909. Pakistan; western India; Sri Lanka; Japan; Korea; Hong Kong; Western Australia and Queensland, Australia. Under stones (Tirmizi et al., 1982).

Polyonyx loimicola Sankolli, 1965. Pakistan; and India. Buried under mud (Tirmizi et al., 1989).

Raphidopus Stimpson, 1858

Raphidopus ciliatus Stimpson, 1858. Pakistan; Korea; Formosa Strait; China; Hong Kong; Gulf of Thailand; Singapore; Japan; Australia; Malay Peninsula. Muddy bottom (Tirmizi and Ghani, 1994).

Superfamily **Hippoidea** Latreille, 1825

Albuneidae Stimpson, 1858

Albunea Fabricius, 1793

Albunea steinitzi Holthuis, 1958. Pakistan; Philippines; Western Australia; Red Sea; Gulf of Aden. In littoral sand (Tirmizi, 1978).

Hippidae Latreille, 1825.

Emerita Scopoli, 1777

Emerita holthuisi Sankolli, 1965. Pakistan; India. In littoral sand (Tirmizi, 1977).

Superfamily **Paguroidea** Latreille, 1802

Coenobitidae Dana, 1851

Coenobita Latreille, 1826

Coenobita perlatus H. Milne Edwards, 1837. Pakistan; Samoa; Mauritius. Semi-terrestrial, in sandy shore (Ahmed and Khan, 1971).

Coenobita rugosus H. Milne Edwards, 1837. Pakistan; Bay of Bengal; west coast of America. Semi-terrestrial, in rocky and sandy shores (Ahmed and Khan, 1971).

Coenobita scaevola (Forskål, 1775). Northern Arabian Sea; Pakistan; Red Sea; Gulf of Aden; Oman. Semi-terrestrial, more

abundant above sandy shores and tidal zone (Tirmizi and Siddiqui, 1981).

Diogenidae Ortmann, 1892

Calcinus Dana, 1851

**Calcinus elegans* H. Milne Edwards, 1837. Pakistan; Hawaiian Island to East Africa. Rocky shore (Siddiqui, pers. obs.).

Calcinus latens (Randall, 1840). Indo-Pacific region; Pakistan; Maldives; Australia; Hawaiian Islands; eastern Africa; Red Sea; Gulf of Aden; Oman. Rocky shore (Tirmizi and Siddiqui, 1981).

Clibanarius Dana, 1852

Clibanarius aequabilis Dana 1852. Pakistan; Sri Lanka; Mergui; Malay Peninsula; Tahiti; western Africa. Muddy and sandy shores (Ahmed and Khan, 1971). This record appears to be in error.

Clibanarius arethusa De Man, 1888. Pakistan; Bay of Bengal. Rocky shore (Ahmed and Khan, 1971).

Clibanarius clibanarius (Herbst, 1791). Pakistan; Andamans to Tahiti. Muddy and sandy beaches (Tirmizi and Siddiqui, 1981).

Clibanarius infraspinus Hilgendorf, 1869. Indo-Pacific; northern Arabian Sea; Pakistan; Bay of Bengal; Malay Archipelago; eastern Australia; Red Sea. Muddy and sandy beaches (Ahmed and Khan, 1971).

Clibanarius padavensis De Man, 1888. Indo-Pacific; Pakistan to Singapore; East Indies; Australia; New Caledonia. Muddy and sandy shores (Ahmed and Khan, 1971).

Clibanarius signatus Heller, 1861. Northern Arabian Sea; Pakistan; Oman; Red Sea. Common on rocky and sandy shores, rare on muddy shore (Tirmizi and Siddiqui, 1981).

Clibanarius striolatus Dana, 1852. Karachi, Pakistan; Gulf of Aden; Seychelles and eastward to Tahiti; Australia. Rocky and muddy shores (Alcock, 1905).

Clibanarius virescens (Krauss, 1843). Pakistan; Australia; Japan; Philippine and Fiji Islands; Hong Kong; eastern Africa; Red Sea; Gulf of Aden; Oman; Persian Gulf. Rocky shore (Tirmizi and Siddiqui, 1981).

Dardanus Paulson, 1857

Dardanus setifer (H. Milne Edwards, 1836). Pakistan and eastward to Hong Kong; Australia; southern and eastern Africa. Offshore (Tirmizi and Siddiqui, 1981).

Dardanus vulnerans (Thalwitz, 1892). Pakistan; New Guinea; Bay of Bengal; Persian Gulf. Offshore (Tirmizi and Siddiqui, 1981).

Diogenes Dana, 1852

**Diogenes alias* McLaughlin and Holthuis, 2001. Pakistan; eastern Indian Peninsula; Borneo; South China Sea. Offshore on muddy bottom. Tirmizi and Siddiqui's (1981) report of *D. diogenes* (Herbst, 1791) from Pakistan is actually *D. alias* (McLaughlin and Holthuis, 2001).

Diogenes avarus Heller, 1865. Northern Arabian Sea; Pakistan; Vietnam; Philippine Islands; Indonesia; Thailand; northern and western Australia; eastern Africa; Red Sea. Rocky shore (Tirmizi and Siddiqui 1981).

Diogenes bicristimanus Alcock, 1905. Pakistan; India; South Africa; South Arabia. Rocky shore (Tirmizi and Siddiqui 1982).

Diogenes costatus Henderson, 1888. Northern Arabian Sea; Pakistan; south-eastern India; Red Sea (Ahmed and Khan, 1971).

Diogenes custos (Fabricius, 1798). Indo-Pacific; Pakistan; Madras; eastern Australia. Rocky shore. Tirmizi and Siddiqui's (1981) report of *Diogenes? affinis*, and Henderson's (1893) *D. planimanus* and *D. violaceus* are actually *D. custos* (McLaughlin and Holthuis, 2001).

**Diogenes dubius* (Herbst, 1804). Pakistan; Indian Seas; Bay of Bengal; south-eastern Australia. Muddy shore. Reported from Pakistan (Tirmizi and Siddiqui, 1981) as *D. custos* (Fabricius, 1798) (McLaughlin and Holthuis, 2001).

Diogenes sp. Northern Arabian Sea; Pakistan. Rocky shores. Reported from Pakistan (Tirmizi and Siddiqui, 1981) as *D. guttatus* Henderson, 1888, but could possibly be *D. granulimanus* Miers, 1880, or an undescribed species (P. McLaughlin, in litt.).

**Diogenes ?fasciatus* Rahayu and Forest, 1995. Pakistan; and Indonesia. In creek area. Identification tentative (P. McLaughlin, in litt.).

**Diogenes ?karwarensis* Nayak and Neelkantan, 1989. Pakistan; and India. In creek area. Identification tentative (P. McLaughlin, in litt.).

**Diogenes ?klaasi* Rahayu and Forest 1995. Pakistan; Indonesia. In creek area. Identification tentative (P. McLaughlin, in litt.).

**Diogenes ?manaarensis* (Henderson, 1893). Pakistan; Mergui; Philippine; Australia; eastern Africa; Red Sea. Rocky and sandy shore. Reported from Pakistan (Tirmizi and Siddiqui, 1981) as *D. jousseumei* (Bouvier, 1897), may be *D. ?manaarensis* (Henderson 1893) (P. McLaughlin, in litt.).

Paguristes Dana, 1851

Paguristes perspicax Nobili, 1906. Pakistan; Red Sea; Persian Gulf. Rocky shores (Tirmizi and Siddiqui, 1981).

Paguridae Latreille, 1802

Pagurus Fabricius, 1775

Pagurus kulkarnii Sankolli, 1962. Pakistan; India; Thailand. Rocky shores (Tirmizi and Siddiqui, 1981).

Pagurus sp. Pakistan. Offshore (Tirmizi and Siddiqui, 1981).

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