

## Holothurians (Holothuroidea : Echinodermata) of the Eastern Coast of Thailand

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**ABSTRACT.-** Holothurians (Class Holothuroidea, Phylum Echinodermata) of the Eastern Coast of Thailand were intensively studied from the specimens collected from 4 marine habitats namely, coral reef, seagrass bed, sandy and rocky beaches in Chon Buri, Rayong, Chanthaburi and Trat Provinces from 1998 to 2002. In addition, museum specimens from the authors's collections also examined along with other specimens deposited in several institutions and collections in Thailand. The holothurians found were classified into 4 Orders, 6 Families, 14 Genera and 34 species. Regarding the observed habitats, it was found that there were 31 species in coral reefs, 3 species in seagrass beds, 9 species in sandy beaches and 1 species in rocky beaches.

**KEY WORDS :** Holothurian, Echinodermata, Eastern Coast, Thailand.

### INTRODUCTION

The holothurian species inhabiting along the Eastern Coast of Thailand have received scant attentions and few surveys have been conducted to reveal their actual diversities. Starting in 1996 by P. Rodma, whose taxonomic work had made known 14 holothurian species. Two years later, S. Putchakarn (1998) reported from the same studied areas 8 holothurian species. And lastly the first author discovered as many as 17 holothurian species living around the Lan and Phai Islands, Chon Buri Province in 1998.

The Eastern Coast of Thailand encompasses 4 maritime provinces stretching side

by side along the northern shore of the Gulf of Thailand, namely Chon Buri, Rayong, Chanthaburi and Trat; also consisting of many island groups, such as the Lan, the Samae San, the Samet and the Chang islands. Nowadays, this particular area has been targeted to be developed into the industrial estate; the impacts of which will certainly effect the livings of the native holothurian species in more or less extent.

### MATERIALS AND METHODS

Holothurians were collected from 1998-2002 along the Eastern Coast of Thailand (Chon Buri, Rayong, Chanthaburi and Trat). We collected from the reef flats, seagrass bed, sandy beaches and rocky beaches for the total of 82 stations (Table 1) by hand-picking at low tide, by snorkeling and by Scuba diving down to five

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meter depth. In addition, We studies specimens from the museums or reference collections namely, Reference collection of Bang Saen Institute of Marine Science : BIMS, Burapha University, Bang Saen, Chon Buri; Kasetsart University Museum of Fisheries (Natural History) : KUMF(NH.), Faculty of Fisheries, Kasetsart University, Bangkok; Department of Fisheries Museum : DoFM, Department of Fisheries, Bangkok; Invertebrate Laboratory room of Aquatic Science, Burapha University : AQ.SC.BUU., Faculty of Science, Burapha University, Chon Buri and Invertebrate laboratory room of Marine Science, Chulalongkorn University : MS.SC.CU., Faculty of Science, Chulalongkorn University, Bangkok.

The Holothurians are identified mainly on the basis of spicules and morphological characters and classified by their form and number of tentacles, distribution of tube feet and papillae, color, shape, length of bodies, calcareous ring and presence or absence of cuvierian tubules.

For spicule examination, thin sections of the dorsal and ventral body wall, tentacle and tube feet were boiled in 10% NaOH, dissolving the tissues and leaving the calcareous spicules intact. These were then washed with distilled water for 3 times and finally dehydrated in 95% ethanol. The samples were then examined under the microscope and a photo taken.

The taxonomic scheme used in this paper follows those of Rowe (1969), Clark and Rowe (1971), Fell (1982); Cannon and Silver (1986); Guille, Laboute and Menou (1986); Rowe and Gates (1995) and Massin (1996,1999).

The materials are deposited in the collection of the Bang Saen Institute of Marine Science (BIMS), Burapha University, Bang Saen, Chon Buri, Thailand. Comparison were made with materials from the Phuket Marine Biological Center (PMBC), Phuket, Thailand.

**Table 1** Stations for collecting Holothurians on the Eastern Coast of Thailand.

| Station No.       | Name                                  | Locality            |
|-------------------|---------------------------------------|---------------------|
| <b>Coral reef</b> |                                       |                     |
| 1                 | Ko Si Chang (W), Chon Buri            | 13°10' N, 100°48' E |
| 2                 | Ko Si Chang (E), Chon Buri            | 13°08' N, 100°49' E |
| 3                 | Hin Sompun yaeu, Chon Buri            | 13°11' N, 100°48' E |
| 4                 | Ko Ran Dok Mai (W), Chon Buri         | 13°09' N, 100°50' E |
| 5                 | Ko Khang Khao (N), Chon Buri          | 13°07' N, 100°49' E |
| 6                 | Ko Lan (N - Leam Tonglang), Chon Buri | 12°56' N, 100°47' E |
| 7                 | Ko Lan (SE - Ao Nu-an), Chon Buri     | 12°54' N, 100°47' E |
| 8                 | Ko Lan (S), Chon Buri                 | 12°53' N, 100°47' E |
| 9                 | Ko Lan (SW - Haad Samae), Chon Buri   | 12°54' N, 100°46' E |
| 10                | Ko Sak (N), Chon Buri                 | 12°57' N, 100°48' E |
| 11                | Ko Khrok (E), Chon Buri               | 12°56' N, 100°49' E |
| 12                | Ko Khrok (W), Chon Buri               | 12°56' N, 100°49' E |
| 13                | Ko Phai (W), Chon Buri                | 12°56' N, 100°40' E |
| 14                | Ko Phai (SW), Chon Buri               | 12°15' N, 100°40' E |
| 15                | Ko Lueam (E), Chon Buri               | 12°57' N, 100°39' E |
| 16                | Ko Lueam Noi (E), Chon Buri           | 12°58' N, 100°40' E |
| 17                | Ko Klung Badan (E), Chon Buri         | 12°54' N, 100°41' E |
| 18                | Ko Klung Badan (W), Chon Buri         | 12°54' N, 100°41' E |
| 19                | Ko Man Wichai (E), Chon Buri          | 12°52' N, 100°41' E |
| 20                | Ko Rin (E), Chon Buri                 | 12°48' N, 100°42' E |
| 21                | Leam Samae San, Chon Buri             | 12°36' N, 100°58' E |

Table 1 Continued.

| Station No.       | Name                                  | Locality            |
|-------------------|---------------------------------------|---------------------|
| <b>Coral reef</b> |                                       |                     |
| 22                | Ko Samae San (N), Chon Buri           | 12°35' N, 100°57' E |
| 23                | Ko Raet (E), Chon Buri                | 12°35' N, 100°58' E |
| 24                | Ko Chang Kluea (NE), Chon Buri        | 12°33' N, 100°59' E |
| 25                | Ko Kham (N), Chon Buri                | 12°34' N, 100°56' E |
| 26                | Ko Mu (E), Chon Buri                  | 12°38' N, 100°54' E |
| 27                | Ko I Lao (NE), Chon Buri              | 12°37' N, 100°53' E |
| 28                | Ko Tao Mo (E), Chon Buri              | 12°38' N, 100°53' E |
| 29                | Ko Khram (N), Chon Buri               | 12°43' N, 100°47' E |
| 30                | Ko Khram (E), Chon Buri               | 12°42' N, 100°49' E |
| 31                | Ko I Ra (E), Chon Buri                | 12°41' N, 100°50' E |
| 32                | Ko Samet (E - Ao Wong Dau-an), Rayong | 12°32' N, 101°27' E |
| 33                | Ko Samet (E - Ao Pa Chae), Rayong     | 12°34' N, 101°28' E |
| 34                | Ko Samet (E - Ao Luk Yon), Rayong     | 12°33' N, 101°27' E |
| 35                | Ko Samet (W - Ao Phrao), Rayong       | 12°34' N, 101°26' E |
| 36                | Ko Kudi (W), Rayong                   | 12°35' N, 101°30' E |
| 37                | Ko Thalu (N), Rayong                  | 12°34' N, 101°34' E |
| 38                | Hin Klong Rong (Hin Kunchae), Rayong  | 12°35' N, 101°34' E |
| 39                | Ko Man Nai (W), Rayong                | 12°37' N, 101°41' E |
| 40                | Ko Man Klang (N), Rayong              | 12°34' N, 101°42' E |
| 41                | Ko Man Nok (N), Rayong                | 12°34' N, 101°42' E |
| 42                | Ko Nom Sao (E), Chanthaburi           | 12°28' N, 102°02' E |
| 43                | Ko Chang (N), Trat                    | 12°09' N, 102°17' E |
| 44                | Ko Lim (E), Trat                      | 12°03' N, 102°26' E |
| 45                | Ko Prouhg Nok (E), Trat               | 11°58' N, 102°24' E |
| 46                | Ko Ngam (N), Trat                     | 11°57' N, 102°27' E |
| 47                | Ko Krabung (N), Trat                  | 11°58' N, 102°27' E |
| 48                | Ko Mo Nai (W), Trat                   | 11°58' N, 102°30' E |
| 49                | Ko Moa Nok (E), Trat                  | 11°58' N, 102°31' E |
| 50                | Ko Maisi Yai (E), Trat                | 11°57' N, 102°29' E |
| 51                | Ko Maisi Lex (S), Trat                | 11°57' N, 102°30' E |
| 52                | Ko Lao Nai (E), Trat                  | 11°57' N, 102°25' E |
| 53                | Ko Chan (E), Trat                     | 11°55' N, 102°28' E |
| 54                | Ko Bai Dank (N), Trat                 | 11°54' N, 102°27' E |
| 55                | Ko Wai (N), Trat                      | 11°54' N, 102°24' E |
| 56                | Ko Wai (SE), Trat                     | 11°53' N, 102°25' E |
| 57                | Ko Khlum (N), Trat                    | 11°56' N, 102°22' E |
| 58                | Ko Kham (W), Trat                     | 11°50' N, 102°28' E |
| 59                | Ko Mak (N), Trat                      | 11°50' N, 102°29' E |
| 60                | Ko Rayang Nok (NE), Trat              | 11°48' N, 102°28' E |
| 61                | Ko Kra - Ko Thian (NE), Trat          | 11°49' N, 102°24' E |
| 62                | Ko Yaax (E.), Trat                    | 11°47' N, 102°24' E |
| 63                | Ko Lom (E), Trat                      | 11°49' N, 102°27' E |
| 64                | Ko Rang (E), Trat                     | 11°48' N, 102°24' E |
| 65                | Ko Man Nok (E), Trat                  | 12°01' N, 102°17' E |

Table 1 Continued.

| Station No.         | Name                           | Locality            |
|---------------------|--------------------------------|---------------------|
| <b>Coral reef</b>   |                                |                     |
| 66                  | Ko Yuak (E), Trat              | 12°02' N, 102°16' E |
| 67                  | Ko Chang Noi, Trat             | 12°10' N, 102°15' E |
| 68                  | Ko Mak (S), Trat               | 11°47' N, 102°30' E |
| 69                  | Ko Maisi Lex (S), Trat         | 11°43' N, 102°32' E |
| 70                  | Ko Kut (N), Trat               | 11°45' N, 102°33' E |
| <b>Seagrass bed</b> |                                |                     |
| 71                  | Ao Makhom Pom, Rayong          | 12°40' N, 102°40' E |
| 72                  | Ao Thammachart, Ko Pui, Trat   | 12°12' N, 102°21' E |
| 73                  | Leam Klong Kluai, Ko Kut, Trat | 11°42' N, 102°37' E |
| 74                  | Ko Kradat (W), Trat            | 11°52' N, 102°32' E |
| <b>Sandy beach</b>  |                                |                     |
| 75                  | Haad Bang Sare, Chon Buri      | 12°47' N, 100°54' E |
| 76                  | Haad Bang Saen, Chon Buri      | 13°17' N, 100°55' E |
| 77                  | Haad Mae Ramphung, Rayong      | 12°36' N, 101°23' E |
| 78                  | Haad Leam Chabang, Chon Buri   | 13°05' N, 100°53' E |
| <b>Rocky beach</b>  |                                |                     |
| 79                  | Leam Tan, Chon Buri            | 13°18' N, 100°54' E |
| 80                  | Leam Ya, Rayong                | 12°35' N, 101°25' E |
| 81                  | Leam Chao Lao, Chonhaburi      | 12°31' N, 101°57' E |
| 82                  | Leam Sok, Trat                 | 12°03' N, 102°33' E |

**Note:** N – North, S – South, E – East, W – West, NE – Northeast, SE – Southeast,  
SW – Southwest.

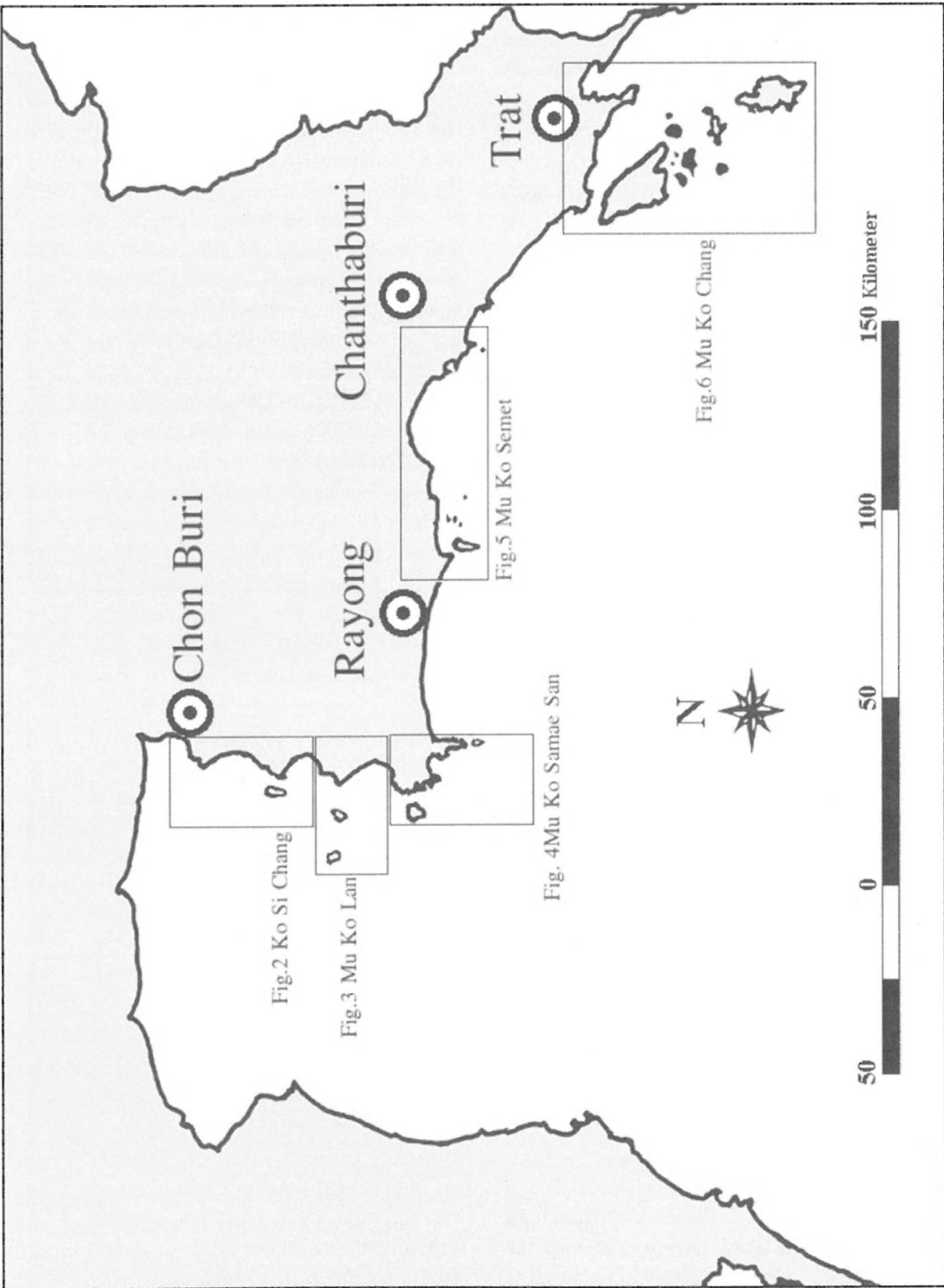
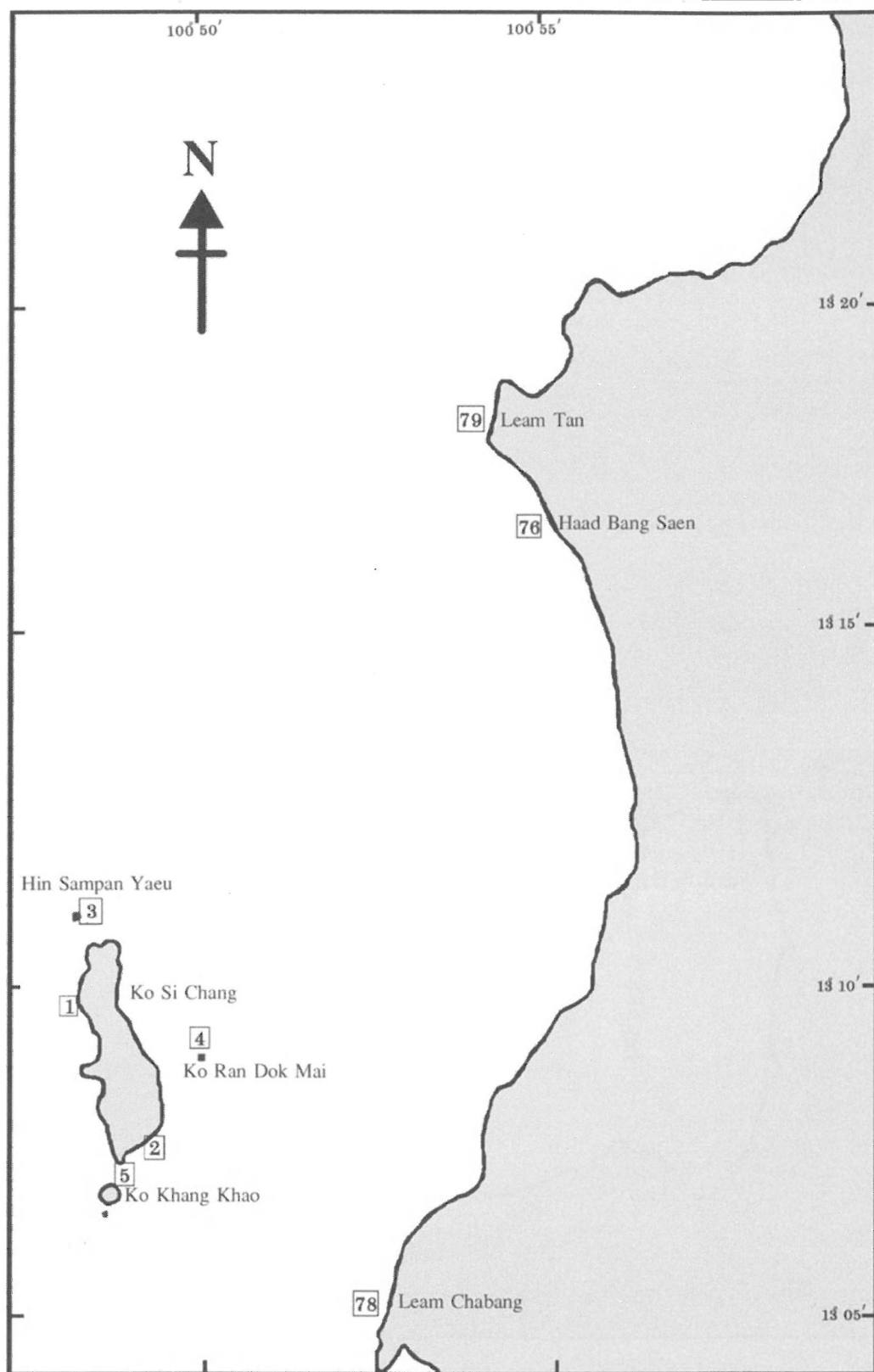


Figure 1 Location of the studied area along the Eastern Coast of Thailand. The map was modified by Arom Mucharin.



**Figure 2** Location of the studied area (number in square) in Chon Buri Province. The map was modified by Arom Mucharin.

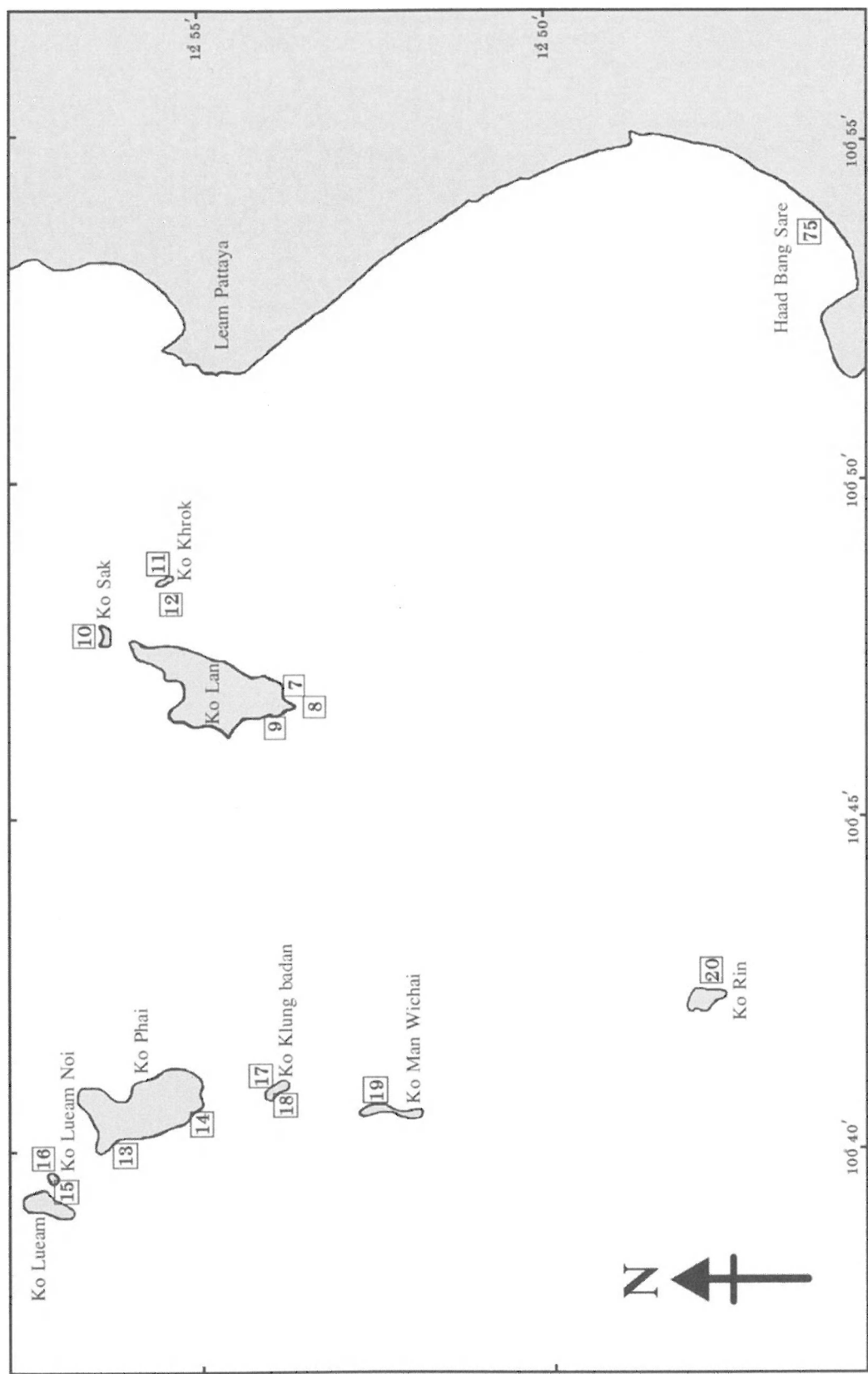
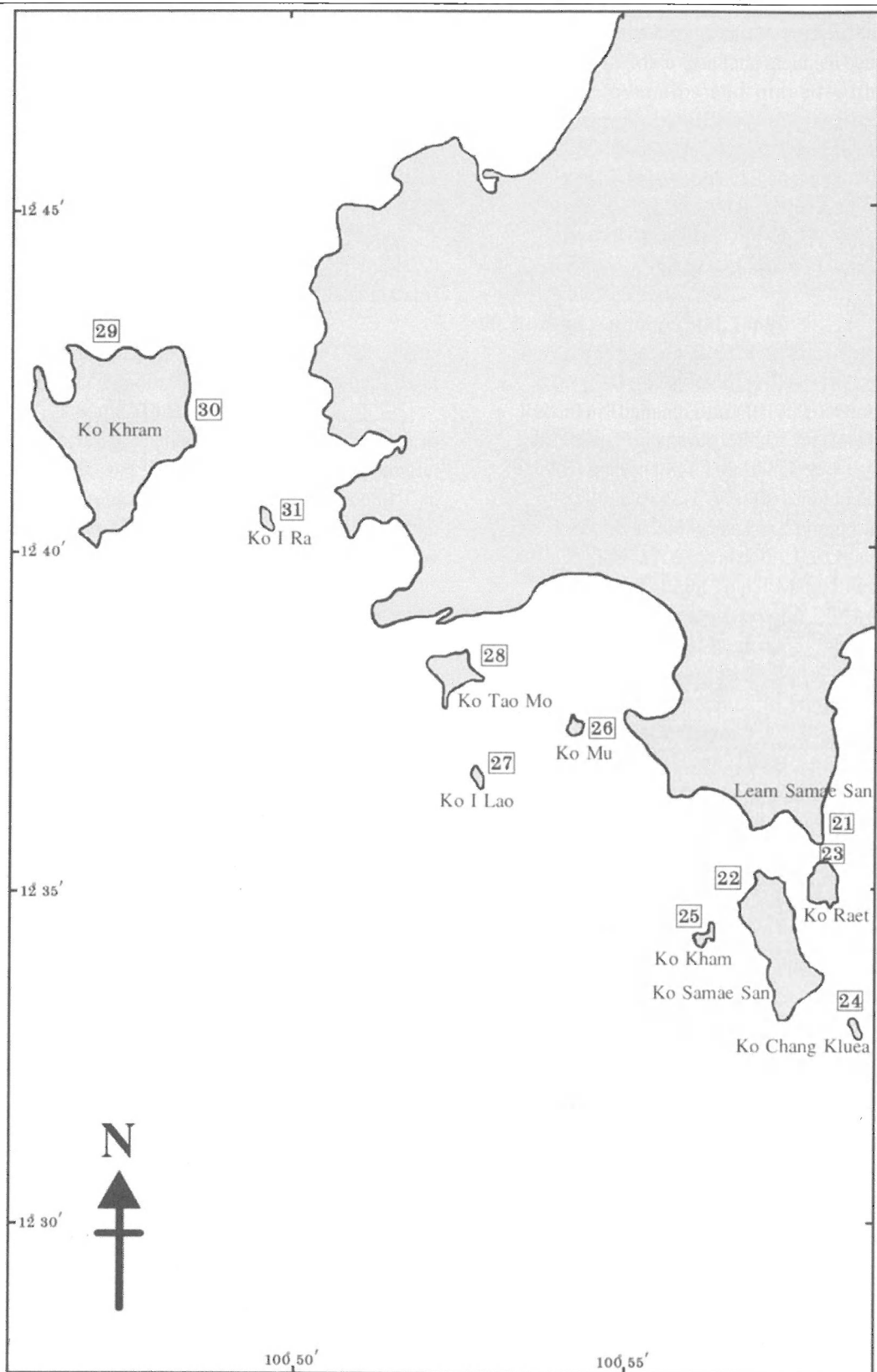
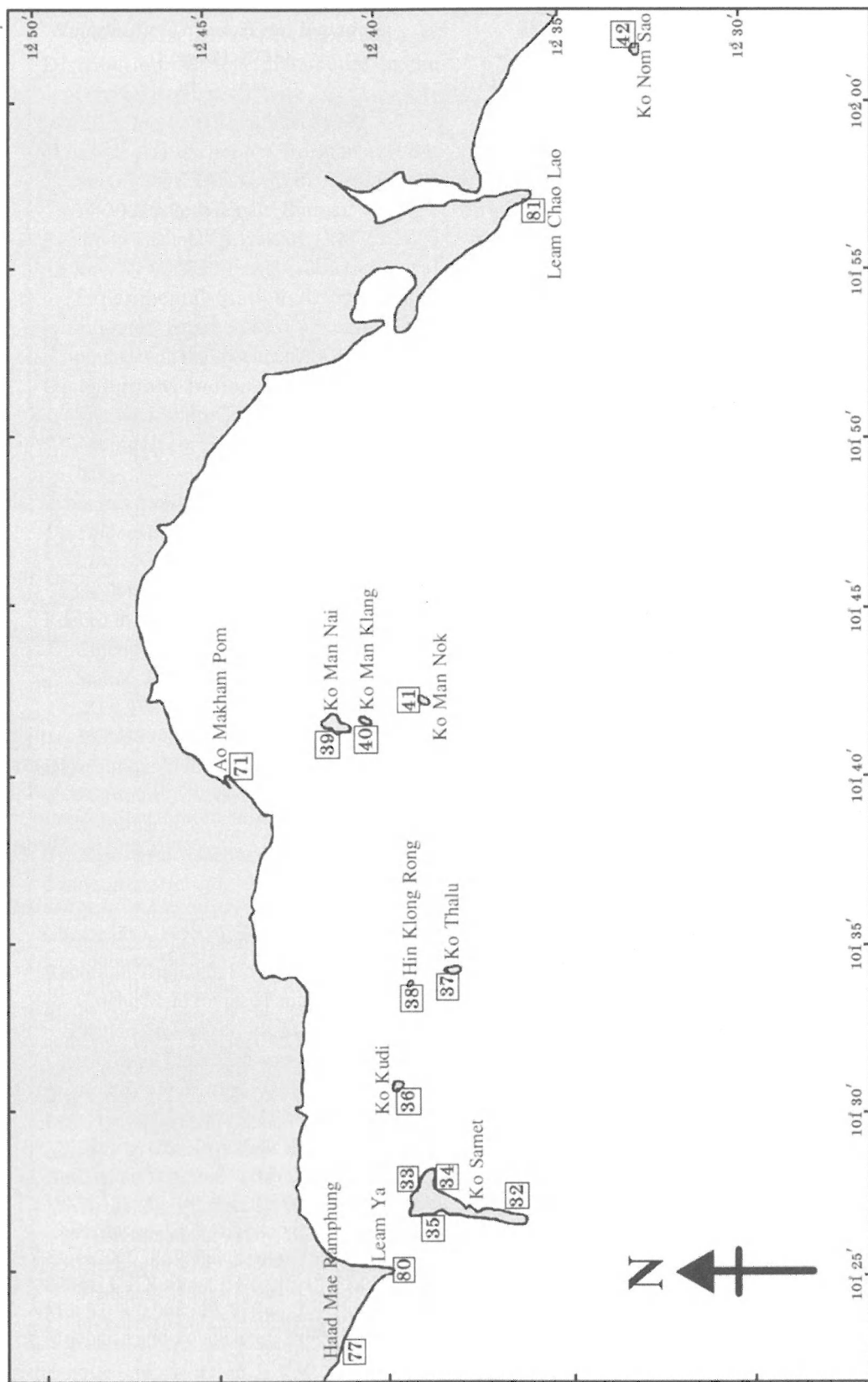


Figure 3 Location of the studied area (number in square) in Chon Buri Province. The map was modified by Arom Mucharin.

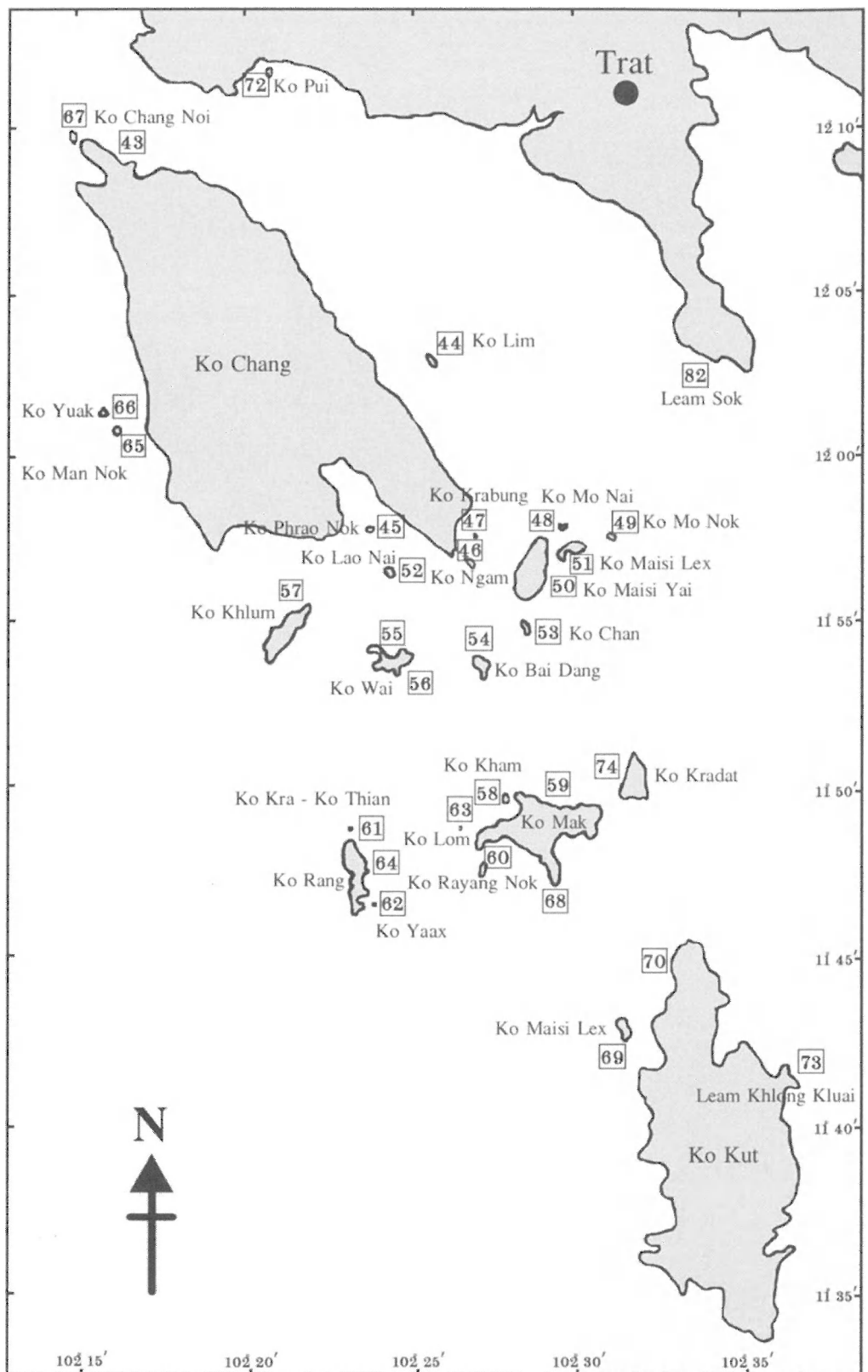


**Figure 4** Location of the studied area (number in square) in Chon Buri Province. The map was modified by Arom Mucharin.





**Figure 5** Location of the studied area (number in square) in Rayong and Chanthaburi Province. The map was modified by Arom Mucharin.



**Figure 6** Location of the studied area (number in square) in Trat Province. The map was modified by Arom Mucharin.

**Table 2** List of species collected from the station.

| Holothurian                                                   | Station No.                                                                                                                                                                                                 |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Family Holothuriidae</b>                                   |                                                                                                                                                                                                             |
| <i>Actinopyga echinites</i> (Jaeger, 1833)                    | *                                                                                                                                                                                                           |
| <i>Bohadschia marmorata</i> (Jaeger, 1833)                    | 16, 29                                                                                                                                                                                                      |
| <i>Bohadschia vitiensis</i> (Semper, 1868)                    | 2, 4, 5, 11, 16, 20, 29, 74                                                                                                                                                                                 |
| <i>Holothuria (Halodeima) atra</i> Jaeger, 1833               | 8, 15, 16, 17, 18, 20, 25, 27, 29, 30, 31, 36, 41, 43, 52, 55, 56, 57, 59, 60, 61, 64, 65, 66, 68, 69, 70, 73                                                                                               |
| <i>Holothuria (Halodeima) edulis</i> Lesson, 1830             | 31, 61, 62, 64, 69                                                                                                                                                                                          |
| <i>Holothuria (Semperothuria) flavomaculata</i> Semper, 1868  | 6, 25, 27, 29                                                                                                                                                                                               |
| <i>Holothuria (Stauropora) discrepans</i> Semper, 1868        | 56, 60                                                                                                                                                                                                      |
| <i>Holothuria (Stauropora) fuscocinerea</i> Jaeger, 1833      | 6, 9, 13, 14, 19, 21, 23, 24, 25, 29, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 56, 57, 59, 60, 63, 65, 66, 69, 70                                                                                            |
| <i>Holothuria (Metriatyla) martensi</i> Semper, 1868          | 55                                                                                                                                                                                                          |
| <i>Holothuria (Metriatyla) scabra</i> Jaeger, 1833            | *                                                                                                                                                                                                           |
| <i>Holothuria (Metriatyla) ocellata</i> Jaeger, 1833          | *                                                                                                                                                                                                           |
| <i>Holothuria (Platyperona) difficilis</i> Semper, 1868       | 20, 37                                                                                                                                                                                                      |
| <i>Holothuria (Thymiosycia) impatiens</i> (Forskål, 1775)     | 30, 33, 35, 39, 42, 45, 65, 67                                                                                                                                                                              |
| <i>Holothuria (Lessonothuria) verrucosa</i> Selenka, 1867     | 25, 29, 52                                                                                                                                                                                                  |
| <i>Holothuria (Lessonothuria) pardalis</i> Selenka, 1867      | 8, 33, 35                                                                                                                                                                                                   |
| <i>Holothuria (Mertensiothuria) leucospilota</i> Brandt, 1835 | 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 23, 24, 25, 26, 27, 28, 31, 36, 37, 39, 41, 42, 43, 45, 47, 49, 50, 51, 52, 54, 55, 56, 57, 58, 60, 61, 63, 65, 66, 67, 68, 69, 71, 74, 81 |
| <i>Pearsonothuria graeffei</i> (Semper, 1868)                 | 62, 68, 69, 70                                                                                                                                                                                              |
| <b>Family Stichopodidae</b>                                   |                                                                                                                                                                                                             |
| <i>Stichopus naso</i> Semper, 1868                            | 2, 6, 16, 23                                                                                                                                                                                                |
| <i>Stichopus chloronotus</i> Brandt, 1835                     | 61                                                                                                                                                                                                          |

Table 2 Continued.

| Holothurian                                               | Station No.                                                                                          |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <i>Stichopus horrens</i> Selenka, 1867                    | 6, 7, 10, 11, 12, 16, 17, 18, 19, 20, 21, 23, 25, 27, 28, 29, 30, 31, 33, 36, 38, 59, 60, 61, 64, 68 |
| <i>Stichopus hermanni</i> Semper, 1868                    | 16                                                                                                   |
| <b>Family Cucumaridae</b>                                 |                                                                                                      |
| <i>Actinocucumis typicus</i> Ludwig, 1875                 | 25,                                                                                                  |
| <i>Cercodemus anceps</i> (Selenka, 1867)                  | 5, 16, 23, 25, 36, 37                                                                                |
| <i>Colochirus quadrangularis</i> Troschei, 1846           | 25, 37,                                                                                              |
| <i>Pseudocolochirus axiologus</i> (Clark, 1914)           | **                                                                                                   |
| <b>Family Phyllophoridae</b>                              |                                                                                                      |
| <i>Stolus conjugens</i> (Semper, 1868)                    | *                                                                                                    |
| <i>Stolus buccalis</i> (Stimpson, 1855)                   | 8, 37                                                                                                |
| <i>Thyone</i> cf. <i>papuensis</i> Théel, 1886            | 16                                                                                                   |
| <i>Havelockia versicolor</i> (Semper, 1868)               | 16                                                                                                   |
| <b>Family Caudinidae</b>                                  |                                                                                                      |
| <i>Acaudina leucoprocta</i> (H.L. Clark, 1938)            | 71                                                                                                   |
| <i>Acaudina</i> cf. <i>leucoprocta</i> (H.L. Clark, 1938) | 55                                                                                                   |
| <i>Acaudina</i> sp.                                       | *                                                                                                    |
| <b>Family Synaptidae</b>                                  |                                                                                                      |
| <i>Synaptula racta</i> (Semper, 1868)                     | 2, 5, 23, 24, 28, 30, 34, 35, 37, 41, 42, 49, 52, 57, 61, 62, 67, 68, 69, 70                         |
| <i>Synaptula</i> sp.                                      | 4, 35, 42, 61, 69, 70                                                                                |

Note: - \*: found in the museum only, \*\*: found in Aquarium only,

- Station No. 44, 46, 48, 53, 75, 76, 77, 78, 79, 80, 82 : No holothurian found, Station No. 1, 3, 72 : No survey conducted.

Table 3 List of species collected in Chon Buri, Rayong, Chanthaburi and Trat, Eastern Coast of Thailand.

| Holothurian                                                   | Chon Buri | Rayong | Chanthaburi | Trat |
|---------------------------------------------------------------|-----------|--------|-------------|------|
| <b>Family Holothuriidae</b>                                   |           |        |             |      |
| <i>Actinopyga echimites</i> (Jaeger, 1833)                    | X         | X      |             |      |
| <i>Bohadschia marmorata</i> (Jaeger, 1833)                    | X         | X      |             |      |
| <i>Bohadschia vittensis</i> (Semper, 1868)                    | X         |        |             |      |
| <i>Holothuria (Halodeima) atra</i> Jaeger, 1833               | X         | X      |             | X    |
| <i>Holothuria (Halodeima) edulis</i> Lesson, 1830             | X         | X      |             |      |
| <i>Holothuria (Semperothuria) flavomaculata</i> Semper, 1868  | X         |        |             |      |
| <i>Holothuria (Stauropora) discrepans</i> Semper, 1868        | X         |        |             |      |
| <i>Holothuria (Stauropora) fuscocinerea</i> Jaeger, 1833      | X         | X      |             | X    |
| <i>Holothuria (Metriatyla) martensi</i> Semper, 1868          | X         | X      |             |      |
| <i>Holothuria (Metriatyla) scabra</i> Jaeger, 1833            | X         |        |             |      |
| <i>Holothuria (Metriatyla) ocellata</i> Jaeger, 1833          | X         |        |             |      |
| <i>Holothuria (Platyperona) difficilis</i> Semper, 1868       | X         |        |             |      |
| <i>Holothuria (Thymiosycia) impatiens</i> (Forskål, 1775)     | X         | X      |             | X    |
| <i>Holothuria (Lessonothuria) verrucosa</i> Selenka, 1867     | X         |        |             |      |
| <i>Holothuria (Lessonothuria) pardalis</i> Selenka, 1867      | X         | X      |             |      |
| <i>Holothuria (Mertensiothuria) leucospilota</i> Brandt, 1835 | X         | X      |             | X    |
| <i>Pearsonothuria graeffei</i> (Semper, 1868)                 | X         |        |             |      |
| <b>Family Stichopodidae</b>                                   |           |        |             |      |
| <i>Stichopus naso</i> Semper, 1868                            | X         |        |             |      |
| <i>Stichopus chloronotus</i> Brandt, 1835                     | X         |        |             |      |
| <i>Stichopus horrens</i> Selenka, 1867                        | X         | X      |             | X    |
| <i>Stichopus herrmanni</i> Semper, 1868                       | X         |        |             |      |

Table 3 Continued.

| Holothurian                                               | Chon Buri | Rayong | Chanthaburi | Trat |
|-----------------------------------------------------------|-----------|--------|-------------|------|
| <b>Family Cucumariidae</b>                                |           |        |             |      |
| <i>Actinocucumis typicus</i> Ludwig, 1875                 | X         |        |             |      |
| <i>Cercodemus anceps</i> (Selenka, 1867)                  | X         | X      |             | X    |
| <i>Colochirus quadrangularis</i> Troschel, 1846           | X         | X      |             |      |
| <i>Pseudocolochirus axiologus</i> (Clark, 1914)           | X         |        |             |      |
| <b>Family Phyllophoridae</b>                              |           |        |             |      |
| <i>Stolus conjugens</i> (Semper, 1868)                    | X         |        |             |      |
| <i>Stolus buccalis</i> (Stimpson, 1855)                   | X         | X      |             |      |
| <i>Thyone</i> cf. <i>papuiensis</i> Théel, 1886           | X         |        |             |      |
| <i>Havelockia versicolor</i> (Semper, 1868)               | X         |        |             |      |
| <b>Family Caudinidae</b>                                  |           |        |             |      |
| <i>Acaudina leucoprocta</i> (H.L. Clark, 1938)            |           | X      |             |      |
| <i>Acaudina</i> cf. <i>leucoprocta</i> (H.L. Clark, 1938) |           |        | X           | X    |
| <i>Acaudina</i> sp.                                       | X         |        |             |      |
| <b>Family Synaptidae</b>                                  |           |        |             |      |
| <i>Synaptula racta</i> (Semper, 1868)                     | X         | X      |             | X    |
| <i>Synaptula</i> sp.                                      | X         | X      |             |      |

**Table 4** List of species collected from 4 habitats : Coral reef, Seagrass bed, Sandy and Rocky beaches.

| Holothurian                                                   | Coral reef | Seagrass bed | Sandy beach | Rocky beach |
|---------------------------------------------------------------|------------|--------------|-------------|-------------|
| <b>Family Holothuriidae</b>                                   |            |              |             |             |
| <i>Actinopyga echinites</i> (Jaeger, 1833)                    | X          |              |             |             |
| <i>Bohadschia marmorata</i> (Jaeger, 1833)                    | X          |              | X           |             |
| <i>Bohadschia vitiensis</i> (Semper, 1868)                    | X          |              |             |             |
| <i>Holothuria (Halodeima) atra</i> Jaeger, 1833               | X          | X            |             |             |
| <i>Holothuria (Halodeima) edulis</i> Lesson, 1830             | X          |              |             |             |
| <i>Holothuria (Semperothuria) flavomaculata</i> Semper, 1868  | X          |              |             |             |
| <i>Holothuria (Stauropora) discrepans</i> Semper, 1868        | X          |              |             |             |
| <i>Holothuria (Stauropora) fuscocinerea</i> Jaeger, 1833      | X          |              |             |             |
| <i>Holothuria (Metriatyla) martensi</i> Semper, 1868          | X          |              | X           |             |
| <i>Holothuria (Metriatyla) scabra</i> Jaeger, 1833            | X          |              |             |             |
| <i>Holothuria (Metriatyla) ocellata</i> Jaeger, 1833          | X          |              | X           |             |
| <i>Holothuria (Platyperona) difficilis</i> Semper, 1868       | X          |              |             |             |
| <i>Holothuria (Thymiosycia) impatiens</i> (Forskål, 1775)     | X          |              |             |             |
| <i>Holothuria (Lessonothuria) verrucosa</i> Selenka, 1867     | X          |              |             |             |
| <i>Holothuria (Lessonothuria) pardalis</i> Selenka, 1867      | X          |              | X           |             |
| <i>Holothuria (Mertensiothuria) leucospilota</i> Brandt, 1835 | X          | X            |             | X           |
| <i>Pearsonothuria graeffei</i> (Semper, 1868)                 | X          |              |             |             |
| <b>Family Stichopodidae</b>                                   |            |              |             |             |
| <i>Stichopus naso</i> Semper, 1868                            | X          |              |             |             |
| <i>Stichopus chloronotus</i> Brandt, 1835                     | X          |              |             |             |
| <i>Stichopus horrens</i> Selenka, 1867                        | X          |              |             |             |
| <i>Stichopus hermanni</i> Semper, 1868                        | X          |              |             |             |

Table 4 Continued.

| Holothurian                                            | Coral reef | Seagrass bed | Sandy beach | Rocky beach |
|--------------------------------------------------------|------------|--------------|-------------|-------------|
| <b>Family Cucumariidae</b>                             |            |              |             |             |
| <i>Actinocucumis typicus</i> Ludwig, 1875              | X          |              |             |             |
| <i>Cercodemus anceps</i> (Selenka, 1867)               | X          | X            |             |             |
| <i>Colochirus quadrangularis</i> Troschel, 1846        | X          | X            |             |             |
| <i>Pseudocolochirus axiologus</i> (Clark, 1914)        | X          |              |             |             |
| <b>Family Phyllophoridae</b>                           |            |              |             |             |
| <i>Stolus conjugens</i> (Semper, 1868)                 |            | X            |             |             |
| <i>Stolus buccalis</i> (Stimpson, 1855)                | X          | X            |             |             |
| <i>Thyone</i> cf. <i>papuensis</i> Théel, 1886         | X          |              |             |             |
| <i>Havelockia versicolor</i> (Semper, 1868)            | X          |              |             |             |
| <b>Family Caudinidae</b>                               |            |              |             |             |
| <i>Acaudina leucoprocta</i> (H.L. Clark, 1938)         |            | X            |             |             |
| <i>Acaudina</i> cf. <i>molpadioides</i> (Semper, 1868) | X          |              |             |             |
| <i>Acaudina</i> sp.                                    |            |              | X           |             |
| <b>Family Synaptidae</b>                               |            |              |             |             |
| <i>Synaptula recta</i> (Semper, 1868)                  | X          |              |             |             |
| <i>Synaptula</i> sp.                                   | X          |              |             |             |



## RESULTS

The collected holothurians were identified and classified into 4 orders, 6 families, 15 genera and 34 species. The details are as follows.-

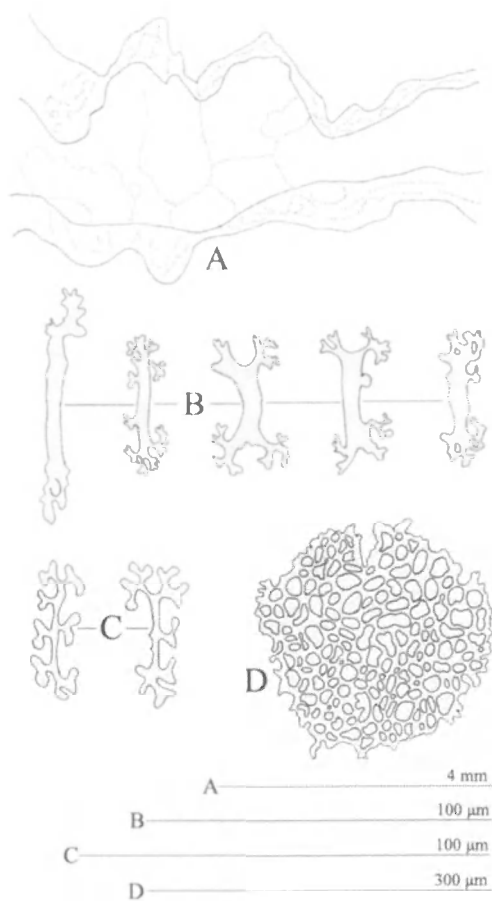
**Order Aspidochirotida Grube, 1840**

**Family Holothuriidae Ludwig, 1894**

**Genus *Actinopyga* Broon, 1860**

***Actinopyga echinites* (Jaeger, 1833)**

(Fig. 4)



**Figure 4** *Actinopyga echinites* (Jaeger, 1833). A: calcareous ring; B: body wall rods; C: body wall rosettes; D: tube foot perforated plates. The figures were drawn by Arom Mucharin.

*Actinopyga echinites* : Cherbonnier, 1955(b): 136, Pl. 25, fig. A-p; Rowe, 1969 : 131, fig. 3; Clark and Rowe, 1971 : 176, Pl. 27, fig. 1; Rowe and

Doty, 1977 : 228, figs. 2e, 6c; Tan Tiu, 1981 : 70, PL. 12, figs. 1-2; Reyes-Leonardo, 1984 : 143-144, Pl. 1, fig. 4a-f; Leonardo and Cowan, 1984, : 14-15; Cannon and Silver, 1986 : 20, fig. 5a; Chao and Chang, 1989 : 116, figs. 12, 29g; Rowe and Gates, 1995 : 286-287; Massin, 1996 : 8, figs. 2A-B, 3A-B; Conand, 1998 : 1167; Lane, *et al.*, 2000 : 488.

**Common name** : deep-water red fish (Leonardo and Cowan, 1984 : 14)

**Materials.-** : 2 specimens. - BIMS-I 288 : Ko Samae San (N), Chonburi, - Mar. 1996; BIMS-I 744 : Ko Khlum (N), Trat, 21 Dec. 1999.

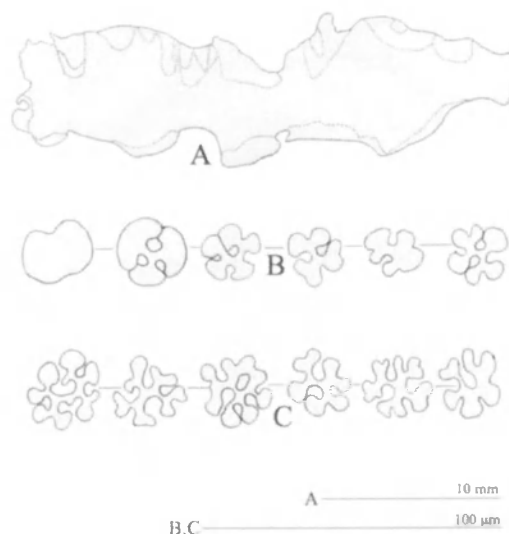
**Habitat** : lives in a nook of coral reef or dead corals at 6 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Is. of W. Indian Ocean, E. Africa & Madagascar, S.E. Arabia, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

**Genus *Bohadschia* Jaeger, 1833**

***Bohadschia marmorata* (Jaeger, 1833)**

(Fig. 5)



**Figure 5** *Bohadschia marmorata* (Jaeger, 1833) A: calcareous ring; B: body wall grains; C: body wall rosettes. The figures were drawn by Arom Mucharin.

***Bohadschia marmorata*** : Cherbonnier, 1955(b) : 132, Pl. 12, fig. a-i; Rowe, 1969 : 129, fig. 2; Sanjindawong, 1973 : 26, fig. 16; Cannon and Silver, 1986 : 21, fig. 5d; Clark and Rowe, 1971 : 176, Pl. 27, fig. 8; Rowe and Doty, 1977 : 229, figs. 3a, 6g-h; Tan Tiu, 1981 : 69, Pl. 11, figs. 1-2; Reyes-Leonardo, 1984 : 145, Pl. 1, figs. 3a-h; Rowe and Gates, 1995 : 289; Lane, *et al.*, 2000 : 488; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

***Bohadschia marmorata marmorata*** : Leonardo and Cowan, 1984 : 21; Mucharin, 1998 : 24, Pl. 9, figs. 3-4.

**Common name** : chalky fish (Leonardo and Cowan, 1984 : 21)

**Materials.-** : 4 specimens. - BIMS-I 262 : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998; BIMS-I 337 : Ko Rin (E), Chon Buri, 15 Jul. 1998; BIMS-I 382 : Haad Mae Ramphung, Rayong, 15 May. 1999; BIMS-I 1035 : Ko Khram (N), Chon Buri, 4 Mar. 2001.

**Habitat** : lives on the sand flat beyond the reef at 5-10 meter depth.

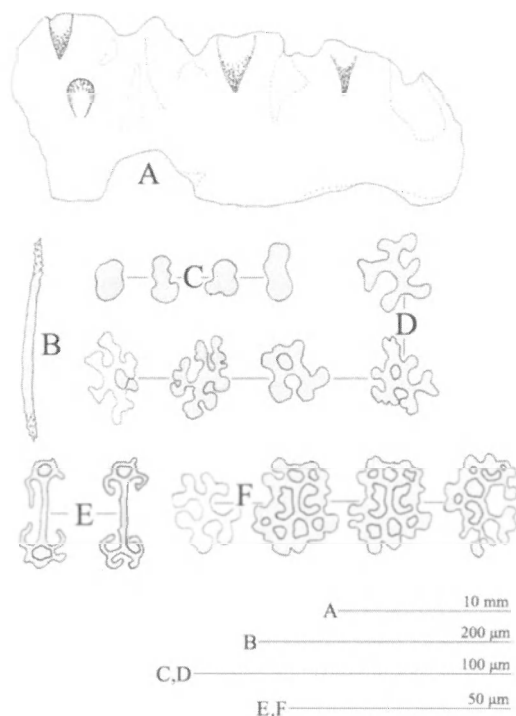
**General Distribution** : Indo-West Pacific, i.e. Mascarene Is., E. Africa & Madagascar, Red Sea, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

***Bohadschia vitiensis* (Semper, 1868)**  
(Fig. 6)

***Bohadschia vitiensis*** : Clark and Rowe, 1971 : 176; Rowe and Gates, 1995 : 289; Conand, 1998 : 1174; Massin, 1999 : 13-15, figs. 8a-k, 9; Lane, *et al.*, 2000 : 488; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

***Bohadschia marmorata vitiensis*** : Leonardo and Cowan, 1984 : 22; Mucharin, 1998 : 24-25, Pl. 10, figs. 1-2.

**Materials.-** : 4 specimens. - BIMS-I 315 : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998; BIMS-I 316 : Ko Lueam Noi (E), Chon Buri, 24 Jan. 1998; BIMS-I 322 : Ko Khrok (E), Chon Buri, 11 Jun.



**Figure 6** *Bohadschia vitiensis* (Semper, 1868) A: calcareous ring; B: tentacle rod; C: body wall grains; D: body wall rosettes; E: tube feet branched rods; F: papillae rosettes. The figures were drawn by Arom Mucharin.

1998; BIMS-I 328 : Ko Khrok (E), Chon Buri, 11 Jun. 1998.

**Habitat** : lives on the reef flat or sandy flat beyond the reef at 5-8 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

**Genus *Holothuria* Linnaeus, 1767**  
**Subgenus *Halodeima* (Pearson, 1914)**  
***Holothuria (Halodeima) atra***  
**Jaeger, 1833**  
(Fig. 7)

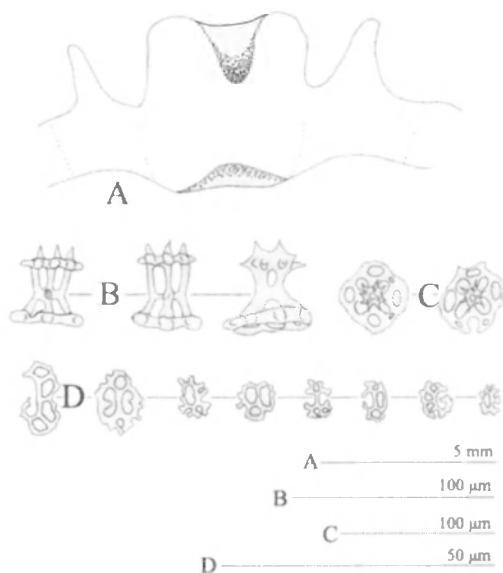
***Holothuria (Halodeima) atra*** : Rowe, 1969 : 137, fig. 7; Clark and Rowe, 1971 : 176, Pl. 27, fig. 11; Rowe and Doty, 1977 : 230, figs. 3d, 7a; Cherbonnier, 1980 : 631, fig. 8A-N; Tan Tiu,

1981 : 73-74, Pl. 15, figs. 1-3, Pl. 29, figs. 1-2e; Reyes-Leonardo, 1984 : 45, Pl. 2, figs. 1a-d; Leonardo and Cowan, 1984 : 24-25; Cannon and Silver, 1986 : 22, fig. 6d; Chao and Chang, 1989 : 117, figs. 13, 29H; Rowe and Gates, 1995 : 291; Massin, 1996 : 18, fig. 10A-E; Conand, 1998 : 1176; Massin, 1999 : 20-21, fig. 13; Lane, *et al.*, 2000 : 488; Putchakarn, 1998 : 85, Pl. 7, figs. 5-6; Mucharin, 1998 : 18-19, Pl. 6, figs. 1-2; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

*Halodeima atra* : Cherbonnier, 1955(a) : 77.

Cherbonnier, 1955(b) : 141, Pl. 29, fig. a-b.

*Holothuria atra* : Sriyakorn, 1970 : 75, Pl. 28, fig. 1, Pl. 40, fig. 3; Sanjindawong, 1973 : 26, fig. 9; Waiyanida, 1988 : 11-17, figs. 7-9.



**Figure 7** *Holothuria (Halodeima) atra* Jaeger, 1833 A: calcareous ring; B-C : body wall tables; D: body wall rosettes. The figures were drawn by Arom Mucharin.

**Common name** : Lolly fish (Leonardo and Cowan, 1984 : 24; Massin, 1999: 20)

**Materials.-** : 13 specimens. - BIMS-I 257 : Ko Rin (E), Chon Buri, 18 Jan. 1998; BIMS-I 274 : Ko Kham (N), Chon Buri, 21 Dec. 1996; BIMS-I 304 : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998, BIMS-I 330 : Ko Lueam Noi (E), Chon Buri, 17 Apr. 1998;

BIMS-I 335 : Ko Rin (E), Chon Buri, 15 Jul. 1998; BIMS-I 341 : Ko Klung badan (W), Chon Buri, 17 Jul. 1998; BIMS-I 348 : Ko Lan (S), Chon Buri, 10 Nov. 1998; BIMS-I 423 : Haad Kai Bae, Ko Chang, Trat, 20 Jun. 1999; BIMS-I 757 : Ko Kudi (W), Rayong, 15 May. 2000; BIMS-I 1006 : Ko Kra- Ko Thian (NE), Trat, 20 Jan. 2001; BIMS-I 1011 : Ko Lueam Noi (E), Chon Buri, 2 Feb. 2001; BIMS-I 1013 : Ko Kra- Ko Thian (NE), Trat, 26 Feb. 2001; BIMS-I 1014 : Ko Kra- Ko Thian (NE), Trat, 26 Feb. 2001.

**Habitat** : lives on the sandy beach or reef flat at 3-5 meter depth.

**General Distribution** : Indo-west Pacific, i.e. Is. Of W. Indian Ocean, E. Africa & Madagascar, Red Sea, S.E. Arabia, Persian Gulf, Maldiva area, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.

#### *Holothuria (Halodeima) edulis*

Lesson, 1830

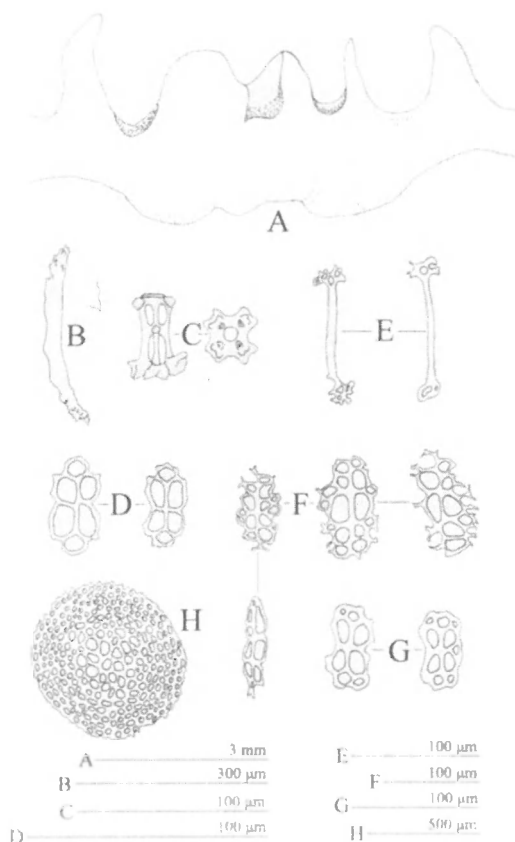
(Fig. 8)

*Holothuria (Halodeima) edulis* : Cherbonnier, 1955(b) : 142, Pl. 29, fig. C; Clark and Rowe, 1971 : 176, Pl. 27; fig. 14; Rowe and Doty, 1977 : 231, figs. 2e, 7b; Cherbonnier, 1980 : 632-633, fig. 9A-L; Reyes-Leonardo, 1984 : 146, Pl. 3, figs. 1a-i; Leonardo and Cowan, 1984 : 26; Cannon and Silver, 1986 : 22, fig. 6f; Massin, 1996 : 19, fig. 11A-G; Conand, 1998 : 1177; Rowe and Gates, 1995 : 291; Massin, 1999 : 21-22, figs. 14, 110d; Lane, *et al.*, 2000 : 488.

*Holothuria edulis* : Sriyakorn, 1970 : 75-76, Pl. 28, fig. 2, Pl. 40, fig. 4.

**Common name** : pink fish (Leonardo and Cowan, 1984 : 26)

**Materials.-** : 7 specimens. - BIMS-I 275 : Ko Khram (N), Chon Buri, 1 May. 1998; BIMS-I 310 : Ko Rang (E), Trat, 28 Sep. 1994; BIMS-I 370 : Ko Rang (E), Trat, 28 Sep. 1994; BIMS-I 388 : Ko Rang (E), Trat, 28 Sep. 1994; BIMS-I 1009 : Ko Kra- Ko Thian (NS), Trat, 20 Jan. 2001; BIMS-I 1018 : Ko Kra- Ko Thian (NS), Trat, 26 Feb. 2001; BIMS-I 1023 : Ko Yaax (E), Trat, 27 Feb. 2001.



**Figure 8** *Holothuria (Halodeima) edulis* Lesson, 1830 A: calcareous ring ; B : tentacle rod; C: body wall tables; D: body wall bottoms; E: tube feet rods; F: tube foot perforated rods; G: tube feet bottoms; H: tube foot perforated plates. The figures were drawn by Arom Mucharin.

**Habitat** : lives on the sand, coral rubble or flat rock beyond the reef at 3-5 meter depth.

**General Distribution** : Indo-West Pacific, i.e. E. Africa & Madagascar, Red Sea, S.E. Arabia, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

#### Subgenus *Semperothuria*

Deichmann, 1958

#### *Holothuria (Semperothuria) flavomaculata*

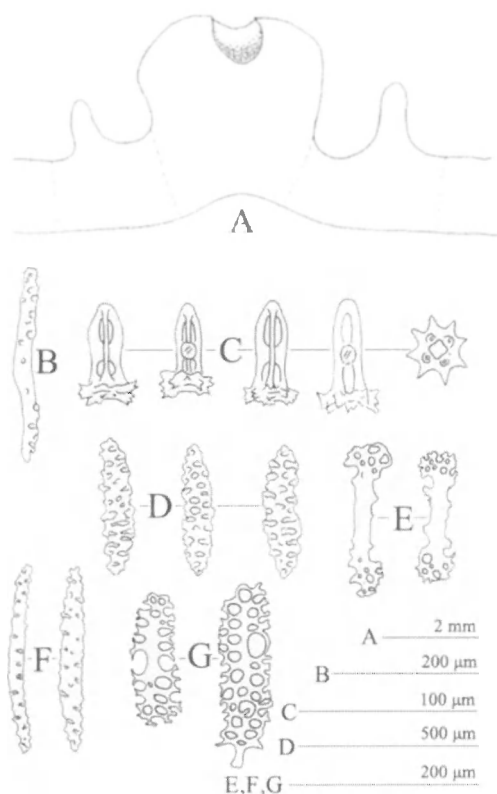
Semper, 1868

(Fig. 9)

*Holothuria (Semperothuria) flavomaculata* : Clark and Rowe, 1971 : 178, Pl. 27, fig. 15;

Cherbonnier, 1980 : 634-635, fig. 10A-F; Guille, *et. al.*, 1986 : 90-91; Rowe and Gates, 1995 : 298; Massin, 1999 : 42-44, figs. 32a-g, 110j; Lane, *et. al.*, 2000 : 489; Putchakarn, 1998 : 85-86, Pl. 7, figs. 7-8; Rodma, 1996 : 44, Pl. 12, figs. 4-5; Mucharin, 1998 : 19-20, Pl. 6, figs. 3-4; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

*Halodeima flavomaculata* : Cherbonnier, 1955(b) : 77-81, fig. 1a-m, fig. 2n-g.



**Figure 9** *Holothuria (Semperothuria) flavomaculata* Semper, 1868 A: calcareous ring; B : tentacle rod; C: body wall tables; D: body wall massive rods; E: tube feet perforated rods; F: tube feet rods; G: tube feet perforated plates. The figures were drawn by Arom Mucharin.

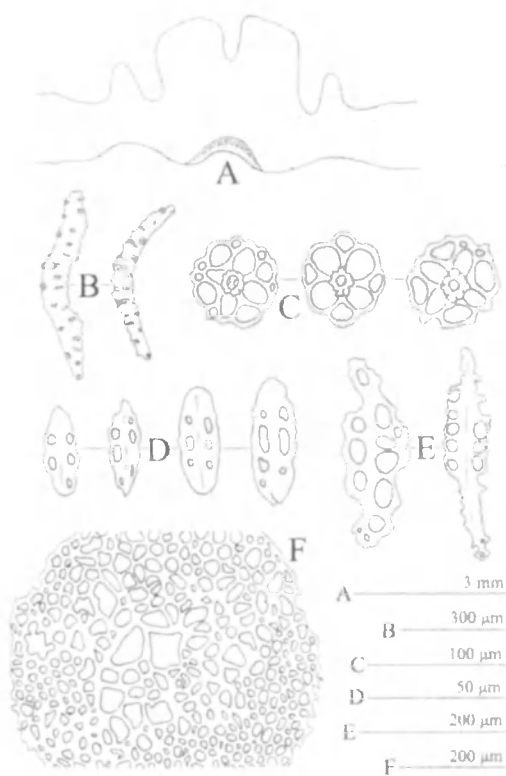
**Materials.**- : 5 specimens. - BIMS-I 320 : Leam Tonglang, Ko Lan, Chon Buri, 10 Jun. 1998; BIMS-I 321 : Leam Tonglang, Ko Lan, Chon Buri, 10 Nov. 1998; BIMS-I 365 : Ko Kham (N), Chon Buri, 28 Apr. 1999; BIMS-I 847 : Ko Kham (N), Chon Buri, 25 May. 2000; AQ.SC.BUU.(no number) : Ko Kham (N), Chon Buri, 25 May. 2000.

**Habitat** : lives in the nook of corals or dead corals at 3-4 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Red Sea, East Indies, Philippine Is., South Pacific Is.

**Subgenus *Stauropora* Rowe, 1969**  
***Holothuria (Stauropora) discrepans***  
**Semper, 1868**  
 (Fig. 10)

*Holothuria (Stauropora) discrepans* : Rowe, 1969 : 140, fig. 9; Clark and Rowe, 1971 : 178, Pl. 28, fig. 4; Massin, 1999 : 46-48, figs. 36a-k, 37, 111b; Lane, *et al.*, 2000 : 489.



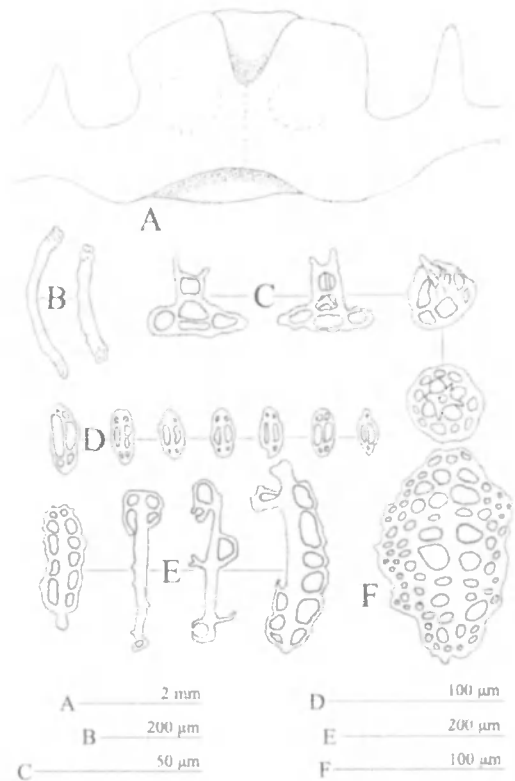
**Figure 10** *Holothuria (Stauropora) discrepans* Semper, 1868. A: calcareous ring; B: tentacle rods; C: body wall tables; D: body wall buttons; E: tube foot perforated rods; F: tube foot perforated plates. The figures was drawn by Arom Mucharin.

**Materials.-** : 3 specimens. - BIMS-I 1020 : Northeastern of Kra-Teau Island, Trat, 26 Feb. 2001; BIMS-I 1025 : Northeastern of Rayong Nok Island, Trat, 27 Feb. 2001; BIMS-I 1029 : Eastern of Wai Island, Trat, 28 Feb. 2001.

**Habitat** : lives under the dead corals or flat rock, at 2-3 meters depth.

**General Distribution** : Indo-West Pacific, i.e. Maldive area, South Pacific Is.

***Holothuria (Stauropora) fuscocinerea***  
**Jaeger, 1833**  
 (Fig. 11)



**Figure 11** *Holothuria (Stauropora) fuscocinerea* Jaeger, 1833. A: calcareous ring; B: tentacle rods; C: body wall tables; D: body wall buttons; E: ventral body wall perforated rods; F: tube foot perforated plates. The figures was drawn by Arom Mucharin.

*Holothuria (Stauropora) fuscocinerea* : Rowe and Gates, 1995 : 299; Massin, 1999 : 48-51, figs. 38a-n, 39, 111c; Lane, *et al.*, 2000 : 489.

***Holothuria (Mertensiothuria) fuscocinerea* :**

Cherbonnier, 1955(b) : 135-138, fig. 1a-p, fig. 2q-y; Clark and Rowe, 1971 : 176; Tan Tiu, 1981 : 78-79, Pl. 20, figs. 1-2, Pl. 21, figs. 1-2f; Cherbonnier, 1984(a) : 680-682, fig. 10A-N; Reyes-Leonardo, 1984 : 148, Pl. 5, figs. 2a-j; Leonardo and Cowan, 1984 : 30; Cannon and Silver, 1986 : 22-23; Chao and Chang, 1989 : 120, fig. 23, 31B; Rodma, 1996 : 46, Pl. 15, figs. 4-5; Mucharin, 1998 : 23, Pl. 9, figs. 1-2; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

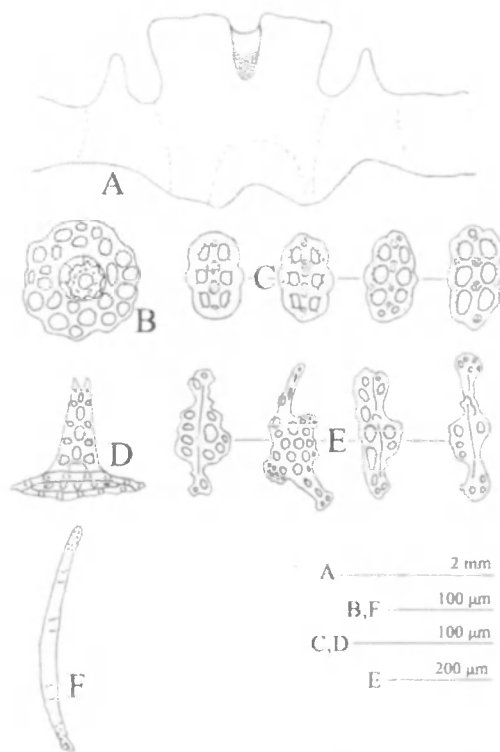
**Materials.-** : 13 specimens. - BIMS-I 256 : Haad Samae, Ko Lan, Chon Buri, 24 May. 1998; BIMS-I 267 : Ko Man Wichai (E), Chon Buri, 27 Jun. 1991; BIMS-I 272 : Ko Phai (W), Chon Buri, 12 Nov. 1998; BIMS-I 346 : Leam Tonglang, Ko Lan, Chon Buri, 10 Nov. 1998; BIMS-I 384 : Ko Man Nai (W), Rayong, 24 Nov. 1995; BIMS-I 386 : Ko Man Nai (N), Rayong, 19 Oct. 1998; BIMS-I 759 : Ko Kudi (W), Rayong, 15 May. 2000; BIMS-I 761 : Ao Wong Dau-an, Ko Samet, Rayong, 16 May. 2000; BIMS-I 849 : Ko Kham (N), Chon Buri, 25 May. 2000; BIMS-I 870 : Ao Phrao, Ko Samet, Rayong, 23 Sep. 2000; BIMS-I 878 : Ko Kudi (W), Rayong, 24 Sep. 2000; BIMS-I 1024 : Ko Yaax (E), Trat, 27 Feb. 2001; AQ.SC.BUU.(no number) : Ko Phai (W), Chon Buri, 12 Nov. 1998.

**Habitat** : lives under the dead corals at 2-6 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Mascarene Is., E. Africa & Madagascar, Red Sea, Maldiva area, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

**Subgenus *Metriatyla* Rowe, 1969*****Holothuria (Metriatyla) martensi*****Semper, 1868**

(Fig. 12)



**Figure 12** *Holothuria (Metriatyla) martensi* Semper, 1868. A: calcareous ring; B: body wall table; C: body wall buttons; D: papillae table; E: tube feet perforated rods; F: papillae rods. The figures were drawn by Arom Mucharin.

***Holothuria (Metriatyla) martensi* :** Cherbonnier, 1955(b) : 159-160, Pl. 42, fig. a-l; Clark and Rowe, 1971 : 178; Cannon and Silver, 1986 : 23, fig. 2e; Rowe and Gates, 1995 : 294; Lane, *et al.*, 2000 : 489.

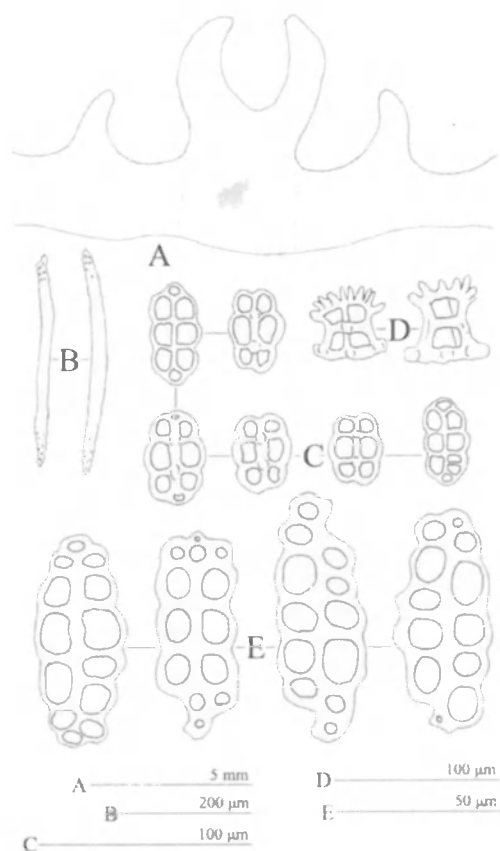
***Holothuria martensi* :** Sriyakorn, 1970 : 76-77, Pl. 28, fig. 3, Pl. 41, fig. 1.

**Materials.-** : 3 specimens. - BIMS-I 282 : Haad Bang Saen, Chon Buri, 29 Mar. 1995; BIMS-I 1008 : Ko Wai (N), Trat, 20 Jan. 2001; AQ.SC.BUU.(no number) : Ko Wai (N), Trat, 20 Jan. 2001.

**Habitat** : lives on the sand beyond the reef at 5-10 meter depth.

**General Distribution** : Indo-West Pacific, i.e. E. Africa & Madagascar, S.E. Arabia, Maldiva area, East Indies, North Australia, Philippine Is., China & Japan.

***Holothuria (Metriatyla) scabra* Jaeger, 1833**  
(Fig. 13)



**Figure 13** *Holothuria (Metriatyla) scabra* Jaeger, 1833. A: calcareous ring; B: tentacle rods; C: dorsal body wall buttons; D: ventral body wall tables; E: papillae buttons. The figures was drawn by Arom Mucharin.

***Holothuria (Metriatyla) scabra*** : Cherbonnier, 1955(b) : 145-146, Pl. 32, fig. a-c; Rowe, 1969 : 160-161, fig. 20; Clark and Rowe, 1971 : 178, Pl. 28, figs. 15; Cherbonnier, 1980 : 647-649, fig. 16A-L; Tan Tiu, 1981 : 83-84, Pl. 25, figs. 1-3; Reyes-Leonardo, 1984 : 149, Pl. 6, fig. 1a-g; Leonardo and Cowan, 1984 : 33; Cannon and Silver, 1986 : 23, fig. 6I; Rowe and Gates, 1995 : 294-295; Massin, 1996 : 25-27, figs. 16A-F, 17A-D; Conand, 1998 : 1179; Massin, 1999 : 30-33, figs. 22a-l, 23, 110f; Lane, *et al.*, 2000 : 489; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

***Holothuria scabra*** : Sanjindawong, 1973 : 27-28, figs. 5-8; Waiyanida, 1988 : 18-24, figs. 10-12.

**Common Name** : Sandfish (Leonardo and Cowan, 1984 : 33; Massin, 1999 : 30)

**Materials.-** : 3 specimens. - BIMS-I 302 : Leam Chabang, Chon Buri, 21 Nov. 1995; BIMS-I 361 : Haad Ta Wan, Ko Lan, Chon Buri, 20 Mar. 1999; KUMF (NH.) (no number) : Haad Pattaya, Chon Buri, 7 Sep. 1969.

**Habitat** : lives on the sand beyond the reef at 6-10 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Mascarene Is., E. Africa & Madagascar, Red Sea, S.E. Arabia, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

***Holothuria (Metriatyla) ocellata* Jaeger, 1833**  
(Fig. 14)

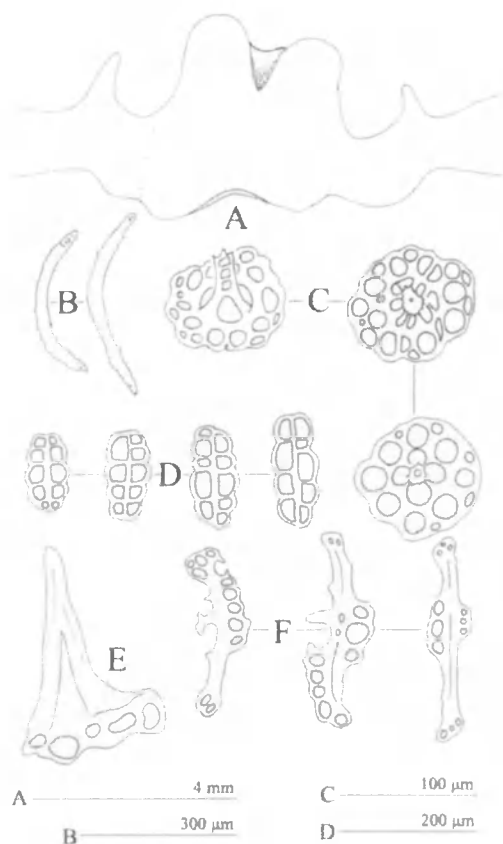
***Holothuria (Metriatyla) ocellata*** Jaeger, 1833 : Cherbonnier, 1984(b) : 687-690, fig. 13A-K; Clark and Rowe, 1971 : 178, Pl. 28, fig. 10; Cannon and Silver, 1986 : 23; Rowe and Gates, 1995 : 294.

***Holothuria (Theelothuria) ocellata*** Jaeger, 1833 : Lane, *et al.*, 2000 : 489.

**Materials.-** : 2 specimens. - BIMS-I 284 : Leam Chabang, Chon Buri, 21 Nov. 1995; BIMS-I 295 : Ko Sak (N), Chon Buri, 13 Aug. 1995.

**Habitat** : lives on the sand beyond the reef at 10-12 meters depth.

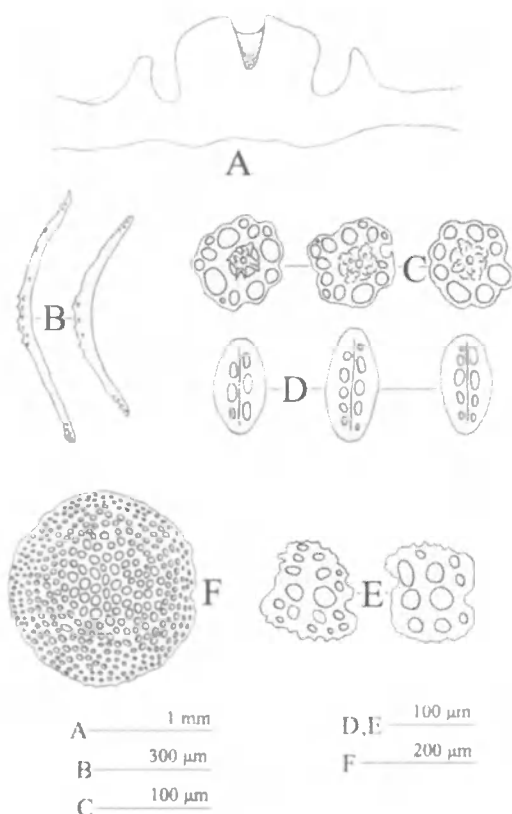
**General Distribution** : Indo-West Pacific, i.e. Red Sea, Bay of Bengal, East Indies, North Australia, China & Japan.



**Figure 14** *Holothuria (Metriatyla) ocellata* Jaeger, 1833. A: calcareous ring; B: tentacle rods; C: body wall tables; D: body wall buttons; E: papillae table; F: tube feet perforated rods. The figures was drawn by Arom Mucharin.

**Subgenus *Platyperona* Rowe, 1969**  
***Holothuria (Platyperona) difficilis***  
**Semper, 1868**  
 (Fig. 15)

*Holothuria (Platyperona) difficilis* : Rowe, 1969 : 143-144, fig. 12; Clark and Rowe, 1971 : 178, Pl. 27, fig. 9; Rowe and Doty, 1977 : 232, fig. 3h; Cannon and Silver, 1986 : 24, fig. 7b; Chao and Chang, 1989 : 117-118, figs. 16, 30c; Rowe and Gates, 1995 : 296-297; Massin, 1996 : 155, figs. 3-4; Massin, 1999 : 38-40, figs. 28a-g, 29; Lane, *et al.*, 2000 : 489; Muchrin, 1998 : 20, Pl. 7, figs. 1-2; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.



**Figure 15** *Holothuria (Platyperona) difficilis* : Rowe, 1969. A: calcareous ring; B: tentacle rods; C: body wall tables; D: body wall buttons; E: body wall perforated plates; F: tube feet perforated plates. The figures was drawn by Arom Mucharin.

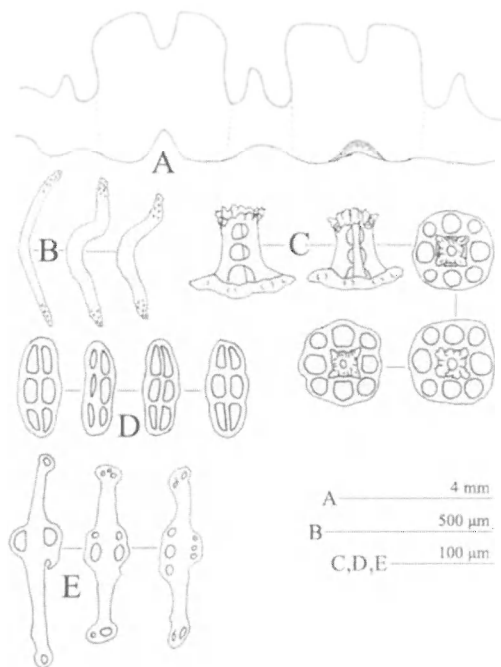
**Materials.-** : 3 specimens. - BIMS-I 260 : Ko Rin (E), Chon Buri, 18 Jan. 1998; BIMS-I 301 : Ko Rin (E), Chon Buri, 15 Aug. 1998; BIMS-I 1033 : Ko Thalu (N), Rayong, 3 Mar. 2001.

**Habitat** : lives on rock or dead coral in the coral reef at 10-12 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Is. Of W. Indian Ocean, Mascarene Is., Red Sea, Maldiv area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.



**Subgenus *Thymiosycia* Pearson, 1914**  
***Holothuria (Thymiosycia) impatiens***  
**(Forskål, 1775)**  
**(Fig. 16)**



**Figure 16** *Holothuria (Thymiosycia) impatiens* (Forskål, 1775). A: calcareous ring; B: tentacle rods; C: body wall tables; D: body wall buttons; E: tube feet perforated rods. The figures was drawn by Arom Mucharin.

***Holothuria (Thymiosycia) impatiens*** : Cherbonnier, 1955(b) : 148-149, Pl. 35, fig. a-d; Cherbonnier, 1955(a) : 140-141; Rowe, 1969 : 145-146, fig. 13; Clark and Rowe, 1971 : 178, Pl. 28, fig. 8; Liao, 1975 : 214, fig. 14; Rowe and Doty, 1977 : 233, figs. 4c, 7e; Cherbonnier, 1980 : 642-644, fig. 14A-H; Tan Tiu, 1981 : 76, Pl. 18, figs. 1-2; Reyes-Leonardo, 1984 : 147-148, Pl. 4, figs. 1a-d; Cannon and Silver, 1986 : 25, fig. 7f; Massin, 1996 : 30-33, fig. 21A-E; Guille, *et al.*, 1986 : 94-95; Chao and Chang, 1989 : 118, fig. 18, 30E; Rowe and Gates, 1995 : 303; Massin, 1999 : 57-58, figs. 45, 111e; Lane, *et al.*, 2000 : 489; Putchakarn, 1998 : 86-87, Pl. 8, figs. 3-4; Rodma, 1996 : 45, Pl. 15, figs. 1-3; Mucharin, 1998 : Pl. 7, figs. 3-4; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

***Holothuria impatiens*** : Sriyakorn, 1970 : 77, Pl. 28, fig. 4, Pl. 41, fig. 2.

**Materials.-** : 8 specimens. - BIMS-I 276 : Leam Tonglang, Ko Lan, Chon Buri, 10 Jun. 1998; BIMS-I 377 : Leam Tonglang, Ko Lan, Chon Buri, 13 May. 1999; BIMS-I 383 : Ko Man Nai (W), Rayong, 24 Nov. 1995; BIMS-I 385 : Ko Man Nai (W), Rayong, 19 Sep. 1998; BIMS-I 422 : Haad Kai Bae, Ko Chang, Trat, 20 Jun. 1999; BIMS-I 872 : Ao Phrao, Ko Samet, Rayong, 23 Sep. 2000; BIMS-I 1030 : Ko Man Nok (E), Rayong, 1 Mar. 2001; AQ.SC.BUU.(no number) : Ao Phrao, Ko Samet, Rayong, 23 Sep. 2000.

**Habitat** : lives in the nooks of corals at 3-6 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Is. Of W. Indian Ocean, Mascarene Is., E. Africa & Madagascar, Red Sea, S.E. Arabia, Persian Gulf, Maldiva area, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.

**Subgenus *Lessonothuria***  
**Deichmann, 1958**

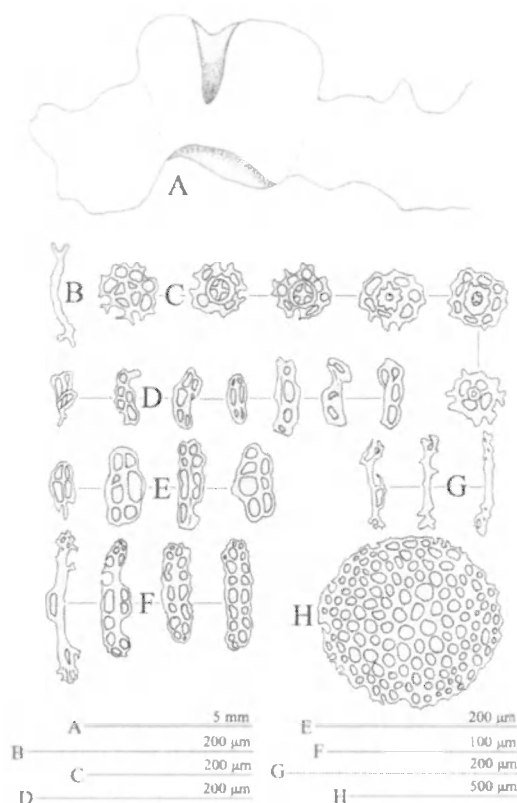
***Holothuria (Lessonothuria) verrucosa***  
**Selenka, 1867**  
**(Fig. 17)**

***Holothuria (Lessonothuria) verrucosa*** : Clark and Rowe, 1971 : 176, Pl. 28, fig. 7; Cherbonnier, 1980 : 637-638, fig. 12A-O; Cherbonnier, 1984(a) : 675-678, fig. 8A-I; Cannon and Silver, 1986 : 22; Rowe and Gates, 1995 : 292; Massin, 1996 : 23-25, figs. 14A-D, 15A-G; Lane, *et al.*, 2000 : 489.

**Materials.-** : 1 specimens. - BIMS-I 285 : Ko Kham (N), Chon Buri, 6 Oct. 1998.

**Habitat** : lives in the nook of coral at 3-5 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Mascarene Is., E. Africa & Madagascar, East Indies, North Australia, Philippine Is., South Pacific Is., Hawaiian Is.

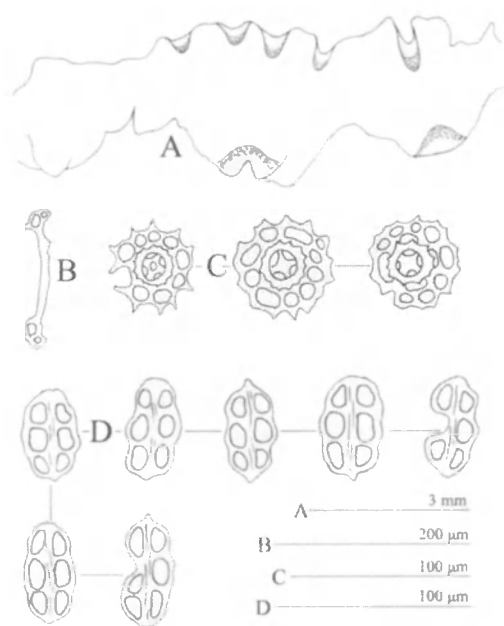


**Figure 17** *Holothuria (Lessonothuria) verrucosa* Selenka, 1867. A: calcaireous ring; B: tentacle rods; C: body wall tables; D: dorsal body wall pseudo buttons; E: ventral body wall pseudo buttons; F: tube feet buttons; G: tube feet rods; H: tube feet perforated plates. The figures was drawn by Arom Mucharin.

***Holothuria (Lessonothuria) pardalis*  
Selenka, 1867**

(Fig. 18)

***Holothuria (Lessonothuria) pardalis*** : Cherbonnier, 1955(b) : 150-151, Pl. 36, fig. a-v; Rowe, 1969 : 149-150, fig. 15; Clark and Rowe, 1971 : 176, Pl. 28, fig. 11; Rowe and Doty, 1977 : 233, fig. 4e; Reyes-Leonado, 1984 : 148, Pl. 4, figs. 3a-f; Cannon and Silver, 1986 : 22, fig. 6e; Chao and Chang, 1989 : 119, figs. 20, 30G; Rowe and Gates, 1995 : 292; Massin, 1996 : 19-23, figs. 12A-D, 13A-E; Massin, 1999 : 25-27, figs. 18a-j, 19; Lane, *et al.*, 2000 : 489; Mucharin, 1998 : 21-22, Pl. 8, figs. 1-2; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.



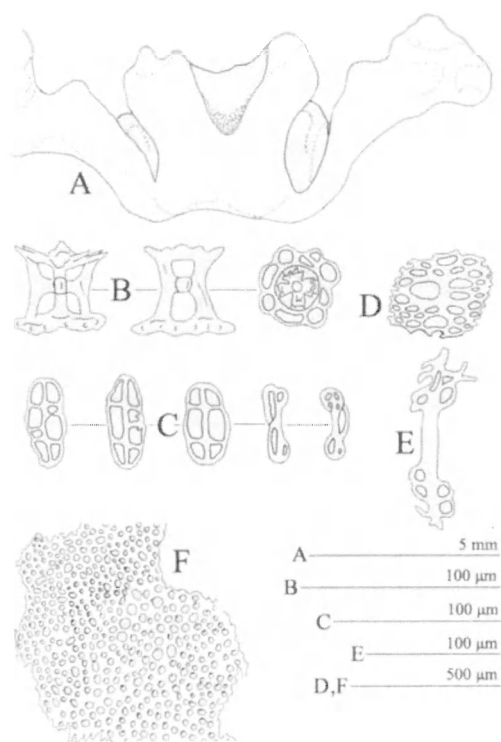
**Figure 18** *Holothuria (Lessonothuria) pardalis* Selenka, 1867. A: calcaireous ring; B: tentacle rods; C: body wall tables; D: dorsal body wall buttons. The figures was drawn by Arom Mucharin.

**Materials.-** : 9 specimens. - BIMS-I 281 : Haad Bang Pra, Chon Buri, 17 Feb. 1999; BIMS-I 283 : Haad Bang Saen, Chon Buri, 9 Oct. 2001; BIMS-I 286 : Ko Man Nok (N), Rayong, 24 Nov. 1995; BIMS-I 291 : Ko Lan (S), 10 Nov. 1998; BIMS-I 292 : Leam Chabang, Chon Buri, 23 Nov. 1995; BIMS-I 357 : Haad Bang Pha, Chon Buri, 6 May. 1999; BIMS-I 387 : Haad Mae Ramphung, Rayong, 2 Sep. 1998; BIMS-I 871 : Ao Phrao, Ko Samet, Rayong, 23 Sep. 2000; AQ.SC.BUU.(no number) : Ao Phrao, Ko Samet, Rayong, 23 Sep. 2000.

**Habitat** : lives under the sand beyond the reef at 4-5 meter depth.

**General Distribution** : Indo-west Pacific, i.e. Is. Of W. Indian Ocean, Mascarene Is., E. Africa & Madagascar, Red Sea, S.E. Arabia, W. India & Pakistan, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.

**Subgenus *Mertensiothuria* Deichmann, 1958**  
***Holothuria (Mertensiothuria) leucospilota***  
**Brandt, 1835**  
**(Fig. 19)**



**Figure 19** *Holothuria (Mertensiothuria) leucospilota* Brandt, 1835. A: calcareous ring; B: body wall tables; C: body wall buttons; D: papillae perforated plates; E: tube feet perforated rods; F: tube feet perforated plates. The figures was drawn by Arom Mucharin.

***Holothuria (Mertensiothuria) leucospilota*** : Rowe, 1969 : 148, fig. 14; Clark and Rowe, 1971 : 176, Pl. 28, figs. 19; Rowe and Doty, 1977 : 233-234, figs. 4f, 7g; Tan Tiu, 1981 : 77-78, Pl. 19, figs. 1-2d; Cherbonnier, 1984(a) : 682-685, fig. 11A-M; Cannon and Silver, 1986 : 23, fig. 6g; Chao and Chang, 1989 : 119, figs. 21, 30H; Rowe and Gates, 1995 : 293; Conand, 1998 : 1178; Massin, 1999 : 27-30, figs. 20a-g, 21; Putchakarn, 1998 : 87, Pl. 8,

figs. 5-6; Rodma, 1996 : 45, Pl. 16, figs. 1-2; Mucharin, 1998 : 22-23, Pl. 8, figs. 3-4; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

***Holothuria leucospilota*** : Cherbonnier, 1955(a) : 81.

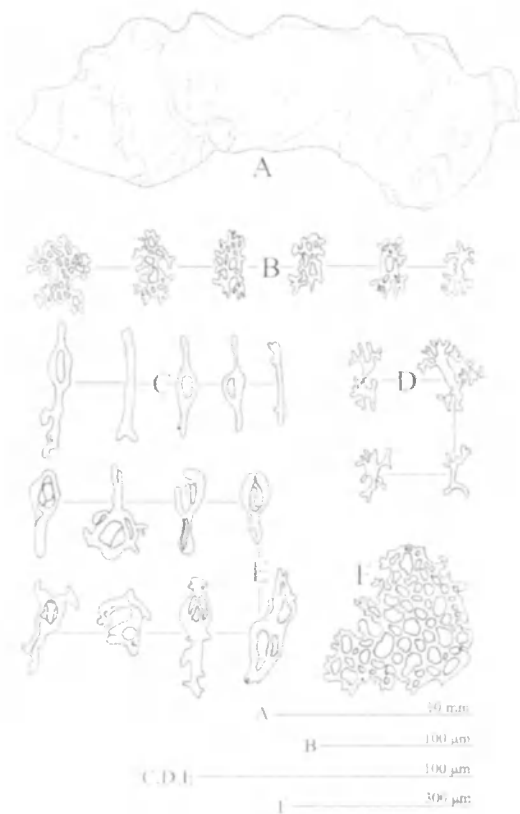
**Materials.-** : 25 specimens. - BIMS-I 255 : Ko Sak (N), Chon Buri, 13 Aug. 1995; BIMS-I 258 : Ko Yaw, Chon Buri, 24 Jul. 1997; BIMS-I 261 : Ko Man Nok, Rayong, 25 Nov. 1995; BIMS-I 278 : Ko Yaw, Chon Buri, 24 Jun. 1997; BIMS-I 298 : Haad Samae San, Chon Buri, 1 Feb. 1999; BIMS-I 317 : Haad Samae, Ko Lan, Chon Buri, 9 Jul. 1998; BIMS-I 326 : Ko Khrok (W), Chon Buri, 11 Jun. 1998; BIMS-I 327 : Ko Khrok (E), Chon Buri, 11 Jun. 1998; BIMS-I 329 : Ko Sak (N), Chon Buri, 10 Jun. 1998; BIMS-I 331 : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998; BIMS-I 336 : Ko Rin (E), Chon Buri, 15 Jul. 1998; BIMS-I 340 : Ko Klung Badan (W), 17 Jul. 1998; BIMS-I 343 : Ko Phai (S), Chon Buri, 12 Nov. 1998; BIMS-I 347 : Ko Lan (S), 16 Nov. 1998; BIMS-I 350 : Ao Nu-an, Ko Lan, Chon Buri, 10 Nov. 1998; BIMS-I 380 : Leam Tonglang, Ko Lan, Chon Buri, 13 May. 1999; BIMS-I 381 : Haad Ta Wan, Ko Lan, Chon Buri, 13 May. 1999; BIMS-I 424 : Haad Kai Jae, Ko Chang, Trat, 20 Jun. 1999; BIMS-I 755 : Ao Makhom Pom, Rayong, 26 Apr. 2000; BIMS-I 758 : Ko Kudi (W), Rayong, 15 May. 2000; BIMS-I 846 : Ko Kham (N), Chon Buri, 25 May. 2000; BIMS-I 918 : Haad Samae, Ko Lan, Chon Buri, 28 Oct. 2000; BIMS-I 919 : Haad Samae, Ko Lan, Chon Buri, 28 Oct. 2000; BIMS-I 1010 : Ko Lueam Noi (E), Chon Buri, 2 Feb. 2001; AQ.SC.BUU. (no number) : Ko Phai (S), Chon Buri, 12 Nov. 1998.

**Habitat** : lives generally on the sandy beaches or on the sand in coral reef at 3-6 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Is. Of W. Indian Ocean, Mascarene Is., E. Africa & Madagascar, Red Sea, S.E. Arabia, Persian Gulf, Maldiva area, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.

**Genus *Pearsonothuria* Levin,  
Kalinin & Stonik, 1984**  
***Pearsonothuria graeffei* (Semper, 1868)**

(Fig. 20)



**Figure 20** *Pearsonothuria graeffei* (Semper, 1868). A: calcareous ring (R : radial piece; IR : interradial piece); B: tentacle rosettes; C: body wall rods; D: body wall branch rods; E: body wall pseudo tables; F: tube feet perforated plates. The figures was drawn by Arom Mucharin.

*Pearsonothuria graeffei* : Tan Tiu, 1981 : 68, Pl. 9, figs. 1-2; Cherbonnier, 1984 : 669-672, fig. 6A-I; Cannon and Silver, 1986 : 21; Massin, 1996 : 33-34, fig. 22A-H; Conand, 1998 : 1184; Massin, 1999 : 62-63, figs. 51, 111 g, h; Lane, *et al.*, 2000 : 489.

*Bohadschia graeffei* : Clark and Rowe, 1971 : 176, Pl. 27, fig. 7; Rowe and Doty, 1977 : 229, figs. 2g, 6c; Reyes-Leonardo, 1984 : 144, Pl. 1, figs. 1a-h; Rowe and Gates, 1995 : 288.

**Materials.**- : 3 specimens. - BIMS-I 371 : Ko Lom, Trat, 6 Mar. 1998; BIMS-I 743 : Ko Khlum (E), Trat, 21 Dec. 1998; BIMS-I 1022 : Ko Yaax (E), Trat, 27 Feb. 2001.

**Habitat** : lives on the rock in coral reef at 3-8 meter depth.

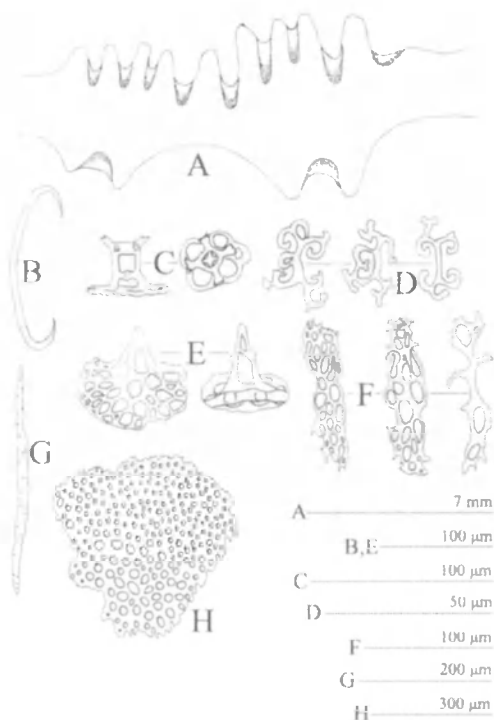
**General Distribution** : Indo-West Pacific, i.e. Red Sea, Maldive area, East Indies, Philippine Is., South Pacific Is.

**Family Stichopodidae Haeckel, 1886**

**Genus *Stichopus* Brandt, 1835**

***Stichopus naso* Semper, 1868**

(Fig. 21)



**Figure 21** *Stichopus naso* Semper, 1868. A: calcareous ring; B: body wall C-shape rod; C: body wall tabs; D: body wall rosettes; E: papillae tables; F: tube feet perforated plates; G: tube feet rod; H: tube feet perforated plates. The figures was drawn by Arom Mucharin.

***Stichopus naso*** : Reyes-Leonardo, 1984 : 151-152, Pl. 10, figs. 2a-h; Leonardo and Cowan, 1984 : 43; Clark and Rowe, 1971 : 178; Rowe and Gates, 1995 : 325-326; Mucharin, 1998 : 29, Pl. 12, figs. 3-4; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

**Materials.-** : 8 specimens. - BIMS-I 309 : Ko Khrok (W), Chon Buri, 15 Jan. 1998; BIMS-I 311 : Ko Lueam Noi (E), Chon Buri, 12 Mar. 1996; BIMS-I 319 : Leam Tonglang, Ko Lan, Chon Buri, 10 Jun. 1998; BIMS-I 344 : Ko Phai (S), Chon Buri, 12 Nov. 1998; BIMS-I 345 : Ko Phai (S), Chon Buri, 12 Nov. 1998; BIMS-I 352 : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998; BIMS-I 353 : Leam Tonglang, Ko Lan, Chon Buri, 10 Jun. 1998; BIMS-I 375 : Haad Ta Wan, Ko Lan, Chon Buri, 13 May. 1999.

**Habitat** : lives on the sand nearly reef edge at 6-15 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Philippine Is.

***Stichopus chloronotus* Brandt, 1835**

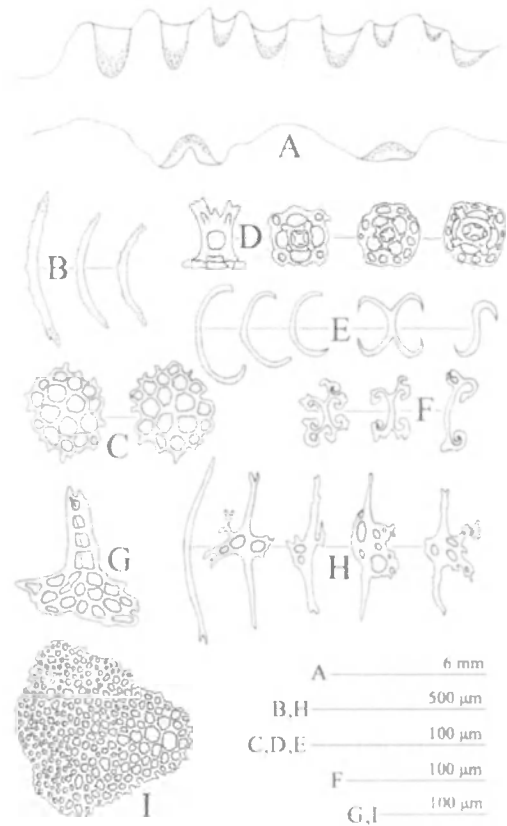
(Fig. 22)

***Stichopus chloronotus*** : Cannon and Silver, 1984 : 27, fig. 7h; Reyes-Leonardo, 1984 : 151, Pl. 9, fig. 1a-d; Leonardo and Cowan, 1984 : 40-41; Clark and Rowe, 1971 : 178, Pl. 27, fig. 18; Rowe and Doty, 1977 : 227, figs. 2c, 6a; Rowe and Gates, 1995 : 323; Massin, 1996 : 34-35, fig. 23A-L; Conand, 1998 : 1186; Lane, *et al.*, 2000 : 489.

**Common Name** : Teat fish (Leonardo and Cowan, 1984 : 40)

**Materials.-** : 1 specimens. - BIMS-I 1015 : Ko Kra - Ko Thian (NE), Trat, 26 Feb. 1999.

**Habitat** : lives on the rock in rocky beach or on the sand in coral reef at 1-2 meter depth.



**Figure 22** *Stichopus chloronotus* Brandt, 1835. A: calcareous ring; B: tentacles rod; C: tentacles perforated plates; D: body wall tables; E: body wall C-shape and S-shape rods; F: papillae rosettes; G: papillae table; H: tube feet perforated rods; I: tube feet perforated plates. The figures was drawn by Arom Mucharin.

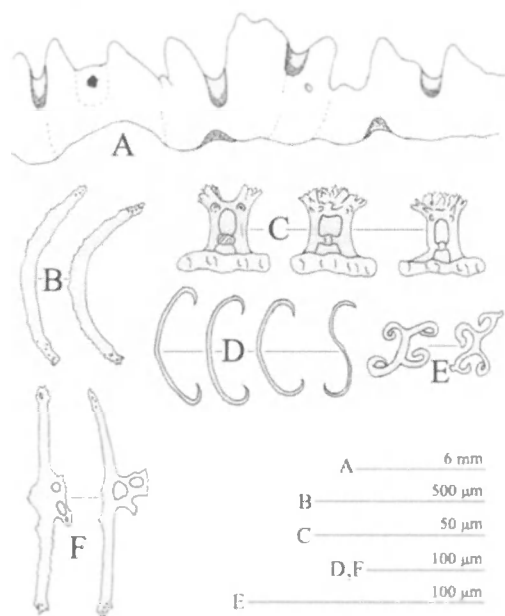
**General Distribution** : Indo-West Pacific, i.e. Is. Of W. Indian Ocean, Mascarene Is., E. Africa & Madagascar, Maldiva area, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.

***Stichopus horrens* Selenka, 1867**

(Fig. 23)

***Stichopus horrens*** : Cherbonnier, 1955(a) : 323; Rowe and Doty, 1977 : 227, figs. 2d, 6b; Cherbonnier, 1980 : 649-651, fig. 17A-Q; Leonardo and Cowan, 1984 : 42; Clark and Rowe, 1971 : 178, Pl. 27, fig. 19; Cannon and Silver, 1986 : 27, fig. 7g; Chao and Chang,

1989 : 115, fig. 8, 29c; Rowe and Gates, 1995 : 324; Conand, 1998 : 1187; Land, *et al.*, 2000 : 489; Mucharin, 1998 : 26, Pl. 10, figs. 3-4; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.



**Figure 23** *Stichopus horrens* Selenka, 1867. A: calcareous ring; B: tentacles rods; C: dorsal body wall tables; D: dorsal body wall C and S shape rods; E: dorsal body wall branch rods; F: tube feet perforated rods. The figures was drawn by Arom Mucharin.

**Materials.-** : 34 specimens. - BIMS-I 299 : Ko Khrok (W), Chon Buri, 11 Jun. 1998; BIMS-I 300 : Leam Tonglang, Ko Lan, Chon Buri, 10 Jun. 1998; BIMS-I 303 : Ko Khrok (E), Chon Buri, 15 Jan. 1998; BIMS-I 308 : Ko Rang, Trat, 28 Sep. 1994; BIMS-I 318 : Leam Tonglang, Ko Lan, Chon Buri, 10 Jun. 1998; BIMS-I 323 : Ko Khrok (W), Chon Buri, 11 Jun. 1998; BIMS-I 324 : Ko Khrok (W), Chon Buri, 11 Jun. 1998; BIMS-I 325 : Ko Khrok (W), Chon Buri, 11 Jun. 1998; BIMS-I 332 : Ko Lueam Noi (E), Chon Buri, 25 Nov. 1998; BIMS-I 333 : Ko Lueam Noi, Chon Buri, 17 May. 1998; BIMS-I 334 : Ko Rin (E), Chon Buri, 15 Jul. 1998; BIMS-I 338 : Ko Man Wichai (E), Chon Buri, 16 Jul. 1998; BIMS-I 339 : Ko Man Wichai (E), Chon Buri, 16 Jul. 1998; BIMS-I 342 : Ko Klung Badan (E), Chon Buri, 17 Jul. 1998; BIMS-I 349 : Haad Nu-an, Ko Lan, Chon Buri, 10 Nov. 1998; BIMS-I

351 : Ko Sak (N), Chon Buri, 28 Aug. 1995; BIMS-I 354 : Ko Kham (N), Chon Buri, - Dec. 1995; BIMS-I 355 : Haad Samae San, Chon Buri, - Dec. 1995; BIMS-I 356 : Haad Samae San, Chon Buri, 1 Feb. 1999; BIMS-I 376 : Haad Ta Wan, Ko Lan, Chon Buri, 13 May. 1998; BIMS-I 389 : Ko Rang, Trat, 28 Sep. 1994; BIMS-I 394 : Ko Man Nai (N), Rayong, 24 Nov. 1995; BIMS-I 395 : Ko Man Nok (E), Rayong, 25 Nov. 1995; BIMS-I 396 : Ko Man Nai (W), Rayong, 21 Nov. 1998; BIMS-I 397 : Ko Man Nok (S), Rayong, 22 Nov. 1998; BIMS-I 398 : Ko Man Nok (S), Rayong, 22 Nov. 1998; BIMS-I 588 : Haad Pattaya, Chon Buri, 24 May. 1997; BIMS-I 760 : Ko Kudi (W), Rayong, 15 May. 2000; BIMS-I 851 : Ko Kham (N), Chon Buri, 25 May. 2000; BIMS-I 873 : Ao Phrao, Ko Samet, Rayong, 23 Sep. 2000; BIMS-I 1016 : Ko Kra - Ko Thian (NS), Trat, 26 Feb. 2001; BIMS-I 1017 : Ko Kra - Ko Thian (NS), Trat, 26 Feb. 2001; BIMS-I 1019 : Ko Kra - Ko Thian (NS), Trat, 26 Feb. 2001; BIMS-I 1026 : Ko Rayang Nok (NE), Trat, 27 Feb. 2001.

**Habitat** : lives on the the sand nearly reef edge at 5-7 meter depth.

**General Distribution** : Indo-West Pacific, i.e. East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is., Hawaiian Is.

*Stichopus herrmanni* Semper, 1868  
(Fig. 24)

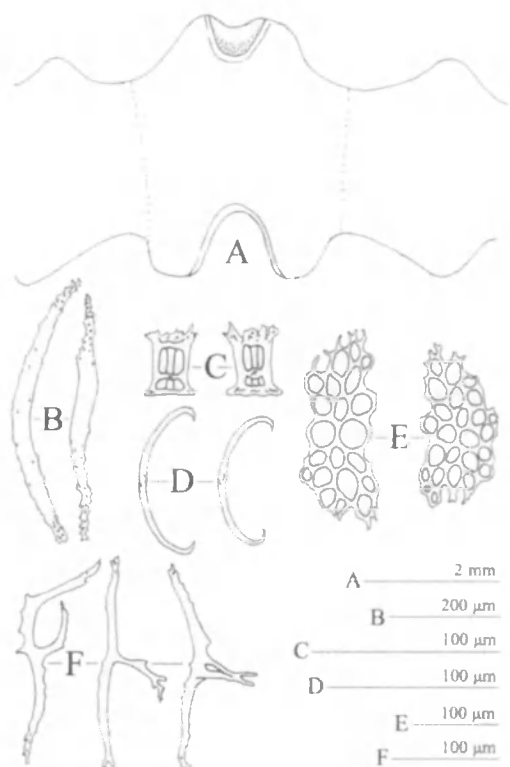
*Stichopus herrmanni* : Massin, 1996 : 35-37, figs. 24A-G, 25A-B; Massin, 1999 : 63-65, fig. 52a-n; Lane, *et al.*, 2000 : 489.

*Stichopus variegatus herrmanni* : Reyes-Leonardo, 1984 : 152, Pl. 9, figs. 2a-g, Pl. 10, figs. 1a-c; Leonardo and Cowan, 1984 : 46-47; Mucharin, 1998 : 27-28, Pl. 11, figs. 3-4; Putchakarn, Mucharin and Sonchaeng, 2000 : 8.

**Common Name** : Curry fish (Leonardo and Cowan, 1984 : 46)

**Materials.-** : 2 specimens. - BIMS-I 305 : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998; BIMS-I 306 : Ko Lueam Noi (E), Chon Buri, 17 Jun. 1998.

**Habitat** : lives on the sand nearly reef edge at 5-7 meter depth.



**Figure 24** *Stichopus herrmanni* Semper, 1868. A: calcareous ring; B: tentacles rods; C: dorsal body wall tables; D: dorsal body wall C-shape rods; E: tube feet perforated plates; F: tube feet rods. The figures was drawn by Arom Mucharin.

**General Distribution** : Indo-west Pacific, i.e. Indian Ocean, Red Sea.

**Order Dendrochirotida** Grube, 1840

**Family Cucumariidae** Ludwig, 1894

**Genus *Actinocucumis*** Ludwig, 1875

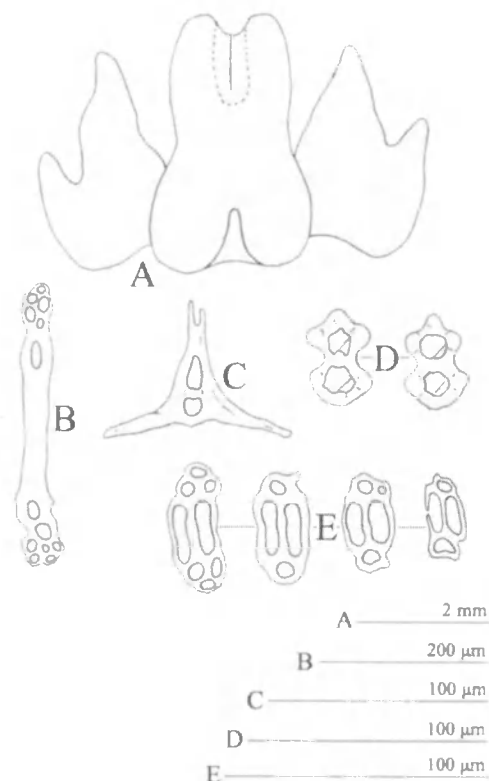
***Actinocucumis typicus*** Ludwig, 1875

(Fig. 25)

*Actinocucumis typicus* : Clark and Rowe, 1971 : 182, Pl. 30, fig. 4; Cannon and Silver, 1986 : 32, fig. 8a, 9h; Rowe and Gates, 1995 : 270; Lane, *et al.*, 2000 : 490.

**Materials.-** : 1 specimens. - BIMS-I 854 : Ko Kham (N), Chon Buri, 25 May. 2000.

**Habitat** : lives under the sponge in dead coral at 3 meter depth.



**Figure 25** *Actinocucumis typicus* Ludwig, 1875. A: calcareous ring; B: tentacles rods; C: body wall tables; D: body wall fenestrated figure of eight; E: body wall buttons. The figures was drawn by Arom Mucharin.

**General Distribution** : Indo-west Pacific, i.e. W. India & Pakistan, Ceylon area, Bay of Bengal, East Indies, North Australia, China & Japan, South Pacific Is.

**Genus *Cercodemas*** Selenka, 1867

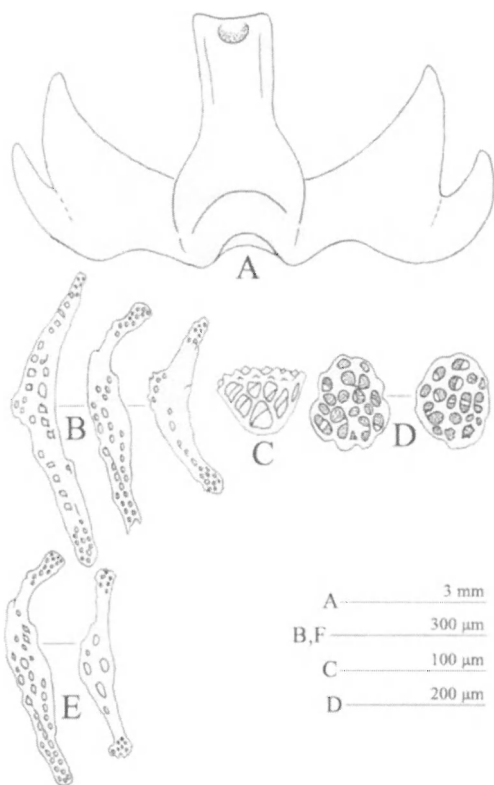
***Cercodemas anceps*** (Selenka, 1867)

(Fig. 26)

*Cercodemas anceps* : Rowe and Gates, 1995 : 271-272; Lane, *et al.*, 2000 : 490.

*Pentacta anceps* : Clark and Rowe, 1971 : 180, Pl. 29, fig. 8; Cannon and Silver, 1986 : 30, fig. 8b; Putschakarn, 1998 : 82, Pl. 7, figs. 1-2; Rodma, 1996 48, Pl. 17, figs. 4-5; Mucharin, 1998 : 31-32, Pl. 13, figs. 3-4.

*Pentacta australis* : Sanjindawong, 1973 : 22, figs. 3, 24.



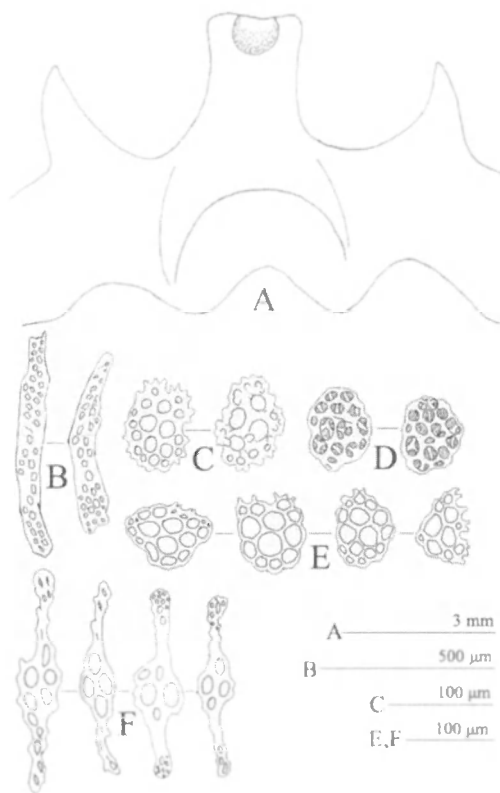
**Figure 26** *Cercodemas anceps* (Selenka, 1867). A: calcareous ring; B: tentacles rods; C: body wall baskets; D: body wall fenestrates bodies; E: tube feet rods. The figures was drawn by Arom Mucharin.

**Materials.-** 8 specimens. - BIMS-I 378 : Ta Wang Beach of Lan Island, Chon Buri, 13 May. 1999; BIMS-I 590 : Ta Wang Beach of Lan Island, Chon Buri, 12 Jun. 1998; BIMS-I 596 : Leam Chabung, Chon Buri, 21 Nov. 1998; BIMS-I 741 : Ko Wai (SW), Trat, 23 Dec. 1998; BIMS-I 852 : Ko Kham (N), Chon Buri, 25 May. 2000; BIMS-I 855 : Ko Kudi (W), Rayong, 26 May. 2000; BIMS-I 1034 : Ko Raet (N), Chon Buri, 5 Mar. 2001; AQ.SC.BUU. (no number) : Ko Lueam Noi (E), Chon Buri, 12 Jun. 1998.

**Habitat** : lives on the dead coral, shell or rock in coral reef at 3-15 meter depth.

**General Distribution** : Indo-West Pacific, i.e. East Indies, North Australia, Philippine Is., China & Japan, South Pacific Is.

**Genus *Colochirus* Troschel, 1846**  
***Colochirus quadrangularis***  
**Troschel, 1846**  
 (Fig. 27)



**Figure 27** *Colochirus quadrangularis* Troschel, 1846. A: calcareous ring; B: tentacles rods; C: body wall perforated plates; D: body wall fenestrates bodies; E: body wall perforated plates; F: tube feet perforated rods. The figures was drawn by Arom Mucharin.

***Colochirus quadrangularis*** : Rowe and Gates, 1995 : 272-273; Massin, 1996 : 5; Lane, et al., 2000 : 490.

***Pentacta quadrangularis*** : Clark and Rowe, 1971 : 180, Pl. 29, fig. 11; Cannon and Silver, 1986 : 30; Sanjindawong, 1973 : 22, figs 2, 23; Putchakarn, 1998 : 82-83, Pl. 7, figs. 3-4; Rodma, 1996 : 47-48, Pl. 17, figs. 1-3; Mucharin, 1998 : 32, Pl. 14, figs. 1-2.

**Maerials.-** 7 specimens. - BIMS-I 379 : Haad Ta Wan, Ko Lan, Chon Buri, 13 Jun. 1998; BIMS-I



591 : Haad Mae Ramphung, Rayong, No date; BIMS-I 592 : Haad Mae Ramphung, Rayong, 21 Mar. 1995; BIMS-I 664 : Ko Man Nok, Rayong, 22 Feb. 1998; BIMS-I 853 : Ko Kham (N), Chon Buri, 25 May. 2000; BIMS-I 1032 : Ko Thalu (N), Rayong, 3 Mar. 2001; AQ.SC.BUU. (no number) : Haad Mae Ramphung, Rayong, 21 Mar. 1995.

**Habitat** : lives on the sand, shell or rock beyond the reef at 10-15 meter depth.

**General Distribution** : Indo-West Pacific, i.e. Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan.

**Genus *Pseudocolochirus***

Pearson, 1910

***Pseudocolochirus axiologus***

(Clark, 1914)

***Pseudocolochirus axiologus*** : Clark and Rowe, 1971 : 180, Cannon and Silver, 1986 : 31, fig. 8c, 9e.

**Materials.-** : 1 living specimens from Aquarium of Institute of Marine Science, Burapha University, Bang Saen, Chon Buri. (no number)

**Habitat** : lives on the sand, shell or rock at more than 10 meter depth.

**General Distribution** : Indo-West Pacific, i.e. North Australia

**Family Phyllophoridae**

Oestergren, 1907

**Genus *Stolus* Selenka, 1867**

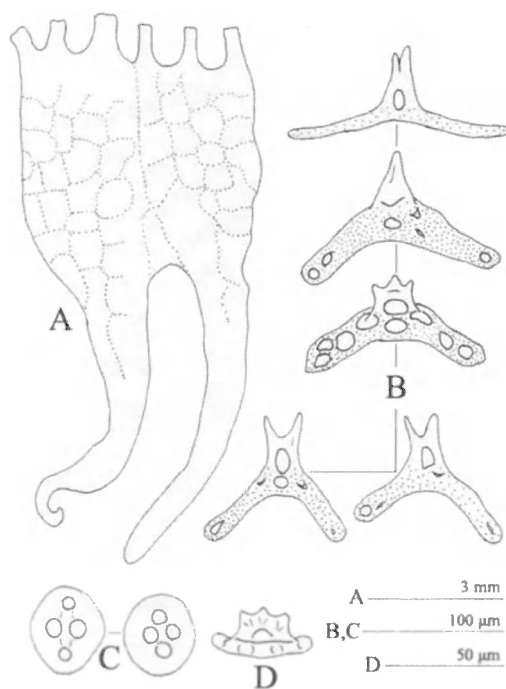
***Stolus conjugens* (Semper, 1868)**

(Fig. 28)

***Stolus conjugens*** : Clark and Rowe, 1971 : 182, Pl. 29, fig. 16; Rowe and Gates, 1995 : 314-315; Lane, *et al.*, 2000 : 491.

**Materials.-** : 2 specimens. - BIMS-I 296 : Haad Bang Saen, Chon Buri, 4 Nov. 1998; BIMS-I 314 : Haad Bang Saen, Chon Buri, 9 Oct. 1997.

**Habitat** : lives under the sand beach at 3 meter depth.



**Figure 28** *Stolus conjugens* (Semper, 1868). A: calcareous ring; B: body wall tables; C: body wall buttons; D: body wall plates. The figures was drawn by Arom Mucharin.

**General Distribution** : Indo-West Pacific, i.e. W. India & Pakistan, Ceylon area, Philippine Is.

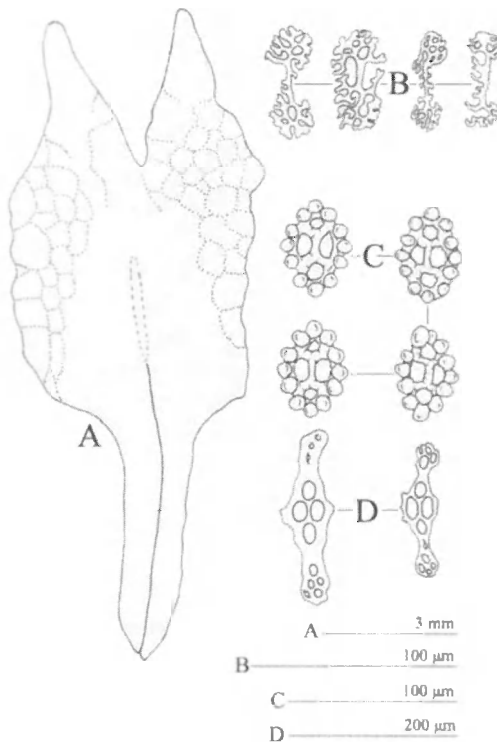
***Stolus buccalis* (Stimpson, 1855)**

(Fig. 29)

***Stolus buccalis*** : Clark and Rowe, 1971 : 182. Pl. 29, fig. 14; Cannon and Silver, 1986 : 31, fig. 9f; Rowe and Gates, 1995 : 314; Lane, *et al.*, 2000 : 491; Rodma, 1996 : 47, Pl. 16, figs. 3-4; Mucharin, 1998 : 30-31, Pl. 13, figs. 1-2.

**Materials.-** : 2 specimens. - BIMS-I 259 : Ko Si Chang (E), Chon Buri, 3 Nov. 1996; BIMS-I 593 : Haad Mae Ramphung, Rayong, No date; BIMS-I 597 : Ko Lan (S), Chon Buri, 10 Nov. 1998.

**Habitat** : lives under the sand beach at 3 meter depth.



**Figure 29** *Stolus buccalis* (Stimpson, 1855). A: calcareous ring; B: tentacle rosettes; C: body wall knob buttons; D: tube feet perforated rods. The figures was drawn by Arom Mucharin.

**General Distribution** : Indo-West Pacific, i.e. E. Africa & Madagascar, S.E. Arabia, Persian Gulf, W. India & Pakistan, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is., China & Japan.

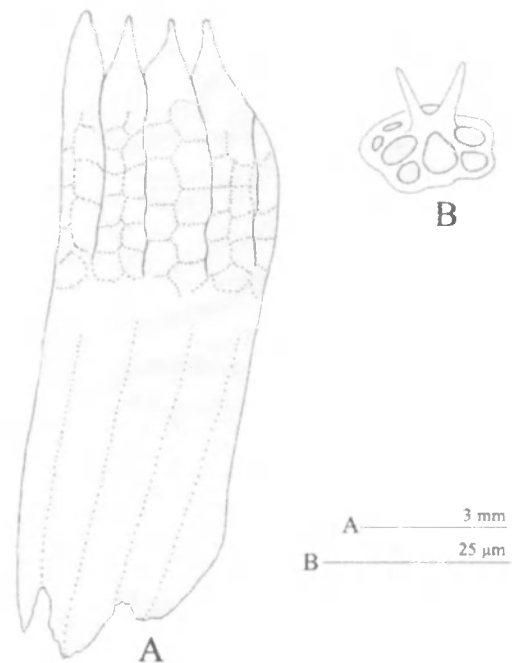
**Genus *Thyone* Oken, 1815**

***Thyone cf. papuensis* Théel, 1886**  
(Fig. 30)

***Thyone papuensis*** : Clark and Rowe, 1971 : 182; Cannon and Silver, 1986 : 32, fig. 9g; Rowe and Gates, 1995 : 316; Lane, *et al.*, 2000 : 491; Mucharin, 1998 : 33, Pl. 15, figs. 1-3.

**Materials.**- : 1 specimens. - BIMS-I 594 : Ko Lueam Noi (E), Chon Buri, 20 Jun. 1998.

**Habitat** : lives under the sand beach at 3 meter depth.



**Figure 30** *Thyone cf. papuensis* Théel, 1886. A: calcareous ring; B: body wall tables. The figures was drawn by Arom Mucharin

**General Distribution** : Indo-West Pacific, i.e. Ceylon area, Bay of Bengal, East Indies, North Australia.

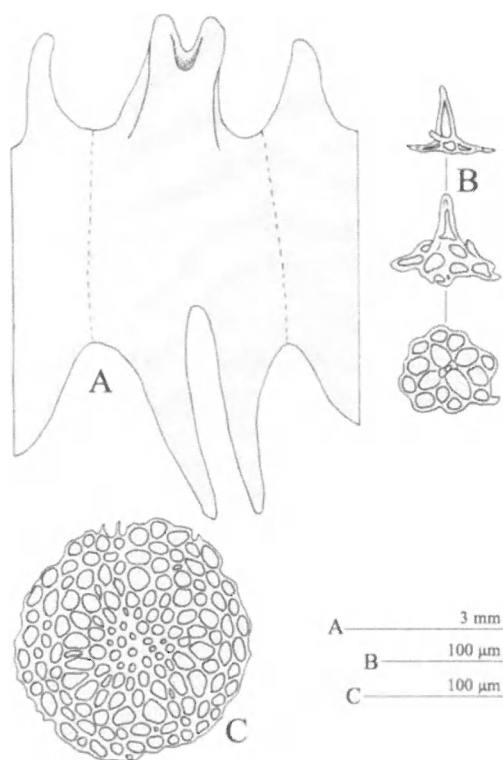
**Genus *Havelockia* Pearson, 1903**  
***Havelockia versicolor* (Semper, 1868)**  
(Fig. 31)

***Havelockia versicolor*** : Clark and Rowe, 1971 : 180, Pl. 29, fig. 13; Cannon and Silver, 1986 : 29, fig. 9a; Rowe and Gates, 1995 : 310-311; Lane, *et al.*, 2000 : 490; Mucharin, 1998 : 34, Pl. 14, figs. 3-4.

**Materials.**- : 2 specimens. - BIMS-I 595 : Ko Lueam Noi (E), Chon Buri, 17 Jul. 1998; BIMS-I 658 : Ko Lueam Noi (E), Chon Buri, 19 Feb. 1998.

**Habitat** : lives on the dead coral of rock in coral reef at 4-6 meter depth.

**General Distribution** : Indo-west Pacific, i.e. East Indies, Philippine Is.



**Figure 31** *Havelockia versicolor* (Semper, 1868). A: calcareous ring; B: body wall tables; C: tube feet perforated plate. The figures was drawn by Arom Mucharin.

**Order Molpadiida** Haeckel, 1896  
**Family Caudinidae** Heding, 1931  
**Genus** *Acaudina* H.L. Clark, 1907

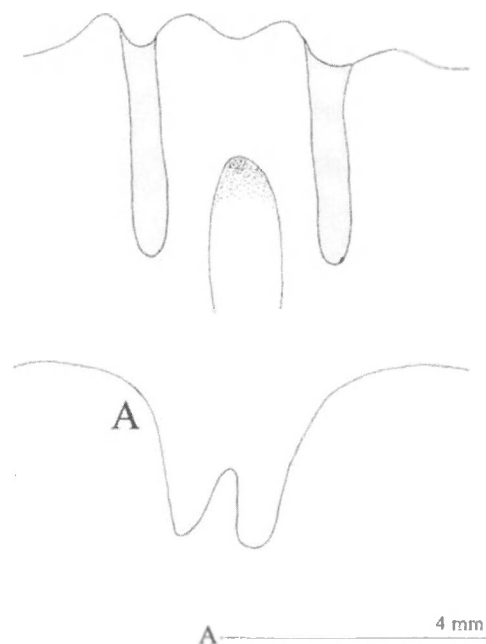
*Acaudina leucoprocta*  
 (H.L. Clark, 1938)  
 (Fig. 32)

*Acaudina leucoprocta* : Clark and Rowe, 1971 : 184; Cannon and Silver, 1986 : 40; Rowe and Gates, 1995 : 263; Lane, *et al.*, 2000 : 491.

**Materials.-** : 1 specimens. - BIMS-I 756 : Ao Makam Pom, Rayong, 26 Apr. 2000.

**Habitat** : lives under the mud - sand in seagrass bed; *Halodule pinifolia* is dominate species.

**General Distribution** : Indo-West Pacific, i.e. North Australia.



**Figure 32** *Acaudina leucoprocta* (H.L. Clark, 1938). A: calcareous ring. The figures was drawn by Arom Mucharin.

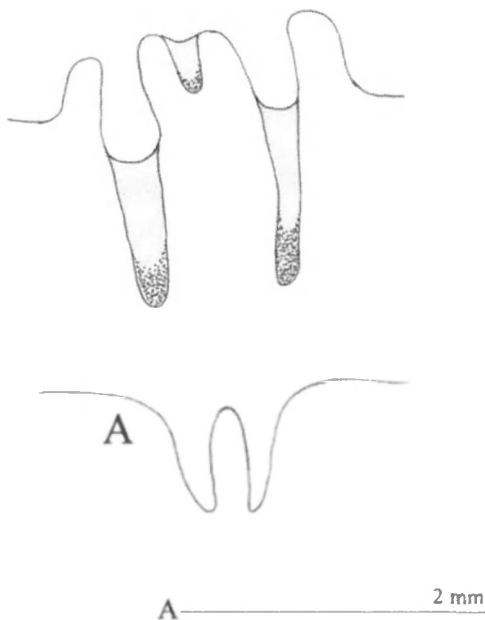
*Acaudina cf. molpadioides*  
 (Semper, 1868)  
 (Fig. 33)

*Acaudina molpadioides* : Clark and Rowe, 1971 : 184, Pl. 31, Fig. 12; Rowe and Gates, 1995 : 263; Lane, *et al.*, 2000 : 491.

**Materials.-** : 2 specimens. - BIMS-I 978 : Waelu estuary, Chantaburi, 16 Sep. 2000; BIMS-I 1007 : Ko Wai (N), Trat, 16 Sep. 2000.

**Habitat** : lives under the mud - sand in seagrass bed or sand beach.

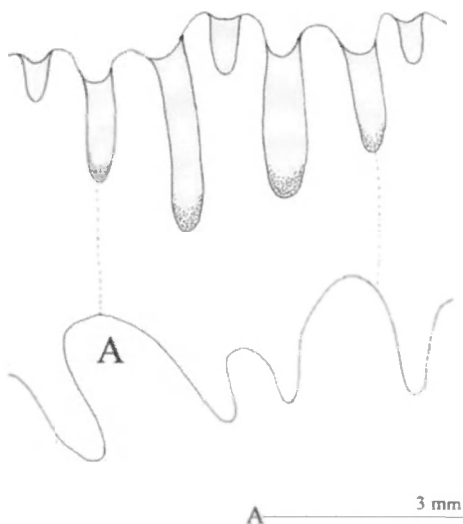
**General Distribution** : Indo-West Pacific, i.e. Ceylon area, Bay of Bengal, East Indies, Philippine Is. China & S. Japan.



**Figure 33** *Acaudina* cf. *molpadioides* (Semper, 1868) A: calcareous ring. The figures was drawn by Arom Mucharin.

*Acaudina* sp.  
(Fig. 34)

**Materials.-** : 1 specimens. - BIMS-I 287 : Haad Bang Pha, Chon Buri, 12 Oct. 1998.



**Figure 34** *Acaudina* sp. A: calcareous ring. The figures was drawn by Arom Mucharin.

**Habitat** : lives under the mud - sand at 8 meter depth.

**Order Apodida Brandt, 1835**

**Family Synaptidae Burmeister, 1837**

**Genus *Synaptula* Orsted, 1849**

*Synaptula recta* (Semper, 1868)  
(Fig. 35)

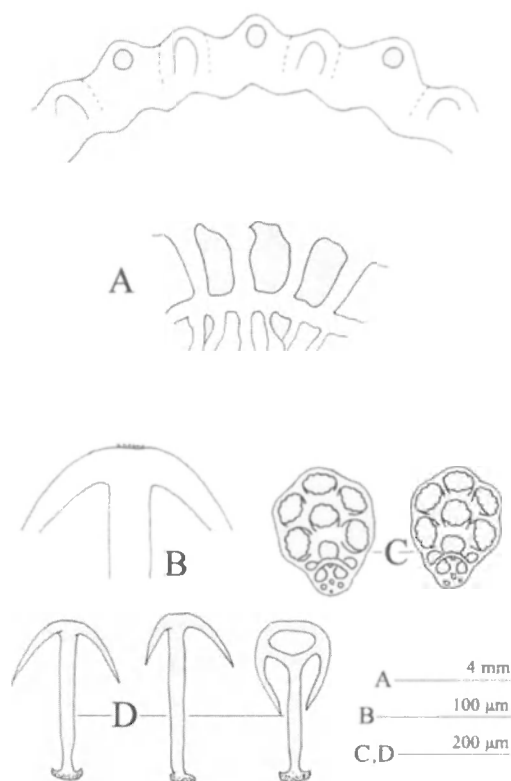
*Synaptula recta* : Clark, 1907 : 84-85; Clark, 1924 : 475-476; Heding, 1928 : 167, fig. 16 (4-6), 17 (3-8), 17; Clark and Rowe, 1971 : 188-189, pl. 30, fig. 16; Cannon and Silver, 1987 : 43, fig. 8i; Rowe and Gates, 1995 : 338; Bussarawit and Thongtham, 1999 : 35; Massin, 1999 : 116-119, figs. 101-102; Lane, *et al.*, 2000 : 492; Samyn, 2003 : 113-115, fig. 48 A-F, fig. 56F, pl. 4H.

*Chondrocloeia recta* : Clark, 1938 : 545-546. pl. 15.

**Materials.-** : 9 specimens. - BIMS-I 769 : Ao Pa Chae, Ko Samet, Rayong, 19 May. 2000; BIMS-I 770 : Ao Pa Chae, Ko Samet, Rayong, 19 May. 2000; BIMS-I 874 : Ao Luk You, Samet, Rayong, 23 Sep. 2000; BIMS-I 825 : Ao Luk You, Samet, Rayong, 23 Sep. 2000; BIMS-I 876 : Ao Phrao, Samet, Rayong, 23 Sep. 2000; BIMS-I 1012 : Ko Lueam (E), Chon Buri, 2 Feb 2001; BIMS-I 1028 : Ko Yaax (E), Trat, 27 Feb. 2001; AQ.SC.BUU. (no number) : Haad Pala, Rayong, No date.

**Habitat** : lives on the sponge or coral in coral reef at 2-3 meter depth.

**General Distribution** : Indo-west Pacific, i.e. Red Sea, Ceylon area, Bay of Bengal, East Indies, North Australia, Philippine Is and South Pacific.

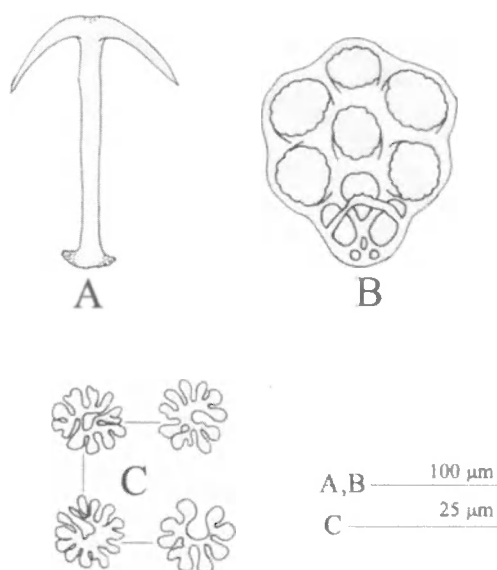


**Figure 35** *Synaptula recta* (Semper, 1868) A: calcareous ring; B: tip of anchors; C: body wall anchor plates; D: body wall anchors. The figures was drawn by Arom Mucharin.

*Synaptula* sp.  
(Fig.36)

**Materials.-** 3 specimens. - BIMS-I 771 : Haad Pa Chae, Ko Samet, Rayong, 19 May. 2000; BIMS-I 877 : Ao Phrao, Ko Samet, Rayong, 3 Sep. 2000; AQ.SC.BUU. (no number) : Ko Rin (E), Chon Buri, No Date.

**Habitat :** lives on the sponge, coral or dead coral in coral reef at 2-3 meter depth.



**Figure 36** *Synaptula* sp. A: body wall anchors; B: body wall anchor plates; C: body wall granules. The figures was drawn by Arom Mucharin.

## DISCUSSION

Studying of the Holothurians (Holothuroidea : Echinodermata) of the Eastern Coast of Thailand were conducted by actual collecting techniques through the numerous field trips and reference collections of Thai institutes. The total of 194 specimens examined consisting of 27 species obtained from the field, 26 species from the collections and one species of a live specimen rearing in the aquarium of the Bang Saen Institute of Marine Science.

The above holothurians were classified into 4 orders, 6 families, 14 genera and 34 species; only four of them have not yet identified down into the species level.

Judging of their distributions by provinces of the Eastern Coast, i.e, Chon Buri, Rayong, Chanthaburi and Trat; those holothurians distributing in all 4 provinces include *Holothuria* (*Thymiosycia*) *impatiens*, *H. (Mertensiothuria)* *leucospilota*, *Synaptula* sp.1 and *Synaptula* sp.2; those in Chon Buri only are *Bohadschia* *marmorata*, *H. (Semperothuria)* *flavomaculata*, *Stichopus* *naso*, *S. herrmanni*, *Actinocucumis* *typicus*, *Thyone* cf. *papuensis* and *Havelockia*

*versicolor*; those in Rayong only are *Acaudina* sp.; and those in Trat only are *Holothuria* (*Halodeima*) *edulis*, *H. (Stauropora) discrepans*, *H. (Metriatyla) martensi*, *Pearsonothuria graeffei* and *Paracaudina* sp. (Table 1)

From the preferred habitats studied, most were found inhabiting the coral reefs; while *Acaudina leucoprocta* only in the seagrass bed; and both *Stolus conjugens* and *Acaudina* sp. only in sandy beach.

On the problematic species treatment of *Bohadschia marmorata* and *B. vitensis*; Rowe and Doty (1977) and Leonardo and Cowan (1984) regarded the latter as a subspecies of the former by both possessing very similar forms of spicules. On the contrary, Cannon and Silver (1986) and Massin (1999) separated them as 2 distinct species on having different morphological characters and branching patterns of the rods.

This present study had led to the conclusion that conforming well to the latter two works that *B. vitensis* having more complex branchings of the rods than those of *B. marmorata*, and should be regarded as 2 different species.

Also, we disagreed with Leonardo and Cowan (1984) who classified *Stichopus herrmanni* as variety of *S. variegatus*, but followed Massin (1999) in treating it as a good species. Only *S. herrmanni* could be found in the Gulf of Thailand. From this study we could not find any *S. variegatus*, reported living in the Gulf and the Andaman Sea by many workers (Sriyakorn, 1970; Sanjindawong, 1973; Bussarawit and Thongtham, 1999)

Regarding the genus *Thyone*, *T. cf. papuensis* could not be confirmed as that particular species, because its body color is yellow, not dark brown as stated by Cannon and Silver (1986); but Clark and Rowe (1971) reported *T. papuensis* distributing in the East Indies, which including Thai waters, and its spicules are closed to those shown on page 38 in Cannon and Silver (1986).

Some difficult genera of holothurians, the caudinid genera *Acaudina* could not be positively confirmed to species level, because their spicules in the body wall could not be seen; only their morphological characters and distinctive

calcareous ring character could lead to the conclusion that they were *Acaudina*.

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