ON A COLLECTION OF ECHINODERMATA FROM KARNATAKA COAST, INDIA

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INTRODUCTION

The Karnataka State of India has a 270 km long coast line bordering Arabian Sea. The habitats are mainly sandy with scattered rocks and rocky islands. The echinoderm fauna of the coast is poorly known. There are several scattered reports of echinoderms from Karnataka (see Sastry, 2007). However, the report of Patil (1953) includes the marine fauna exclusively of Karnataka and only Temnopleurus sp. of echinoderms from Karwar coast of Karnataka. Recently Sastry (2007) gave an account of Echinodermata reported from the Indian coast including 27 species mainly from the offshore locations along the Karnataka coast collected years back chiefly by the R. I. M. S. Investigator. The collections made during the recent survey of the coast by Dr. M. K. Dev Roy of ZSI along with JGP and SM of us included seven species. The asteroid Asterina burtoni is from the intertidal rocks at St. Mary Island and all the other six species are from the trash collections of the offshore fishing trawlers left on the beach. Of the seven species, the asteroid Luidia hardwicki and the two echinoids were reported earlier from the Karnataka. The other four species are additions to the fauna of the State. Further, the finding extends the known distribution of Comatella stelligera westward into Arabian Sea. Brief description of the material is given under remarks. The distribution along the Indian coast is from Sastry (2007) and elsewhere is mainly from Clark and Rowe (1971). A list of all the echinoderm species known from Karnataka is appended.

SYSTEMATIC ACCOUNT

Phylum Echinodermata
Class CRINOIDEA
Order COMATULIDA
Family COMATULIDAE

1. Comatella stelligera (P. H. Carpenter)
(Pl. I. Fig. 1)

1971. Comatella stelligera: Clark, A. M. and Rowe, F. W. E. Monograph of shallow-water Indo-West Pacific echinoderms, 6-7 (distribution) and 15 (key).

Material: Murudeshwar beach, 17.3.2009, one specimen.

Remarks: Some of the division series are lost or broken. All the division series present are of only two ossicles and without a syzygy. II Br series with two III Br series, or III Br only on the outer side. First brachial syzygy at 3+4.

Distribution: India- Lakshadweep, Tamil Nadu, Andamans. The species newly recorded from Karnataka coast.

Elsewhere: Bay of Bengal to South China Sea and North Australia.

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Class ASTEROIDEA
Order PAXILLOSIDA
Family LUIDIIDAE

2. Luidia hardwicki (Gray)
   (Pl. I, Fig. 4)


1971. Luidia hardwicki: Clark, A. M. and Rowe, F. W. E. Monograph of shallow-water Indo-West Pacific echinoderms, 30-31 (distribution) and 44 (key).


Material: Bhatkal Fishing Harbor, 17.3.2009, one spec; Gangoli Fishing Harbor, Kundapura, 20.3.2009, one spec.

Remarks: The specimens are from a trawl waste and not properly preserved. Disc and arms are separate with the armament on oral side completely rubbed off and could not be identified. It appears from the nature of paxillar arrangement that the specimens belong to Luidia hardwicki among the five armed species.

Distribution: India- Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, West Bengal and Andaman Islands. Earlier the species was collected by RIMS Investigator from Karnataka coast at 8 mls WSW of Honawar and reported by Koehler (1910) as L. limbata.

Elsewhere: SE Arabia, Persian Gulf, Islands of Western Indian Ocean, Bay of Bengal, East Indies, South China Sea, North Australia and Hawaii.

Family ASTROPECTINIDAE

3. Astropecten hemprichi Müller and Troschel
   (Pl. I. Fig. 2, 3)


1971. Astropecten hemprichi: Clark, A. M. and Rowe, F. W. E. Monograph of shallow-water Indo-West Pacific echinoderms, 30-31 (distribution) and 45 (key).


Material: Karwar coast, fish trawl collection, 13.3.2009, one spec, R = 23 mm; Bhatkal, 17.3.2009, 13 specs, R = 18-34 mm, R/r of the largest is 34/10 mm; Mangalore coast, Ullal beach, 24.3.2009, 22 specs, R = 20-32 mm.

Remarks: Actinal plates one or two. Superomarginals vertically aligned at the interradius and wider beyond third or fourth plate. Short spinelets not prominent, extending till end of arm, proximally on the inner margin, shifting to outer margin beyond third or fourth plate, two series of spines from third to sixth plates. Inferomarginals with one pointed spine marginally and two unequal spines below it, the smaller is half the length of the other, actinal surface with pointed spinelets. Adambulacrals with three spines in the furrow and two unequal spines in the subambulacral area. About half dozen specimens contained two to eight small gastropods in the stomach.

Distribution: India- Andhra Pradesh and Tamil Nadu. The species newly recorded from Karnataka coast.

Elsewhere: Persian Gulf to Natal coast of South Africa and Bay of Bengal.
Order VALVATIDA
Family ASTERINIDAE

4. Asterina burtoni Gray
   (Pl. I. Fig. 5)


Material: St. Mary Island, 22.3.2009, one specimen.

Remarks: The specimen measures 5 mm in R and 2.5 mm in r. arms five and thick radially, madreporite single. Abactinal plates with up to four short spines. Pore series confluent interradially. Actinal plates with one to three spines. Furrow spines three, subambulacral spines two.

Distribution: India- Gujarat, Lakshadweep, Tamil Nadu, Andaman and Nicobar Islands. The species is newly recorded from Karnataka coast.

Elsewhere: Red Sea and East coast of Africa to north Australia.

Class ECHINOIDEA
Order TEMNOPLEUROIDA
Family TEMNOPLEURIDAE

5. Temnopleurus toreumaticus (Leske)
   (Pl. II. Fig. 6)


1971. Temnopleurus toreumaticus: Clark, A. M. and Rowe, F. W. E. Monograph of shallow-water Indo-West Pacific echinoderms, 144-145 (distribution) and 160 (key).


Material: Mangalore coast, off Bhatkal, 17.3.2009, 22 specs; Off Mangalore, Fish trawl collection, 24.3.2009, 10 specs.

Remarks: The specimens measure 20-45 mm in length, l/b = 20/20 in the smallest and 45/42 in the largest. The anus is characteristically abutting the posterior margin.

Distribution: India- Gujarat, Karnataka, Kerala, Tamil Nadu, Orissa, Andhra Pradesh and West Bengal.

Elsewhere: Persian Gulf to the Natal coast and to east Indies.

Class Holothuroidea
Order Dendrochirotida
Family CUCUMARIDAE

7. Leptopentacta javanicus (Sluiter)
   (Pl. II. Fig. 9)


**Material**: Karwar Coast, Uttara Kannada Dt, 13.3.2009, 18 specs; Bhatkal, 17.3.2009, 15 specs; Tonka, near Honawar, Uttara Kannada Dt, 18.3.2009, 2 specs; Gangoli, Kundapura, 20.3.2009, 11 specs.

**Remarks**: Body form small and slender. Pedicles in a double row along each side of the ambulacral areas ventrally. Papillae in three rows, along the dorsal ambulacral areas. Aggregations of spicules in inter ambulacral areas make a reticulate appearance. Spicules smooth nodular buttons with four hole baskets and large lenticulate plates also present.

**Distribution**: India- Kerala, Tamil Nadu and Andhra Pradesh. The species is recently recorded from Karnatak coast.

**Elsewhere**: SE Arabia, Maldives, Bay of Bengal and East Indies.

**SUMMARY**

Recent collections from the Karnatak (Arabian Sea) coast of India contained material of seven species of echinoderms. Of these the Crinoid *Comatella stelligera*, the asteroids *Astropecten hemprichi* and *Asterina burtoni* are new to the fauna of Karnatak coast. In addition, the collection included *Luidia hardwicki*, *Temnopleurus toreumaticus* and *Clypeaster rarispinus* already known from the coast and the holothuroid *Leptopentacta javanicus* which was recently reported from this coast. Further the present record of *Comatella stelligera* extends its distribution westward into the Arabian Sea.

**ACKNOWLEDGEMENTS**

We are grateful to The Director, Zoological Survey of India, Kolkata for the facilities and encouragement.

**REFERENCES**


Manuscript Received: 02 July, 2010; Accepted: 20 September, 2012
SASTRY et. al: On a collection of Echinodermata from Karnataka Coast, India

APPENDIX

ECHINODERMATA of KARNATAKA COAST
* species new to Karnataka Coast

Phylum ECHINODERMATA
Class CRINOIDEA
Order COMATULIDA
Family Comatulidae
1 Comatella stelligera (Carpenter)*
Family HIMEROMETRIDAЕ
2 Heterometra compta A. H. Clark
Family MARIAMETRIDAЕ
3 Lamprometra palmata (J. Müller)
Family COLOBOMETRIDAЕ
4 Oligometra serripinna (P. H. Carpenter)
Order BOURGUETICRINIDA
Family PENTACRINITIDAЕ
5 Comastocrinus ornatus (A. H. Clark)
6 Comastocrinus springeri (A. H. Clark)

Class ASTEROIDEA
Order PAXILLOSIDA
Family LUIDIIDAE
1 Luidia (Luidia) hardwicki (Gray)
Family ASTROPECTINIDAE
2 Astropecten hemprichi Müller and Troschel*
3 Astropecten inutilis Döderlein
4 Astropecten tamilicus Döderlein
Family PORCELLANASTERIDAE
5 Sidonaster vaneyi Koehler

Order Valvatida
Family Asterinidae
6 Asterina burtoni Gray*
Order BRISINGIDA
Family BRISINGIDAE
7 Brisinga gunni Alcock

Class OPHIUROIDEA
Order OPHIURIDA
Family OPHIURIDAE
Subfamily OPHIURINAE
1 Ophiura undulata (Lyman)
Family HEMIEURYALIDAE
2 Ophiomoeris tenera (Koehler)
Family OPHIOTHRICIDAE
3 Ophiothrix sp.

Class ECHINOIDEA
Order CIDAROIDEA
Family CIDARIIDAE
1 Stereocidaris alcocki (A. R. S.Anderson)
Order PHYMOSOMATOIDA
Family STOMECHINIDAE
2 Stomopneustes variolaris (Lamarck)
Order TEMNOPLEUROIDA
Family TEMNOPLEURIDAE
3 Salmacis bicolor L. Agassiz
4 Temnopleurus toreumaticus (Leske)

Order CLYPESTEROIDA
Family CLYPEASTERIDAE
5 Clypeaster rarispinus de Meijere
6 Clypeaster reticulatus (Linnaeus)

Family FIBULARIIDAE
7 Echinocyamus crispus Mazetti

Order SPATANOIDA
Family SPATANGIDAE
8 Nacospatangus (Pseudomaretia) alta (A. Agassiz)

Class HOLOTHUROIDEA
Order ASPIDOCHIROTIDA
Family HOLOTHURIIDAE
1 Holothuria (Halodeima) atra (A. Agassiz)
2 Holothuria (Mertensiothuria) leucospilota Brandt

Order DENDROCHIROTIDA
Family Cucumaridae
3 Leptopentacta javanicus (Sluiter)*

Order DACTYLOCHIROTIDA
Family YPSILOTHURIIDAE
4 Ypsilothuria bitentaculata (Ludwig)

Order APODIDA
Family MYRIOTROCHIDAE
5 Ankyloderm a musculus (Risso)

Other Holothurians
6 Bathyzona incerta Koehler and Vaney
7 Pseudothuria duplex Koehler and Vaney
Fig. 6. Temnopleurus toreumaticus

Fig. 7. Clypeaster rarispinus (aboral)

Fig. 8. Clypeaster rarispinus (oral)

Fig. 9. Leptopentacta javanicus