

ECHINODERMATA (OTHER THAN HOLOTHUROIDEA) FROM THE RITCHIE'S ARCHIPELAGO, ANDAMAN ISLANDS

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INTRODUCTION

Ritchie's Archipelago located East of South Andamans in the Bay of Bengal consists of 13 islands. These are North, Middle and South Button Island National Parks; East or Inglis and Sir Hugh Rose Island Sanctuaries; Outram, John Lawrence and Henry Lawrence Islands of Rani Jhansi Marine National Park and Wilson, Nicholson, Sir William Peel, Havelock and Neil Islands. Mahadevan and Easterson (1983) and Pande *et al.* (1991) gave topographical details of these islands. In spite of several accounts on the echinoderm fauna of the Andaman Islands, there are only a few reports pertaining to Ritchie's Archipelago (see Anon., 1995). Recently there has been a necessity for island-wise faunal inventories for declaration and management of protected areas in the Andaman and Nicobar Islands. Hence the following account reports on the echinoderms other than holothurians of Ritchie's Archipelago. Earlier, Julka and Das (1978), Soota *et al.* (1983), James (1986b) and Sastry (1997) reported the following 12 species from the Ritchie's Archipelago.

ASTEROIDEA

1. *Archaster typicus* Mueller & Troschel (Havelock I)
2. *Culcita novaeguineae* Mueller & Troschel (Havelock I)
3. *Dactylosaster cylindricus* (Lamarck) (Outram I)
4. *Linckia laevigata* Mueller & Troschel (Havelock I)

ECHINOIDEA

5. *Phyllacanthus imperialis* (Lamarck) (Henry Lawrence I)
6. *Prionocidaris verticillata* (Lamarck) (Henry Lawrence I)
7. *Mespilia globulus* (Linnaeus) (Henry Lawrence I)

HOLOTHUROIDEA

8. *Actinopyga mauritiana* (Quoy & Gaimard) (Neil I)
9. *Holothuria pyxis* Selenka (Havelock I)
10. *H. arenicola* Semper (Neil I)

11. *H. impatiens* Forskal (Havelock I)
 12. *Stichopus chloronotus* Brandt (Havelock & Neil Is)

During the intensive surveys of the Ritchie's Archipelago over the years by scientists, including the present author, of Zoological Survey of India, several echinoderms had been collected from these islands. The material belonged to 34 species including eight species of Crinoidea, four species of Asteroidea, 17 species of Ophiuroidea and five species of Echinoidea. Of these only the asteroids *Culcita novaeguineae* Mueller and Troschel and *Linckia laevigata* Mueller and Troschel have been reported from Havelock Island of Ritchie's Archipelago as mentioned above. All the other 32 species are new to the echinoderm fauna of the Archipelago. Among the 34 species encountered, the crinoid *Stephanometra indica* (Smith), and the ophiuroids *Macrophiothrix demessa* (Lyman), *Ophiothela danae* Verrill and *Ophiothrix exigua* Lyman are new records from the Andaman Islands while the ophiuroid *Ophiocoma pusilla* (Brock) is new to the fauna of Indian coast. A brief mention of all the 34 species is given below since Clark and Rowe (1971) gave keys for identification, figures, detailed Indo-West Pacific distribution and references to the descriptions and revisions of these species. Other important references are cited in the text. The distribution of all the 44 species in the different islands of the Archipelago is given in Table 1.

Abbreviations: **AD** - Dr. A. Daniel; **ANRS** - Zoological collections of Andaman and Nicobar Regional Station, Port Blair; **BKT** - Dr. B. K. Tikader; **BPH** - Dr. B. P. Haldar; **DRKS** - Dr. D. R. K. Sastry; **DVR** - Dr. D V. Rao; **GCR** - Dr. G. C. Rao; **HL** - Henry Lawrence; **I(s)** - Island(s); **KVS** - Sri K. V. Surya Rao; **Mar. Surv.** - Marine Survey (R.I.M.S. Investigator); **NZC** - National Zoological Collection, Zoological Survey of India, Calcutta; **spec(s)** - specimen(s); **Sta.** Station; **SWP** - Sir William Peel.

SYSTEMATIC ACCOUNT

Phylum : ECHINODERMATA
 Class : CRINOIDEA
 Order : COMASTERIDA
 Family : COMASTERIDAE

1. *Comanthus parvicirrus* (J. Mueller)

Material examined : NZC - Havelock I., GCR, 6.4.1974, one spec.

Distribution : East Coast of Africa to South Pacific Is. as per Clark and Rowe (1971) while Rowe *et al.* (1986) confirmed the distribution from East Indies to Australia only.

Remarks : Clark (1912, 1932) reported the species from Table I. and Port Blair of Andamans and Nancowry I. of Nicobars.

2. *Comanthus samoanus* A. H. Clark

Material examined : NZC - Havelock I., GCR, 7.4.1974, one spec.; 21.3.1978, three specs.

Distribution : Eastern Arabian Sea to South Pacific Is.

Remarks : Clark (1912) reported the species from Invisible Bank of Andamans.

3. *Comaster multifidus* (J. Mueller)

Material examined : NZC - SWP I., GCR, 7.4.1974, one spec.

Distribution : Bay of Bengal to South Pacific Is.

Remarks : The species has also been recently collected from the Curlew (B.P) I. of North Andamans (Sastry, in press).

4. *Comatella nigra* (P. H. Carpenter)

Material examined : NZC - Havelock I., GCR, 8.4.1974, one spec.

Distribution : Bay of Bengal to Philippines and North Australia.

Remarks : The species was reported from the Mahatma Gandhi Marine National Park of South Andamans by Sastry (1998).

5. *Comatella stelligera* (P. H. Carpenter)

Material examined : NZC - SWP I., GCR, 7.4.1974, one spec.; Havelock I., GCR, 21.3.1974, one spec.

Distribution : Sri Lanka to South Pacific Is.

Remarks : The species has also been recently collected from Interview I. of North Andamans (Sastry, in press).

6. *Oxycomanthus bennetti* (J. Mueller)

Material examined : NZC - SWP I., GCR 7.4.1974, two specs.

Distribution : Bay of Bengal to South Pacific Is.

Remarks : The species was earlier reported from Table I. of Andamans by Clark (1912) under the genus *Comanthus* and Rowe et al. (1986) transferred the species to their new genus *Oxycomanthus*.

Family : MARIAMETRIDAE

7. *Lamprometra palmata* (J. Muller)

Material examined : NZC - Havelock I., GCR 21.3.1974, one spec.

Distribution : Arabian Sea to Hawaiian Is.

Remarks : The species was earlier collected also from Oliver and Egg Is of North Andamans (Sastry, in press).

8. *Stephanometra indica* (Smith)

Material examined : NZC - Havelock I., GCR, 4.5.1973, two specs.

Distribution : East coast of Africa to South Pacific Is.

Remarks : The species is newly recorded here from the Andamans.

Class : ASTEROIDEA

Order : VALVATIDA

Family : OREASTERIDAE

9. *Culcita novaeguineae* Mueller and Troschel

Material examined : ANRS - Havelock I., DRKS, 31.3.1996, one spec.

Distribution : Lakshadweep to Hawaiian Is.

Remarks : Earlier Julka and Das (1978) reported the species from Havelock I.

Family : OPHIDIASTERIDAE

10. *Fromia indica* (Perrier)

Material examined : NZC - HL I., Mar. Surv., 31.3.1930, one spec.

Distribution : Southern Arabian Sea to South Pacific Is.

Remarks : Koehler (1909,1910), Clark (1967) and James (1969) reported the species from the Andamans.

11. *Linckia laevigata* (Linnaeus)

Material examined : ANRS - Outram I., DVR, 26.2.1994, one spec.; DVR, 1.3.1994, one spec.

Distribution : East coast of Africa to (?) Hawaiian Is.

Remarks : The species was first reported from the Andamans by Koehler (1910) as *L. miliaris* and later by James (1969).

Family : ASTERINIDAE

12. *Asterina sarasini* (de Loriol)

Material examined : NZC - Sta. 665. Outram I., Mar. Surv., 5.2.1924, one spec.; Sta. 667. Neil I., Mar. Surv., 8.2.1924, one spec.

Distribution : Bay of Bengal.

Remarks : Koehler (1910) reported the species from the Andamans under *Palmipes*.

Class : OPHIUROIDEA

Order : OPHIURIDA

Family : OPHIACTIDAE

13. *Ophiactis modesta* Brock

Material examined : NZC - SWP I., BPH, 14.5.1978, one spec.

Distribution : Bay of Bengal, East Indies, Philippines and South Pacific Is.

Remarks : The species was earlier reported by James (1983) from Port Blair.

14. *Ophiactis savignyi* Mueller and Troschel

Material examined : NZC - Havelock 12.5.1978, one spec.; Neil I., BPH, 5.5.1978, one spec.

Distribution : Tropical Atlantic, Indian and Pacific Oceans.

Remarks : The species is often associated with various sponges.

Family : OPHIOTHRICIDAE

15. *Macrophiothrix demessa* (Lyman)

Material examined : NZC - Neil I., BPH, 5.5.1978, one spec.

Distribution : East Coast of Africa to North Australia.

Remarks : The species is newly recorded from the Andamans. Earlier it was known on Indian Coast only from the Lakshadweep (Sastry, 1991).

16. *Macrophiothrix longipeda* (Lamarck)

Material examined : NZC - Havelock I., KVS, 19.2.1974, one spec.; ANRS - Nicholson I., DRKS, 2.4.1996, one spec.

Distribution : East coast of Africa to South Pacific Is.

Remarks : The species inhabits deep crevices and burrows in coral and shingle beds. The disc and two or three arms are firmly hidden in the crevice or burrow. The remaining arms are extended out into the waters to collect suspended food organisms in the mucous secretions and are conveyed in the form of small balls to the mouth.

17. *Macrophiothrix propinqua* (Lyman)

Material examined : NZC - SWP I., BPH, 14.5.1978, two specs.; Havelock I., BPH, 12.5.1978, four specs.; Neil I., BPH 4.5.1978, one spec. ; 5.5.1978, four specs.; 6.5.1978, six specs.

Distribution : East coast of Africa to South Pacific Is.

Remarks : The species was earlier reported from the Andamans by Koehler (1898) under the genus *Ophiothrix* and Clark (1980) transferred the species to *Macrophiothrix*.

18. *Ophiothela danae* Verrill

Material examined : NZC - Havelock I., BPH, 10.05.1978, 40 specs.

Distribution : Arabian Sea to South Pacific Is.

Remarks : The species is here reported for the first time from Andamans. It is fissiparous and epizoic on gorgonians.

19. *Ophiothrix exigua* Lyman

Material examined : NZC - Havelock I., BPH, 12.05.1978, four specs.

Distribution : Maldives to South Pacific Is.

Remarks : The species is newly recorded from the Andamans. Earlier it was reported from the Gulf of Mannar of Indian coast by James (1986a).

20. *Ophiothrix trilineata* Luetken

Material examined : NZC - SWP I., BPH, 14.5.1978, one spec. Havelock I., BPH, 12.05.1978, two specs.; Neil I., BPH, 5.5.1978, four specs.; 6.5.1978, nine specs.

Distribution : East coast of Africa to South Pacific Is.

Remarks : Earlier Koehler (1898) reported the species from the Andamans.

Family : OPHIOCOMIDAE

21. *Ophiarthrum pictum* Muller and Troschel

Material examined : NZC - Inglis I., Mar. Surv., 21.4.1919, one spec.; Havelock I., AD, 27.02.1971, one spec.; GCR, 4.5.1974, one spec.; ANRS - Havelock I. DRKS, 5.4.1996, one spec.

Distribution : Bay of Bengal to South Pacific Is.

Remarks : The species was earlier reported by James (1969, 1971) from the Nicobars and by Sastry (1997) from the Andamans.

22. *Ophiocoma brevipes* Peters

Material examined : ANRS - Inglis I., DRKS, 3.4.1996, one spec.

Distribution : East Coast of Africa to Hawaiian Is.

Remarks : James (1969, 1987b) reported the species from the Andamans.

23. *Ophiocoma dentata* Mueller and Troschel

Material examined : NZC - Inglis I., Mar.Surv., 21.4.1919, three specs.

Distribution : East coast of Africa to Hawaiian Is.

Remarks : James (1969) reported the species as *O. insularia* var. *variegata* from the Andamans.

24. *Ophiocoma erinaceus* Mueller and Troschel

Material examined : NZC - Havelock I., GCR, 4.5.1973, one spec.; BPH, 12.05.1978, one spec.; Neil I., GCR, 31.03.1974, one spec.; BPH, 4.5.1978, one spec.; 5.5.1978, five specs.; 6.5.1978, two specs.; ANRS - Inglis I., DRKS, 3.4.1996, one spec.

Distribution : East Coast of Africa to Hawaiian Is.

Remarks : Koehler (1898) reported the species from the Andamans.

25. *Ophiocoma pusilla* (Brock)

Material examined : NZC - Neil I., 4.5.1978, one spec.; 5.5.1978, one spec.

Distribution : Red Sea, Western Indian Ocean, Andamans, East Indies, South China Sea and South Pacific Is.

Remarks : Devaney (1970) relegated *O. latilaxa* Murakami to the synonymy of *O. pusilla* (Brock). The species is new to the fauna of Indian coast.

26. *Ophiocoma scolopendrina* (Lamarck)

Material examined : NZC - Inglis I., Mar.Surv., 21.4.1919, one spec.; Havelock I., Sta. 662, Mar.Surv., 3.2.1924, two specs.; KVS, 19.2.1974, one spec.; BPH, 11.5.1978, one spec.; Neil I., GCR, 31.3.1974, three specs.; ANRS - Nicholson I., DRKS, 2.4.1996, two specs.

Distribution : East Coast of Africa to Hawaiian Is.

Remarks : James (1969) reported the species from the Andamans.

27. *Ophiomastix annulosa* (Lamarck)

Material examined : NZC - Inglis I., Mar.Surv., 21.4.1919, two specs.; Neil I., BKT, 9.4.1970, one spec.

Distribution : Maldives to South Pacific Is.

Remarks : Bell (1887) and Koehler (1898) reported the species from the Andamans.

Family : OPHIURIDAE

28. *Ophioelegans cincta* (Mueller and Troschel)

Material examined : NZC - Neil I., GCR, 31.3.1974, two specs.

Distribution : East coast of Africa to South Pacific Is.

Remarks : James (1987a) while reporting the species from the Andamans transferred it to a new genus *Ophioelegans*.

29. *Ophiolepis superba* H. L. Clark

Material examined : NZC - HL I., Station 664, Mar. Surv., 4.2.1924, one spec.

Distribution : East coast of Africa to South Pacific Is.

Remarks : Bell (1887) reported the species from the Andamans.

Class : ECHINOIDEA

Order : DIADEMATOIDA

Family : DIADEMATIDAE

30. *Diadema setosum* (Leske)

Material examined : ANRS - Outram I., DVR, 3.3.1994, one spec.

Distribution : East coast of Africa to South Pacific Is.

Remarks : James (1983) reported the species from the Andamans.

31. *Echinothrix calamaris* (Pallas)

Material examined : ANRS - HL I., DRKS, 4.4.1996, one spec.; Havelock I., DRKS, 5.4.1996, one spec.

Distribution : East coast of Africa to Hawaiian Is.

Remarks : Clark (1925) and Koehler (1927) reported the species from Andamans.

Order : ECHINOIDA

Family : ECHINOMETRIDAE

32. *Echinometra mathaei* (de Blainville)

Material examined : ANRS - Inglis I., DRKS, 3.4.1996, one spec.; Outram I., DVR, 2.3.1994, one spec.; HL I., DRKS, 4.4.1996, one spec.; Havelock I., DVR 21.11.1991, one spec.

Distribution : East coast of Africa to Hawaiian Is.

Remarks : Clark (1925) and Koehler (1927) reported the species from the Andamans. Three colour forms one of olive green spines, one of violet spines and another of black spines with reddish tips are known to occur in the Andaman and Nicobar Islands.

Order : HOLECTYPOIDA

Family : ECHINONEIDAE

33. *Echinoneus cyclostomus* Leske

Materials examined : ANRS - Havelock I., DVR, 24.2.1994, one spec,

Distribution : Tropical Western Atlantic, Indian and West Pacific oceans.

Remarks : Bell (1887) reported the species from the Andamans.

Order : SPATANGOIDA

Family : LOVENIIDAE

34. *Lovenia elongata* (Gray)

Material examined : ANRS - Havelock I., DVR, 24.2.1994, one spec.

Distribution : East coast of Africa to Philippines and North Australia.

Remarks : The species is new to Andamans. It was collected from the sandy region adjacent to coral reef area.

Table 1. Distribution of echinoderms known from the Ritchie's Archipelago in different islands.

Echinoderm species	Rani Jhansi Marine						
	Inglis	National Park			Sir		
		Outram	Henry Lawrence	Nicholson	William Peel	Havelock	Neil
CRINOIDEA							
1. <i>Comanthus parvicirrus</i>						+	
2. <i>Comanthus samoanus</i>							+
3. <i>Comaster multifidus</i>					+		
4. <i>Comatella nigra</i>							+
5. <i>Comatella stelligera</i>					+		+
6. <i>Oxycomanthus bennetti</i>					+		
7. <i>Lamprometra palmata</i>							+
8. <i>Stephanometra indica</i>							+
ASTEROIDEA							
9. <i>Archaster typicus</i>							+
10. <i>Culcita novaeguineae</i>							+
11. <i>Dactylosaster cylindricus</i>		+					
12. <i>Fromia indica</i>				+			
13. <i>Linckia laevigata</i>		+					+
14. <i>Asterina sarasini</i>		+					+
OPHIUROIDEA							
15. <i>Ophiactis modesta</i>						+	
16. <i>Ophiactis savignyi</i>							+
17. <i>Macrophiothrix demessa</i>							+
18. <i>Macrophiothrix longipeda</i>					+		+
19. <i>Macrophiothrix propinqua</i>						+	+
20. <i>Ophiothela danae</i>							+
21. <i>Ophiothrix exigua</i>							+
22. <i>Ophiothrix trilineata</i>						+	+
23. <i>Ophiarthrum pictum</i>	+						+
24. <i>Ophiocoma brevipes</i>	+						
25. <i>Ophiocoma dentata</i>	+						

Table 1. Contd.

Echinoderm species	Inglis	Rani Jhansi Marine National Park			Sir		
		Outram	Henry Lawrence	Nicholson	William Peel	Havelock	Neil
26. <i>Ophiocoma erinaceus</i>	+					+	+
27. <i>Ophiocoma pusilla</i>							+
28. <i>Ophiocoma scolopendrina</i>	+			+		+	+
29. <i>Ophiomastix annulosa</i>	+						+
30. <i>Ophioelegans cincta</i>							+
31. <i>Ophiolepis superba</i>			+				
ECHINOIDEA							
32. <i>Phyllacanthus imperialis</i>			+				
33. <i>Prionocidaris verticillata</i>			+				
34. <i>Diadema setosum</i>		+					
35. <i>Echinothrix calamaris</i>			+			+	
36. <i>Mespilia globulus</i>			+				
37. <i>Echinometra mathaei</i>	+	+	+			+	
38. <i>Echinoneus cyclostomus</i>						+	
39. <i>Lovenia elongata</i>						+	
HOLOTHUROIDEA							
40. <i>Actinopyga mauritiana</i>							+
41. <i>Holothuria pyxis</i>						+	
42. <i>Holothuria arenicola</i>							+
43. <i>Holothuria impatiens</i>						+	
44. <i>Stichopus chloronotus</i>						+	+

Note : Many of the common species are likely to occur at other islands also.

SUMMARY

East of South Andaman Islands in the Bay of Bengal 13 islands constitute Ritchie's Archipelago. The echinoderm fauna of the Archipelago is so far known by four species of Asteroidea, three species of Echinoidea and five species of Holothuroidea. The present study reports eight species of Crinoidea, four species of Asteroidea, 17 species of Ophiuroidea and five species of Echinoidea. Of these the asteroids *Culcita novaeguineae* Mueller and Troschel and *Linckia laevigata* Mueller and Troschel

were reported earlier. Among the others, *Stephanometra indica* (Smith), *Macrophiothrix demessa* (Lyman), *Ophiothela danae* Verrill and *Ophiothrix exigua* Lyman are new to the fauna of Andamans while *Ophiothrix pusilla* (Brock) is new to the fauna of Indian coast. A brief account of all the 34 species is presented along with a list of species reported earlier.

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