

## HOLOTHUROIDEA OF THE INDIAN OCEAN WITH REMARKS ON THEIR DISTRIBUTION \*

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### ABSTRACT

In the Indian Ocean more than 160 species of Holothuroïd Echinoderms have been recorded, of which 150 species are available in the collection of the Zoological Survey of India. These include about 75 species from the deep Sea and another 70 species from shallow offshore and littoral regions. The remaining species occur exclusively on reef flats of Coral islands i. e. Andamans, Nicobars, Krusadi and adjacent islands in the Gulf of Mannar, Pirotan island and adjacent Coral beds in the Gulf of Kutch and Laccadive-Minicoy-Maldive groups of islands; these species contribute to the 'Beche-de-mer' or 'trepang' industry.

The geographical and bathymetrical distribution pattern of all the valid species of holothuroidea of the Indian Ocean are also presented. An attempt has been made to explain the distribution chiefly in relation to Oceanic currents and bottom topography.

### INTRODUCTION

THE holothurians of the Indian Ocean had received considerable attention from 1868 to 1927 [Semper (1868) Ludwig (1875, 1882, 1891 & 1899), Bell (1884-1889), Lampert (1895), Pearson (1903, 1910a,b, & 1915), Koehler & Vaney (1905, 1908 and 1910), Vaney (1905), Erwe (1913 & 1919), Clark, H. L. (1914 & 1923) and Gravely (1927)] Monographic works of Bell (1884) on 'Alert' material, Théel (1886) on 'Challenger' material, Ludwig and Heding (1935) on 'Valdivia' material added considerably to our knowledge on this abberant group. In recent years Mortensen (1939), Tortense (1947, 1951, 1953, 1954 & 1960), Clark, A. M. (1951 & 1952), Cherbonnier (1954b & 1955) from Red Sea region, Nair (1946) James (1965) and Gopalakrishnan (1969) from the Indian region, Clark, H. L. (1938 & 1946) from Australia, Heding (1937), John (1939) Cherbonnier (1952, 1953 & 1954a), Panning (1941), Deichmann (1944 & 1948), from South Africa, and Heding (1940) from Iran studied the Holothurians of the different regions. Recent monographic works of Clark, H. L. (1946) on Australian species and Heding & Panning (1954) on the family Phyllophoridae are of immense value. However, there is no comprehensive account of the geographical and bathymetrical distribution of the Holothurians reported from the Indian Ocean, in recent years. Hence it was thought desirable to undertake this study. The species contributing to the 'trepang' industry in the different regions of the Indian Ocean and elsewhere are also listed.

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## FAMILIES, GENERA AND NUMBER OF SPECIES REPRESENTED IN THE DIFFERENT REGIONS OF THE INDIAN OCEAN

In this study the Indian Ocean is divided into four regions *i.e.* Arabian Sea, Bay of Bengal, South Western Indian Ocean and South Eastern Indian Ocean. The area covered in each region is demarcated by longitudinal line of 80°E and latitudinal line of 0°. In Table 1, the families, genera and number of species of the 5 orders of the class Holothuria reported from the different regions of the Indian Ocean are given. The number of species having wider range of distribution are indicated separately, in the same table.

The abbreviations used in this table are as follows :—

A.S.	= Arabian Sea	S. E. I.	= South-East Indian Ocean
B. B.	= Bay of Bengal	R. I. O.	= Regions of the Indian Ocean
S. W. I.	= South-West Indian Ocean	O. I. in I. O.	= Widely represented in the Indian Ocean

TABLE 1. Number of Species

		A.S.	B.B.	S.W.I.	S.E.I.	2 or 3 R.I.O.	O.I. in I.O.	Total
<b>I. Order-Dendrochirotia</b>								
<b>A. Family—Cucumariidae</b>								
Genus—	1. <i>Actinocucumis</i>	—	1	—	2	1	—	4
	2. <i>Cucumaria</i>	9	12	15	2	3	1	42
	3. <i>Echinocucumis</i>	—	—	1	—	—	—	1
	4. <i>Havloekta</i>	—	1	—	—	—	—	1
	5. <i>Leptopentacta</i>	—	—	—	1	—	—	1
	6. <i>Lipatrapeza</i>	—	—	—	2	—	—	2
	7. <i>Orbithyone</i>	—	—	—	1	—	—	1
	8. <i>Pentacta</i> -( <i>Colochirus</i> )	2	5	3	5	1	2	18
	9. <i>Pentamera</i>	—	—	2	—	—	—	2
	10. <i>Pentathyone</i>	—	—	—	1	—	—	1
	11. <i>Pseudocolochirus</i>	—	1	—	1	—	—	2
	12. <i>Pseudocucumis</i>	—	—	—	2	1	1	4
	13. <i>Staurothyone</i>	—	—	—	1	—	—	1
	14. <i>Thyone</i>	4	3	6	10	2	1	26
	15. <i>Trachythyone</i>	1	—	—	—	—	—	1
	16. <i>Urolemas</i>	—	—	1	2	—	—	3
<b>B. Family—Phylloporidae</b>								
Genus—	1. <i>Ohsumella</i>	1	—	1	—	—	—	2
	2. <i>Phylloporous</i>	6	—	2	3	3	—	14
	3. <i>Thynidiella</i>	—	—	1	—	—	—	1
<b>C. Family—Psolidae</b>								
Genus—	1. <i>Psolidium</i>	2	—	—	1	—	—	3
	2. <i>Psolus</i>	3	—	6	2	—	—	11
<b>D. Family—Rhoqalodiinidae</b>								
Genus—	1. <i>Ypsilothuria</i>	—	—	—	—	1	—	1
<b>Total</b>		<b>28</b>	<b>23</b>	<b>38</b>	<b>36</b>	<b>12</b>	<b>5</b>	<b>142</b>

		A.S.	B.B.	S.W.I.	S.E.I.	2 or 3 R.I.O.	O.I. in I.O.	Total	
<b>II. Order—Aspidochirota</b>									
<b>A. Family—Holothuriidae</b>									
Genus—	1. <i>Actinopyga</i>	..	2	1	5	—	3	4	15
	2. <i>Bohadschia</i>	..	2	—	—	—	—	—	2
	3. <i>Labidodenas</i>	..	—	1	—	—	—	—	1
	4. <i>Holothuria</i>	..	14	20	18	6	20	12	90
	5. <i>Microthele</i>	..	1	—	—	—	1	—	2
<b>B. Family—Stichopodidae</b>									
Genus—	1. <i>Neostichopus</i>	..	—	—	1	—	—	—	1
	2. <i>Parastichopus</i>	..	—	—	3	—	—	—	3
	3. <i>Stichopus</i>	..	—	1	3	5	—	2	11
<b>C. Family—Synallactidae</b>									
Genus—	1. <i>Allopatides</i>	..	—	1	—	—	—	—	1
	2. <i>Bathyploetes</i>	..	2	5	—	—	—	—	7
	3. <i>Bathyzona</i>	..	1	—	—	—	—	—	1
	4. <i>Benthothuria</i>	..	1	1	—	—	—	—	2
	5. <i>Dendrothuria</i>	..	1	—	—	—	—	—	1
	6. <i>Mesothuria</i>	..	3	1	—	—	—	—	4
	7. <i>Pelopatides</i>	..	1	6	—	—	1	—	8
	8. <i>Perizona</i>	..	1	—	—	—	—	—	1
	9. <i>Pseudostichopus</i>	..	—	1	—	—	—	—	1
	10. <i>Pseudothuria</i>	..	1	—	—	—	—	—	1
	11. <i>Synallactes</i>	..	2	4	2	—	—	—	8
<b>Total</b>		..	32	42	29	11	25	18	157
<b>III. Order—Apoda</b>									
<b>A. Family—Chiridotidae</b>									
Genus—	1. <i>Chiridota</i>	..	—	1	2	1	—	1	5
	2. <i>Sigmodota</i>	..	—	—	—	1	—	—	1
	3. <i>Taeniogyrus</i>	..	—	—	1	1	—	—	2
<b>B. Family—Synaptidae</b>									
Genus—	1. <i>Anapta</i>	..	—	1	—	—	—	—	1
	2. <i>Chondrocloea</i>	..	1	1	—	1	2	1	6
	3. <i>Epitomapta</i>	..	—	—	1	—	—	—	1
	4. <i>Euapta</i>	..	—	1	—	—	1	—	2
	5. <i>Leptosynapta</i>	..	—	—	1	2	—	—	3
	6. <i>Opheodesoma</i>	..	1	—	1	—	—	—	2
	7. <i>Patinapta</i>	..	1	—	1	—	—	—	2
	8. <i>Protankyra</i>	..	1	7	—	—	—	—	8
	9. <i>Synapta</i>	..	6	1	2	1	—	1	11
<b>Total</b>		..	10	12	9	7	3	3	44

		A.S.	B.B.	S.W.I.	S.E.I.	2 or 3 R.I.O.	O.I. in I.O.	Total	
IV. Order—Molpadia									
A. Family—Caudinidae									
Genus—	<i>Paracaudina</i>	..	—	—	—	2	—	—	2
B. Family—Gephyrothuridae									
Genus—	1. <i>Filiturina</i>	..	—	1	—	—	—	—	1
	2. <i>Gephyrothuria</i>	..	—	1	—	—	—	—	1
C. Family—Molpadidae									
Genus—	1. <i>Apelodactyla</i>	..	—	1	—	2	—	—	3
	2. <i>Haplodactyla</i>	..	—	—	—	—	1	—	1
	3. <i>Molpadia</i>	..	—	11	—	—	4	—	15
	= <i>Ankyloiderna</i>								
	= <i>Trochostoma</i>								
Total		..	—	14	—	4	5	—	23
V. Elaspoda									
A. Family—Deimalidae									
Genus—	1. <i>Amphidelma</i>	..	—	1	—	—	—	—	1
	2. <i>Apodogaster</i>	..	—	1	—	—	—	—	1
	3. <i>Benihophyces</i>	..	1	—	—	—	—	—	1
	4. <i>Deima</i>	..	—	—	—	—	1	—	1
	5. <i>Oneirophanta</i>	..	1	—	—	—	—	—	1
	6. <i>Ophnurgus</i>	..	—	2	—	—	—	—	2
B. Family—Elpiidae									
Genus—	1. <i>Enypniastes</i>	..	—	1	—	—	—	—	1
	2. <i>Euriplastes</i>	..	—	1	—	—	—	—	1
	3. <i>Penigone</i>	..	—	3	—	—	—	—	3
C. Family—Laetmogonidae									
Genus—	1. <i>Laetmogone</i>	..	1	—	—	—	—	—	1
D. Family—Pelagothuridae									
Genus—	1. <i>Pelagothuria</i>	..	—	—	1	—	—	—	1
E. Family—Psychropotidae									
Genus—	1. <i>Benihodytes</i>	..	1	—	—	—	2	—	3
	2. <i>Euphronides</i>	..	—	1	—	—	—	—	1
	3. <i>Psychropotes</i>	..	1	—	—	—	—	—	1
Total		..	5	10	1	—	3	—	19

An analysis of Table 1 reveals that 385 species of Holothuroidea are known from the Indian Ocean. Of these, 75 species from the Arabian Sea, 101 species from the Bay of Bengal, 77 species from the South-West Indian Ocean and 58 species from the South-East Indian Ocean have not been reported from the other regions of the

Indian Ocean and therefore appear to be restricted to the particular Zones where in they have been recorded. 48 species have a wider distribution occurring in all the four regions of the Indian Ocean. The order Aspidochirota is well represented by 157 species, followed by the order Dendrochirota wherein 142 species have been recorded. The other three orders are poorly represented *i.e.* 44 species in the order Apoda, 23 species in the order Molpadia and 19 species in the order Elasipoda. The orders Molpadia and Elasipoda are unrepresented in the South Western Indian Ocean and South Eastern Indian Ocean respectively. The order Elasipoda has been reported mainly from the Bay of Bengal and Arabian sea, and is represented in the South Western Indian Ocean, by a single species of the genus *Pelagothuria*. The genus *Holothuria* predominates with a maximum number of 90 species followed by the genus *Cucumaria* wherein 42 species have been recorded so far. Among the other genera, 26 species of *Thyone*, 18 species of *Pentacata*, 15 species of *Actinopyga*, 14 species of *Phyllophorus* and 11 species each of *Psolus* and *Stichopus* have been reported from the Indian Ocean.

In the Bay of Bengal the genera *Molpadia*, *Protankyra*, *Pelopatides* and *Bathyploetes* and in the Arabian Sea the genera *Phyllophorous* and *Synapta* occur commonly. In the South-East Indian Ocean, the genera *Thyone* and *Stichopus* and in the South Western Indian Ocean the genus *Psolus* are well represented.

#### SPECIES OCCURRING IN THE DIFFERENT REGIONS WITH LOCALITY RECORDS

The species occurring in the different regions of the Indian Ocean with their locality records are presented in Tables 2 to 7. The species present in the collections of the Zoological Survey of India are indicated with an asterisk.

TABLE 2. *Species known from the Arabian Sea only*  
(including Red Sea, Gulf of Aden, Suez Canal, Gulf of Aqaba)

Genus — <i>Cucumaria</i>	
*1. <i>C. arinana</i> Koehler & Vaney	.. Lat. 11° 14' N., Long. 74° 57' 15" E.
2. <i>C. crucifer</i> Semper . . .	Somalia.
*3. <i>C. digitata</i> Koehler & Vaney	Lat. 21° 49' 50" N., Long. 59° 48' E.
4. <i>C. glaberrima</i> Semper . . .	Somalia.
*5. <i>C. imbellis</i> Koehler & Vaney	.. Lat. 21° 49' 50" N., Long. 59° 48' E.
*6. <i>C. mosaica</i> Koehler & Vaney	.. Lat. 26° 20' N., Long. 53° 54' E.
*7. <i>C. perdita</i> Koehler & Vaney	.. Lat. 17° 59' N., Long. 57° 22' 30" E.
*8. <i>C. pigra</i> Koehler & Vaney	.. Karachi.
9. <i>C. transitera</i> Vaney	.. Somalia.
Genus — <i>Pentacta</i>	
10. <i>P. gravieri</i> Vaney	.. Somalia.
11. <i>P. pusillus</i> Helfer	.. Tor, Senai Coast.
Genus — <i>Thyone</i>	
*12. <i>T. dura</i> Koehler & Vaney	Lat. 20° 37' 15" N., Long. 69° 24' 20" E.
*13. <i>T. festina</i> Koehler & Vaney	.. Lat. 27° 5' 12" N., Long. 50° 55' 20" E.
14. <i>T. venusta</i> Selenka	.. Red Sea.
15. <i>T. quadruporata</i> Cherbonnier	.. Red Sea.

Genus — <i>Trachythyon</i>	
16. <i>T. dollfusi</i> Cherbonnier	.. Red Sea.
Genus — <i>Ohshimella</i>	
17. <i>O. chrenbergi</i> Selenka	.. Red Sea.
Genus — <i>Phylloporous</i>	
*18. <i>P. celer</i> Koehler & Vaney	.. Lat. 17° 27'N., Long. 17° 41'E.
19. <i>P. calypsoi</i> Cherbonnier	.. Red Sea.
20. <i>P. ehrenbergi</i> Selenka	.. Red Sea.
21. <i>P. frauenfeldi</i> Ludwig	.. Gulf of Aden/Red Sea.
22. <i>P. gracilis</i> Selenka	.. Red Sea.
*23. <i>P. intermedius</i> Koehler & Vaney	.. Lat. 8° 23'N., Long. 76° 28'E.
Genus — <i>Psolidium</i>	
*24. <i>P. rugosum</i> Koehler & Vaney	.. Lat. 8° 23'N., Long. 76° 28'E.
*25. <i>P. translucidum</i> Koehler & Vaney	.. Lat. 70° 2' 30'N., Long. 79° 36'E.
Genus — <i>Psolus</i>	
26. <i>P. complanatus</i> Semper	.. Gulf of Manaar.
*27. <i>P. levis</i> Koehler & Vaney	.. Lat. 8° 23'N., Long. 76° 28'E.
*28. <i>P. membranaceus</i> Koehler & Vaney	.. Lat. 8° 23'N., Long. 76° 28'E.
Genus — <i>Actinopyga</i>	
29. <i>A. aegyptiana</i> Helfer	.. Suez Canal.
30. <i>A. serratidens</i> Labbwarthi Panning	.. Suez Canal.
Genus — <i>Bohadschia</i>	
31. <i>B. consteani</i> Cherbonnier	.. Red Sea.
32. <i>B. drachi</i> Cherbonnier	.. Red Sea.
Genus — <i>Holothuria</i>	
33. <i>H. aphanes</i> Lampert	.. Gulf of Aden/Red Sea.
34. <i>H. curiosa pervicax</i> (Selenka)	.. Dahab (Gulf of Aqaba).
35. <i>H. fusco-punctata</i> Jager	.. Gulf of Aden.
36. <i>H. fungosa</i> Helfer	.. Suez Canal.
37. <i>H. graffi</i> Semper	.. Maldiva Is.
38. <i>H. hamata</i> Pearson	.. Suez Bay.
39. <i>H. jousseawnei</i> Cherbonnier	.. Red Sea.
40. <i>H. klunzingeri</i> Lampert	.. Gulf of Aden/Red Sea.
41. <i>H. maculosa</i> Pearson	.. Aldabra Is.
42. <i>H. massaspicula</i> Cherbonnier	.. Red Sea.
43. <i>H. maxima</i> Forsskal	.. Suez Canal.
44. <i>H. samoana</i> Ludwig	.. Gulf of Aden/Red Sea.
45. <i>H. squamifera</i> Semper	.. Gulf of Aden/Red Sea.
46. <i>H. sucosa</i> Erwe	.. Gulf of Aqaba.
Genus — <i>Microthele</i>	
47. <i>M. difficilis</i> (Semper)	.. Gulf of Aqaba.
Genus — <i>Bathyplores</i>	
*48. <i>B. assimiles</i> Koehler & Vaney	.. Lat. 9° 39' 34'N., Long. 75° 38'E.
49. <i>B. papillosus</i> Koehler & Vaney	.. Lat. 7° 36'N., Long. 78° 05'E.
Genus — <i>Bathyzona</i>	
*50. <i>B. incerta</i> Koehler & Vaney	.. Lat. 14° 35' 15''N., Long. 72° 2' 37''E.
Genus — <i>Benthothuria</i>	
*51. <i>B. distostus</i> Koehler & Vaney	.. Lat. 15° 11'N., Long. 72° 28' 45''E.
Genus — <i>Dendrothuria</i>	
*52. <i>D. similis</i> Koehler & Vaney	.. Lat. 11° 12' 47''N., Long. 74° 24' 30''E.

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Genus — <i>Mesothuria</i>	
*53. <i>M. abbreviata</i> Koehler & Vaney	.. Lat. 9° 34' 57''N., Long. 75° 36' 30''E.
*54. <i>M. incerta</i> Koehler & Vaney	.. Lat. 9° 29' 34'' N., Long. 75° 38'E.
*55. <i>M. multipes</i> Ludwig	.. Lat. 6° 54' 30''N., Long. 79° 34' 30''E. Lat. 11° 12' 47''N., Long. 74° 25' 30''E. Lat. 24° 37' 30'' N., Long. 62° 2' 30''E.
Genus — <i>Pelopatides</i>	
*56. <i>P. mammillatus</i> Koehler & Vaney	.. Lat. 21° 8' 30''N., Long. 65° 47'E.
Genus — <i>Perizona</i>	
*57. <i>P. magna</i> Koehler & Vaney	.. Laccadive Is. (75 miles away from Goa Coast).
Genus — <i>Pseudothusia</i>	
*58. <i>P. duplex</i> Koehler & Vaney	.. Lat. 12° 41' 45''N., Long. 73° 40' 30''E.
Genus — <i>Synallactes</i>	
*59. <i>S. anceps</i> Koehler & Vaney	.. Lat. 12° 02'N., Long 73° 46'E.
*60. <i>S. dupios</i> Koehler & Vaney	.. Lat. 6° 54' 30''N., Long. 79° 34' 30''E.
Genus — <i>Chondrocloea</i>	
61. <i>C. striata incurvata</i> Vaney	.. Somalia.
Genus <i>Opheodesoma</i>	
62. <i>O. kamaranensis</i> A.M. Clark	.. Red Sea.
Genus <i>Patinapta</i>	
63. <i>P. dumasi</i> Cherbonnier	.. Red Sea.
Genus <i>Protankyra</i>	
*64. <i>P. denticulata</i> Koehler & Vaney	.. Lat. 16° 01'N., Long. 18° 25'E.
Genus — <i>Synapta</i>	
65. <i>S. inharens</i> O. F. Müller	.. Gulf of Aden/Red Sea.
66. <i>S. kefersteinii</i> Solenka	.. Gulf of Aden/Red Sea.
67. <i>S. nigra</i> Semper	.. Gulf of Aden/Red Sea.
68. <i>S. reciprocans</i> Forsskal	.. Red Sea and Suez Canal.
69. <i>S. vittata</i> Forsskal	.. Red Sea and Suez Canal.
70. <i>S. maculata</i> (Cham. & Eysenh.)	.. Um Nageila (Gulf of Aqaba).
Genus — <i>Benthophyces</i>	
*71. <i>B. fragilis</i> Koehler & Vaney	.. Lat. 15° 02'N., Long. 72° 34'E.
Genus — <i>Oneirophanta</i>	
*72. <i>O. conservata</i> Koehler & Vaney	.. Lat. 7° 05' 45''N., Long. 75° 4'E.
Genus — <i>Laetmogone</i>	
*73. <i>L. violacea</i> Thèbel	.. Lat. 75° 45''N., Long. 75° 04' E.
Genus <i>Benthodytes</i>	
*74. <i>B. superbus</i> Koehler & Vaney	.. Lat. 21° 8' 30''N., Long. 65° 47'E.
Genus — <i>Psychropotes</i>	
*75. <i>P. minutus</i> Koehler & Vaney	.. Laccadive Is.

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TABLE 3. Species known from the Bay of Bengal only

Genus— <i>Actinocucumis</i>	
1. <i>A. donnani</i> Pearson	.. Ceylon.
Genus— <i>Cucunaria</i> .	
2. * <i>C. alcocki</i> Koehler & Vaney	.. Andaman Is.
3. * <i>C. ardens</i> Koehler & Vaney	.. Orissa Coast.
4. * <i>C. assimiles</i> Bell	.. Mergui Archipelago.
5. * <i>C. bacilliformis</i> Koehler & Vaney	.. Andaman Is.
6. * <i>C. conjungens</i> Semper	.. Ceylon.
7. * <i>C. ehinata</i> Marenzeller	.. Orissa Coast, Tavoy Is. (Mergui Archipelago).
8. * <i>C. imbricata</i> Semper	.. Ceylon, Ganjam Coast, Orissa Coast, Madras Coast, Vizag Coast, Gulf of Martaban.
9. * <i>C. inflexa</i> Koehler & Vaney	.. Ganjam Coast.
10. * <i>C. investigatoris</i> Koehler & Vaney	.. Mouth of river Hooghly.
11. * <i>C. leonina</i> Semper	.. Singapore.
12. * <i>C. rapax</i> Koehler & Vaney	.. Mouth of Hooghly.
13. <i>C. tricolor</i> Sluiter	.. Ceylon.
Genus— <i>Havelockia</i>	
14. * <i>H. herdmanni</i> Pearson	.. Ceylon.
Genus— <i>Pentacta</i>	
15. <i>P. armatus</i> Marenzeller	.. Ceylon.
16. <i>P. cucumis</i> Semper	.. Mergui Archipelago.
17. <i>P. inornatus</i> Marenzeller	.. Mergui Archipelago.
18. <i>P. jagorii</i> Semper	.. Singapore.
19. <i>P. quadrangularis</i> Uollis Pearson	.. Ceylon.
Genus— <i>Pseudocolochirus</i>	
20. * <i>P. violacea</i> (Thel)	.. Ganjam Coast, Orissa Coast.
Genus— <i>Thyone</i>	
21. <i>T. (?) calcarea</i> Pearson	.. Ceylon.
22. <i>T. (?) fuscus</i> Pearson	.. Ceylon.
23. <i>T. (?) hornelli</i> Pearson	.. Ceylon.
Genus— <i>Actinopyga</i>	
24. * <i>A. booleyi</i>	.. Andamans.
Genus— <i>Labidodemas</i>	
25. * <i>L. semperianum</i> Selenka	.. Andamans.
Genus— <i>Holothuria</i>	
26. <i>H. albidia</i> Bell	.. Andamans.
27. * <i>H. andersoni</i> Bell	.. Mergui Archipelago.
28. <i>H. argus</i> Jager	.. Ceylon, Mergui Archipelago.
29. <i>H. cadelli</i> Bell	.. Andamans.
30. <i>H. caesarea</i> Ludwig	.. Ceylon.
31. <i>H. erinaceus</i> Selenka	.. Singapore.
32. <i>H. exilis</i> Koehler & Vaney	.. Andamans.
33. <i>H. gallensis</i> Pearson	.. Ceylon.
34. <i>H. imitans</i> Ludwig	.. Ceylon.
35. <i>H. marenzelleri</i> Ludwig	.. Ceylon.
36. <i>H. martensi</i> Semper	.. Ceylon.
37. <i>H. ondoatjei</i> Bell	.. Ceylon.
38. * <i>H. papillata</i>	.. Andamans.
39. <i>H. princeps</i> Selenka	.. Mergui Archipelago.
40. <i>H. prompta</i> Koehler & Vaney	.. Andamans.
41. * <i>H. pyxis</i> Selenka	.. Andamans.

42. * <i>H. rugosa</i> Ludwig	..	Great Coco Is., Andamans.
43. <i>H. spinifer</i> Théel	..	Ceylon.
44. * <i>H. tenuissima</i> Semper	..	Lat. 29° 8' N., Long. 83° E., Ceylon.
45. <i>H. vitiensis</i> Semper	..	Ceylon.
Genus— <i>Stichopus</i>		
46. <i>S. chloronatus fuscus</i> Pearson	..	Ceylon.
Genus— <i>Allopatides</i>		
47. * <i>A. dendroides</i> Koehler & Vaney	..	Lat. 11° 16' 30" N., Long. 92° 58' E.
Genus— <i>Bathyplores</i>		
48. <i>B. cinctus</i> Koehler & Vaney	..	Lat. 10° 21' N., Long. 92° 46' 25" E.
49. * <i>B. crenulatus</i> Koehler & Vaney	..	Lat. 13° 27' N., Long. 93° 14' 30" E.
50. * <i>B. profundus</i> Koehler & Vaney	..	Lat. 12° 50' N., Long. 90° 52' E.
51. * <i>B. roseus</i> Koehler & Vaney	..	Lat. 11° 35' N., Long. 80° 02' 15" E.
	..	Lat. 11° 29' N., Long. 80° 02' 30" E.
52. * <i>B. variabilis</i> Koehler & Vaney	..	Lat. 10° 08' N., Long. 80° 49' 30" E.
Genus— <i>Benthothuria</i>		
53. * <i>B. cristatus</i> Koehler & Vaney	..	Lat. 9° 26' 30" N., Long. 91° 56' 30" E.
Genus— <i>Mesothuria</i>		
54. * <i>M. squamosa</i> Koehler & Vaney	..	Lat. 11° 29' 45" N., Long. 80° 02' 36" E.
Genus— <i>Pelopattides</i>		
55. * <i>P. dissidens</i> Koehler & Vaney	..	Lat. 10° 6' N., Long. 92° 29' E.
56. * <i>P. gelatinosus</i> (Walsh)	..	Lat. 11° 31' 40" N., Long. 92° 46' 40" E.
	..	Lat. 13° 27' N., Long. 93° 14' 30" E & Andaman Is.
57. * <i>P. insignis</i> Koehler & Vaney	..	Lat. 15° 43' 30" N., Long. 81° 19' 30" E.
58. * <i>P. mollis</i> Koehler & Vaney	..	Andaman Is., Lat. 11° 25' 5" N., Long. 92° 47' 6" E.
59. * <i>P. ovalis</i> (Walsh)	..	Andaman Is.
60. * <i>P. verrucosus</i> Koehler & Vaney	..	Lat. 7° 4' 40" N., Long. 82° 02' 45" E.
	..	Lat. 13° 50' 30" N., Long. 93° 26' E.
	..	Lat. 17° 7' 30" N., Long. 94° 5' 30" E.
Genus— <i>Pseudostichopus</i>		
61. * <i>P. occultatus plicatus</i> Koehler & Vaney	..	Lat. 12° 50' N., Long. 90° 52' E.
Genus— <i>Synallactes</i>		
62. * <i>S. horridus</i> Koehler & Vaney	..	Lat. 11° 58' N., Long. 88° 52' 17" E.
63. * <i>S. (?) pellucidus</i> Koehler & Vaney	..	Lat. 13° 45' 38" N., Long. 80° 29' 37" E.
64. * <i>S. rigidus</i> Koehler & Vaney	..	Bay of Bengal Lat. 10° N., Long. 91° 7' E.
65. * <i>S. woodmasoni</i> (Walsh)	..	Lat. 12° 20' N., Long. 85° 8' E.
	..	Lat. 13° 27' N., Long. 93° 14' 30" E.
	..	Lat. 13° 17' 15" N., Long. 93° 10' E.
	..	Andaman Is., Ross Is. (Andamans).
Genus— <i>Chiridota</i>		
66. <i>C. dubia</i> Semper	..	Ceylon.
Genus— <i>Anapta</i>		
67. * <i>A. (?) dubiosa</i> Koehler & Vaney	..	Bay of Bengal.
Genus— <i>Chondrocloea</i>		
68. <i>C. varians</i> Nair	..	Madras Harbour.
Genus— <i>Euapta</i>		
69. * <i>E. grisea</i> Semper	..	High Is. (Mergui Archipelago).
Genus— <i>Protankyra</i>		
70. <i>P. challengerii</i> Théel	..	Lat. 13° 29' 30" N., Long. 95° 29' E.
71. * <i>P. conferta</i> Koehler & Vaney	..	Lat. 8° 48' N., Long. 80° 37' E.
	..	Lat. 15° 43' 30" N., Long. 81° 19' 30" E.

72. \**P. errata* Koehler & Vaney .. Andaman Is. & Bay of Bengal.  
 73. \**P. inflexa* Koehler & Vaney .. Bay of Bengal.  
 74. \**P. innominata* Ludwig .. Andamans.  
 75. \**P. timida* Koehler & Vaney .. Lat. 13° 47' 30" N., Long. 92° 36' E. and  
 Andaman Is.  
 76. \**P. tristis* Koehler & Vaney .. Lat. 18° 26' N., Long. 85° 24' E.
- Genus— *Synapta*  
 77. *S. radiosa* Reynoud .. Coromondal Coast.
- Genus— *Filithuria*  
 78. *F. elegans* Koehler & Vaney .. Lat. 11° 25' 5" N., Long. 92° 47' 6" E.
- Genus— *Gephyrothuria*  
 79. \**G. alcocki* Koehler & Vaney .. Lat. 6° 52' N., Long. 81° 11' E.
- Genus— *Aphelodactyla*  
 80. \**A. molpadoides* (Semper) .. Balassore Bay, Orissa Coast off puri.
- Genus— *Molpadia*  
 81. \**M. andamanense* Walsh .. Lat. 13° 27' N., Long. 93° 12' 30" E.  
 Lat. 13° 17' 15" N., Long. 93° 10' E.  
 Lat. 13° 50' 30" N., Long. 93° 26' E.  
 Lat. 14° 13' N., Long. 93° 40' E.  
 Lat. 8° 56' N., Long. 81° 09' E.  
 82. \**M. brevicaudatum* Koehler & Vaney .. Lat. 13° 17' 15" N., Long. 93° 10' E.  
 83. \**M. concolor* Koehler & Vaney .. Bay of Bengal.  
 84. \**M. concolor caudatum* Koehler & Vaney .. Lat. 8° 40' N., Long. 81° 27' 35" N.  
 85. \**M. contortum* Koehler & Vaney .. Coast of Krishna  
 86. \**M. ecalcareum* Koehler & Vaney .. Lat. 11° 35' 15" N., Long. 80° 02' 15" E.  
 87. \**M. elongatum* Koehler & Vaney .. Lat. 13° 21' N., Long. 93° 27' E.  
 88. \**M. granulata* Ludwig .. Lat. 15° 21' N., Long. 92° 48' E.  
 89. \**M. intermedium* Koehler & Vaney .. Coast of Krishna, Lat. 84° 0' N., Lat. 81° 27'  
 35' E.  
 90. \**M. pauperum* Koehler & Vaney .. Lat. 11° 29' 45" N., Long. 80° 02' 36" E.  
 91. \**M. polymorphum* Koehler & Vaney .. Lat. 15° 38' N., Lat. 82° 30' E.
- Genus— *Amphideima*  
 92. \**A. investigatoris* Koehler & Vaney .. Andaman Is.
- Genus— *Apodogaster*  
 93. \**A. alcocki* Walsh .. Lat. 13° 47' 30" N., Long. 92° 36' E.
- Genus— *Ophnurgus*  
 94. *O. glaber* (Walsh) .. Bay of Bengal.  
 95. \**O. invalidus* Koehler & Vaney .. Lat. 11° 35' 15" N., Long. 80° 2' 15" E.
- Genus— *Enypniasies*  
 96. \**E. ? decipiens* Koehler & Vaney .. Lat. 11° 26' 30" N., Long. 92° 53' 45" E.
- Genus— *Euriplasies*  
 97. \**E. obscura* Koehler & Vaney .. Lat. 12° 20' N., Long. 85° 8' E.
- Genus— *Peniagone*  
 98. \**P. expansa* Koehler & Vaney .. Lat. 11° 58' N., Long. 88° 52' 17" E.  
 99. \**P. ? Obscura* Koehler & Vaney .. Lat. 12° 20' N., Long. 85° 8' E.  
 100. \**P. stabilis* Koehler & Vaney .. Lat. 12° 20' N., Long. 85° 8' E.
- Genus— *Euphronides*  
 101. \**E. bifurcata* Koehler & Vaney .. Lat. 12° 20' N., Long. 85° 8' E.

TABLE 4. *Species known from the South-West Indian Ocean only*

Genus— <i>Cucumaria</i>		
1.	<i>C. corbula</i> Cherbonnier	.. South Africa.
2.	<i>C. deichmanni</i> Cherbonnier	.. South Africa.
3.	<i>C. discolor</i> Thèel	.. E. Coast of Africa.
4.	<i>C. improvisa</i> Ludwig	.. E. Coast of Africa.
5.	<i>C. insolens</i> Thèel	.. E. Coast of Africa.
6.	<i>C. jagari</i> Lampert	.. South Africa.
7.	<i>C. plancti</i> Brandt	.. E. Coast of Africa.
8.	<i>C. posthuma</i> Lampert	.. E. Coast of Africa.
9.	<i>C. rigidapeda</i> Cherbonnier	.. South Africa.
10.	<i>C. sinorbis</i> Cherbonnier	.. South Africa.
11.	<i>C. spyridophora</i> H.L. Clark	.. South Africa.
12.	<i>C. syklon</i> (Lampert)	.. South Africa & Natal.
13.	<i>C. stephensoni</i>	.. South Africa.
14.	<i>C. tetracentriophora</i>	.. South Africa.
15.	<i>C. tristis</i> Ludwig	.. E. Coast of Africa.
Genus— <i>Echinocucumis</i>		
16.	<i>E. typica</i> Sars	.. South Africa.
Genus— <i>Pentacta</i>		
17.	<i>P. collaradiatus</i> Haacke	.. Mauritius.
18.	<i>P. propinquus</i> Haacke	.. Mauritius.
19.	<i>P. tristis</i> Ludwig	.. E. Coast of Africa.
Genus— <i>Pentamera</i>		
20.	<i>P. chuni</i>	.. South Africa.
21.	<i>P. velligera</i>	.. South Africa.
Genus— <i>Thyone</i>		
22.	<i>T. aurea</i> (Quoy & Gaimard)	.. Off Cape point, S. Africa.
23.	<i>T. curvata</i> Lampert	.. S. Africa.
24.	<i>T. infusca</i> Cherbonnier	.. South Africa.
25.	<i>T. proceracorona</i> Cherbonnier	.. South Africa.
26.	<i>T. turrisoolida</i> Cherbonnier	.. South Africa.
27.	<i>T. venustella</i>	.. E. Coast of Africa.
Genus— <i>Urodemus</i>		
28.	<i>U. bifurcatum</i> Dsichmann	.. South of Durban.
Genus— <i>Ohishimella</i>		
29.	<i>O. mauritiensis</i> Heding & Panning	.. Mauritius.
Genus— <i>Phyllophorus</i>		
30.	<i>P. ambigulus</i> Heding	.. Dar-es-Salam.
31.	<i>P. tenuis</i> Haacke	.. Mauritius.
Genus— <i>Thyonidiella</i>		
32.	<i>T. oceana</i> Heding & Panning	.. Mauritius.
Genus— <i>Psolus</i>		
33.	<i>P. agulhasicus</i>	.. Cape Agulhas.
34.	<i>P. appendiculata</i> Philippi	.. E. Coast of Africa.
35.	<i>P. capensis</i>	.. South Africa.
36.	<i>P. imperfectus</i>	.. South Africa.
37.	<i>P. pourtalesii</i>	.. South Africa.
38.	<i>P. squamata</i> (O. F. Müller)	.. South Africa.
Genus— <i>Actinopyga</i>		
39.	<i>A. echinites plebeja</i>	.. E. Coast of Africa.
40.	<i>A. formosa</i> Selenka	.. Natal.

41. *A. obesa obesa* .. E. Coast of Africa.  
 42. *A. plebeja* Selenka .. Mozambique.  
 43. *A. serratidens agassizii* .. E. Coast of Africa.
- Genus—*Holothuria*
44. *H. atra ambonensis* Thöel .. Zanzibar.  
 45. *H. botellus* Selenka .. Zanzibar.  
 46. *H. collaris* Haacke .. Mauritius.  
 47. *H. decorata* Marenzeller .. E. Coast of Africa.  
 48. *H. doffeinii* Augustin .. Zanzibar.  
 49. *H. flavomaculata* .. Seychelles.  
 50. *H. floridana* Pourtales .. Zanzibar.  
 51. *H. gracilis* Semper .. E. Coast of Africa.  
 52. *H. immbolts* Semper .. Mauritius.  
 53. *H. kollikeri* Semper .. E. Coast of Africa.  
 54. *H. macleari* Bell .. E. Coast of Africa.  
 55. *H. mamiculata* Haacke .. Mauritius.  
 56. *H. moebii* Ludwig .. E. Coast of Africa.  
 57. *H. monosticha* Haacke .. Seychelles.  
 58. *H. occidentalis* Ludwig .. E. Coast of Africa.  
 59. *H. pleuripus* Haacke .. E. Coast of Africa.  
 60. *H. pulla* Selenka .. E. Coast of Africa.  
 61. *H. utrimquestigmata* Haacke .. Mauritius.
- Genus—*Neostichopus*
62. *N. grammata* (H. L. Clark) .. South Africa.
- Genus—*Stichopus*
63. *S. cylindricus* Haacke .. Mauritius.  
 64. *S. naso* Semper .. Mauritius.  
 65. *S. rigidus* Selenka .. Zanzibar.
- Genus—*Synallactes*
66. *S. mollis* Cherbonnier .. South Africa.  
 67. *S. viridillimus* Cherbonnier .. South Africa.
- Genus—*Chiridota*
68. *C. exima* Haacke .. Mauritius.  
 69. *C. violacea* Peters .. Mozambique.
- Genus—*Taeniogyrus*
70. *T. dayi* Cherbonnier .. South Africa.
- Genus—*Eptimapta*
71. *E. knysnaensis* Cherbonnier .. Anysna, South Africa.
- Genus—*Leptosynapta*
72. *L. ancaracuta* Cherbonnier .. South Africa.
- Genus—*Opheodesoma*
73. *O. mauritiae* Heding & Panning .. South Africa.
- Genus—*Patinapta*
74. *P. crosslandi* .. South Africa.
- Genus—*Synapta*
75. *S. godeffroyi* Semper .. Mauritius.  
 76. *S. serpentina* J. Müller .. Zanzibar.
- Genus—*Pelagothuria*
77. *P. ludwigi* Chun .. Seychelles.

TABLE 5 Species known from South-East Indian Ocean only

Genus— <i>Actinocucumis</i>	
1. <i>A. difficilis</i> Bell	.. Broome, Western Australia.
2. <i>A. longipedes</i> H. L. Clark	.. Western Australia : Off False Cape Bossut; south of the jetty at Broome.
Genus— <i>Cucumaria</i>	
3. <i>C. bicolor</i>	.. West coast of Australia.
4. <i>C. mutans</i> Joshua	.. Western Australia : Bunker's Bay; cottesloe beach ; S. Australia.
Genus— <i>Leptopentacta</i>	
5. <i>L. grisea</i> H. L. Clark	.. Broome, Western Australia.
Genus— <i>Lipotrapeza</i>	
6. <i>L. ventripes</i> (Joshua & Creed)	.. St. Vincent Gulf, South Australia.
7. <i>L. ventiens</i> (Joshua)	.. Western Australia : Cottesloe beach ; Bunker's Bay ; Ellen rock beach ; Cape Leeuwin.
Genus— <i>Orbithyone</i>	
8. <i>O. megapodia</i> H. L. Clark	.. Broome, Western Australia.
Genus— <i>Pentacta</i>	
9. <i>P. australis</i> (Ludwig)	.. Western Australia: Shark Bay & Broome and S. Coast of Australia.
10. <i>P. australis armatus</i> (Marenzeller)	.. Western Australia : Shark Bay & Koombana Bay, Bunbury.
11. <i>P. coerulea</i> (Semper)	.. Western Australia: Augustus Is. ; Broome : off Cape Villaret; off False Cape Bossut; Abrolhos; 80 mile Beach ; Fremantle; Albany.
12. <i>P. coerulea rubra</i> H. L. Clark	.. Broome (Western Australia).
13. <i>P. minutus</i> (Ludwig)	.. Albany (South coast of W. Australia).
Genus— <i>Pentathyone</i>	
14. <i>P. mirabilis</i> (Ludwig)	.. Western Australia : Broome; False Cape Bossut; AusustusI. & Wallal.
Genus— <i>Pseudocolochirus</i>	
15. <i>P. axiologus</i> (H. L. Clark)	.. Port Hedland (W. Australia).
Genus— <i>Pseudocucumis</i>	
16. <i>P. intercedens</i> Lampert	.. Broome, Western Australia; N. W. Australia.
17. <i>P. thomsoni</i> (Hutton)	.. Lat. 33° 15'S., Long. 126° 22' 15" E.
Genus— <i>Staurothyone</i>	
18. <i>S. distincta</i> H. L. Clark	.. Broome, Western Australia.
Genus— <i>Thyone</i>	
19. <i>T. alba</i> H. L. Clark	.. Broome (W. Australia).
20. <i>T. axiologa</i> H. L. Clark	.. Entrance point, Broome (W. Australia).
21. <i>T. buccalis</i> Stimpson	.. Western Australia : Broome, ; False Cape Bossut ; 80 mile beach.
22. <i>T. buccalis pallida</i> H. L. Clark	.. Broom (Western Australia).
23. <i>T. grisea</i> H. L. Clark	.. Broome & False Cape Bossut (W. Australia).
24. <i>T. micra</i> H. L. Clark	.. Broome (Western Australia).
25. <i>T. minuta</i> H. L. Clark	.. Broome (Western Australia).
26. <i>T. perissa</i> H. L. Clark	.. Off Cape Villaret (W. Australia).
27. <i>T. vercoi</i> Joshua & Creed	.. Le. Fevre's Peninsula, St. Vincent's Gulf.
Genus— <i>Urodemas</i>	
28. <i>U. hamatum</i> Sluiter	.. N. W. coast of Australia & Broome (W. Australia).
29. <i>U. schmelzlii</i> (Ludwig)	.. Western Australia : Augustus Is. ; False Cape Bossut; Broome & N.W. coast of Australia.

- Genus—*Phyllophorus*  
 30. *P. brocki* Ludwig .. Augustus Is. (Western Australia).  
 31. *P. proteus* Bell .. Western Australia : Augustus Is. & Broome.  
 32. *P. thynoides* H. L. Clark .. Cottesloe beach (Western Australia).
- Genus—*Psolidium*  
 33. *P. granuliferum* H. L. Clark .. Koombana Bay, Bunbury (Western Australia).
- Genus—*Psolus*  
 34. *P. ambulatrix* Bell .. Perth, Western Australia.  
 35. *P. spinuliferus* H. L. Clark .. Off 80 mile Beach, N. W. Australia & Broome, Western Australia.
- Genus—*Holothuria*  
 36. *H. conica* H. L. Clark .. Quail Is., N.W. Australia.  
 37. *H. hartmeyeri* Erwe .. W. Australia: Geraldton; Point Person; Garden Is., Burnbury; Bunker's Bay; Albany & Brighton beach (S. Australia).  
 38. *H. impatiens bicolor* H. L. Clark .. False Cape Bossut.  
 39. *H. macroporona* H. L. Clark .. W. Australia: Rottnest Is. & Bathurst point.  
 40. *H. michaelsoni* Erwe .. Denham, Shark Bay (W. Australia).  
 41. *H. viotoriae* .. Fremantle (W. Australia).
- Genus—*Stichopus*  
 42. *S. ellipes* H. L. Clark .. Broome, W. Australia.  
 43. *S. ludwigi* Erwe .. S.W. Australia.  
 44. *S. mollis* Hutton .. Port Philip Bay (S. Australia) & Albany (W. Australia).  
 45. *S. simultans* (Dendy) .. Rottnest Is. (W. Australia).  
 46. *S. variegatus pallidus* H. L. Clark .. Cape Jaubert (N. W. Australia).
- Genus—*Chiridota*  
 47. *C. contorta* Ludwig .. Koombana Bay, Bunbury (Western Australia).
- Genus—*Sigmodota*  
 48. *S. roebucki* (Joshua) .. Western Australia: Geraldton, Rottnest Is.
- Genus—*Taeniogyrus*  
 49. *T. cidaris* Ohshima .. Rottnest Is. (Western Australia).
- Genus—*Chondroclaea*  
 50. *C. macra* H. L. Clark .. Allaru Is., Coburg Peninsula.
- Genus—*Leptosynapta*  
 51. *L. dolabrifera* (Stimpson) .. Western Australia : Bunker's Bay, Bunbury; Point Peron, Roehampton Is., Rottnest Is., Port Hedland & False Cape Bossut and Port Willunga (S. Australia).  
 52. *L. dyscrita* H. L. Clark .. Roebuck Bay, Broome (W. Australia).
- Genus—*Protankyra*  
 53. *P. verrilli* (Thóel) .. Western Australia : Broome & 80 mile Beach.  
 54. *P. bisperforata* H. L. Clark .. Broome (Western Australia).
- Genus—*Synapta*  
 55. *S. fasciata* Kuhl & Hasselt .. West Coast of Java.
- Genus—*Paracaudina*  
 56. *P. chilensis ransonnetii* (Marenzeller) .. Roebuck Bay, Broome (Western Australia).  
 57. *P. tetrapora* (H. L. Clark) .. Western Australia : Fremantle & Cottesloe beach and St. Vincent's Gulf.
- Genus—*Aphlodactyla*  
 58. *A. delicata* H. L. Clark .. Western Australia : Cape Jaubert & Walla.  
 59. *A. leucoprocta* H. L. Clark .. Western Australia: False Cape Bossut & Broome.

TABLE 6. *Species reported from 2 or 3 regions of the Indian Ocean*

Species	Arabian Sea	Bay of Bengal	S.W. Indian Ocean	S.E. Indian Ocean
Genus— <i>Actinocucumis</i>				
1. <i>A. typicus</i> Ludwig	+	+		+
Genus— <i>Cucumaria</i>				
2. <i>C. frauenfeldi</i> Ludwig		+	+	
*3. <i>C. forbesi</i> Bell	+	+		
4. <i>C. turbinata</i> Hutton		+	+	
Genus— <i>Pentacta</i>				
5. <i>P. tuberculosus</i> (Quoy & Gaimard)	+	+		+
Genus— <i>Pseudocucumis</i>				
6. <i>P. actcula</i> Semper		+	+	
Genus— <i>Thyone</i>				
7. <i>T. fuscus papuensis</i> Théel		+		+
8. <i>T. rosacea</i> Semper	+	+		
Genus— <i>Phyllophorus</i>				
9. <i>P. cebuensis</i> (Semper)		+		+
10. <i>P. frauenfeldi</i> Ludwig	+		+	
11. <i>P. parvipedes</i> H. L. Clark	+	+		+
Genus— <i>Ypsilothuria</i>				
*12. <i>Y. bitentaculata</i> (Ludwig)	+	+		
Genus— <i>Actinopyga</i>				
13. <i>A. maculata</i> (Brandt)	+		+	+
14. <i>A. parvula</i> Selenka	+		+	+
15. <i>A. serratidens</i>		+	+	
Genus— <i>Holothuria</i>				
16. <i>H. arenicola</i> Semper	+		+	
17. <i>H. curiosa</i>		+	+	
*18. <i>H. difficilis</i> Semper		+	+	
*19. <i>H. glaberrima</i> Selenka		+	+	
*20. <i>H. insignis</i> Ludwig	+	+		
*21. <i>H. kurti</i> Lampert	+	+		
22. <i>H. lagoena</i> Haacke	+		+	
*23. <i>H. leucospilota</i> (Brandt)			+	+
24. <i>H. lineata</i> Ludwig	+	+	+	
*25. <i>H. lubrica</i> Selenka	+	+	+	
26. <i>H. martensi</i> Semper		+	+	
27. <i>H. modesta</i> Ludwig	+			+

Species	Arabian Sea	Bay of Bengal	S.W. Indian Ocean	S.E. Indian Ocean
*28. <i>H. ocellata</i> Jäger	+	+		+
*29. <i>H. parva</i> Krauss	+		+	
30. <i>H. pervicax</i> Selenka	+		+	+
31. <i>H. pulchella</i> Selenka	+	+	+	
32. <i>H. rigida</i> Selenka	+		+	
*33. <i>H. remollescens</i> Lampert	+	+		
34. <i>H. strigosa</i> Selenka	+		+	
35. <i>H. verrucosa</i> Selenka		+	+	
Genus— <i>Microthele</i>				
36. <i>M. nobilis</i> (Selenka)	+		+	
Genus— <i>Pelopatides</i>				
*37. <i>P. modestus</i> Koehler & Vaney	+	+		
Genus— <i>Chondrocloea</i>				
*38. <i>C. beselli</i> (Jäger)	+	+		
*39. <i>C. striata</i> (Sluiter)	+	+		
Genus— <i>Euapta</i>				
40. <i>E. grisea</i> Semper	+	+		
Genus— <i>Haplodactyla</i>				
*41. <i>H. australis</i> Semper		+	+	
Genus— <i>Molpadia</i>				
*42. <i>M. albicans</i> (Théel)	+	+		
*43. <i>M. musculus</i> Risso	+	+		
*44. <i>M. musculus acutum</i> (Koehler & Vaney)	+	+		
*45. <i>M. musculus undulatum</i> (Koehler & Vaney)	+	+		
Genus— <i>Delma</i>				
*46. <i>D. blakei</i> Théel	+	+		
Genus— <i>Benthodytes</i>				
*47. <i>B. glutinosa</i> R. Parrier	+	+		
*48. <i>B. sanguinolenta</i> Théel	+	+		

TABLE 7 species reported from all the four regions of the Indian Ocean

	S.W. INDIAN OCEAN	ARABIAN SEA	BAY OF BENGAL	S.E. INDIAN OCEAN
Genus— <i>Holothuria</i>				
1. <i>H. albiventer</i> Semper ..	+	+	+	+
2. * <i>H. atra</i> Jäger ..	+	+	+	+
3. <i>H. cherrassens</i> Brandt ..	+	+	+	+
4. * <i>H. edulis</i> Lesson ..	+	+	+	+
5. <i>H. fusconcherea</i> Jäger ..	+	+	+	+
6. * <i>H. impatientis</i> Forsskal ..	+	+	+	+
7. * <i>H. maculata</i> (Brandt) ..	+	+	+	+
8. <i>H. marmorata</i> (Jäger) ..	+	+	+	+
9. * <i>H. monacaria</i> (Lesson) ..	+	+	+	+
10. * <i>H. pardalis</i> Selenka ..	+	+	+	+
	East coast of Africa	South Africa	Natal	Mozambique
	Madagascar	Zanzibar	Mauritius	Seychelles
	Somalia	Gulf of Aden	Red Sea	Gulf of Aqaba
	Gulf of Suez	Persian Gulf	W. Coast of India	Laccadive & Maldive
	Gulf of Manaar & Palk Strait	Ceylon	Madras	Mergui Archipelago
	Malacca Strait	Andamans	Nicobars	Bay of Bengal
	W. Coast of Sumatra	W. Coast of Java	N. W. Coast of W. Australia	W. Coast of W. Australia
	S. Coast of W. Australia	Christmas Island	Indian Ocean	(no particular locality mentioned)

11.*	<i>H. scabra</i> Jäger	..	+		+	+	+		+	+	+	+	+	+	+	+	+	
12.*	<i>H. vagabunda</i> Selenka	..	+		+	+	+	+	+	+	+	+	+	+	+	+	+	
13.	Genus— <i>Actinopyga echinites</i> Jäger	..	+		+	+	+		+	+	+					+	+	
14.*	<i>A. lecanora</i> Jäger	..	+		+	+	+		+		+		+		+	+	+	
15.*	<i>A. mauritiana</i> Quoy & Gaim.	..	+		+	+	+		+	+		+	+	+				
16.*	<i>A. miliaris</i> Selenka	..	+		+	+	+		+		+					+	+	+
17.*	Genus— <i>Stichopus chloronatus</i> Brandt	..	+		+	+	+		+	+	+	+	+	+		+	+	
18.*	<i>S. variegatus</i> Semper	..			+	+	+		+	+		+	+	+	+	+	+	
19.	Genus— <i>Cucumaria semperi</i> Bell	..			+				+		+					+		
20.	Genus— <i>Pseudocucumis africana</i> (Semper)	..			+	+	+		+		+					+		
21.	Genus— <i>Pentacta dotiolum</i> (Pallas)	..		+				+			+					+		
22.*	<i>P. quadrangularis</i> (Lesson)	..		+						+	+		+		+			
23.	Genus— <i>Synapta beselli</i> Jäger	..	+			+	+	+		+		+	+		+	+	+	
24.*	Genus— <i>Thyone sacellus</i> Selenka	..			+	+		+	+	+	+		+					
25.*	Genus— <i>Chiridota rufescence</i> Brandt	..			+		+			+	+	+	+		+			
26.	Genus— <i>Chondrocloea recta</i> (Semper)	..			+	+	+		+	+	+	+			+	+		

[18]

48.	<i>M. andamanense</i>	.. 480 m—750 m—900 m 2000 m—2700 m.
49.	<i>M. brevicaudatum</i>	.. 350 m—650 m.
50.	<i>M. concolor</i>	.. 850 m.
51.	<i>M. contortum</i>	.. 1350 m.
52.	<i>M. concolor caudatum</i>	.. 1140 m—1440 m.
53.	<i>M. elongatum</i>	.. 1650 m.
54.	<i>M. ealcareum</i>	.. 702 m.
55.	<i>M. granulata</i>	.. 2770 m—3440 m—3590 m.
56.	<i>M. intermedium</i>	.. 1146 m—1440 m.
57.	<i>M. musculus</i>	.. 740 m—1000 m—1200 m—2300 m—2340 m several records at intermediate depths.
58.	<i>M. accutum</i>	.. 730 m—1000 m—1400 m—1700 m.
59.	<i>M. undulatum</i>	.. 330 m—864 m.
60.	<i>M. pauperum</i>	.. 800 m.
61.	<i>M. polymorphum</i>	.. 1240 m—1650 m.
62.	<i>Amphideima investigatoris</i>	.. 500 m—600 m.
63.	<i>Apodogaster alcocki</i>	.. 1000 m—1100 m.
64.	<i>Benthophyces fragilis</i>	.. 1400 m.
65.	<i>Deima blakei</i>	.. 1400m—1800m—2000m—3000 m—3100m—3240 m.
66.	<i>Oneirophanta conservata</i>	.. 1400 m.
67.	<i>Ophnurgus glaber</i>	.. 1000 m.
68.	<i>O. invalidus</i>	.. 600 m.
69.	<i>Eynpniastes (?) decipiens</i>	.. 710 m.
70.	<i>Euriplastes obscura</i>	.. 3240 m.
71.	<i>Peniagone expansa</i>	.. 3130 m.
72.	<i>P. (?) obscura</i>	.. 3240 m.
73.	<i>P. stabilis</i>	.. 3240 m.
74.	<i>Laetmogone violacea</i>	.. 1290 m.
75.	<i>Benthodytes glutinosa</i>	.. 2700—3240—3600 m.
76.	<i>B. sanguinolenta</i>	.. 1200 m—1330 m.
77.	<i>B. superbus</i>	.. 2700 m.
78.	<i>Euphronides bifurcata</i>	.. 3240 m.
79.	<i>Psychropotes minutes</i>	.. 2050 m.

An analysis of the bathymetrical records of the deep sea Holothurioidea present in the collections of the Zoological Survey of India reveals that most of the species appear to be restricted to the depths at which they occur. Some species, however, have a wide range of vertical distribution. These are *Ypsilothuria bitentaculata* from 260m-2400 m, *Mesothuria multipes* from 960 m-2000 m, *Synallactes woodmasoni* from 480 m-2700 m, *Molpadia andamanense* from 480 m-2700 m, *Molpadia musculus* from 740 m-2340 m and *Deima blakei* from 1400 m-3240 m. This indicates the adaptability of these species to the different environmental (pressure and hydrographical) conditions.

#### SPECIES CONTRIBUTING TO THE BECHE-DE-MER INDUSTRY

The most valued Australian species of beche-de-mer is *Stichopus variegatus* along with *Holothuria edulis*, *H. fuscocinerea* and *H. impatiens* to some extent (vide, Hornell, 1917 p. 126).

Domanty (1936) listed 15 edible holothurians from Indonesia. Of these, 11 species viz. *Actinopyga miliaris*, *Holothuria argus*, *atra*, *edulis impatiens*, *marmorata*, *monocaria*, *paradoxa*, *paradalis*, *scabra* and *vitiensis*) occur in the Indian Ocean. Sella & Sella (1940) described 14 species of holothuria that were used in Trepang industry. Of these, *Actinopyga lecanora*, *A. mauritiana*, *A. miliaris*, *Holothuria scabra*, *H. argus* and *Microthele nobilis* are also found in the Indian Ocean. Panning (1941) listed 14 species of sea cucumbers from East Africa that were utilized in the Trepang industry. Later in 1944, he listed one species *Actinopyga serratidens bannwarthi* from Suez out of 10 species which was used in trepang industry. In 1953, Domanty published a list of species of Holothurians from Zamboango, wherein he mentioned 5 species as being used in trepang industry. Of these, 3 species viz. *Holothuria argus*, *H. marmorata* and *Microthele nobilis* are also known from the Indian Ocean.

According to Hcnell (1917, p. 125) *Holothuria scabra* is the only Indian species that counted in the Indian Beche-de-mer industry. The other species which were utilized were *Holothuria atra*, *Holothuria spinifer* and *Stichopus chloronatus* although these did not yield satisfactory results. These indicate that the species belonging to the families Holothuridae (genera *Actinopyga*, *Holothuria* and *Microthele*) and Stichopodidae (Genus *Stichopus*) included in the Order Aspidochirota which is represented by 157 species in the Indian Ocean have so far been utilized for the trepang industry. Further, in the Indian Ocean the family Holothuriidae is represented by 110 species of which 50 species come under the genus *Holothuria*, the species of which have contributed the most to the trepang industry. Similarly, the family Stichopodidae is represented by 12 species in the Indian Ocean of which 11 species come under the genus *Stichopus*, which have also contributed much to the success of the trepang industry.

The extent to which the other species of Holothuroidea including the species occurring in the Holothurian beds detected in recent years off the Andaman and Nicobar islands by the Marine Survey Division of the Zoological Survey of India could be utilized for the beche-de-mer industry needs further investigation.

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