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ANNOTATED CHECKLIST OF SPONGES (PORIFERA) OF THE SOUTH CHINA SEA REGION

J.N.A. Hooper, J.A. Kennedy
Queensland Museum, P.O. Box 3300, South Brisbane, Qld, 4101, Australia

and

R.W.M. van Soest
Institute of Systematics and Population Biology (Zoological Museum), University of Amsterdam, P.O.Box 94766, 1090 AT, Amsterdam, The Netherlands

ABSTRACT. - Many important scientific collections of Porifera have been made within the South China Sea region, commencing in the late 1700s during the era of the 'spice trade', but no synthesis or inventory of this fauna had so far been attempted. This annotated systematic checklist of marine sponges contains over 1500 species recorded in the scientific literature (including marine natural products records), or so far unpublished collections known to exist in museums. As for many other marine invertebrate phyla the South China Sea region contains an exceptionally high diversity of sponges, with an expectation that many more species await discovery and description. This checklist indicates that about 5% of the fauna is widely distributed in the Indo-west Pacific, mainly associated with the coral reef fauna, some wide Indo-Pacific species, a few known to be introduced through human activities, whereas most appear to be 'endemic' to this region. This latter group is relatively more specialised in its ecological requirements than widespread coral reef species, living on non-emergent deeper reefs, soft bottoms, trawl grounds and other habitats which are rarely considered in conservation strategies. These strategies are discussed as they relate to particular characteristics of the sponge fauna.

KEY WORDS. - Porifera, species inventory, South China Sea, biodiversity, conservation strategies.

CONTENTS

INTRODUCTION

Sponges (Porifera) are amongst the most difficult of metazoan phyla to identify. Much of the current taxonomic framework, based largely on skeletal morphology, derives from work published last century. Consequently the classification is laden with species, generic and family synonyms. More recently, contemporary authors have incorporated other forms of biological evidence into this framework but this effort is far from complete. Although contemporary classification and nomenclature are now both approaching stability (at least compared with earlier efforts; see introductions in Hooper & Wiedenmayer, 1994), it is still extremely difficult to resolve much of this new biological evidence (biochemistry, genetic, reproductive cytological etc. data) within the morphologically-based classification.

It is still common for sponges to be misidentified and misplaced within the classification. This makes it very difficult to compile accurate regional species inventories and to determine what proportion of the regional fauna is unique (endemic) and which species are truly widely distributed amongst adjacent biogeographic provinces. Two recent comprehensive inventories of the Australian and New Zealand sponge faunas (Hooper & Wiedenmayer, 1994; Dawson, 1993), were each many years in preparation. These inventories often involved substantial taxonomic revisions, and consequently they were able to resolve nomenclatural complexities and species synonymies for the Australian and New Zealand faunas, and to provide realistic estimates of biodiversity within these provinces. Conversely, attempting something of similar complexity for the South China Sea region is not possible given constraints of time and resources. Instead, we provide a 'database list' of recorded species without attempting to resolve all possible synonyms and misidentications. Although this product is less desirable than complete taxonomic revisions it does provide us with the groundwork to estimate the magnitude and diversity of this important resource. However, to make this document more useful to subsequent workers, to eventually provide the basis for an accurate and comprehensive inventory, we include ordinal and family diagnoses for each taxon which we believe will allow species encountered in the future to be placed more accurately within the classification. A more comprehensive taxonomic guide to sponges, including generic diagnoses and synonyms, methods of collection and preparation for taxonomy, can be found on the internet at "http://www.qmuseum.qld.gov.au" (Hooper, 1997).

The earliest scientific descriptions of sponges collected from the South China Sea are from the late 1700s to the mid 1800s (Esper, 1797-1830 [revised by Ehlers, 1870]; Grant, 1836; Gray, 1858-70; Bowerbank & Norman, 1869a,b; Harting, 1870; Bowerbank, 1872-1877), based on material usually obtained serendipitously by European merchants trading with private collectors, and occasionally collections made during early scientific and technical surveys (e.g. "La Bonite" expedition to the "Indochina" region in 1838 (Dawydoff, 1952); telegraph cable laying mission by the Great Northern Telegraph Company (with sponges subsequently described by Lindgren, 1897)). Some of this material still survives (albiet as antiquated dry specimens) in the BMNH London, Upsala Museum Sweden and MNHN Paris, with only vague localities given as "East Indies", "Indochina", "Cochinchina", "Indo-Malay region" etc. In most cases published descriptions of these species are very poor, usually not illustrated, and many are still unrecognisable, or at best poorly known, as to their true life characteristics.

During the latter part of the 1800s several European scientific and exploratory expeditions collected many species from this region, with more detailed scientific descriptions provided by Carter (1883-7), Poléjaeff (1884a,b), Ridley & Dendy (1886-7), Sollas (1886-8), Kieschnick (1896-1900), Lindgren (1897-8), Topsent (1897), Schulze (1898) and Thiele (1899-1903). Although scientific interest in sponges continued into the first three decades of this century (Sollas, 1902; Vosmaer, 1902-11; Dragnewitsch, 1905; Lendenfeld, 1907; Hentschel, 1912; Wilson, 1925; Ijima, 1926; Burton, 1928-32; Dendy & Burton, 1926; de Laubenfels, 1935; Dawydoff, 1952 [with sponges identified by Topsent]), only few papers on South China Sea sponges have been published in recent years (see Bibliography below). To date, over 1500 species have been described, or are known to exist in contemporary collections, from this region. However, there are certainly many more species living in the South China Sea region given that it lies in close proximity to the megadiverse fauna centred around the Indo-Malay archipelago (see Hooper & Lévi, 1994).

The present work provides: (a) an annotated systematic checklist of sponge species described in the scientific literature (including marine natural products literature), specifying locality

(where known) or broad region of collection; (b) also incorporating a list of identified (but so far unpublished) specimens collected recently from this region, housed in several museums and universities throughout the world; (c) a list of the major repositories of voucher specimens, including the important larger expeditions that visited these waters; and (d) a discussion of known rare or endemic species, predicted areas of highest biodiversity, estimates of the magnitude of the sponge biodiversity, and comments on the conservation and preservation of this biodiversity.

REPOSITORIES OF IMPORTANT COLLECTIONS

Many sponge collections have already been made within the South China Sea region, ranging from old colonial expeditions (dredging, trawling) to contemporary collections using SCUBA and underwater photography. Unfortunately there has never been any coordinated effort to compile a common database of these collections, which are scattered throughout museums and universities worldwide.

Major collections include:

Zoological Museum Amsterdam, Netherlands (**ZMA**): published and unpublished species collected during the *Siboga* (1899-1900) and the Dutch-Indonesian *Snellius II* expeditions (1984-85), and more contemporary collections made by Rob van Soest and associates.

Natural History Museum London, England (**BMNH**): extensive early collections of sponges from British colonial territories and smaller expeditions in the South China Sea, published by authors such as Bowerbank, Carter, Dendy, Burton, plus more recent collections from Sabah and Brunei made during ecological surveys of reefs by the BMNH in these regions.

Muséum National d'Histoire Naturelle Paris, France (**MNHN**): small collections made in French colonial waters of the "Indochina" region (Vietnam, Cambodia) published by Topsent, and more recent collections from Zamboanga (Philippines) and Nha Trang (Vietnam) published by Lévi (1961a,b).

Uppsala Museum, Sweden: small collections from "Indochina" (Java to Vietnam), described by Lindgren (1897).

Smithsonian Institution Washington, USA (**USNM**): these collections include species described by Wilson (1925) from the *Albatross* expedition, as well as much more extensive, contemporary collections from Malaysia, Singapore, Indonesia, Thailand, Hong Kong and Philippines, possibly comprising thousands of species. These contemporary collections mostly involve primary (or duplicate) voucher specimens used in marine natural product "bioactive" sponge surveys, largely funded by the US National Cancer Institute (**NCI**), undertaken by several independent groups of chemical researchers (e.g. Australian Institute of Marine Science, Townsville (**AIMS**); Coral Reef Research Foundation, Chuuk State and Palau (**CRRF**); Scripps Institute, San Diego; University of Southern California, Santa Cruz; Cancer Research Institute, Arizona State University; and others).

Zoological Reference Collections (Raffles Museum), National University of Singapore (**ZRC**): small collections of approximately 200 species mainly from the Singapore and northwest Indonesian islands.

Phuket Marine Biological Station, Thailand (**PMBS**): small collections of approximately 100 species from the Andaman Sea, Gulf of Thailand and Malay peninsula.

Pacific Institute of Bio-organic Chemistry, Vladivostok (**PIBOC**): moderately large collections of several hundreds of species from Vietnam and northern part of the South China Sea made by the RV *Akademik Oparin* and other expeditions during the late 1980s and early 1990s.

Queensland Museum Brisbane and Northern Territory Museum Darwin, Australia (**QM,NTM**): collections of approximately 200 species from southwestern Philippines, Thailand, Malaysian and Cambodian regions made by John Hooper (1989-1991).

Institute of Oceanology, Academia Sinica, Qingdao, China (**IOAS**): collections of approximately 45 species from both shallow and deeper waters in the northern part of the South China Sea (these are appended, compiled independently by Li Jinhe).

Silliman University Marine Laboratory, Dumagette, Philippines: duplicates of collections made by various NCI expeditions comprising approximately 200 species.

Maritime Biology Museum, Oceanographic Institute of Nha Trang, Vietnam: small collection of approximately 100 specimens from waters of Vietnam and Cambodia, presently unidentified (Nguyen Huu Phung, personal communication).

University of Hong Kong: Small collection of approximately 30 species, some published by van Soest (1980) and Pulitzer-Finali (1980) in the proceedings of an international biological workshop on the Hong Kong fauna.

NOTES ON THE SPECIES LIST

The following regions were included in the literature and database searches (annotated **1-7** for each species). Broad regions are: **1** = Cocos, Nicobar and Andaman Islands, Andaman Sea, islands and coast of Burma and western Thailand; **2** = western Malay Peninsula, Singapore, Straits of Malacca, northern Sumatra, northern Java; **3** = Gulf of Thailand, east coast of Thailand, Cambodia, Vietnam, including Paracels Archipelago, Spratly Is, Macclesfield, Atoll de Tizard; **4** = Borneo, Sarawak, Sabah, Brunei; **5** = southern coast of China including Hong Kong; **6** = southeastern Indonesian archipelago; **7** = Philippines, Palawan.

Apart from collections made personally by the author all other species records cited here are taken from the literature and from several computer databases. In many cases no judgement was possible as to their "absolutely correct" generic assignment, or the possibility that they might be junior synonyms of other species (or misidentifications). Very few reliable revisions of this fauna have yet been made, but the species list does provide an indication of the relatively high biodiversity of sponges, and diversity of biological habitats in this region.

Only the major taxonomic works dealing exclusively or mainly with this region have been checked and provided with annotations about localities etc. There are many other species records of sponges from the Indonesian archipelago scattered throughout the vast and mostly antiquated sponge literature. Fortunately, these have already been compiled in a computer database (indicated as **ZMA database**, Zoological Museum of Amsterdam, The Netherlands). Due to constraints of time most of these isolated records have **not** been checked from original sources, hence only a general regional locality is provided. This database also includes "preliminary identifications" made by Maurice Burton of the huge *Siboga* expedition sponge collections (1899-1900), still largely unpublished, with many unpublished (manuscript) species names (indicated as species names in quotes). These records are annotated as **Burton MS**. Personal collections made by the senior author from southwestern Philippines, Thailand, Malaysian and Cambodian regions (1989-1991), housed in the Queensland Museum Brisbane and Northern Territory Museum Darwin, are annotated **QM collection** and **NTM collection**, respectively. Small collections, primarily made for marine natural products chemistry studies, are housed in the Zoological Reference Collection, National University of Singapore (**ZRC**).

KEY TO CLASSES AND ORDERS

1. Mineral skeleton composed of calcitic spicules ..... **[Class Calcarea]** ..... (2)
- Mineral skeleton composed of six-rayed silica spicules, occurring both individually and fused together ..... **[Class Hexactinellida]** ..... (5)
- Mineral skeleton composed of silica spicules and/or spongin fibres ..... **[Class Demospongiae]** ..... (7)

2. With at least some free triradiate spicules ..... **[Subclass Calcinea]** ..... (3)
- Spicules are free and sagittal tetracts and monaxonic forms ..... **[Subclass Calcaronea]** ..... (4)
- Most spicules are fused ('hypercalcified'), often with tuning fork spicules included (polyphyletic characters) ..... **[Orders Murrayonida (Calcinea) and Lithonida (Calcaronea)]**

3. Spicules may include triradiate and quadriradiate forms periphery of skeleton has a distinct cortex. ..... **[Order Clathrinida, family Leucettidae]**
- Only triradiate spicules present, body plan asconoid ..... **[Order Clathrinida, other families]**

4. Body plan asconoid ..... **[Order Leucosoleniida, family Leucosoleniidae]**
- Body plan syconoid or leuconoid ..... **[Order Leucosoleniida, other families]**

5. Birotulate microscleres present, hexaster microscleres absent, sponges not attached to substrate but embedded within it on 1 or more long basal spicules ..... **[Subclass Amphidiscophora, Order Amphidiscosida]**
- Hexaster microscleres present, birotulate microscleres absent, sponges usually fixed to substrate ..... **[Subclass Hexasterophora]** ..... (6)

6. Parenchymal skeleton consists of fused hexactine spicules forming rigid skeleton ..... **[Order Hexactinosida]**
- Parenchymal spicules are lychniscs united together, with centre of each spicule surrounded by 12 struts ..... **[Order Lychniscosida]**
- Parenchymal spicules consist of hexactines usually free within syncytial (acellular) matrix, and with specialized ectosomal hexactines or pentactines with longest ray pointing inwards ..... **[Order Lyssacinosida]**

7. Skeleton composed of tetraxonid spicules and derivatives with equal rays, megascleres and microscleres undifferentiated, (sometimes spicules are lost completely and sponge may be superficially confused with compound ascidians) ..... **[Subclass Homoscleromorpha, Order Homosclerophorida]**

- Tetraxonid and monaxonid megascleres often occur together, asterose microscleres common, skeleton is usually radial or axially compressed ..... **[Subclass Tetractinomorpha]** ..... (8)
- Monaxonic megascleres, with a diversity of microscleres but never asterose forms, (two order lacking free spicules altogether) ..... **[Subclass Ceractinomorpha]** ..... (9)

8. Spherical growth form usual, radial pattern of triaenes and oxeas, microscleres sigmaspires .... **[Order Spirophorida]**
- Large oxeas always present, sometimes with triaenes, radial at surface only, microscleres asterose forms ..... **[Order Astrophorida]**
- Monaxonic spicules only (styles, oxeas, never tetractinal forms), radial at least at surface, microscleres may be absent or may include asterose and monaxonic forms (microxeas, spirasters) ..... **[Order Hadromerida]**
- Articulated siliceous desma megascleres, with or without free spicules .... **[Order Lithistida** (polyphyletic)**]**

9. With siliceous megascleres and/or microscleres, with spongin fibres ..... (10)
- Without free spicules, with spongin fibres ..... (11)

10. Microscleres include chelae and other diverse forms, megascleres often localized to distinct regions (e.g. inside fibres), sand/detritus may replace megascleres completely .... **[Order Poecilosclerida]**
- Microscleres typically absent, with main skeleton composed of criss-cross (family Halichondriidae) of monaxonic megascleres (styles, oxeas, strongyles), usually with more organization at surface, or sometimes condensed into an axial skeleton and a plumose or plumo-reticulate extra-axial skeleton (family Axinellidae), or plumose-dendritic mineral skeleton (family Dictyonellidae), fibre system poorly developed or absent ..... **[Order Halichondrida]**
- Microscleres may be absent or include centrangulate sigmas, toxas or microxeas, megascleres diactinal usually producing well-formed structure (e.g. isodictyal-reticulate) .... **[Order Haplosclerida]**
- Main skeleton composed of well developed spongin fibres cored and/or echinated by short styles or oxeas with verticillate spines ..... **[Order Agelasida]**

11. Lacking mineral skeleton completely (although detritus and contaminating spicules often occur, confusing these with poecilosclerids), with well developed relatively homogeneous spongin fibres forming reticulate skeleton, typically with 2 or 3 different sized networks, consistency not collagenous ..... **[Order Dictyoceratida]**
- Spongin fibres forming reticulate skeleton, with laminated spongin fibres, with distinct pith of fine fibrils, forming reticulate skeleton without differentiation of primary and secondary elements, collagenous consistency, frequently with a live yellow colouration which darkens in contact with the air ..... **[Order Verongida]**
- With strongly lamellated spongin fibres forming dendritic skeleton arising from basal attachment ..... **[Order Dendroceratida]**
- Without free spicules but with a solid aragonitic cortex producing a series of chambers on top of each other, the youngest (uppermost) chambers lined with living tissue .... **[Order Verticillitida]**

SYSTEMATIC CHECKLIST OF SPONGES

Phylum Porifera
Subphylum Cellularia

Class Demospongiae

Definition. - Sponges with the skeleton composed of spongin fibres alone or together with siliceous spicules (although some "relict sclerosponge" forms have both a basal calcitic skeleton as well as free siliceous spicules). Some groups lack a mineral skeleton entirely

(some Homoscleromorpha and others). Collagenous filaments or fibrils (forming the ground substance of the intercellular mesohyl) are ubiquitous, spongin fibres (also composed of collagen) occur in most families, and histological organisation is always cellular (as opposed to syncytial in the Hexactinellida). Choanocytes occupy chambers that are spherical, hemispherical, elongate or branched.

Remarks. - Three subclasses of Demospongiae are distinguished on the basis of larval morphology and life cycle strategy (Homoscleromorpha, Tetractinomorpha, Ceractinomorpha), and a fourth (polyphyletic) group, the "sclerosponges" with calcified basal skeletons, is now distributed amongst the existing various families of demosponges. The 'sphinctozoa' are also now included in Demospongiae, subclass Ceractinomorpha. There are 13 orders (1 dubious), 71 families and 1005 nominal genera included, although only 507 genera are presently considered to be valid. 481 genera include marine species and 26 genera concern freshwater species (the latter not included in this work).

Demospongiae contain about 95% of living species, with a described fauna already consisting of about 4500-5000 species and an estimated total extant fauna of between 14000-15000 species worldwide.

Subclass Homoscleromorpha

Definition. - Demospongiae with secondarily derived amphiblastula larvae and viviparous reproduction; skeleton composed of tetraxonid siliceous spicules and derivatives with equal rays (diods, triods, lophate spicules), arranged around choanocyte chambers reflecting the canal structure; no differentiation between megascleres and microscleres although size differences do occur between types of spicules; spicules usually small (100µm or less), not localised to any particular region; choanocyte chambers with large numbers of choanocytes. One order, one family.

Order Homosclerophorida

Definition. - As for subclass.

Family Plakinidae Schulze, 1880

Definition. - Encrusting or massive growth forms; simple body structure with aquiferous system varying from simple asconoid construction to more complex folding and elaborate canal systems; mineral skeleton composed of relatively small calthrops and/or derivatives (diods or triods), often with branched ends (lophotetractines), generally arranged uniformly within sponge; spicules usually surround aquiferous system in regular "alveolar" arrangement; siliceous spicules and spongin fibres absent in one genus (*Oscarella*), having only collagenous fibrillar spongin in mesohyl; choanocyte chambers with 300-500 choanocytes, usually eurypylous, occasionally aphodal; larvae unique amphiblastula type.

SOUTH CHINA SEA SPECIES.

Astroplakina stelligera Dendy and Burton, 1927:231, fig.2 (W of Mergui Archipelago, 12° N, 130m) (1)

Oscarella lobularis Schmidt, 1862 (Indonesia, ZMA database) (6)

Placinolopha bedoti (Topsent, 1897); Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Plakina sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Plakortis "clathrata" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS).
Plakortis cf. *corticioides* Vacelet, Vasseur & Lévi, 1976 (Indonesia, ZMA database) (6)
Plakortis (Dercitopsis) mammillaris (Lendenfeld, 1906) (SW. Cebu, Philippines) (7, QM/NTM collection)
Plakortis nigra Lévi, 1961 (Sulawesi, Indonesia) (6, QM/NTM collection)
Plakortis simplex (Schulze, 1880); Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Plakortis cf. *trilopha* Schulze, 1880 (Indonesia, ZMA database) (6)
Plakortis n.sp. (Indonesia, ZMA database) (6)

Subclass Tetractinomorpha

Definition. - Demospongiae with parenchymellae or creeping blastula larvae, predominantly oviparous reproduction although in some genera young sponges are incubated within parent and set free as small adults; megascleres tetraxonid and monaxonid, occurring together or separately; microscleres asterose forms and derivatives; skeletal structure usually radial or axially compressed.

Remarks. - Three orders of Tetractinomorpha are well established (Astrophorida (also known as Choristida), Hadromerida, and Spirophorida), and a fourth polyphyletic order ("Lithistida") shows major affinities to, and will probably be merged eventually in, Hadromerida.

Order Spirophorida

Definition. - Typically with spherical growth form, with tetraxonid and monaxonid megascleres (triaenes, oxeas), in radiate pattern; protriaenes most common and often protrude from surface; monocrepidial desmas may be present; microscleres contorted microspined sigmaspires (an apomorphy for the group); reproduction oviparous without a larval stage, or viviparous with production of young adults within parent. Two families included, one with "lithistid" grade of construction.

Family Tetillidae Sollas, 1886

Definition. - Sponges with a perfect radial skeleton and consequent near spherical form, often referred to as 'golf ball sponges'; megascleres triaenes and oxeas arranged in radiate pattern; protriaenes apomorphic for the family, often protruding from the suface; microscleres contorted sigmaspires with minute spines; sometimes other modified triaene spicules also present (amphiclads, calthrops-like); inhalant pores grouped in special pore areas in some genera (poriferous pits or porocalices), unique to the family; reproductive patterns range from extrusion of fertilized eggs (which are fixed to the substrate and develop directly), to oviparous (with incubation of complete young sponges which are then expelled by localised breakdown of the pinacoderm); no free larvae yet described.

SOUTH CHINA SEA SPECIES.
Cinachyra arabica (Carter, 1869); Burton & Rao, 1932:326; Pattanayak, 1997 (Camorta I., Nicobar Is, 8° 10'N; Andaman Is; Nicobar and Andaman Islands) (1)
Cinachyra australiensis (Carter, 1886); Burton & Rao, 1932:326 (Andaman Is); Lévi, 1961: 129; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Vietnam; Negros, Zamboanga, Philippines) (1,3,4,6, 7, QM/NTM collection)

Cinachyra barbata Sollas, 1888; Dawydoff, 1952 (Poulo Condore, Phuquoc, Vietnam) (3)
Cinachyra cavernosa, (Lamarck); Burton & Rao, 1932; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Cinachyra macellata (Sollas, 1888) (off Manila) (7)
Cinachyra malaccensis Sollas, 1902:219, pl.14, fig.2, pl.15, fig.5 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Cinachyra simplex (Sollas, 1888); Burton & Rao, 1932:326 (off Cape Negrais, Burma, 15° 50'N) (1)
Cinachyra voeltzkowi Lendenfeld, 1899; Dragnewitsch, 1906:440 (Singapore, 1° 30'N) (2)
Cinachyra sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Cinachyra sp. (Indonesia, ZMA database) (6)
Cinachyra spp. (Singapore; QM/ZRC collections) (2)
Cinachyra sp (Nha Trang, Vietnam, PIBOC database) (3)
Cinachyrella clavigera (Hentschel, 1912:327); Wilson, 1925:365 (Philippines) (7)
Cinachyrella crustata (Wilson, 1925:367) (Philippines) (7)
Cinachyrella hirsuta (Dendy, 1889); Wilson, 1925:363 (Philippines) (7)
Cinachyrella paterifera (Wilson, 1925:375) (Philippines) (7)
Craniella carteri Sollas, 1888 (Indonesia, ZMA database) (6)
Craniella simillima (Bowerbank); Wilson, 1925:378 (Philippines) (7)
Craniella sp (Nha Trang, Vietnam, PIBOC database) (3)
Craniella sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Paratetilla arcifera Wilson, 1925:380 (Philippines) (7)
Paratetilla bacca (Selenka, 1867); Lindgren, 1897: 485; Lindgren, 1898 (Gaspar Straits, Java Sea); Burton & Rao, 1932:325; Pattanayak, 1997 (Marble Rocks, Mergui Archipelago; Port Blair, Andaman Is, 11° 50'N; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,2,6)
Samus anonyma Gray, 1867; Sollas, 1902:218 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Tetilla ciliata Wilson, 1925:360 (Philippines) (7)
Tetilla cranium (Mueller, 1789); Burton & Rao, 1932:326; Pattanayak, 1997 (Invisible Bank, Andaman Is, 11° 30'N; off Cape Negrais, Burma, 15° 50'N; Nicobar and Andaman Islands) (1)
Tetilla dactyloidea (Carter, 1869); Carter, 1887:79; Burton & Rao, 1932:326; Pattanayak, 1997 (Port Blair, Andaman Is, 11° 50'N; Nicobar and Andaman Islands; King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Tetilla enoi Brondsted, 1934 (Java, Banda, Indonesia) (6)
Tetilla (Donatia) japonica (Sollas, 1888); Dawydoff, 1952 (Gulf of Tonkin, Cape Saint-Jacques, Vietnam; Indonesia, ZMA database) (3,6)
Tetilla pedifera Sollas, 1888 (Indonesia, ZMA database) (6)
Tetilla ridleyi Sollas, 1888; Sollas, 1902:218 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Tetilla spinosa Wilson, 1925:361 (Philippines, Indonesia, ZMA database) (6,7)
Tetilla ternatus Kieschnick; Lindgren, 1897: 485; Lindgren, 1898 (Java) (2)
Tetilla zetlandica Carter, 1886 (Indonesia, ZMA database) (6)
Tetilla spp. (Nha Trang, Vietnam, PIBOC database) (3)
Tetilla ('Chrotella') sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Family Scleritodermidae Sollas, 1888

Definition. - Bowl, cup-shaped or plate-like growth forms; fused "lithistid" skeleton composed of monocrepidial desmas (rhizoclones) and free spicules with slender oxeas distributed in tracts within choanosome, sometimes protruding through surface; triaenes absent, presumed secondarily lost; specialised ectosomal skeleton composed of contorted sigmaspires and special ectosomal desmas, also dispersed throughout sponge, sometimes together with minutely spined microstrongyles.

SOUTH CHINA SEA SPECIES.
Aciculites cf. *ciliata* Wilson, 1925:463 (Philippines, Indonesia, ZMA database) (6,7)
Aciculites cf. *papillata* Lévi & Lévi, 1983 (Philippines, Indonesia) (6,7)
Aciculites tulearensis Vacelet & Vasseur, 1965 (Indonesia, ZMA database) (6)
Aciculites sp. (Indonesia, ZMA database) (6)

Amphibleptula ('Taprobane') herdmani (Dendy, 1905:103); Wilson, 1925:468; Burton, 1928:110 (W of Mergui Archipelago, 13° 04'N, 130m; Philippines; Indonesia, ZMA database) (1,6,7)
Amphibleptula stoneae (Lévi & Lévi, 1983) (Philippines, Indonesia) (6,7)
Scleritoderma flabelliformis Sollas, 1888 (Indonesia, ZMA database) (6)
Scleritoderma nodosum Thiele, 1900 (Indonesia, ZMA database) (6)

Order Astrophorida

Definition. - Typically with asterose microscleres (but sometimes lost), microxeas and microrhabds; with tetractinal megascleres, usually triaenes, calthrops, or short-shafted triaenes, together with oxeas; with radial skeletal architecture obvious at least at surface; reproduction oviparous although gametes so far described for very few species; larval stages not yet known. Seven families presently included.

Family Ancorinidae Schmidt, 1870

Definition. - Growth forms either encrusting to massive, or more specialised with spherical body and long inhalant and exhalant tubes at opposite ends (the latter with stellate, spicular, funnel-shaped end); megascleres long-shafted triaenes (with shaft directed inwards and clads on surface) and oxea megascleres; microscleres euasters and microrhabds, without sterrasters or amphiasters.

SOUTH CHINA SEA SPECIES.
Ancorina simplex (Lendefeld, 1899); Dragnewitsch, 1906:441 (Singapore) (2)
Ancorina sp. 941; Sattahip region, Thailand (3, QM/NTM collection)
Asteropus simplex Carter, 1879:349; van Soest, 1980 (Hong Kong, Philippines) (5,7)
Asteropus sp. (Singapore; ZRC) (2)
Disyringa dissimilis Ridley, 1884 (Indonesia, ZMA database) (6)
Disyringa nodosa Hentschel, 1912 (Aru Is, Indonesia) (6)
Ecionemia acervus, (Bowerbank, 1862); Burton & Rao, 1932; Pattanayak, 1997 (Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Ecionemia agglutinans Thiele, 1899 (Indonesia, ZMA database) (6)
Ecionemia baculifera (Carter, 1887:78) (King I., Mergui Archipelago, Burma, 12° 08'N); Lindgren, 1897: 485; Lindgren, 1898; Burton, 1937:7; Lévi, 1961:510 (Zamboanga, Philippines; Java, Indonesia) (1,2,7)
Ecionemia carteri Dendy, 1905: Burton & Rao, 1932:318 (Nankauri, Nicobar Is, 7° 57'N; Andaman Is) (1)
Ecionemia conulosa Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Ecionemia cribrosa Thiele; Wilson, 1925:24 (Ternate, Moluccas, Indonesia; Philippines) (6,7)
Holoxea collectrix Thiele, 1900 (Indonesia, ZMA database) (6)
Holoxea valida Thiele, 1900 (Indonesia, ZMA database) (6)
Melophlus ('Asteropus') sarassinorum (Thiele, 1899); George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Banda Sea; Bohol Sea; Philippines) (4,6,7, QM/NTM collection)
**Myriastra clavosa* (Ridley, 1884); Lindgren, 1897: 485; Lindgren, 1898; Wilson, 1925:287; Dendy and Burton, 1927:246; Burton & Rao, 1932:311; Brondsted, 1934 (off Cinque I., Andaman Is, 11° 20'N, 140-240m; Tana Mura Besar, Singapore I., 1° 25'N; Kabusa I., Mergui Archipelago, 12°N; Andaman Is; Vietnam, China Sea, 11° 5'N, Mansfield I., Indonesia; Philippines) (1,2,3,6,7)
**Myriastra clavosa* (Dendy & Burton, 1926); Burton & Rao, 1932; Pattanayak, 1997 (Nicobar and Anadaman Islands) (1) [perhaps junior homonym of Ridley, 1884 species]
Myriastra ('Stelletta') purpurea (Ridley, 1884); Burton & Rao, 1932; Pattanayak, 1997 (Camorta I., Nicobar Is, 8° 5'N; ENE of Preparis I., Bay of Bengal, Burma, 15°N; Indonesia, ZMA database; Andaman Islands) (1,6)
Myriastra siemensi Wilson, 1925:291 (Philippines) (7)
Myriastra sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Penares dendyi (Hentschel, 1912) (Indonesia) (6)
Penares "dirhabdosa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Penares schulzei Thiele, 1899 (Indonesia, ZMA database) (6, Burton MS)
Penares sollasi Thiele, 1900 (Indonesia, ZMA database) (6)
Penares sp. ; Pinder, 1992 (South China Sea) (5)
Rhabdastrella ('Diastra') sterrastraea (Row, 1911) (Indonesia, ZMA database) (6, Burton MS)
Rhabdastrella ('Aurora', 'Stelletta') globostellata (Carter, 1883); Dragnewitsch, 1906:440; Burton & Rao, 1932:317, Pattanayak, 1997 (Singapore; Aberdeen Reef, Andaman Is, 12°N, Nicobar and Andaman Islands; Indonesia, ZMA database) (1,2,6)
Stelletta aruensis Hentschel, 1912 (Aru I., Indonesia) (6)
Stelletta aspera Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Stelletta brevidens Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Stelletta brevis Hentschel, 1912 (Aru I., Indonesia) (6)
Stelletta brunnea Thiele, 1900 (Indonesia) (6)
Stelletta cavernosa (Dendy, 1916); Burton & Rao, 1932:311; Pattanayak, 1997 (Nicobar Is; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Stelletta clavata Ridley, 1884; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Stelletta crassispicula Sollas, 1888 (Indonesia, ZMA database) (6)
Stelletta debilis Thiele, 1900 (Indonesia, ZMA database) (6)
Stelletta haeckeli (Sollas, 1888); Dendy & Burton, 1927:246; Pattanayak, 1997 (8 mls W of Interview I., Andaman Is, 13°N, 90-540m; Nicobar and Andaman Islands) (1)
Stelletta herdmani Dendy, 1905 (Indonesia, ZMA database) (6)
Stelletta japonica (Lebwohl, 1914) (Indonesia, ZMA database) (6, Burton MS)
Stelletta longicladus Dendy & Burton, 1929 (Indonesia, ZMA database) (6, Burton MS)
Stelletta mauritiana Dendy, 1916 (Indonesia, ZMA database) (6)
Stelletta maxima Thiele, 1898 (Indonesia, ZMA database) (6)
Stelletta orientalis Thiele, 1898; Burton and Rao, 1932:311 (Andaman Is., shallow water) (1)
Stelletta plagioreducta Lévi, 1961:512 (Zamboanga, Philippines) (7)
Stelletta porosa Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Stelletta radicifera Wilson, 1925:294 (Philippines) (7)
Stelletta reniformis Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Stelletta simplicifurca (Sollas); Lindgren, 1897: 485; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N, Amoy, China, Taiwan, N. China Sea) (3)
Stelletta simplicissima Sollas, 1888; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Stelletta sphaeroides Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Stelletta stellifera Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Stelletta subtilis Sollas, 1888 (Indonesia, ZMA database) (6)
Stelletta tenuis Lindgren, 1897: 485; Lindgren, 1898 (Java); Deng et al., 1992; Su et al., 1994, 1995a (South China Sea, Taiwan) (2,5)
Stelletta tenuispicua Sollas, 1888 (Indonesia, ZMA database) (6)
Stelletta ternatensis Thiele, 1900 (Ternate, Moluccas, Indonesia) (6)
Stelletta testudinaria (Ridley, 1884) (6, Burton MS)
Stelletta topsenti Thiele, 1903 (Indonesia, ZMA database) (6)
Stelletta trichotriaena Dendy & Burton, 1927:241, fig.6; Pattanayak, 1997 (Andaman Is, 12°N, 540m; Nicobar and Andaman Islands) (1)
Stelletta validissima Thiele, 1900; Burton & Rao, 1932:310; Pattanayak, 1997 (Invisible Bank, Andaman Is, 11° 30'N, Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Stelletta variohamata Thiele, 1900 (Indonesia, ZMA database) (6)
Stelletta spp. ("reduced"); Burton & Rao, 1932:312 (Macpherson Straits near Chiriyatapur, Andaman Is, 11° 25'N; Paway I., Mergui Archipelago, 11° 30'N) (1)
Stelletta sp.; Caberoy, 1979:19 (Bohol, Philippines) (7)
Stelletta spp. (Indonesia, ZMA database) (6)
Stelletta sp. (Singapore; ZRC) (2)
Stelletta spp. (Nha Trang, Vietnam, PIBOC database) (3)
Stryphnus sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Tethyopsis colmunifer Stewart, 1870 (Indonesia, ZMA database) (6)
Tethyopsis dubia Wilson, 1925:300 (Philippines) (7)
Tethyopsis radiata (Marshall, 1880) (Indonesia, ZMA database) (6, Burton MS)

Family Calthropellidae Lendenfeld, 1906

Definition. - Massive to subsperical growth forms; megascleres calthrops and oxeas, with rays of calthrops sometimes more than four or reduced to two, and three rays may be bifurcate; one genus (*Chelotropella*) with radially oriented dichotriaenes; microscleres usually euasters, usually spherasters, but sometimes others.

SOUTH CHINA SEA SPECIES.
Calthropella geodioides Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Pachastrissa sp. 975 (Ko Samui region, Thailand) (3, QM/NTM collection)
Pachastrissa (*'Pachastrea'*) sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Family Coppatiidae Topsent, 1898

Definition. - Encrusting to massive growth forms; megascleres only oxeas forming radial skeleton; triaenes absent; microscleres euasters (never sterrasters), sometimes microxeas and sanidasters; genera related to stellettids but lack triaenes.

SOUTH CHINA SEA SPECIES.
Cryptotethya agglutinans Dendy, 1905 (Indonesia, ZMA database) (6) [incertae sedis]
Cryptotethya topsenti Thiele, 1900 (Indonesia, ZMA database) (6) [incertae sedis]
Jaspis (Dorypleres) biangulata (Lindgren, 1897:483); Lindgren, 1898 (Java) (2,6)
Jaspis cf. *coriacea* Carter, 1886 (Indonesia, ZMA database) (6)
Jaspis distinctus Thiele, 1900 (Indonesia, ZMA database) (6)
Jaspis johnstoni (Schmidt, 1862) (Indonesia, ZMA database) (6, Burton MS)
Jaspis serpentina Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Jaspis stellifera Carter, 1879; Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Jaspis sp.; Jung et al., 1995 (South China Sea) (5)
Jaspis sp. (Nha Trang, Vietnam, PIBOC database) (3)
Stellettinopsis sp. (Singapore; ZRC) (2)
Stellettinopsis sp. (Indonesia, ZMA database) (6)

Family Geodiidae Gray, 1867

Definition. - Thickly encrusting, massive to bowl-shaped growth forms; megascleres long shafted trienes and oxeas; sterraster microscleres always present forming superficial ectosomal crust, sometimes also with euasters, microrhabds and spherules.

SOUTH CHINA SEA SPECIES.
Caminus chinensis Lindgren, 1897: 485; Lindgren, 1898; Dawydoff, 1952 (Taiwan, China Sea; Vietnam) (3,5)
Erylus cornutus Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Erylus decumbens Lindgren, 1897: 485; Lindgren, 1898 (Java) (2)
Erylus geodioides Burton & Rao, 1932:320, fig.5 (Mergui Archipelago, 130m; Indonesia, ZMA database) (1,6)
Erylis inaequalis Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Erylus lendenfeldi (Sollas, 1888); Burton & Rao, 1932:320; Pattanayak, 1997 (Andaman Is, Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Erylus nobilis Thiele, 1900 (Indonesia, ZMA database) (6)
Erylus placenta (Gray); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Geodia alba Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Geodia alba Kieschnick *minor* Hentschel, 1912 (Aru Is, Indonesia) (6)
Geodia areolata Carter, 1880 (Indonesia, ZMA database) (6)

Geodia arripiens Lindgren, 1897: 486; Lindgren, 1898; Dawydoff, 1952 (Vietnam, Cambodia, 11° 5'N) (3)
Geodia berryi Sollas, 1888; Thiele, 1899 (Indonesia) (6)
Geodia cydonium Mueller var. *berryi* Sollas, 1888; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Geodia cydonium (Mueller) *cerryi* (Sollas); Lindgren, 1897: 486; Lindgren, 1898 (Vietnam, China Sea, 11° 5'N) (3)
Geodia distincta Lindgren, 1897: 486; Lindgren, 1898 (Java Sea, Banda Sea) (2,6)
Geodia eoaster Sollas, 1888 (Indonesia, ZMA database) (6, Burton MS)
Geodia hirsuta Sollas, 1888 (Indonesia, ZMA database) (6)
Geodia inconspicua (Bowerbank, 1873); Burton & Rao, 1932:322 (ENE Preparis I., Bay of Bengal, Burma, 82m, 15°N) (1)
Geodia japonica spherulifera Wilson, 1925:317 (Philippines) (7)
Geodia kuekenthali Thiele, 1900 (Indonesia, ZMA database) (6)
Geodia microspinosa Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Geodia ('Isops') nigra (Lindgren, 1897: 486); Lindgren, 1898; Dawydoff, 1952 (Gaspar Straits, Java Sea; Vietnam) (2,3,6)
Geodia perarmata Bowerbank, 1873; Burton & Rao, 1932:323 (ENE Preparis I., Bay of Bengal, Burma, 82m, 15°N; Indonesia, ZMA database) (1,6)
Geodia philippinensis Wilson, 1925:311 (Philippines) (7)
Geodia ('Sidonops') picteti (Topsent, 1897); Lindgren, 1897: 486; Lindgren, 1898 (Java); Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (2,6)
Geodia sparsa Wilson, 1925:314; de Laubenfels, 1935:335 (Puerta Galera, Philippines) (7)
Geodia sphaeroides Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Geodia sp. 698 (Bohol Sea, Philippines) (7, QM/NTM collection)
Geodinella sphaerastrosa Wilson, 1925:322 (Philippines, Indonesia, ZMA database) (6,7)
Pachymatisma sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Family Pachastrellidae Carter, 1875

Definition. - Encrusting, massive and plate-shaped growth forms, with ostia and oscules on opposite sides; megascleres calthrops, short-shafted triaenes, and oxeas; microscleres streptasters of various types (metasters, spirasters and amphiasters), but never euasters; desmas common in some genera ('lithistid' or 'sublithistid' grades of construction).

SOUTH CHINA SEA SPECIES.
Brachiaster simplex Wilson, 1925:471 (Philippines) (7)
Characella abbreviata Wilson, 1925:284 (Philippines) (7)
Dercitus extensa Dendy, 1905 (Indonesia, ZMA database) (6)
Dercitus pauper Sollas, 1902:218, pl.15, fig.1 (Great Redang I., E coast of Malay Peninsula, 5° 50'N) (3)
Dercitus plicatus Topsent, 1895; Sollas, 1902:218 (Great Redang I., E coast of Malay Peninsula, 5° 50'N) (3)
Dercitus simplex (Carter, 1880); Burton & Rao, 1932:309 (Invisible Bank, Andaman Seas, 11° 30'N; Indonesia, ZMA database) (1,6)
Pachamphilla dendyi Hentschel, 1912; Thomas, 1977 (Andaman Sea, Indonesia) (1,6)
Pachastrella monilifera Schmidt, 1868 (Indonesia, ZMA database) (6)
Pachastrella sp. (Indonesia, ZMA database) (6)
Poecillastra ciliata Wilson, 1925:282 (Philippines) (7)
Poecillastra compressa (Bowerbank, 1864); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Poecillastra eccentrica Dendy & Burton, 1927:238; Pattanayak, 1997 (between N and S Sentinel Is, Andaman Is, 11° 30'N, 440-480m; Nicobar and Andaman Islands) (1)
Poecillastra laminaris Sollas, 1888 (Indonesia, ZMA database) (6)
Poecilastra saxicola Ridley, 1884; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Poecillastra tenuilaminaris Sollas; Dendy & Burton, 1927:238; Burton and Rao, 1932:309; Pattanayak, 1997 (W of Mergui Archipelago, 12° 15'N - 13° 04'N, 120-130m; off Cape Negrais, Burma, 80-90m, 15° 57'N; Mergui Archipelago, 130m; Interview I., Andaman Is, 13°N, 90-540m; Table I., Cocos Group, and West I., Andaman Is, 20m, 15° 35'N; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6, Burton MS)

Poecillastra sp.; Jung et al., 1995 (South China Sea) (5)
Poecillastra spp. (Indonesia, ZMA database) (6)
Vulcanella ('Sphinctrella') bifacialis (Wilson, 1925:280) (Phillipines) (7)
Vulcanella ('Sphinctrella') sp. (Indonesia, ZMA database) (6)

Family Theneidae Sollas, 1886

Definition. - Mushroom shaped, more-or-less symmetrical sponges, with root-like bases forming masses of tangled spicules; one or more oscules may be present, and specialized pore areas as well as scattered pores distributed over entire surface; oscules and pore areas may or may not be fringed by projecting spicules; megascleres long-shafted trienes (pro-, dicho- and anatriaenes), oxeas and oxytylote megascleres; microscleres streptaster (plesi-, met-, spir- and amphiasters), but never euasters; asexually produced buds formed by some species.

SOUTH CHINA SEA SPECIES.
Thenea andamanensis Dendy & Burton, 1927:235, pl.3, fig.1, text-fig.4; Pattanayak, 1997 (Andaman Sea, 13° 15'N, 990m; Nicobar and Andaman Islands) (1)
Thenea grayi Sollas, 1888; Wilson, 1925 (Indonesia, ZMA database) (6)
Thenea mesotriaena Lendenfeld, 1907 (N. Sumatra) (2)
Thenea muricata (Bowerbank, 1864); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Thenea nicobarensis Lendenfeld, 1907 (N. Sumatra) (2)
Thenea wyvillei Sollas, 1888; Dawydoff, 1952 (Paracels, Vietnam) (3)

Family Thrombidae Sollas, 1888

Definition. - Massive sponges with diplodal aquiferous systems; megascleres small, minutely spined triaenes (plagio-, dicho- and trichotriaenes with trifurcate clads), organised in ectosomal region with long shaft directed inwards and small clads tangential to surface, disorganised in choanosomal skeleton; microscleres amphiasters.
[no recorded species]

Order Hadromerida

Definition. - Relatively cohesive order with uniform spiculation of monaxonid megascleres (monactinal or diactinal); with radially arranged skeleton always obvious at surface if not within choanosome; spongin fibres poorly developed (if at all present); ectosomal spicules typically smaller than choanosomal spicules, usually standing perpendicular to surface and protruding through ectosome; microscleres, if present, euasters, streptasters and derivatives, spirasters or spiraster-like spirules, or peculiar asterose-like discorhabds; all groups oviparous (where known), with development of parenchymella larva (in one case blastula larva) directly in seawater. Twelve families presently included.

Family Chondrillidae Gray, 1872

Definition. - Encrusting to massive, liver-like or gelatinous sponges, often mistaken for compound ascidians; surface often smooth with marked cortex, enriched with fibrillar collagen; megascleres secondarily lost; euaster microscleres present or absent.

SOUTH CHINA SEA SPECIES.
Chondrilla ('Chondrillastra') australiensis Carter, 1886; Lindgren, 1897: 484; Lindgren, 1898; Dawydoff, 1952; Lévi, 1961: 130 (Vietnam, China Sea, 11° 5'N; Indonesia, ZMA database) (3,6)
Chondrilla distincta Thiele, 1899 (Indonesia, ZMA database) (6)
Chondrilla euastra de Laubenfels, 1949 (Indonesia, ZMA database) (6)
Chondrilla grandistellata Thiele, 1899 (Indonesia, ZMA database) (6)
Chondrilla jinensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Chondrilla media Hentschel, 1912 (Aru Is, Indonesia) (6)
Chondrilla mixta Schulze; Lindgren, 1897: 484; Lindgren, 1898; Dawydoff, 1952 (Java; Vietnam) (2,3)
Chondrilla cf. *nucula* Schmidt, 1870; Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Chondrilla sacciformis Carter, 1879; Brondsted, 1934 (Java, Banda, Indonesia) (6)
Chondrilla ternatensis Thiele, 1903 (Indonesia, ZMA database) (6)
Chondrilla sp. (Singapore; ZRC) (2)
Chondrosia cf. *chucalla* de Laubenfels, 1954 (Indonesia, ZMA database) (6)
Chondrosia corticata Thiele, 1899 (Indonesia, ZMA database) (6)
Chondrosia debilis Thiele, 1899 (Indonesia, ZMA database) (6)
Chondrosia cf. *reniformis* Schmidt, 1862; Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)

Family Clionidae Gray, 1867

Definition. - Obligatory excavating or burrowing sponges in calcitic substrata; inhalant ectosomal pores (ostia) localized on papillae protruding through surface; terminal exhalant pores (oscules) on other papillae; megascleres tylostyles or subtylostyles; microscleres microspined oxeas and spirasters, both sometimes absent; following metamorphosis settled larvae burrow into calcareous substratum producing galleries, whereas faster-growing species may overgrow substratum completely, becoming massive, free-living sponges.

SOUTH CHINA SEA SPECIES.
Cliona bacillifera Carter, 1887:76 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Cliona cf. *caroboea* Carter, 1882 (Indonesia, ZMA database) (6)
Cliona carpenteri (Thomas,1979); Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Cliona cf. *celata* Topsent; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Cliona ensifera (Sollas, 1888) Pattanayak, 1997 (Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Cliona kempi (Annandale,1915); Thomas, 1979 Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Cliona lobata (Hancock, 1849) Pattanayak, 1997 (Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Cliona mucronata (Sollas, 1888); Dawydoff, 1952; Pattanayak, 1997 (Vietnam; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,3,6)
Cliona orientalis Thiele, 1900 (Indonesia, ZMA database) (6)
Cliona quadrata (Hancock, 1849) Pattanayak, 1997 (Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Cliona cf. *schmidti* Ridley, 1881 (Indonesia, ZMA database) (6)
Cliona vastifica (Hancock, 1849); Dawydoff, 1952; Pattanayak, 1997 (Vietnam; Nicobar and Andaman Islands) (1,3)
Cliona cf. *viridis* Schmidt, 1862; Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Cliona sp. (Indonesia, ZMA database) (6)
Cliona sp. 936 (Luzon, Philippines) (7, QM/NTM collection)
Cliona sp. (Singapore; QM/ZRC collections) (2)
Thoosa (Cliothosa) hancocki (Topsent, 1888); Lindgren, 1897: 484; Lindgren, 1898; Dawydoff, 1952; Pattanayak, 1997 (Nicobar and Andaman Islands; Java; Poulo Condore, Réam, Vietnam) (1,2,3)

Family Hemiasterellidae Lendenfeld, 1889

Definition. - Encrusting, cup-shaped or branching sponges; megascleres styles, oxeas or both enclosed within compressed axial spongin fibres and plumose to plumo-reticulate extra-axial branches, or sometimes without a definite axis; microscleres euasters, smooth or partially microspined.

SOUTH CHINA SEA SPECIES.
Axos sp. (Indonesia, ZMA database) (6)
Hemiasterella complicata Topsent, 1919 (Indonesia, ZMA database) (6)
Hemiasterella intermedia Dendy, 1922 (Indonesia, ZMA database) (6)

Family Latrunculiidae Topsent, 1922

Definition. - Encrusting, massive, cylindrical to branched morphology, often with special oscula areas, oscules elevated on papillae, or pore sieve-plates lying on surface in deep furrows; megascleres styles, oxeas or strongyles, radial tracts at surface, with axial orientation in stalked forms and more confused tracts in choanosome of massive forms; microscleres peculiar discorhabds (bearing either two whorls of spines, two or three disks on a straight or spined axial rod, and with one swollen spined end, both ends spined, or both ends smooth), often aggregated into dense ectosomal crust ('cortex').

SOUTH CHINA SEA SPECIES.
Diacarnus megaspinorhabdosa Kelly-Borges & Vacelet, 1995 (Batangas, Philippines) (7)
Diacarnus ('Latrunculia') spinipoculum (Carter, 1886) (Indonesia, ZMA database) (6)
Latrunculia "debeauforti" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Latrunculia globosa Vacelet, Vasseur & Lévi, 1976 (Indonesia, ZMA database) (6)
Latrunculia laevis Lindgren, 1897: 484; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N; Cambodia) (2,3)
Latrunculia lendenfeldi (Lindgren, 1897)(Indonesia, ZMA database) (6)
Latrunculia "loveni" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Latrunculia quadrilobata Dendy, 1922 (Indonesia, ZMA database) (6)
Latrunculia sp.; Jung et al., 1995 (South China Sea) (5)
Latrunculia sp. (Indonesia, ZMA database) (6)
Latrunculia sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Negombata kenyensis (Pulitzer-Finali, 1982) (Puerto Princessa, Philippines) (7, QM/NTM collection)

Family Placospongiidae Gray, 1867

Definition. - Encrusting to lobate-digitate growth forms; surface often with network of sculptured grooves or plates, often closable, into which ectosomal pores and oscules open; plate-like grooves on surface rendered hard by thick cortex of closely packed sterrasters; single layer of upright tylostyles lies in the floor of each groove; megascleres tylostyles, also occuring in tracts within choanosomal skeleton; microscleres sterrasters (spiraster-like) forming both dense surface crust and axial tracts; silica may be pigmented red.

SOUTH CHINA SEA SPECIES.
Placospongia carinata Bowerbank, 1858; Lindgren, 1897: 485; Lindgren, 1898 (Gaspar Straits; Indonesia, ZMA database) (2,6)
Placospongia melobesioides Gray, 1867:127; Lindgren, 1897: 485; Lindgren, 1898; Wilson, 1925:322; Dawydoff, 1952 (Gaspar Straits, Java Sea; Baie d'Along, Vietnam; Indonesia, ZMA database; Philippines) (2,3,6,7)
Placospongia sp. (Singapore; ZRC) (2)

Family Polymastiidae Gray, 1867

Definition. - Massive, spherical or burrowing sponges, typically with oscular or blind fistules, papillae or plates on upper surface; megascleres usually tylostyles of subtylostyles, typically more than one size category, smaller forming erect surface brushes and larger radiating choanosomal bundles, with smaller spicules in poorly organised arrangement between columns; thin, smooth oxeas also occur in one genus; microscleres rare, if present, including only acanthose microxeas.

SOUTH CHINA SEA SPECIES.
Atergia sp.; George & George, 1987 (photo 1I) (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Polymastia gemmipara Dendy, 1916 (Indonesia, ZMA database) (6)
Polymastia mamillata Mueller; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Polymastia sp. (Indonesia, ZMA database) (6)
Polymastia sp. (Singapore; QM/ZRC collections) (2)
Radiella ('Trichostemma') straticulatum (Wilson, 1925:347) (Philippines) (7)

Family Spirastrellidae Ridley & Dendy, 1886

Definition. - Growth forms include encrusting, facultative burrowing and excavating sponges, massive, or digitate growth forms, many with surface plates and sometimes with papillae protruding above surface; megascleres tylostyles; microscleres usually spirasters forming ectosomal crust.

SOUTH CHINA SEA SPECIES.
Spirastrella areolata Lindgren, 1897; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Spirastrella aurivillii Lindgren, 1897: 484; Lindgren, 1898; Dawydoff, 1952 (Gaspar Staits, Java Sea; Vietnam) (2,3)
Spirastrella carnosa Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Spirastrella coccinea Duchassaing & Michelotti; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Spirastrella cuncatrix Schmidt, 1868; Carter, 1887:75; Van Soest, 1980 (King I., Mergui Archipelago, Burma, 12° 08'N; Indonesia, ZMA database; Hong Kong) (1,5,6)
Spirastrella cuspidifera (Lamarck, 1814) (Indonesia, ZMA database) (6)
Spirastrella decumbens Ridley, 1884 (Indonesia, ZMA database) (6)
Spirastrella inconstans (Dendy, 1887); Sollas, 1902:216, pl.14, fig.3; Lévi, 1961:513; Pattanayak, 1997 (Pulau Bidang, NE of Penang, 5° 30'N; Nicobar and Andaman Islands; Indonesia, ZMA database; Zamboanga, Philippines) (1,2,6,7)
Spirastrella lacunosa Kieschnick, 1900; Dragnewitsch, 1906:441 (Singapore, 1° 30'N; Ternate, Moluccas, Indonesia) (2,6)
Spirastrella pachyspira Lévi, 1958 (Indonesia, ZMA database) (6)
Spirastrella purpurea Ridley, 1884 (Indonesia, ZMA database) (6)
Spirastrella purpurea Ridley *glaebrosa* Vosmaer, 1911 (Indonesia, ZMA database) (6)
Spirastrella semilunaris Lindgren, 1897: 484; Lindgren, 1898 (Java) (2)
Spirastrella solida Ridley & Dendy, 1886; Lindgren, 1897: 484; Lindgren, 1898; Dawydoff, 1952 (Gaspar Straits, Java Sea; Vietnam; Indonesia, ZMA database) (2,3,6)
Spirastrella spiculifer Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Spirastrella spinispirulifera Carter, 1879 (Indonesia, ZMA database) (6)
Spirastrella tristellata Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Spirastrella vagabunda Ridley, 1884; Wison, 1925:343; de Laubenfels, 1935:334 (Puerta Galera, Philippines, Indonesia, ZMA database) (6,7)
Spirastrella cf. *vagabunda* Ridley (Singapore; QM/ZRC collections) (2)
Spirastrella sp. (Phuket region, Thailand) (1, QM/NTM collection)
Spirastrella sp. 942 (Sattahip region, Thailand) (3, QM/NTM collection)

Spirastrella sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Spirastrella sp. 1024 (Bohol Sea, Philippines) (7, QM/NTM collection)
Spirastrella sp. 1034 (Bohol Sea, Philippines) (7, QM/NTM collection)
Spirastrella sp. 88 (Bohol Sea, Philippines) (7, QM/NTM collection)
Spirastrella sp. 1708 (Kalimantan, Indonesia) (6, QM/NTM collection)
Spirastrella sp. (Singapore; ZRC) (2)
Spirastrella sp. (Singapore; ZRC) (2)
Spirastrella sp. (Singapore; ZRC) (2)
Spirastrella spp. (Nha Trang, Vietnam, PIBOC database) (3)

Family Stylocordylidae Topsent, 1928

Definition. - Deep water sponges with stalked, asymmetrical, globular or ovoid bodies, characteristically growing on soft substrates; megascleres include two sizes of oxeote spicules, long centrotylote spicules and unusual, short, terminally curved spicules, together producing peculiar radial tracts converging towards stalk, and with spicules disposed along axis within stalk; microscleres absent or may include microxeas, microstrongyles or asters.

SOUTH CHINA SEA SPECIES.
Stylocordyla borealis Thompson, 1877 (Indonesia, ZMA database) (6)

Family Suberitidae Schmidt, 1870

Definition. - Massive, pedunculate, bowl-shaped or encrusting sponges, generally without surface papillae; skeleton radial at surface, without a distinct cortex, but usually choanosome more disorganised, occasionally with loose axial organisation and nonradial in arrangement; megascleres typically tylostyles, subtylostyles, rarely styles or diactinal forms; tylostyles greatly modified in shape and position of head, being lobate, pear-shaped, drop-shaped or subterminal, or occasionally missing completely; microscleres, if present, may include spined centrotylote rods; reproduction oviparous, with asexual buds or stolons also common.

SOUTH CHINA SEA SPECIES.
Aaptos aaptos (Schmidt) *nigra* Lévi, 1961: 1310 (Vietnam) (3)
Aaptos suberitoides (Brondsted, 1934) (Indonesia, ZMA database) (6)
Aaptos sp.; Do & Erickson, 1983 (Taiwan) (5)
Aaptos sp. (Singapore; ZRC) (2)
Aaptos spp. (Nha Trang, Vietnam, PIBOC database) (3)
Laxosuberites proteus Hentschel, 1909; Dawydoff, 1952 (Aru Is, Indonesia; Vietnam, Cambodia) (3,6)
Laxosuberites "styliferus" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Laxosuberites sp. (Indonesia, ZMA database) (6)
Poterion neptuni Hardwick, 1849; Dawydoff, 1952 (Phuquoc Is, Poulo Condore, Bassac, Gulf of Thailand; Indonesia, ZMA database) (3,6)
Pseudosuberites andrewsi Kirkpatrick, 1900 (Christmas I., Indonesia, ZMA database) (1,6)
Pseudosuberites "canalis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Pseudosuberites cava Sollas, 1902:217, pl.14, fig.6; Burton, 1928:133 (Pulau Bidang, NE of Penang, 5° 30'N; Bally Strait, Malay Archipelago) (1,2)
Pseudosuberites sp. (Indonesia, ZMA database) (6)
Rhizaxinella clavata Thiele, 1899 (Indonesia, ZMA database) (6, Burton MS)
Suberites carnosa Johnston; Carter, 1887:74 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Suberites coronarius Carter, 1882; Carter, 1887:74, pl.7, figs 4-5 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Suberites cf. *domuncula*; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Suberites incrustans Keller, 1891 (Indonesia, ZMA database) (6)

Suberites japonicus Thiele, 1899 (Indonesia, ZMA database); Dmitrenok et al., 1988 (Singapore) (2,6, Burton MS)
Suberites laxosuberites Sollas, 1902:217, pl.15, fig.4 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Suberites lobulata Lévi, 1961: 132 (Vietnam) (3)
Suberites nuda (Wilson, 1925:352) (Philippines, Indonesia, ZMA database) (6,7)
Suberites perfectus Ridley & Dendy, 1886; Burton, 1928:132 (Bally Strait, Malay Archipelago, 320m) (2)
Suberites "ridleyi" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Suberites tenuiculus (Bowerbank, 1864); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Suberites trincomaliensis Carter, 1887:74, pl.6, figs 7-8 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Suberites sp. (Indonesia, ZMA database) (6)
Suberites sp. 953 Phuket region, Thailand (1, QM/NTM collection)
Suberites sp. 1033 (Negros Orientale, Zamboanga, Philippines) (7, QM/NTM collection)
Suberites sp. 327 (Negros Orientale, Philippines) (7, QM/NTM collection)
Suberites sp. 615 (W. Mindinao, Bohol Sea, Philippines) (7, QM/NTM collection)
Suberites sp. 1667 (Sumbawa, Indonesia) (6, QM/NTM collection)
Suberites spp. (Nha Trang, Vietnam, PIBOC database) (3)
Terpios cruciatus Dendy, 1905 (Indonesia, ZMA database) (6)
Terpios fugax Duchassaing & Michelotti, 1864; Sollas, 1902:217 (Pulau Bidang, NE of Penang, 5° 30'N; Indonesia, ZMA database) (2,6)
Terpios zeteki (de Laubenfels, 1936) (Kalimantan, Indonesia) (6, QM/NTM collection)
Terpios sp. (Indonesia, ZMA database) (6)

Family Tethyidae Gray, 1867

Definition. - Typically spherical, less often encrusting or massive growth forms; upper surface often with polygonal plates and oscula-bearing grooves, and cribriform oscules occur at summit of sponge; basal surface often has root-like papillae; megascleres styles or strongyloxeas, latter with asymmetrical and/or telescoped ends; spicules not markedly tylote, frequently occuring in radial tracts; microscleres euasters (including spherasters and micrasters); asexual reproduction by budding is common.

SOUTH CHINA SEA SPECIES.
Tethya ('Donatia') andamanensis (Dendy & Burton, 1926); Dendy & Burton, 1927:248; Pattanayak, 1997 (off Port Blair, Andaman Is, 11° 40'N, 220m; Nicobar and Andaman Islands) (1)
Tethya cf. *aurantium* (Pallas, 1766); Caberoy, 1979:18; Caberoy, 1981:26 (Tayabas Bay, Batangas, Quezon, Mindoro Oriental, Marinduque La Union, Ilocos Sur, Ilocos Norte, Philippines) (7)
Tethya cranium Johnston, var. *robusta* Carter, 1887:79 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Tethya ('Donatia') diploderma (Schmidt, 1870); Brondsted, 1934:5 (Banda, Indonesia); Pattanayak, 1997 (Nicobar and Andaman Islands) (1,6)
Tethya fissurata Lendenfeld, 1888 (Indonesia, ZMA database) (6, Burton MS)
Tethya ingalli (Bowerbank, 1866); Lindgren, 1897: 483; Lindgren, 1898; Sollas, 1902:215; Wilson, 1925:335; Dawydoff, 1952 (Vietnam, Cambodia; Great Redang I., E coast of Malay Peninsula, 5° 50'N; Java; Indonesia, ZMA database) (2,3,6)
Tethya japonica Sollas; Lindgren, 1897: 483; Lindgren, 1898; Dawydoff, 1952; Pulitzer-Finali, 1980 (Vietnam, Cambodia; Java; Hong Kong) (2,3,5)
Tethya ('Donatia') lyncurium auctorum; Carter, 1887:77 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Tethya maza Selenka, 1879; Sollas, 1902:216 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Tethya merguiensis Carter, 1883:366, pl.15, figs 6-8; Carter, 1887:80 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Tethya nux Thiele, 1900 (Indonesia, ZMA database) (6)
Tethya ('Donatia', 'Tethytimea') repens (Schmidt, 1870); Dendy & Burton, 1927:247; Pattanayak, 1997 (Andaman Is, 12°N, 260-960m; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)

Tethya ('Donatia') robusta (Bowerbank, 1858); Dendy & Burton, 1927:248 (Malay Archipelago, 320m); Pattanayak, 1997 (Nicobar and Andaman Islands); Van Soest, 1980 (Hong Kong; Indonesia, ZMA database) (1,2,5,6)
Tethya seychellensis Wright, 1881 (Indonesia, ZMA database) (6)
Tethya stellagrandis Dendy, 1896 (Indonesia, ZMA database) (6)
Tethya tylota Hentschel, 1912 (Aru Is, Indonesia) (6)
Tethya sp. 939 (Sattahip region , Thailand) (3, QM/NTM collection)
Tethya sp. 1715 (Kalimantan, Indonesia) (6, QM/NTM collection)
Xenospongia patelliformis Gray, 1858; Dendy, 1905; Lévi, 1961: 130 (Vietnam; Indonesia, ZMA database) (3,6)

Family Timeidae Topsent, 1928

Definition. - Encrusting growth form, rarely massive; surface often sculptured by stellate subectosomal drainage canals running to oscules, and characteristically with cortex of densely packed euasters and single layer of erect tylostyles or tracts of tylostyles running to surface; megascleres exclusively tylostyles; microscleres include euasters (including anthasters and lophasters) or pseudasters (amphiasters). *Diplastrella* has in addition a basal layer of large spherasters with branching rays

SOUTH CHINA SEA SPECIES.
Diplastrella spiniglobata Carter, 1879 (Indonesia, ZMA database) (6)
Timea capitatostellifera Carter, 1880 (Indonesia, ZMA database) (6)
Timea granulata Bergquist, 1965 (Indonesia, ZMA database) (6)
Timea tetractis Hentschel, 1912 (Aru Is, Indonesia) (6)
Timea cf. *unistellata* Topsent, 1900 (Indonesia, ZMA database) (6)

Family Trachycladidae Hallmann, 1917

Definition. - Massive or branching growth forms; oscules small (less than 1mm in diameter); ostia scattered singly or grouped; skeleton condensed in axial region and plumoreticulate in extra-axial region, with ascending multispicular tracts joined at infrequent intervals by single spicules; skeletal tracts composed of spongin fibres enclosing intermixed oxeas, strongyles and styles; microscleres smooth microstrongyles and spined vermiform spiraster-like spirules, rarely of more than two complete turns.
[no recorded species]

"Order Lithistida"

Definition. - A problematic, polyphyletic assemblage of sponges, abundant in the Cambrian-Quaternary period, with many Recent relatives (all retaining articulated siliceous desma spicules, producing rigid skeletal structure); desmas classified according to number of secondarily silicified rays (crepis), from one (monocredial) to four (tetracrepidial); many species also with secondary skeletons composed of free spicules indicating phylogenetic relationships (in this sense most orders of living sponges have desma-bearing representatives (living relicts ?), and possession of desmas is interpreted as a primitive feature); "lithistids" lacking free spicules are more difficult to assign to other demosponge orders, with desma morphology being the only current diagnostic character. Three suborders with nine families are presently retained in the taxon "Lithistida" awaiting further evidence as to their true affinities.

Suborder Triaenosina

Definition. - Peripheral skeleton of radially arranged triaene megascleres, with amphiaster, spiraster or microrhabd microscleres; with obvious affinities to Hadromerida.

Family Corallistidae Sollas, 1888

Definition. - Massive, fan-shaped, ridge-like and folded plate-like growth forms; rigid skeleton composed of tuberculate or arch-shaped monocrepidal desmas (dicranoclones); free megascleres phyllo-, disco- or dichotriaenes, together with oxeas or strongyles; microscleres streptoscleres (amphiasters, spirasters) or microxeas.

SOUTH CHINA SEA SPECIES.
Callipelta ornata Sollas, 1888 (Indonesia, ZMA database) (6)
Corallistes sp. (Indonesia, ZMA database) (6)
Corallistes sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Macandrewia spinifoliata Lévi & Lévi, 1983 (Philippines, Indonesia) (6,7)

Family Pleromidae Sollas, 1888

Definition. - Cylindrical, vase-shaped or plate-like growth forms; rigid skeleton composed of smooth arch-shaped or armless monocrepidial desmas (megaclones with terminal cupules); free megascleres in ectosomal skeleton dicho- or plagiotriaenes, together with oxeas (or strongyles in one genus); microscleres streptoscleres (amphiasters, spirasters) or microxeas.

SOUTH CHINA SEA SPECIES.
Costifer vasiformis Wilson, 1925:461 (Philippines) (7)
Pleroma sp. (Indonesia, ZMA database) (6)

Family Theonellidae Lendenfeld, 1903

Definition. - Massive, cup-shaped, vase-shaped or cylindrical sponges with a narrow central cavity; desma megascleres fused tetraclones (including tri- or tetracrepidial desmas having four arms that do not have triaenose symmetry); free megascleres include phyllo-, disco- or dichotriaenes; microscleres microxeas, microrhabds or microstrongyles, and streptoscleres (amphiasters or spirasters).

SOUTH CHINA SEA SPECIES.
Discodermia claviformis Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Discodermia emarginata Dendy, 1905:99; Wilson, 1925:455 (Indonesia, ZMA database; Philippines) (6,7)
Discodermia emarginata lamellaris Wilson, 1925:456 (Philippines) (7)
Discodermia gorgonoides (Burton, 1928:109, fig.1); Pattanayak, 1997 (8 mls W of Interview I., Andaman Is, 12° 55'N, 90-540m; Nicobar and Andaman Islands) (1)
Discodermia japonica Doderlein, 1884; Burton & Rao, 1932:306 (off Cape Negrais, Burma, 15° 57'N) (1)
Discodermia panoplia Sollas, 1888 (Indonesia, ZMA database) (6)
Discodermia papillata (Carter, 1880); Burton & Rao, 1932:305; Pattanayak, 1997 (off Cape Negrais, Burma, 15° 57'N and Andaman Is; Nicobar and Andaman Islands) (1)
Discodermia stylifera (Keller, 1891) (Indonesia, ZMA database) (6, Burton MS)

Discodermia tuberosa Dendy, 1922 (Indonesia, ZMA database) (6, Burton MS)
Discodermia sp. (Indonesia, ZMA database) (6)
Kaliapsis "permollis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Neosiphonia ('Jereopsis') fruticosa Wilson, 1925:458 (Philippines) (7)
Theonella conica Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Theonella "cupola" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Theonella cylindrica Wilson, 1925:454 (SW. Cebu, Philippines; Sulawesi, Indonesia, QM/NTM collection; Singapore, ZRC) (2,6,7)
Theonella incerta Thiele, 1900 (Indonesia, ZMA database) (6)
Theonella invaginata Wilson, 1925:451 (Philippines) (7)
Theonella lacerata Lendenfeld, 1907 (N.Sumatra) (2)
Theonella levior Lendenfeld, 1889 (Indonesia, ZMA database) (6, Burton MS)
Theonella pratti Bowerbank, 1869 (Indonesia, ZMA database) (6)
Theonella pulchrifolia Dendy, 1922 (Indonesia, ZMA database) (6)
Theonella swinhoei Gray, 1868; Wilson, 1925:448; Burton & Rao, 1932:307; Pattanayak, 1997 (Nankauri Harbour, Nicobar Is, 7° 58'N; Nicobar and Andaman Islands; Negros Orientale, Philippines; Indonesia, ZMA database) (1,6,7, QM/NTM collection)
Theonella swinhoei verrucosa Wilson, 1925:448 (Philippines) (7)
Theonella sp. (Indonesia, ZMA database) (6)
Theonella sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Suborder Rhabdosina

Definition. - Ectosomal megascleres absent but ectosome contains minutely spined microstrongyles, microspined sigma-like microscleres or monocrepidial (one-rayed) disks; affinities with Hadromerida.

Family Cladopeltidae Sollas, 1888

Definition. - Solid, lobate sponges with tubular processes, each tube with an apical oscule; rigid ectosomal skeleton composed of special monocrepidial desmas, branching in one plane, lacking articulations (i.e. desmas without zygoses), whereas monocrepidial desmas in rigid choanosomal skeleton branch in all directions, articulating with adjacent desmas (i.e. with zygoses); free ectosomal megascleres oxytylote or oxystrongylotes, perpendicular to surface, or tangential to surface at ends of tubular processes; microscleres absent.

SOUTH CHINA SEA SPECIES.
Siphonidium capitatum Sollas, 1888 (Indonesia, ZMA database) (6)

Family Neopeltidae Sollas, 1888

Definition. - Rounded, massive or papilliform sponges; ectosomal skeleton with monocredial disks; choanosome with monocrepidial desmas (dicranoclones), with or without free, slender oxeas; microscleres microxeas and streptoscleres (amphiasters).
[no recorded species]

Suborder Anoplina

Definition. - Both ectosomal megascleres and microscleres absent; affinities uncertain.

Family Azoricidae Sollas, 1888

Definition. - Cup-shaped, club-shaped, spherical, plate-like or fan-shaped or conical growth forms; rigid skeleton composed of monocrepid desmas, and free skeleton with tracts of monoaxonid megascleres (styles or oxeas) in choanosome; special ectosomal skeleton absent; microscleres absent.

SOUTH CHINA SEA SPECIES.
Leiodermatium crassiusculum Hentschel, 1912 (Aru Is, Indonesia) (6)
Leiodermatium deciduum (Schmidt, 1870); Lendenfeld, 1907 (N. Sumatra) (2)
Leiodermatium lynceus Schmidt, 1870 (Indonesia, ZMA database) (6)
Leiodermatium ('Azorica') marginata Sollas, 1888 (Indonesia, ZMA database) (6)
Leiodermatium ('Azorica') pfeifferae Carter; Wilson, 1925:465; Burton, 1928:112; Burton & Rao, 1932:308 (Andaman Sea, 13° 16'N; W of Mergui Archipelago, 13° 04'N; Philippines) (1,7)

Family Desmanthidae Topsent, 1893

Definition. - Encrusting to massive growth forms; rigid skeleton with tetracrepidial desmas (tetraclones); free spicules consist of tracts of styles and tylostyles dispersed in choanosome; special ectosomal spicules absent; microscleres absent.

SOUTH CHINA SEA SPECIES.
Desmanthus topsenti Hentschel, 1912 (Aru Is, Indonesia) (6)
Lophacanthus rhabdophorus Hentschel, 1912 (Aru Is, Indonesia) (6)

Family Vetulinidae Lendenfeld, 1903

Definition. - Folded, plate-like growth forms; rigid skeleton composed of acrepid (no rayed) desmas (sphaeroclones); free spicules strongylote megascleres scattered in choanosome; special ectosomal spicules absent; microscleres absent.

SOUTH CHINA SEA SPECIES.
Vetulina cf. *stalactites* Schmidt, 1870 (Indonesia, ZMA database) (6)

Subclass Ceractinomorpha

Definition. - Sponges with parenchymella larvae and viviparous sexual reproduction (although with several oviparous 'enclaves': Agelasida, Petrosiidae, Axinellidae, Desmoxyidae, Raspailiidae (?)); generally with both spicule skeleton with well developed spongin fibres forming a diversity of skeletal structures (although siliceous spicules lost altogether in 3 orders, and spongin fibres lost in several genera); spicules monaxonic (either monactinal (styles) or diactinal (oxeas-strongyles)), never tetractinal (although modifications to the ends of some monaxonic spicules occur); microscleres diverse (meniscoid, oxeote, toxote, spheres) but never asterose.

Remarks. - Eight orders are differentiated here, although some authors also recognise a ninth (Petrosida), based on the possession of oviparous sexual reproductive strategy, now widely included in the Haplosclerida.

Order Verticillitida

Definition. - Demospongiae with 'sphinctozoan' grade of construction (solid aragonitic cortex producing a series of chambers on top of each other); living 'sphinctozoans' lack free spicules but have cells and larvae resembling those of other Demospongiae.

Remarks. - Only one extant order, family and genus (*Vaceletia*) are known, although many more fossil taxa described.

Family Cryptocoeliidae Steinmann, 1982

Definition. - Living 'sphinctozoans' with solid, cortical aragonitic skeleton consisting of a series of solitary or colonial chambers one on top of the other, with the lowest (oldest) chambers usually partially filled with secondary secretions of aragonite and youngest chambers containing living tissue (including a cuticle and cells such as flattened endopinacocytes and spherule-bearing cells); calcareous chambers contain reinforcement of radially disposed pillars; lining of atrial cavity uninterrupted (prosiphonate), with one chamber growing forward into base of next (younger) chamber, and with numerous thin struts (vesiculae) running from floor to roof of each chamber; struts joined by more or less horizontal crossbars; walls of chambers and atrial lining have trefoil or multifid perforations, with perforations corresponding to location of inhalant pores (ostia), whereas larger (oscular) openings are at apex of chambers with the passage of exhalant water via the atrium; choanocyte chambers aphodal (with a small canal joining chamber to exhalant canal; larvae parenchymellae that develop from a coeloblastula.
[no recorded species]

Order Agelasida

Definition. - Oviparous sponges, showing (perhaps superficial) resemblance to commercial bath sponges (Spongiidae) and biochemical similarities to Axinellidae; growth forms branching, tubular, fan-shaped or massive; well developed spongin-fibre skeleton, forming regular or irregular reticulation; fibres echinated by short styles or oxeas with verticillate spines; microscleres absent.

Remarks. - Two recent families.

Family Agelasidae Verril, 1907

Definition. - Growth form ramose, lamellate, tubular or massive, often "honeycomb" reticulate in construction; colour frequently orange or red, texture extremely tough but compressible reflecting high ratio of spongin fibre to spicule; skeletal structure homogeneous, reticulate, with well developed system of large spongin fibres often containing no primary coring spicules but echinated by unique styles with verticillate spines (acanthoxeas or acanthostrongyles), with some species having geometrically different coring and echinating spicules, and others also having styles; sexual reproduction oviparous.

SOUTH CHINA SEA SPECIES.
Agelas ceylonica Dendy, 1922 (Indonesia, ZMA database) (6)
Agelas cf. *"ceylonica"* Van Soest, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Agelas clathrodes; Pinder, 1992 (South China Sea) (5)
Agelas mauritiana Carter, 1883 (Indonesia, ZMA database) (6)
Agelas "primitiva" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Agelas robusta Pulitzer-Finali, 1980 (Hong Kong) (5)
Agelas cf. *schmidti* Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Agelas spp. (Nha Trang, Vietnam, PIBOC database) (3)

Family Astroscleridae Lister, 1900

Definition. - Bulbous, encrusting or massive subspherical growth forms; basal skeleton composed of aragonite, spherulitic in form (with each spherulite laid down in a cell at the surface of the sponge and is eventually led to a position where it contributes to the general reticulate skeleton of aragonite); intracellular secretion of sclerodermites only found in *Astroscelera*, whereas in other genera the skeleton is secreted extracellularly; living tissue penetrates reticulation to a depth of about 1cm, but no tabulae seperate the tissue-filled external parts of the skeleton from the interior that is of free living tissue; interior interskeletal spaces generally fill in with secondary deposits of aragonite; siliceous spicules verticillately spined acanthostyles, sometimes secondarily lost.

SOUTH CHINA SEA SPECIES.
Astrosclera willeyana Lister, 1900 (Indonesia, ZMA database) (6)

Order Poecilosclerida

Definition. - Skeleton with discrete siliceous spicules, although some primitive groups retain a fused basal calcitic skeleton or a fused siliceous (desmoid) skeleton, along with free siliceous skeletons; main skeleton composed of megascleres (monactinal, diactinal or both) and spongin fibres in various stages of development; megascleres frequently localised to distinct regions; microscleres include meniscoid forms such as chelae (unique to the order) and sigmas, and other diverse forms (toxas, raphides, microxeas); most families are viviparous, with uniformly ciliated parenchymella having bare posterior poles (although Raspailiidae is probably oviparous).

Remarks. - This order contains more living species than all other Recent Porifera, and includes both marine and some freshwater species. Up to 25 families have been recognised in this order, most being typical in having chelae microscleres, several atypical in lacking these microscleres, but a recent proposed reorganisation of the order, based on phylogenetic parsimony analysis, suggests that only 19 of these may be valid.

Suborder Microcionina

Definition. - Poecilosclerida with terminally microspined ectosomal megascleres and up to 5 categories of structural megascleres, most frequently monactinal. Microscleres are palmate chelae, diverse toxas, but sigmas never present.

Family Iophonidae Burton, 1929

Definition. - Encrusting, massive, flabellate or digitate growth forms, sometimes burrowing and fistulose; ectosomal skeleton forming tangential tracts of tylotes or strongyles with microspined bases; choanosomal styles form reticulate (in massive) or plumose skeletons (in encrusting growth forms); echinating spicules present or absent; microscleres include palmate isochelae and toxas (both sometimes lost), occasionally also with other microscleres such as bipocillae, modified anisochelae, microrhabds and raphides.

SOUTH CHINA SEA SPECIES.
Acarnus bergquistae van Soest, Hooper & Hiemstra, 1991; Topsent, 1897; Dawydoff, 1952; Desqueyroux-Faundez, 1981 (as 'tortilis') (Ambon, Indonesia; Vietnam) (3,6)
Acarnus bicladotylota (Hoshino, 1981); van Soest, Hooper & Hiemstra, 1991 (Borneobank; Banda Sea, Indonesia) (6)
Acarnus claudei van Soest, Hooper & Hiemstra, 1991; Thiele, 1903 (as 'ternatus') (Ternate, Moluccas, Indonesia) (6)
Acarnus primigenius Hiemstra & Hooper, 1991 (Sumbawa, Indonesia) (6)
Acarnus wolffgangi Keller, 1889; Kieschnick, 1896; Thiele, 1903; van Soest, Hooper & Hiemstra, 1991 (as 'ternatus') (Ternate, Moluccas, Indonesia) (6)
Cornulum achela Hentschel, 1912 (Aru Is, Indonesia) (6)
Cornulum dubium Hentschel, 1912 (Aru Is, Indonesia) (6)
Cornulum strepsichela Lévi, 1961 (Indonesia, ZMA database) (6)
Damiria australiensis Dendy; Lindgren, 1897: 482; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N) (3)
Damiria simplex fistula Hentschel, 1912 (Aru Is, Indonesia) (6)
Zyzzya fuliginosa (Carter, 1880) (Indonesia, ZMA database) (6)
Zyzzya massalis (Dendy, 1922) (Sulawesi, Indonesia) (6, QM/NTM collection)

Family Microcionidae Carter, 1875

Definition. - Encrusting, massive, lobate, fan-shaped and branching growth forms; ectosomal skeleton composed of styles or anisoxeas (exceptionally oxeas), in erect bundles, forming a continuous crust, lying tangential or sparsely dispersed on the surface; subectosomal skeleton relatively poorly developed; choanosomal skeleton with well developed spongin fibres forming hymedesmoid, microcionid, plumose, plumo-reticulate, reticulate or axially condensed tracts; spongin fibres cored by smooth or partially spined large styles, and echinated by smooth, wholly- or partially-spined small styles or modified forms (acanthoxeas or acanthostrongyles) embedded perpendicular to fibres; microscleres typically palmate isochelae, sometimes contort and thickened (pseudo-anchorate, -arcuate, or *Isodictya*-like isochelae), and also toxas and occasionally raphides or microxeas; sexual reproduction exclusively viviparous.

SOUTH CHINA SEA SPECIES.
Antho (Plocamia) ridleyi (Hentschel, 1912); Hooper, 1996 (Aru I., SE. Indonesia) (6)
Antho (Plocamia) sp. 1707 (Kalimantan, Indonesia) (6, QM/NTM collection)
Artemisina sp. (Nha Trang, Vietnam, PIBOC database) (3)
Antho spp. (Indonesia, ZMA database) (6)
Clathria (Clathria) "aplysilla" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Clathria (Clathria) basilana Lévi, 1961 (Sulawesi, Zamboanga, Philippines; Sumba, Indonesia) (6,7, QM/NTM collection)
Clathria (Clathria) chelifera (Hentschel, 1911); Hooper, 1996 (Hon Trung Lon, Vietnam) (3)
Clathria (Clathria) dubia Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)

Clathria (Clathria) inanchorata Ridley & Dendy, 1886; Kieschnick, 1896; Hooper, 1996 (Ternate, Moluccas, Indonesia) (6)
Clathria (Clathria) meyeri (Bowerbank, 1877); Hooper, 1996 (Irian Jaya, SE.Indonesia) (6)
Clathria (Clathria) pellicula Whitelegge, 1897 (Indonesia, ZMA database) (6, Burton MS)
Clathria (Clathria) spongodes Dendy, 1922 (Indonesia, ZMA database) (6, Burton MS)
Clathria (Clathria) surculosa (Esper, 1797); Hooper, 1996 (Indonesia) (6)
Clathria (Clathria) "tubulosa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Clathria (Clathria) spp. (Nha Trang, Vietnam, PIBOC database) (3)
Clathria (Isociella) eccentrica Burton, 1934; Hooper, 1996 (Sumba, SE. Indonesia) (6)
Clathria (Isociella) sp. 1758 (Manado, Indonesia) (6, QM/NTM collection)
Clathria (Microciona) aceratoobtusa (Carter, 1887); Hooper, 1996 (Ko Samui, Gulf of Thailand; King I., Mergui Archipelago, Burma, 12° 08'N) (1,3)
Clathria (Microciona) atrasanguinea (Bowerbank, 1862); Burton & Rao ,1932:344; Hooper, 1996; Pattanayak, 1997 (off Cape Negrais, Burma, 15° 50'N; Nicobar and Andaman Islands) (1)
Clathria (Microciona) claudei Hooper, 1996; Lévi & Lévi, 1989 (as 'acanthotoxa') (Philippines) (7)
Clathria (Microciona) hentscheli Hooper, 1996; Hentschel, 1912 (as ' lendenfeldi') (Aru I., SE. Indonesia) (6)
Clathria (Microciona) rhopalophora (Hentschel, 1912); Thomas, 1970; Hooper, 1996 (Cocos-Keeling; Aru I., Indonesia) (1,6)
Clathria (Microciona) similis (Thiele, 1903); Hooper, 1996 (Ternate, Moluccas, Indonesia) (6)
Clathria (Microciona) tetrastyla (Hentschel, 1912); Hooper, 1996 (Aru I., Indonesia) (6)
Clathria (Microciona) thielei (Hentschel, 1912); Hooper, 1996 (Aru I., Indonesia) (6)
Clathria (Microciona) n.sp. (Singapore; QM/ZRC collections) (2)
Clathria (Microciona) sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Clathria (Thalysias) abietina (Lamarck, 1813); Lévi & Lévi, 1989; Hooper, 1996 (Palawan, Philippines, SE. Indonesia, as 'acuta', 'abietina') (6,7, QM/NTM collection)
Clathria (Thalysias) aruensis (Hentschel, 1912); Lévi, 1958; Hooper, 1996 (Aru I., Indonesia) (6)
Clathria (Thalysias) calochela (Hentschel, 1912); Hooper, 1996 (Aru I., SE.Indonesia) (6)
Clathria (Thalysias) "camerata"; Dawydoff, 1952 (Vietnam, Cambodia) (attributed to Ridley, 1884) (3)
Clathria (Thalysias) cervicornis (Thiele, 1903); George & George, 1987 (photo 3G); Hooper, 1996 (Ternate, Moluccas; Aru I., SE. Indonesia; Bodgaya Islands and Pulau Sipadan, Sabah; Singapore; QM/ZRC collections) (2,4,6)
Clathria (Thalysias) coppingeri Ridley, 1884; Hentschel, 1912; Brondsted, 1934; Hooper, 1996 (Aru I., SE. Indonesia) (6)
Clathria (Thalysias) coralliophila (Thiele, 1903); Dawydoff, 1952; Hooper, 1996 (Moluccas, Indonesia; Vietnam) (3,6)
Clathria (Thalysias) cratitia (Esper, 1797); Thiele, 1899; Thiele, 1903; Hooper, 1996 (Ternate, Moluccas, Indonesia) (6)
Clathria (Thalysias) distincta (Thiele, 1903); Hentschel, 1912; Hooper, 1996 (Ternate, Moluccas, Indonesia) (6)
Clathria (Thalysias) erecta (Thiele, 1899); Thiele, 1903; Lévi, 1961; Hooper, 1996 (Ternate, Moluccas; Sulawesi, Indonesia; Vietnam) (3,6)
Clathria (Thalysias) eurypa (de Laubenfels, 1954) (Indonesia, ZMA database) (6)
Clathria (Thalysias) fasciculata Wilson, 1925:442; Caberoy, 1981:20; Hooper, 1996 (Sulawesi, Indonesia; Zamboanga, Batangas, Bohol, Pangasinan, Mindoro Oriental, Quezon, Masbate, Philippines) (6,7)
Clathria (Thalysias) filifera (Ridley & Dendy, 1886); Thiele, 1899; Thiele, 1903; Dragnewitsch, 1906; Dawydoff, 1952; Hooper, 1996 (Singapore; Indonesia; Masbate, Philippines; Vietnam) (2,3,6,7)
Clathria (Thalysias) kieschnicki Hooper, 1996; Kieschnick, 1900 (as 'cylindricus') (Ternate, Moluccas, Indonesia) (6)
Clathria (Thalysias) lendenfeldi Ridley & Dendy, 1886; Hentschel, 1912; Hooper, 1996 (AIMS/NCI collection; Andaman Sea, Thailand; Aru I., SE.Indonesia) (1,6, QM/NTM collection)
Clathria (Thalysias) longitoxa (Hentschel, 1912); Hooper, 1996 (Aru I., SE.Indonesia) (6)
Clathria (Thalysias) major Hentschel, 1912; Hooper, 1996 (Aru I., SE Indonesia) (6)
Clathria (Thalysias) michaelseni (Hentschel, 1912); Hooper, 1996 (Aru I., SE..Indonesia) (6)
Clathria (Thalysias) mutabilis (Topsent, 1897); Desqueyroux-Faundez, 1981; Hooper, 1996 (Ambon, Banda Sea, Indonesia) (6)
Clathria (Thalysias) nuda Hentschel, 1912; Hooper, 1996 (Aru I., Indonesia) (6)

Clathria (Thalysias) orientalis (Brondsted, 1934); Hooper, 1996 (Aru I., Indonesia) (6)
Clathria (Thalysias) procera (Ridley, 1884); Hentschel, 1912; Hooper, 1996 (Aru I., SE.Indonesia) (6)
Clathria (Thalysias) ramosa (Kieschnick, 1896); Kieschnick, 1900; Hooper, 1996 (Ternate, Moluccas, Indonesia) (6)
Clathria (Thalysias) reinwardti Vosmaer, 1880; Hentschel, 1912 (as 'typica porrecta', 'spiculosa macilenta'); Vosmaer, 1935; Van Soest, 1989; Hooper, 1996 (Sulawesi; Aru I., SE. Indonesia; Sattahip region, Thailand; SW.Cebu, Negros Oriental, Bohol, Sea, Philippines; Hon Rai, Vietnam; Singapore; QM/ZRC collections) (2,3,6,7, QM/NTM collection)
Clathria (Thalysias) ridleyi (Lindgren, 1897); Lindgren, 1898; Lévi, 1961; Hooper, 1996 (Java Sea, Indonesia; Taganak, Philippines) (2,3)
Clathria (Thalysias) robusta (Dendy, 1922); Burton & Rao, 1932; Hooper, 1996 (Tana Murah Besar, Singapore) (2)
Clathria (Thalysias) spinifera (Lindgren, 1897); Lindgren, 1898; Thiele, 1903; Hooper, 1996 (Moluccas; Java Sea, Indonesia; Phan Thiet, Vietnam) (2,3,6)
Clathria (Thalysias) tener (Carter, 1887); Hooper, 1996 (Mergui Archipelago, Burma) (1)
Clathria (Thalysias) topsenti (Thiele, 1899); Desqueyroux-Faundez, 1981; Hooper, 1996 (Sulawesi; Ambon, Indonesia) (6)
Clathria (Thalysias) toxifera (Hentschel, 1912); Hooper, 1996 (Aru I., Indonesia; Ko Samui, Gulf of Thailand; Singapore; QM/ZRC collections) (2,3,6)
Clathria (Thalysias) vulpina (Lamarck, 1816); Thiele, 1889; Lindgren, 1897; Lindgren, 1898; Hentschel, 1912; Wilson, 1925; Burton & Rao, 1932; Dawydoff, 1952; Lévi, 1961; Hooper, 1996; Pattanayak, 1997 (Paway I., Elphinstone I., and Port Maria, Mergui Archipelago, 11° 25-50'N; Rutland I., Andaman Is, 11° 30'N; Nicobar and Andaman Islands, Andaman Sea; Straits of Malacca; Gaspar Straits; Sulawesi; Java; Aru I., Indonesia; Negros, Bohol, Zamboanga, Mindinao, S. Philippines; Hon Rai, Vietnam; as 'frondifera', 'setotubulosa'; Singapore; QM/NTM/ZRC collections) (1,2,3,6,7)
Clathria (Thalysias) sp. 970 (Ko Samui region, Thailand) (3, QM/NTM collection)
Clathria (Thalysias) spp. (Nha Trang, Vietnam, PIBOC database) (3)
Clathria spp. (Indonesia, ZMA database) (6)
Clathria spp.; Lévi, 1961: 137-8 (Vietnam) (3)
Clathria (Wilsonella) australiensis Carter, 1885; Hooper, 1996 (Indonesia, ZMA database) (6, Burton MS)
Clathria (Wilsonella) claviformis Hentschel, 1912; Hooper, 1996 (Aru I., SE. Indonesia) (6)
Clathria (Wilsonella) foraminifera (Burton & Rao, 1932); Hooper, 1996 (Gaspar Straits, Java Sea, Indonesia) (6)
Clathria (Wilsonella) lingreni Hooper, 1996; Lindgren, 1897; Lindgren, 1898; Hentschel, 1912; Dawydoff, 1952 (as 'ramosa') (Java Sea, Indonesia; Vietnam) (2,3)
Clathria (Wilsonella) mixta Hentschel, 1912; Hooper, 1996 (Aru I., Indonesia) (6)
Clathria (Wilsonella) tuberosa (Bowerbank, 1875); Hentschel, 1912; Hooper, 1996 (Straits of Malacca; Aru I., Indonesia; Singapore; QM/ZRC collections) (2,6)
Clathria (Wilsonella) sp. 1766 (SW. Cebu, Philippines) (7, QM/NTM collection)
Echinochalina (Echinochalina) australiensis (Ridley, 1884); Thiele, 1903; Hooper, 1996 (Moluccas, Indonesia) (6)
Echinochalina (Echinochalina) barba (Lamarck); Thiele, 1903; Thomas, 1977; Hooper, 1996 (Andaman Sea; as 'glabra') (1)
Echinochalina (Echinochalina) intermedia (Whitelegge, 1902); Hooper, 1996 (Sulawesi, Indonesia) (6, QM/NTM collection)
Holopsamma laminaefavosa (Carter, 1885); (as 'Aulena laxa' Lendenfeld) Dragnewitsch, 1906:442; Hooper, 1996 (Singapore, 1° 30'N) (2)

Family Raspailiidae Hentschel, 1923

Definition. - Encrusting, massive, lobate, fan-shaped or branching growth forms, usually with a very hispid surface; specialised ectosomal skeleton consists of brushes of small thin styles or oxeas, surrounding individual long thick styles or oxeas; choanosomal skeleton varies from a compressed axial skeleton, to plumo-reticulate or exclusively reticulate

structures; spongin fibres usually completely enclose coring spicules (choanosome styles, oxeas or both); fibres echinated by spined styles, or modifications to styles; microscleres usually absent, sometimes single raphides or bundles (trichodragmata); reproduction typically oviparous.

SOUTH CHINA SEA SPECIES.

Acanthostylotella cornuta Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6) [*incertae sedis*]

Aulospongus ('Heterectya') villosa (Thiele, 1899) (Indonesia, ZMA database) (6)

Axechina raspailoides Hentschel, 1912; Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Ceratopsion axifera (Hentschel, 1912); Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Ceratopsion erecta Thiele, 1899 (Indonesia, ZMA database) (6)

Ceratopsion "horrida" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)

Cyamon aruense Hentschel, 1912; Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Echinodictyum aceratus (Carter, 1887):67, pl.5, figs 3-6 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)

Echinodictyum asperum (Ridley & Dendy, 1886); Topsent, 1897; Burton & Rao, 1932:348; Dawydoff, 1952; Lévi, 1961; Desqueyroux-Faundez, 1981; Hooper, 1991; Pattanayak, 1997 (Ross I., Andaman Is, 12°N; Nicobar and Andaman Islands; Ambon, Indonesia, ZMA database; Lingayen Gulf, Philippines; Vietnam) (1,3,6,7)

Echinodictyum cancellatum (Lamarck, 1814); Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Echinodictyum carlinoides (Lamarck, 1814); Hentschel, 1912 (as 'glomeratum'); Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Echinodictyum cavernosum Thiele, 1899 (Indonesia, ZMA database) (6)

Echinodictyum clathratum Dendy, 1905 (Indonesia, ZMA database) (6)

Echinodictyum conulosum Kieschnick, 1900; Hooper, 1991 (Ternate, Moluccas, Indonesia) (6)

Echinodictyum flabelliforme Sollas; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Echinodictyum gorgonoides Dendy; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Echinodictyum lacunosum Kieschnick, 1900; Hooper, 1991 (Ternate, Moluccas, Indonesia) (6)

Echinodictyum mesenterinum (Lamarck, 1813); Hooper, 1991 (Negros Orientale, SW. Cebu, Philippines; Aru I., Indonesia; Singapore; QM/ZRC collections) (2,6,7)

Echinodictyum pulchrum Brondsted, 1934 (Java, Banda, Indonesia) (6)

Echinodictyum rugosum Hentschel, 1912; Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Ectyoplasia tabula (Lamarck, 1813); Hooper, 1991 (SE. Indonesia, ZMA database) (6)

Endectyon ('Hemectyon') fruiticosa Dendy, 1887, Phuket region, Thailand (1, QM/NTM collection)

Endectyon fruticosa Dendy *aruensis* (Hentschel, 1912), Hooper, 1991 (Aru Is, SE.Indonesia; Phuket, Thailand) (1,6)

Eurypon clavatum Topsent, 1896; Hooper, 1991 (Indonesia, ZMA database) (6)

Raspailia (Clathriodendron) sp. 973 (Ko Samui region, Thailand) (3, QM/NTM collection)

Raspailia (Raspailia) hispidus (Montagu, 1818); Carter, 1887:66 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)

Raspailia (Raspailia) vestigifera Dendy, 1896 (Sulawesi, Indonesia) (6, QM/NTM collection)

Raspailia (Rapailia) viminalis (Schmidt, 1862); Burton & Rao, 1932; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Raspailia (Raspailia) sp. 1772 (Palawan, Philippines) (7, QM/NTM collection)

Raspailia sp. (Nha Trang, Vietnam, PIBOC database) (3)

Raspailia sp.nov.; Dawydoff, 1952 (Poulo-Dama, Vietnam) (3)

Raspailia (Syringella) australiensis Ridley, 1884; Hooper, 1991 (Indonesia, ZMA database) (6)

Raspailia (Syringella) nuda (Hentschel, 1911) (Sulawesi, Indonesia; Singapore) (2,6, QM/NTM/ZRC collections)

Raspailia (Syringella) sp. 949 (Phuket region Thailand) (1, QM/NTM collection)

Raspailia (Syringella) sp. 1644 (SW. Cebu, Pulangbato, Philippines) (7, QM/NTM collection)

Raspailia ('Parasyringella') clathrata Ridley, 1884 (Indonesia, ZMA database) (6, Burton MS)

Thrinacophora cervicornis Ridley & Dendy, 1886; Hentschel, 1912 (as 'rhaphidophora'); Hooper, 1991 (Philippines; Sulawesi, Aru I., SE.Indonesia) (6,7, QM/NTM collection)

Thrinacophora incrustans Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)

Trikentrion elegans Lendenfeld, 1887 (Indonesia, ZMA database) (6, Burton MS)

Trikentrion flabelliforme Hentschel, 1912; Hooper, 1991 (Aru Is, SE.Indonesia) (6)

Family Rhabderemiidae Topsent, 1928

Definition. - Encrusting, massive, bulbous or digitate growth forms; skeleton without axial compression, usually plumose or plumo-reticulate, composed of light spongin fibres cored by bouquets of entirely smooth, slightly spined or entirely spined rhabdostyles; microscleres are normal or contort sigmas, microstyles and thraustoxeas (all with or without microspines).

SOUTH CHINA SEA SPECIES.

Rhabderemia acanthostyla Thomas, 1968; Hooper, 1990 (as 'conulosa' Lévi MS); van Soest & Hooper, 1993 (Salayer; Sumbawa; Take Karlarang; Sulawesi, Indonesia; Nha Trang, Vietnam) (3,6)

Rhabderemia forcipula (Lévi & Lévi, 1989); van Soest & Hooper, 1993 (Mindoro, Philippines; Phuket region, Thailand) (1, QM/NTM collection,7)

Rhabderemia indica Dendy, 1905; van Soest & Hooper, 1993 (Ko Samui, Gulf of Thailand; Indonesia, ZMA database) (3,6)

Rhabderemia prolifera (Annandale, 1915); Thomas, 1979; van Soest & Hooper, 1993; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Suborder Myxillina

Definition. - Poecilosclerida with microscleres consisting of tridentate-derived chelae, but never toxas; ectosomal megascleres are diactinal, although aniso- terminations commonly occur, and terminal spination of these spicules is absent, or if present they are usually coarse or irregular.

Family Anchinoidae Topsent, 1928

Definition. - Encrusting, massive and branching sponges; surface with characteristic groups of pores (areoles); megascleres are smooth diactinal spicules (oxeotes or strongylotes), grouped together or scattered in the ectosome but never forming a crust, lying perpendicular, tangential, or paratangential to the surface; choanosomal diactinal spicules (usually identical to those in the ectosome but sometimes reduced to only acanthostyles), form thick plumose or plumo-reticulate tracts in the choanosome, with only poorly developed spongin fibres, and echinated by 1-2 sizes of acanthose styles; microscleres include arcuate isochelae, bipocilli and sigmas, never toxas or raphides.

SOUTH CHINA SEA SPECIES.

Hamigera ternatensis Thiele, 1899 (Indonesia, ZMA database) (6)

Kirkpatrickia spiculophila (Burton & Rao, 1932:332, pl.18, fig.5); Pattanayak, 1997 (Port Blair, Andaman Is, 11° 50'N; West Andaman Is; Nicobar and Andaman Islands) (1)

Phorbas ('Pronax') arborescens (Topsent, 1897); Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)

Phorbas sp. (Indonesia, ZMA database) (6)

Family Coelosphaeridae Hentschel, 1923

Definition. - Spherical, club-shaped, tubular, and cushion-shaped growth forms, frequently burrowing or excavating coralline substrates (with long, open and/or blind fistules on upper surface bearing oscules and ostia poking above the substrate); ectosomal skeleton a tangential crust of smooth diactinal (usually tylote) spicules, occasionally secondarily lost; choanosomal skeleton reduced, composed of a delicate reticulation of smooth or acanthose styles,

occasionally oxeas or strongyles, forming plumoreticulate tracts and cavernous internal chambers; microscleres include sigmas, arcuate isochelae, occasionally modified to unguiferous, thaumatose or birotulate forms; toxas absent.

SOUTH CHINA SEA SPECIES.

Acanthodoryx fibrosa Lévi, 1961 (SW.Cebu, Philippines; Sulawesi, Zamboanga, Indonesia) (6,7, QM/NTM collection)

Coelocarteria singaporense (Carter, 1883:326, pl.13, fig.17); Lindgren, 1897, 1898 (Singapore, 1° 15'N, China Sea); Dawydoff, 1952 (Vietnam); Lévi, 1961: 518 (Zamboanga, Philippines) (2,3,6,7)

Coelosphaera dichela Hentschel, 1912 (Aru Is, Indonesia) (6)

Coelosphaera dichela Hentschel *gracilis* Hentschel, 1912 (Aru Is, Indonesia) (6)

Coelosphaera ('Histoderma') fucoides (Topsent, 1897); Burton & Rao, 1932:354 (off Cape Negrais, Burma, 15°50'N, 80-90m) (1)

Coelosphaera ('Histoderma') navicelligera (Ridley & Dendy, 1886); Lindgren, 1897: 482; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N; Indonesia, ZMA database) (3,5,6)

Coelosphaera navicelligera Ridley *aruensis* Hentschel, 1912 (Aru Is, Indonesia) (6)

Coelosphaera toxifera Wilson, 1925:435 (Philippines) (7)

Coelosphaera sp. (Indonesia, ZMA database) (6)

Ectyodoryx sp. 946 (Phuket region, Thailand) (1, QM/NTM collection)

Ectyodoryx sp. 1001 (SW. Cebu, Philippines) (7, QM/NTM collection)

Ectyodoryx sp. 1281 (Sulawesi, Indonesia) (6, QM/NTM collection)

Forcepia mertoni Hentschel, 1912 (Aru Is, Indonesia) (6)

Lissodendoryx arenaria Dendy, 1905 (Indonesia, ZMA database) (6)

Lissodendoryx aspera (Bowerbank, 1875); Hofman & van Soest, 1995:89 (Ambon, Moluccas, Ternate, Aru Is., Sulawesi, Indonesia) (6, QM/NTM collection)

Lissodendoryx bifacialis Lévi & Lévi, 1983 (Indonesia, ZMA database) (6)

Lissodendoryx fucoides Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)

Lissodendoryx grata (Thiele, 1903); Hofman & van Soest, 1995:84 (Ternate, East of Komodo 8°35'S 119°34.2'E, Indonesia, ZMA database) (6)

Lissodendoryx isodictyalis (Carter, 1882) (Indonesia, ZMA database; Quezon, Philippines) (6,7)

Lissodendoryx "lingua" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)

Lissodendoryx microchelifera Hofman & van Soest, 1995:96 (N Cape Komodo, Indonesia, ZMA database) (6)

Lissodendoryx paucispinata (Ridley & Dendy, 1886); Hofman & van Soest, 1995:85 (Indonesia, ZMA database) (6)

Lissodendoryx roxasi de Laubenfels, 1935:330 (Puerto Galera, Philippines) (7)

Lissodendoryx schmidti Ridley, 1884 (Indonesia, ZMA database) (6)

Lissodendoryx similis Thiele, 1899; Burton & Rao, 1932:331; Hofman & van Soest, 1995:90 (Marble Rocks, Mergui Archipelago, 11° 33'N; Jack and Una Is, Mergui Archipelago, 11° 40'N; Ambon, Madras, Kema, Celebes, Moluccas, Jedan Is., Indonesia, ZMA database) (1,6)

Lissodendoryx tawiensis Wilson, 1925:432 (Philippines, Indonesia, ZMA database) (6,7)

Lissodendoryx ternatensis (Thiela, 1903); Hofman & van Soest, 1995:92 (Ternate, Moluccas, Balikpapan, Kalimantan, Indonesia, ZMA database) (6)

Lissodendoryx timorensis Hofman & van Soest, 1995:95 (NE of Timor, Indonesia, ZMA database) (6)

Lissodendoryx sp. (Indonesia, ZMA database) (6)

Family Crambiidae Lévi, 1963

Definition. - Encrusting or massive growth forms; ectosomal megascleres consist of smooth subtylostyles, usually standing perpendicular to surface; choanosomal megascleres are smooth or acanthose styles-tylostyles forming hymedesmoid, plumose or plumoreticulate skeletal structures, with a secondary interlocking desma ("sublithistid") skeleton common; microscleres anchorate or unguiferous isochelae.

SOUTH CHINA SEA SPECIES.
Monanchora clathrata Carter; Lévi, 1961: 135 (Vietnam; Pulangbato, Palawan, Philippines; Sulawesi, Indonesia) (3,6,7, QM/NTM collection)
Monanchora dianchora de Laubenfels, 1935:331 (Puerta Galera, Philippines) (7)
Monachora viridis Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Monachora unguiculata Dendy, 1922 (Indonesia, ZMA database) (6)
Monachora sp. (Indonesia, ZMA database) (6)
Monanchora sp. (Singapore; QM/ZRC collections) (2)
Monanchora sp. (Nha Trang, Vietnam, PIBOC database) (3)
Psammochela elegans (Dendy, 1916); Burton & Rao, 1932:334, pl.18, fig.7; Pattanayak, 1997 (off N coast of Table I., Cocos Is, Andaman Is, 14° 10'N; Mergui Archipelago, 32m, 12°N; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6)
Psammochela rigida (Bowerbank, 1874) (Indonesia, ZMA database) (6, Burton MS)

Family Crellidae Hentschel, 1923

Definition. - Encrusting, massive, club-shaped and branching growth forms; choanosomal skeleton regularly reticulate or plumo-reticulate, composed of bundles of smooth oxeas; ectosomal skeleton with a thick crust of tangentially placed acanthostyles and/or acanthoxeas; acanthose spicules may also be embedded perpendicular to skeletal tracts and/or erect on basal spongin (= echinating basal acanthostyles), and dispersed within the choanosome between the tracts of smooth diactines; microscleres arcuate isochelae, anisochelae and sigmas.

SOUTH CHINA SEA SPECIES.
Crella cyathophora Carter, 1886 (Indonesia, ZMA database) (6)
Crella "myxillioides" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Crella sp. (Indonesia, ZMA database) (6)
Crella sp. 1019 (Negros Orientale, Philippines) (7, QM/NTM collection)
Crellidae gen. nov. 1020 (Negros Orientale, Philippines) (7, QM/NTM collection)

Family Hymedesmiidae Topsent, 1928

Definition. - Persistently encrusting growth form; oscules and ostia usually on papillae, or ostia grouped over subdermal cavities; spined bases of intermingled large choanosomal styles and smaller acanthostyles embedded in a basal layer of spongin, standing perpendicular to the substrate; smooth, often polytylote, diactinal (tornotes, anisotornotes or oxeas) or sometimes monactinal spicules (styles), occur singly or form bundles on the surface; microscleres palmate, arcuate or unguiferous isochelae, sigmas, forceps, and sometimes also anisochelae; toxas never present.

SOUTH CHINA SEA SPECIES.
Hymedesmia hallezi Topsent, 1900: Sollas, 1902:216 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Hymedesmia mertoni Hentschel, 1912 (Aru Is, Indonesia) (6)
Hymedesmia parvispicula Burton & Rao, 1932:351, fig.16 (Mergui Archipelago) (1)
Hymedesmia parvispiculata Vacelet, Vasseur & Lévi, 1976 (Indonesia, ZMA database) (6)
Hymedesmia prostrata Thiele, 1903 (Indonesia, ZMA database) (6)
Hymedesmia sp. (Sattahip Navy base region, Thailand) (3, QM/NTM collection)
Hymedesmia spp. (Indonesia, ZMA database) (6)

Family Myxillidae Topsent, 1928

Definition. - Encrusting, massive, fan-shaped and branching sponges; specialised ectosomal skeleton composed of diactinal tylotes or tornotes with smooth or microspined, slightly swollen bases, arranged as bouquets or lying paratangential or perpendicular to the surface; choanosomal skeleton composed of isotropic, anisotropic or plumose tracts of smooth or partially spined monactinal or diactinal choanosomal megascleres (or choanosomal spicules replaced within the skeleton by ectosomal megascleres), sometimes echinated by small acanthose styles; spongin development variable, usually consisting of light spongin cementing spicule together at their nodes, but sometimes with heavy fibres; microscleres anchorate isochelae and/or derivatives (spatulate, unguiferous or birotulate chelae, sometimes anisochelate), sometimes together with palmate isochelae, smooth sigmas and forceps.

SOUTH CHINA SEA SPECIES.

Amphilectus fucorum Vosmaer, 1880 (Indonesia, ZMA database) (6, Burton MS)
Amphilectus pilosus Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Damiriopsis brondstedi (Burton, 1928:124); Pattanayak, 1997 (Andaman Is, 260-580m, 12°N; Nicobar and Andaman Islands) (1)
Desmacidon fragilis Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Desmacidon fruticosum (Montagu, 1818) Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Desmacidon nodosus Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Desmacidon ternatensis Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Desmacidon reptans Ridley & Dendy, 1886; Lindgren, 1897: 482; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N) (3)
Desmapsamma cf. *anchorata* Carter, 1882 (Indonesia, ZMA database) (6)
Hymenancora lundbecki Hentschel, 1912 (Aru Is, Indonesia) (6)
Iotrochota baculifera (Ridley, 1884); Lindgren, 1897, 1898; Burton & Rao, 1932:353; Dawydoff, 1952; Lévi, 1961:518; Pattanayak, 1997 (NW side of Spiteful Bay, near Leader Point, Nicobar Is, 8°N; Sattahip region, Thailand; Nicobar and Andaman Islands; Vietnam; China Sea; Indonesia, ZMA database, Zamboanga, Philippines; Singapore; QM/ZRC collections) (1,2,3,6,7)
Iotrochota birotulata; Jung et al., 1995 (South China Sea) (5)
Iotrochota purpurea Bowerbank, 1875; Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Iotrochota sp. (Nha Trang, Vietnam, PIBOC database) (3)
Isodictya simulans Bowerbank; Carter 1887:69, pl.6, figs 1-2 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Myxilla dendyi Burton, 1959 (Indonesia, ZMA database) (6)
Myxilla ramosa Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Myxilla ('Dendoryx') mollis (Lindgren, 1897: 482); Lindgren, 1898 (Hirudo Straits, China Sea) (3)
Myxilla rosacea Lindgren, 1897; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Myxilla ('Dendoryx) rosacea var. *japonica* (Ridley & Dendy, 1886); Lindgren, 1897: 482; Lindgren, 1898 (Hirudo Straits, China Sea) (3)
Myxilla ('Stelodoryx') "regularis" (Burton, unpublished MS name) (Indonesia, ZMA database) (6, Burton MS)
Myxilla sp. (Nha Trang, Vietnam, PIBOC database) (3)

Family Phoriospongiidae Lendenfeld, 1888

Definition. - Encrusting, massive, flabellate or digitate growth forms; Ectosomal skeleton frequently absent, replaced by arenaceous or spicular detritus, but typically with areolate oscular sieve plates on surface; ectosomal and choanosomal megascleres undifferentiated, usually strongyles (sometimes secondarily lost); choanosomal spicules are auxiliary megascleres (of ectosomal origin), whereas principal spicules are absent; microscleres arcuate isochelae, sometimes modified to unguiferous or birotulate forms.

SOUTH CHINA SEA SPECIES.
Batzella sp. (Indonesia, ZMA database) (6)
Chondropsis arenifera (Carter, 1886) (Indonesia, ZMA database) (6, Burton MS)
Chondropsis conica (Lendenfeld, 1889) (Indonesia, ZMA database) (6, Burton MS)
Ectyobatzella enigmatica (Burton & Rao, 1932:332, pl.18, fig.6); Pattanayak, 1997 (Nicobar I., 7°N; Nicobar and Andaman Islands) (1)
Hemimycale sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Psammoclemma ('Psammopemma') "marshalli" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Strongylacidon sansibarense Lendenfeld, 1908 (Indonesia, ZMA database) (6)
Strongylacidon stelliderma Dendy, 1924 (Indonesia, ZMA database) (6)
Strongylacidon sp. 1287 (Sulawesi, Indonesia) (6, QM/NTM collection)

Family Tedaniidae Ridley & Dendy, 1886

Definition. - Encrusting, massive or digitate sponges; choanosomal skeleton predominantly plumo-reticulate or even plumose, composed of tracts of smooth or spined monactinal megascleres, or smooth diactinal megascleres, enclosed within light or moderate spongin fibres, or with no visible fibres and spicules merely cemented together at their nodes; ectosomal spicules are diactinal, tylotes or strongyles, usually with spined bases, lying tangential, paratangential or erect on the surface, although usually not in bundles; microscleres onychaetes; chelae are absent.

SOUTH CHINA SEA SPECIES.
Hemitedania wilsoni Hentschel, 1912 (Indonesia, ZMA database) (6)
Tedania actiniformis Ridley & Dendy, 1886; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Tedania anhelans (Lieberkuhn, 1859); Burton & Rao, 1932; Pulitzer-Finali, 1980 Pattanayak, 1997 (Nicobar and Andaman Islands; Indonesia, ZMA database; Hong Kong) (1,5,6)
Tedania brevispiculata Thiele, 1903; Lévi, 1961: 136 (Vietnam; Indonesia, ZMA database) (3,6)
Tedania coralliophila Thiele, 1903 (Indonesia, ZMA database) (6)
Tedania digitata Schmidt; Lindgren, 1897: 481; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N; Sulawesi, Indonesia) [possibly a junior synonym of *Tedania anhelans*] (3,6, QM/NTM collection)
Tedania dirhaphis Hentschel, 1912 (Aru Is, Indonesia) (6)
Tedania infundibuliformis Ridley & Dendy, 1886; Dawydoff, 1952 (Paracels Is) (3)
Tedania meandrica Thiele, 1903 (Indonesia, ZMA database) (6)
Tedania nigrescens (Schmidt, 1862); Burton & Rao, 1932:352 (Marble Rocks, Jack and Una Is, Mergui Archipelago, 11° 40'N; Cinque I. and E end of Macpherson Straits, Andaman Is, 11° 15-30'N) [possibly a junior synonym of *Tedania anhelans*] (1)
Tedania reticulata Thiele, 1903 (Indonesia, ZMA database) (6)
Tedania sp. (Phuket region, Thailand) (1, QM/NTM collection)
Tedania sp. 956 (Phuket region, Thailand) (1, QM/NTM collection)
Tedania sp. 958 (Phuket region, Thailand) (1, QM/NTM collection)
Tedania sp. 956 (Negros Orientale, Philippines) (7, QM/NTM collection)
Tedania sp. 985 (Sulawesi, Indonesia) (6, QM/NTM collection)
Tedania sp. (Nha Trang, Vietnam, PIBOC database) (3)

Suborder Mycalina

Definition. - Poecilosclerida with microscleres consisting of sigmancistra derivatives and megascleres being subtylostyles, with swollen bases and faintly constricted necks (mycalostyles), usually of a single smooth category (never echinating).

Family Cladorhizidae de Laubenfels, 1936

Definition. - Small symmetrical sponges mostly found in the abyssal zones, with diagonal, radiating supporting processes and basal root adaptations for living in soft sediments; choanosomal skeleton consists of an axis composed of monactinal (styles) or occasionally diactinal megascleres (oxeas), from which radiating extra-axial tracts diverge to the ectosome; microscleres include isochelae, sigmas, forceps or spear-shaped microstyles.

SOUTH CHINA SEA SPECIES.
Chondrocladia clavata Ridley & Dendy, 1886 (Indonesia, ZMA database) (6, Burton MS)
Chondrocladia crinata Ridley & Dendy, 1887 (Indonesia, ZMA database) (6)
Chondrocladia "tethyoides" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Cladorhiza depressa Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Cladorhiza pentacrinus Dendy, 1884 (Indonesia, ZMA database) (6, Burton MS)
Cladorhiza spp. (Indonesia, ZMA database) (6)

Family Guitarridae Burton, 1929

Definition. - Encrusting, massive or ramose growth forms; special ectosomal spicules absent, but choanosomal spicules may protrude through surface; choanosomal skeleton is reticulate, isodictyal-reticulate or plumoreticulate, with a single category of subtylostyles; microscleres placochelae and modifications, sometimes also with palmate isochelae and sigmancistras.

SOUTH CHINA SEA SPECIES.
Guitarra indica Dendy, 1916 (Indonesia, ZMA database) (6)

Family Desmacellidae Ridley & Dendy, 1886

Definition. - Encrusting, massive, cup-shaped, fan-shaped and branching growth forms; megascleres usually styles, sometimes also including oxeas or strongyles; spicules typically enclosed within plumose, reticulate, halichondroid-reticulate or compressed axial fibres; microscleres are diverse, always consisting of sigmas, and often including microxeas of several sizes, raphides in bundles or individually, toxas, microstrongyles and spheres.

SOUTH CHINA SEA SPECIES.
Biemna aruensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Biemna democratica Sollas, 1902:213, pl.15, fig.9 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Biemna "enigmatica" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Biemna fistulosa Topsent, 1897; Pulitzer-Finali, 1980; Desqueyroux-Faundez, 1981 (Ambon, Indonesia; Hong Kong) (5,6)
Biemna fortis Topsent, 1897; Sollas, 1902:213; Desqueyroux-Faundez, 1981; Lévi, 1961: 134 (Pulau Bidang, NE of Penang, 5° 30'N; Vietnam; Sulawesi, Ambon, Indonesia) (2,3,6, QM/NTM collection)
Biemna fragilis Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Biemna humilis Thiele, 1903 (Indonesia, ZMA database) (6)
Biemna liposigma (Burton, 1928:120); Pattanayak, 1997 (Andaman Is, 540m, 12°N; Nicobar and Andaman Islands; Indonesia, ZMA database) (1,6, Burton MS)
Biemna megalosigma Hentschel, 1912 (Aru Is, Indonesia) (6)
Biemna megalosigma liposphaera Hentschel, 1912 (Aru Is, Indonesia) (6)
Biemna trirhaphis Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Biemna truncata Hentschel, 1912 (Aru Is, Indonesia) (6)

Biemna tubulata (Dendy, 1905); Burton & Rao, 1932:327, pl.18, fig.4 (NW side of Neill I., Andaman Is, 11° 55'N; Naval Point, Nicobar Is, 8°N; Elphinstone I., Port Maria, Mergui Archipelago, 12° 30'N) (1)
Biemna sp.; Zeng et al., 1995a,d (South China Sea) (5)
Biemna sp. 1282 (Sulawesi, Indonesia) (6, QM/NTM collection)
Biemna sp. (Ko Samui region, Thailand) (3, QM/NTM collection)
Desmacella "arenacea" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Desmacella microstrongyla Hentschel, 1912 (Aru Is, Indonesia) (6)
Desmacella vestibularis Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Desmacella spp. (Indonesia, ZMA database) (6)
Desmacella sp.; Sollas 1902:214 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Microtylostylifer fenestratus (Dendy, 1884) (Indonesia, ZMA database) (6, Burton MS) [incertae sedis, possibly an *Amorphinopsis*]
Neofibularia chinensis Pulitzer-Finali, 1980 (Hong Kong) (5)
Neofibularia irata Wilkinson; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Neofibularia ('Fibularia') ramosa (Carter, 1882); Carter, 1887:71, pl.7, figs 1-3 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)

Family Hamacanthidae Gray, 1872

Definition. - Encrusting to massive sponges; skeleton consists of a tangential ectosomal and reticulate choanosomal skeletal components, composed of monactinal (styles), diactinal (oxeas), or both sorts of megascleres producing multispicular tracts and forming irregular, plumo-reticulate or reticulate structures, with little or no associated spongin; scattered monactinal or diactinal megascleres, or bundles of these spicules, occur within the mesohyl; microscleres sharp-toothed diancistras or cyrtancistras, sometimes with toxas, individual or bundles of raphides (trichodragmata), or sigmas.

SOUTH CHINA SEA SPECIES.
Hamacantha "pyriformis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Hamacantha sp. (Indonesia, ZMA database) (6)

Family Mycalidae Lundbeck, 1905

Definition. - Encrusting, massive, fan-shaped, cup-shaped and branching growth forms; subectosomal sculpturing, grooves and ridges often found on the surface, within which are usually found the ostia; skeleton radially arranged, plumose or plumo-reticulate, composed of styles or oxeas enclosed in spongin fibres; without specialised ectosomal spicules, although choanosomal spicules may form dense brushes at the surface; microscleres anisochelae, but may also include many other forms - palmate isochelae with geometric modifications, sigmas, toxas and raphides.

SOUTH CHINA SEA SPECIES.
Arenochalina sp. (Singapore; QM/ZRC collections) (2)
Esperiopsis challengeri Ridley & Dendy, 1886 (Indonesia, ZMA database) (6)
Mycale aegagropila (Johnston, 1842:119); Wilson, 1925:426 (Philippines) (7)
Mycale bidentata Dendy, 1905 (Indonesia, ZMA database) (6)
Mycale "carinata" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Mycale cavernosa Bergquist, 1965 (Indonesia, ZMA database) (6)
Mycale cleistochela Vacelet & Vasseur, 1971 (Indonesia, ZMA database) (6)
Mycale cockburniana Hentschel, 1911 (Indonesia, ZMA database) (6)
Mycale ('Sceptrospongia') coronata (Dendy, 1926); Burton, 1928:121 (8 mls W of Interview I., Andaman Is, 90-340m, 13°N) (1)

Mycale crassissima Dendy, 1905; Lévi, 1961: 134; Pattanayak, 1997 (Nicobar and Andaman Islands; Vietnam; Indonesia, ZMA database) (1,3,6)
Mycale dendyi (Row, 1911) (Indonesia, ZMA database) (6, Burton MS)
Mycale euplectelloides Row, 1911 (Indonesia, ZMA database) (6)
Mycale euplectellioides regularis Wilson, 1925:427 (Philippines) (7)
Mycale gelatinosa (Ridley & Dendy, 1886) (Indonesia, ZMA database) (6, Burton MS)
Mycale grandis Gray, 1867 (Indonesia, ZMA database) (6)
Mycale graveleyi Burton, 1937 (Indonesia, ZMA database) (6)
Mycale indica (Carter, 1887:72, pl.6, figs 3-6); Burton & Rao, 1932:327; Pattanayak, 1997 (King I., Mergui Archipelago, Burma, 12° 08'N; Snod I., Mergui Archipelago, 12°N; Ross I., Andaman Is, 12° 09'N; Nicobar and Andaman Islands) (1)
Mycale cf. *laevis* Carter, 1882 (Indonesia, ZMA database) (6)
Mycale "lagenoides" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Mycale macrosigma (Lindgren, 1897: 482); Lindgren, 1898 (Korea Straits, China Sea) (3)
Mycale madraspatana Annandale, 1914 (Indonesia, ZMA database) (6)
Mycale massa oceanica Topsent, 1904 (Indonesia, ZMA database) (6, Burton MS)
Mycale "menylloides" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Mycale moluccensis Thiele, 1903 (Indonesia, ZMA database) (6)
Mycale monanchorata Burton & Rao, 1932 (Indonesia, ZMA database) (6)
Mycale ('Esperella') murrayi (Ridley & Dendy, 1887); Dragnewitsch, 1906:441 (Singapore, 1° 30'N) (2)
Mycale obscura Hentschel, 1912 (Aru Is, Indonesia) (6)
Mycale orientalis Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Mycale (Zygomycale) parishii (Bowerbank, 1875); Burton & Rao, 1932:328 (south portion of Malacca Straits, 1°N); George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Indonesia, ZMA database) (2,4,6)
Mycale ('Esperella') pellucida (Ridley, 1884); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Mycale ('Esperella') phillipensis (Dendy); Lindgren, 1897: 482; Lindgren, 1898; Dawydoff, 1952; Pulitzer-Finali, 1980 (Vietnam, China Sea, 11° 5'N; Hong Kong) (3,5)
Mycale phyllophila Hentschel, 1911; van Soest, 1980 (Hong Kong, Indonesia) (5,6)
Mycale ('Esperia') plumosa (Carter, 1882): Carter, 1887:72 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Mycale rhaphidotoxa Hentschel, 1912 (Aru Is, Indonesia) (6)
Mycale (Paresperella) sceptroides (Keller, 1891) (Indonesia, ZMA database) (6, Burton MS)
Mycale "setosa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Mycale cf. *suezza* Row, 1911 (Indonesia, ZMA database) (6)
Mycale sulcata aruensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Mycale ('Esperella) sulevoidea (Sollas, 1902:213, pl.14, figs 8-9, pl.15, fig. 10) (Pulau Bidang, NE of Penang, 5° 30'N; Indonesia, ZMA database) (2,6)
Mycale tenuisistrongylata Hoshino, 1981 (Indonesia, ZMA database) (6)
Mycale tenuispiculata Dendy, 1905 (Indonesia, ZMA database) (6)
Mycale spp. (Indonesia, ZMA database) (6)
Mycale sp.; Tanaka et al., 1993 (Gulf of Thailand) (3)
Mycale sp.; van Soest & Verseveldt, 1987 (Komodo, 8°S 119°E, Indonesia) (7)
Mycale sp. 952 (Phuket region Thailand) (1, QM/NTM collection)
Mycale sp. 959 (Phuket region Thailand) (1, QM/NTM collection)
Mycale sp. 971 (Ko Samui region, Thailand) (3, QM/NTM collection)
Mycale sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Mycale sp. 1283 (Sulawesi, Indonesia) (6, QM/NTM collection)
Mycale sp. 1284 (Sulawesi, Indonesia) (6, QM/NTM collection)
Mycale spp. (Singapore; QM/ZRC collections) (2)
Ulosa angulosa (Lamarck, 1814) (Indonesia, ZMA database) (6)
Ulosa sp. (Indonesia, ZMA database) (6)

Order Halichondrida

Definition. - Choanosomal skeleton composed of styles, oxeas, strongyles or intermediate spicules; spicules not usually functionally localised to any particular region of the skeleton;

skeletal structures range from disorganised plumoreticulate, criss-crossed "halichondroid skeleton" to distinctly compressed axis (or basal) region and a differentiated extra-axial (radial, plumose or plumoreticulate) region; spongin fibres usually poorly developed or absent; ectosomal skeleton sometimes organised into a tangential layer of spicules or erect spicule bundles, with minimal collagenous spongin, typically with large subectosomal cavities; microscleres sparse including only raphides, microxeas, or spined microxeas with a central bend.

Family Axinellidae Carter, 1875

Definition. - Encrusting, massive, branching, fan-shaped and tubular growth forms; encrusting species may consolidate sedimentary particles at the surface of the substratum; surface usually hispid from projecting spicules; megascleres styles, oxeas, strongyles (sometimes sinuous) in all combinations; skeleton typically divided into distinct axial (or basal in encrusting forms) and extra-axial components; main skeleton typically condensed in axis, consisting of smooth straight spicules in most genera, or tuberculate or spined, annular, flexuous, U-shaped or vermiform strongyles in some genera; extra-axial skeleton plumose or plumoreticulate, with tracts of smooth straight spicules, sometimes rhabdose spicules arising perpendicular to the axis and ascending to the surface; axial and extra-axial differentiation may be reduced (vestigial), but rudiments of these structures are always present; microscleres usually absent, although a few genera have raphides or microraphides, sometimes forming bundles (trichodragmata); reproduction oviparous.

SOUTH CHINA SEA SPECIES.

Acanthella aurantiaca Keller, 1889; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Acanthella carteri Dendy, 1889 (Indonesia, ZMA database) (6)
Acanthella cavernosa Dendy, 1922 (widespread throughout South China Sea) (1-7; most collections)
Acanthella costata Kieschnick, 1896 (Ternate, Moluccas, Indonesia; Batangas, Mindanao, Zamboanga Philippines) (6,7, QM/NTM collection)
Acanthella hispida Pulitzer-Finali, 1980 (Hong Kong) (5)
Acanthella pulcherrima Ridley & Dendy, 1886 (Indonesia, ZMA database) (6)
Acanthella vulgata Tanita, 1960; Caberoy, 1981:24 (Zamboanga, Batangas, Davao del Norte, Mindoro Occidental, Marinduque, Quezon, La Union, Ilocos Sur, Ilocos NortePhilippines) (7)
Acanthella sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Auletta lyrata (Esper), var. *brevispiculata* Dendy, 1905; Burton, 1928:128, pl.1, fig.10 (W of Elphinstone I., Mergui Archipelago, 12° 15'N, 120m) (1)
Auletta sp. 960 (Phuket region, Thailand) (3, QM/NTM collection)
Axinella agariciformis Dendy, 1905 (Indonesia, ZMA database) (6)
Axinella aruensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Axinella carteri Dendy, 1889 (widespread throughout South China Sea) (1-7; most collections)
Axinella domantayi (Lévi, 1961) (Zamboanga Norte, Philippines) (7, QM/NTM collection)
Axinella donnani Bowerbank, 1873 (Indonesia, ZMA database) (6)
Axinella echidnea Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Axinella euctimena Hentschel, 1912 (Aru Is, Indonesia) (6)
Axinella mastigophoda Schmidt; Lindgren, 1897: 483; Lindgren, 1898; Dawydoff, 1952 (Taiwan, China Sea; Vietnam) (3,5)
Axinella cf. *polypoides* Schmidt; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Axinella proliferans Ridley, 1884 (Indonesia, ZMA database) (6, Burton MS)
Axinella tenuidigitata Dendy, 1905 (Indonesia, ZMA database) (6)
Axinella virgultosa Carter, 1887:68, pl.5, fig.11 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Axinella virgultosa var. *massa* Carter, 1887:68, pl.7, figs 6-7 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Axinella vulgata Thiele, 1899 (Indonesia, ZMA database) (6)
Axinella sp. 882 (Phuket region, Thailand) (1, QM/NTM collection)

Axinella sp. 955 (Phuket region, Thailand) (1, QM/NTM collection)
Axinella sp. 1640 (Sulu Sea, Philippines) (7, QM/NTM collection)
Axinella sp. 1769 (Pulangbato, Philippines) (7, QM/NTM collection)
Axinella sp. (Singapore; QM/ZRC collections) (2)
Axinella spp. (Nha Trang, Vietnam, PIBOC database) (3)
Bubaris columnata (Burton, 1928:130, pl.2, fig.1); Pattanayak, 1997 (Andaman Sea, 13° 17'N, 180m; Nicobar and Andaman Islands) (1)
Bubaris durissimma Burton, 1928:131, pl.2, fig.2 (W of Elphinstone I., Mergui Archipelago, 12° 15'N, 120m) (1)
Bubaris ligulata Burton, 1928:132, pl.2, fig.3 (W of Elphinstone I., Mergui Archipelago, 12° 15'N, 120m) (1)
Bubaris vermiculata Topsent, 1897; Dawydoff, 1952; Desqueyroux-Faundez, 1981 (Ambon, Indonesia; Vietnam) (3,6)
Bubaris sp. (Indonesia, ZMA database) (6)
Dragmaxia ciliata (Wilson, 1925:341); de Laubenfels, 1935:332 (Puerta Galera, Philippines) (7)
Dragmaxia ensifera (Lamarck, 1814) (Indonesia, ZMA database) (6, Burton MS)
Homaxinella acanthelloides Lévi, 1961:515 (Zamboanga, Philippines) (7)
Homaxinella sp. 974 (Ko Samui region, Thailand) (3, QM/NTM collection)
Perissinella "cactoides" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Phakellia atypica Lévi, 1961:516 (Zamboanga, Philippines) (7)
Phakellia cavernosa Dendy 1922 (Phuket region, Thailand) (1, QM/NTM collection)
Phakellia conulosa Dendy, 1921 (Negros I, Philippines) (7, QM/NTM collection)
Phakellia fusca; Zeng et al., 1991b,c; Fu et al., 1991b; Pinder, 1992 (South China Sea) (5)
Phakellia stipitata (Carter, 1881) (Sulawesi, Indonesia)
Phakellia sp.; Wu et al., 1990 (South China Sea) (5)
Phakellia sp. 948 (Phuket region, Thailand) (1, QM/NTM collection)
Phakellia sp. 961 (Phuket region, Thailand) (1, QM/NTM collection)
Phakellia sp. (Indonesia, ZMA database) (6)
Phakellia sp. 1285 (Sulawesi, Indonesia) (6, QM/NTM collection)
Phakellia sp. (Singapore; QM/ZRC collections) (2)
Phycopsis valida Thiele, 1899 (Indonesia, ZMA database) (6)
Pseudaxinella massa Carter, 1887 (Indonesia, ZMA database) (6)
Ptilocaulis flexibilis Lévi, 1961: 132 (Vietnam) (3)
Ptilocaulis cf. *spiculifera* (Lamarck, 1813) (Indonesia, ZMA database) (6)
Reniochalina sp. 1643 (Cebu, Philippines) (7, QM/NTM collection)
Rhabdoploca topsenti Hentschel, 1912 (Aru Is, Indonesia) (6)
Stylissa flabelliformis (Hentschel, 1912) (SW. Cebu, Philippines) (7, QM/NTM collection)
Stylissa sp. 943 (Phuket region, Thailand) (1, QM/NTM collection)
Stylotella agminata (Ridley) Hallman, 1914; Lévi, 1961:514 (Zamboanga, Philippines) (7)
Stylotella digitata gracilis Hentschel, 1912 (Aru Is, Indonesia) (6)
Stylotella flabelliformis Hentschel, 1912 (Aru Is, Indonesia) (6)
Stylotella suberitoides Brondsted, 1934 (Aru Is, Indonesia) (6)
Tragosia cf. *infundibuliformis* (Bowerbank); Dawydoff, 1952 (Vietnam, Cambodia) (3)

Family Desmoxyidae Hallmann, 1917

Definition. - Encrusting, massive or branching sponges; megascleres are monactinal (styles), diactinal (oxeas), or both, contained within widely spaced multispicular spongin fibres, or with little or no spongin associated, forming reticulate tracts, with poorly developed or no axial compression and poorly differentiated axial and extra-axial skeletons (notably disorganised or slightly plumose); ectosomal skeleton a crust or palisade of smaller oxeotes with spines (occasionally smooth); microscleres smooth or spined microxeas, often centrangulate or strongly bent at the centre, and sometimes raphides in groups (trichodragmata) or singly, and in one genus acanthose cladotoxa and birotules are also present.

SOUTH CHINA SEA SPECIES.
Higginsia petrosioides Dendy, 1922 (Indonesia, ZMA database) (6)
Higginsia strigilata (Lamarck, 1813) (Indonesia, ZMA database) (6)
Higginsia sp. (Indonesia, ZMA database) (6)
Higginsia massalis Carter, 1885 (Bohol Sea, Philippines) (7, QM/NTM collection)
Higginsia mixta (Hentschel, 1912) (Pulangbato, Negros Orientale, SW. Cebu, Philippines) (7, QM/NTM collection)
Higginsia (Dendropsis) mixta (Hentschel, 1912) (Aru Is, Indonesia) (6)
Myrmekioderma granulata (Esper, 1794) (Indonesia, ZMA database) (6, Burton MS)

Family Dictyonellidae van Soest, Diaz & Pomponi, 1990

Definition. - Choanosomal skeleton lacking any axial compression or marked differentiation between axial and extra-axial regions, but has spongin-enforced dendritic or plumose choanosomal spicule tracts and a fleshy conulose surface; no ectosomal mineral skeleton; megascleres include oxeas, styles or both in equal proportion; microscleres absent.

SOUTH CHINA SEA SPECIES.
Dictyonella australiensis Pulitzer-Finali, 1982 (Aru Is, Indonesia) (6)
Dictyonella spp. (Indonesia, ZMA database) (6)
Liosina arenosa Vacelet & Vasseur, 1971 (Indonesia, ZMA database) (6)
Liosina paradoxa Thiele, 1899 (Indonesia, ZMA database) (6)
Scopalina toxotes Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)

Family Halichondriidae Vosmaer, 1887

Definition. - Encrusting to massive growth forms, sometimes with specialised fistules on the upper surface; principle megascleres are oxeas, sometimes with accessory styles; choanosomal skeleton consists of a high density of spicules arranged in vague, poorly defined, directionless tracts ("halichondroid" structure), or spicules in complete confusion; there is often marked subectosomal or vestibular cavities; microscleres usually absent, occasionally raphides.

SOUTH CHINA SEA SPECIES.
Amorphinopsis excavans (Carter, 1887:77, pl.5, figs 12-15) (King I., Mergui Archipelago, Burma, 12° 08'N; Indonesia, ZMA database) (1,6)
Amorphinopsis foetida (Dendy); Lévi, 1961: 138 (Vietnam) (3)
Amorphinopsis ('Ciocalypta') oculata (Kieschnick, 1896) (Ternate, Moluccas, Indonesia) (6)
Amorphinopsis sacciformis (Thiele, 1903) (Indonesia, ZMA database) (6)
Amorphinopsis ('Ciocalypta') subaceratus (Ridley & Dendy, 1886) (Indonesia, ZMA database) (6)
Amorphinopsis spp. (Indonesia, ZMA database) (6)
Amorphinopsis ('Prostylissa') foetida (Dendy, 1889) Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Axinyssa ('Pseudaxinyssa') aculeata (Wilson, 1925) (Philippines, Indonesia, ZMA database) (6,7)
Axinyssa aplysinoides (Dendy, 1922) (Indonesia, ZMA database) (6)
Axinyssa ('Leucophloeus') fenestratus (Ridley, 1884); Burton, 1928:127; Dawydoff, 1952 (Bally Strait, Malay Archipelago, 320m; Vietnam; Indonesia, ZMA database) (2,3,6)
Axinyssa sp. (Singapore; ZRC) (2)
Axinyssa ('Leucophloeus') sp.nov.; Dawydoff, 1952 (Poulo Condore, Vietnam) (3)
Ciocalypta foetida (Dendy); Lindgren, 1897: 483; Lindgren, 1898; Dawydoff, 1952 (China Sea, Mergui Archipelago; Poulo Condore, Vietnam) (1,3)
Ciocalypta melichlora Sollas, 1902:214, pl.14, fig.1, pl.15, fig.8 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Ciocalypta rutilla Sollas, 1902:215, pl.14, fig.7 (Pulau Bidang, NE of Penang, 5° 30'N) (2)

Ciocalypta sp. 1286 (Sulawesi, Indonesia) (6, QM/NTM collection)
Ciocalypta sp. (Singapore; QM/ZRC collections) (2)
Collocalypta digitata Dendy, 1905 (Indonesia, ZMA database) (6)
Didiscus anisodiscus Vacelet & Vasseur, 1971 (Indonesia, ZMA database) (6, Burton MS)
Didiscus sp. (Indonesia, ZMA database) (6)
Didiscus aceratus (Nha Trang, Vietnam, PIBOC database) (3)
Epipolasis suluensis Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Epipolasis sp. (Indonesia, ZMA database) (6)
Epipolasis sp. (Nha Trang, Vietnam, PIBOC database) (3)
Halichondria armata Lindgren, 1897: 480; Lindgren, 1898 (China Sea, 20° 5'N) (3)
Halichondria aura Lindgren, 1897: 480; Lindgren, 1898 (Java Sea and Gaspar Straits) (2)
Halichondria bergquistae Hooper et al., 1997 (Sulawesi, Indonesia) (6, QM/NTM collection)
Halichondria birotulata Higgin, 1877; Carter, 1887:72 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Halichondria cartilaginea (Esper, 1794) (Indonesia, ZMA database) (6, Burton MS)
Halichondria cf. *panicea* Johnston, 1842:114; Carter, 1887:69; Wilson, 1925:394; Dawydoff, 1952; Dmitrenok et al., 1988 (King I., Mergui Archipelago, Burma, 12° 08'N; Philippines; Vietnam) (1,3,7)
Halichondria symbiotica Lévi, 1961: 140 (Vietnam) (3)
Halichondria variabilis Lindgren, 1897: 480; Lindgren 1898; Wilson, 1925:396; Dawydoff, 1952 (Vietnam, 11° 5'N, Gaspar Strait, Java; Philippines) (2,3,7)
Halichondria tyleri Bowerbank, 1873 (Indonesia, ZMA database) (6)
Halichondria sp. 965 (Phuket region, Thailand) (1, QM/NTM collection)
Halichondria sp. 969 (Ko Samui region, Thailand) (3, QM/NTM collection)
Halichondria sp. 1710 (Kalimantan, Indonesia) (6, QM/NTM collection)
Halichondria sp. 1717 (Kalimantan, Indonesia) (6, QM/NTM collection)
Halichondria sp. (Singapore; ZRC) (2)
Halichondria sp. (Singapore; ZRC) (2)
Halichondria spp. (Singapore; QM/ZRC collections) (2)
Halichondria spp. (Nha Trang, Vietnam, PIBOC database) (3)
Hymeniacidon conulosa (Topsent); Lindgren, 1897: 483; Lindgren, 1898 (Gaspar Straits, Java Sea) (2)
Hymeniacidon fenestratus (Ridley); Lindgren, 1897: 483; Lindgren, 1898 (Vietnam, China Sea, 11° 5'N) (3)
Hymeniacidon heliophila (Parker, 1910:2); Caberoy, 1981:18 (Quezon, South Cotabato, Philippines) (7)
Hymeniacidon "assimilis"; Dmitrenok et al., 1988 (Singapore) (2)
Hymeniacidon spp. (Indonesia, ZMA database) (6)
Petromica massalis (Dendy, 1905); Burton, 1928:110; Pattanayak, 1997 (8 mls W of Interview I., Andaman Is, 90-540m, 13°N; Nicobar and Andaman Islands) (1)
Spongosorites ('Trachyopsis') halichondrioides (Dendy, 1905); Burton, 1928:118; Pattanayak, 1997 (Bally Strait, Malay Archipelago; N Sentinel I., Andaman Is, 260-500m, 11° 40'N; Nicobar and Andaman Islands; Philippines) (1,2,7)
Spongosorites "orientalis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Spongosorites sp. (Phuket region, Thailand) (1, QM/NTM collection)
Spongosorites sp. 968 (Phuket region, Thailand) (1, QM/NTM collection)
Topsentia armata (Lindgren, 1897) (Indonesia, ZMA database) (6)
Topsentia cavernosa (Topsent, 1897), Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Topsentia dura Lindgren, 1897: 481; Lindgren, 1898 (Java Sea) (2)
Topsentia glabrata (Keller, 1891) (Indonesia, ZMA database) (6)
Topsentia granulata Keller, 1891 (Indonesia, ZMA database) (6)
Topsentia indica Hentschel, 1912 (Aru Is, Indonesia) (6)
Topsentia salomonensis Dendy, 1905 (Indonesia, ZMA database) (6)
Topsentia variabilis (Lindgren, 1897) (Indonesia, ZMA database) (6)
Topsentia spp. (Indonesia, ZMA database) (6)

Order Haplosclerida

Definition. - Main skeleton is partially or entirely composed of an isodictyal reticulation of spongin fibres and/or spicules, with uni- to multispicular tracts of diactinal spicules forming triangular, rectangular or polygonal meshes; megascleres are exclusively oxeote or strongylote, bonded together with collagenous spongin or enclosed within spongin fibres; microscleres, if present, may include sigmas (frequently centrangulate), smooth toxas or microxeas.

Remarks. - Nine families of sponges are included (five marine and four freshwater, of which seven are viviparous, with parenchymella bearing various patterns of ciliation, one oviparous group (Petrosiidae), and one freshwater family is uncertain (Lubomirskiidae).

Family Callyspongiidae de Laubenfels, 1936

Definition. - Encrusting, massive, vase-shaped, tubular, fan-shaped and branching growth forms; surface characteristically sculptured with conules or ridges, and usually has an optically visible lace-like reticulation of spicules and/or fibres lying tangential to the surface; ectosomal skeleton a two dimensional tangential reticulation of close-set primary, secondary and sometimes tertiary spongin fibres, sparsely cored with small or vestigial oxeas or strongyles; choanosomal skeleton more widely spaced, composed of a reticulation of primary ascending (bi- or multispicular) and secondary connecting spongin fibres (uni- or aspicular), composed of well developed fibres, cored by oxeas or strongyles; spongin characteristically abundant; megascleres sometimes vestigial, with blackened axial canals, absent entirely or replaced by sand grains; microscleres, if present, include only toxas.

SOUTH CHINA SEA SPECIES.

Callyspongia ('Cladochalina') aurantiaca (Lendenfeld, 1887); Dragnewitsch, 1906:444 (Singapore, 1° 30'N) (2)
Callyspongia barodensis Burton, 1959 (Indonesia, ZMA database) (6)
Callyspongia claviformis Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Callyspongia confoederata (Ridley, 1884); Lévi, 1961: 144 (Vietnam; Indonesia, ZMA database) (3,6)
Callyspongia dendyi Burton, 1931 (Indonesia, ZMA database) (6)
Callyspongia diffusa Ridley, 1884; Lévi, 1961:525 (Indonesia, ZMA database, Zamboanga, Philippines) (6,7)
Callyspongia diffusa Ridley *affinis* Hentschel, 1912 (Aru Is, Indonesia) (6)
Callyspongia doorae Brondsted, 1934 (Java, Banda, Indonesia) (6)
Callyspongia elegans Thiele, 1899 (Indonesia, ZMA database) (6)
Callyspongia (Euplacella) elongata (Ridley & Dendy, 1886) (Indonesia, ZMA database) (6, Burton MS)
Callyspongia erecta Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Callyspongia ('Cladochalina') euplax (Lendenfeld, 1887); Dragnewitsch, 1906:444 (Singapore, 1° 30'N)(2)
Callyspongia cf. *fallax* Duchassaing & Michelotti, 1864 (Indonesia, ZMA database) (6)
Callyspongia fibrosa (Ridley & Dendy, 1886); Lévi, 1961: 144 (Vietnam; Indonesia, ZMA database) (3,6)
Callyspongia folioides Bowerbank, 1875 (Indonesia, ZMA database) (6)
Callyspongia fragilis Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Callyspongia globosa Pulitzer-Finali, 1980 (Hong Kong) (5)
Callyspongia joubini Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Callyspongia "lindgreni" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Callyspongia lobata Brondsted, 1934 (Java, Banda, Indonesia) (6)
Callyspongia melior Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)

Callyspongia mollis Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Callyspongia monilata Ridley, 1884; Wilson, 1925:417 (as *Dactylochalina exigua samarensis*); Lévi, 1961: 143 (Vietnam; Indonesia, ZMA database; Philippines) (3,6,7)
Callyspongia murata Ridley, 1884 (Indonesia, ZMA database) (6)
Callyspongia mucricata (Ridley, 1884) (Indonesia, ZMA database) (6, Burton MS)
Callyspongia nuda Hentschel, 1912 (Aru Is, Indonesia) (6)
Callyspongia orieminens Pulitzer-Finali, 1980 (Hong Kong) (5)
Callyspongia parva Desqueyroux, 1984 (Indonesia, ZMA database) (6)
Callyspongia pseudofibrosa Desqueyroux, 1984 (Indonesia, ZMA database) (6)
Callyspongia pulvinatae (Lindgren, 1897); Lindgren, 1898; van Soest, 1980 (Java, Hong Kong) (2,5)
Callyspongia ridleyi Burton, 1934 (Indonesia, ZMA database) (6)
Callyspongia robusta Ridley, 1884 (Indonesia, ZMA database) (6)
Callyspongia schulzei Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Callyspongia spinifera Carter, 1886 (Indonesia, ZMA database) (6)
Callyspongia subarmigera Ridley, 1884; Lévi, 1961:526 (Indonesia, ZMA database, Zamboanga, Philippines) (6,7)
Callyspongia ternatensis Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Callyspongia ('Euchalina') typica (Lendenfeld, 1887); Dragnewitsch, 1906:444 (Singapore, 1° 30'N) (2)
Callyspongia vaginalis (Lamarck, 1814); Caberoy, 1979:17; Caberoy, 1981:19 (SE Negros I, Palawan, Pangasinan, Quezon, Batangas, Philippines) (7, QM/NTM collection)
Callyspongia spp. (Indonesia, ZMA database) (6)
Callyspongia sp. 138 (Sattahip and Phuket regions, Thailand) (1,3, QM/NTM collection)
Callyspongia sp. 938 (Sattahip Navy Base region, Thailand) (3, QM/NTM collection)
Callyspongia sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Callyspongia sp. (Singapore; ZRC collections) (2)
Callyspongia spp. (Nha Trang, Vietnam, PIBOC database) (3)
Siphonochalina crassifibra Dendy, 1899:82; Wilson, 1925:414 (Philippines) (7)
Siphonochalina flexa Pulitzer-Finali, 1980 (Hong Kong) (5)
Siphonochalina truncata Lindgren, 1897: 481; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N) (3)
Siphonochalina sp.; George & George, 1987 (photo 2C) (Bodgaya Islands and Pulau Sipadan, Sabah) (4)

Family Chalinidae Gray, 1867

Definition. - Encrusting, massive, cup-shaped, fan-shaped and branching growth forms, usually with spongy and delicate consistency; when present ectosomal skeleton consists of a special, tangential, unilayered, unispicular, isotrophic reticulation of oxeas bound by nodal spongin; choanosomal skeleton consists of an isodictyal reticulation of uni- or paucispicular primary tracts of oxeas, rarely multispicular, interconnected by uni- or paucispicular secondary tracts, and spicules are bonded together at their nodes of junction by small amounts of collagenous spongin, or they may be fully enclosed within light spongin fibres and form more robust reticulations; microscleres, if present, include only sigmas or toxas; parenchymella larvae are incubated and are completely and uniformly ciliated or have a bare posterior cap fringed by longer cilia.

SOUTH CHINA SEA SPECIES.
Acervochalina confusa Dendy, 1922 (Indonesia, ZMA database) (6)
Acervochalina sp. (Indonesia, ZMA database) (6)
Cladocroce aculeata Putitzer-Finali, 1982 (Indonesia, ZMA database) (6)
Dendroxea sp. (Indonesia, ZMA database) (6)
Gellius amboinensis Lévi, 1961: 142 (Vietnam) (3)
Gellius angulatus vasiformis Wilson, 1925:367 (Philippines) (7)
Gellius centrangulatus Sollas, 1902:212, pl.15, fig.6 (Great Redang I., E. coast of Malay Peninsula, 5° 50'N) (3)

Gellius fibulata Schmidt, 1862; Dragnewitsch, 1906:442 (Singapore, 1° 30'N) (2)
Gellius flagellifer (Ridley & Dendy, 1886); Burton, 1928:114; Pattanayak, 1997 (Andaman Sea, 13° 15-59'N, 340-1200m; Nicobar and Andaman Islands) (1)
Gellius megastoma (Burton, 1928); Burton, 1932:115, pl.1, fig.1; Pattanayak, 1997 (Andaman Is, 12°N, 260-580m; Nicobar and Andaman Islands) (1)
Gellius ridleyi Hentschel; Lévi, 1961: 142 (Vietnam, Zamboanga, Lingayen Gulf, Philippines) (3, 7)
Gellius strongylatus Lindgren, 1897: 481; Lindgren 1898 (Hirudo Straits, China Sea) (3)
Gellius toxius Topsent, 1897; Dawydoff, 1952; Pulitzer-Finali, 1980 (Vietnam, Cambodia, Malaysia, Hong Kong) (2,3,5)
Gellius sp. 1018 (Zamboanga, Philippines) (7, QM/NTM collection)
Gellius sp. 1032 (Bohol Sea, Philippines) (7, QM/NTM collection)
Gellius spp (Nha Trang, Vietnam, PIBOC database) (3)
Haliclona amboinensis Lévi, 1961 (Indonesia, ZMA database) (6)
Haliclona bandae Brondsted, 1934 (Java, Banda, Indonesia) (6)
Haliclona carteri Burton, 1959 (Indonesia, ZMA database) (6)
Haliclona cerebrum Burton, 1928 (Indonesia, ZMA database) (6)
Haliclona clathrata Dendy, 1895; Dawydoff, 1952; Caberoy, 1981:17 (Vietnam; Indonesia, ZMA database) (3,6,7)
Haliclona compacta (Ridley & Dendy, 1886) (Indonesia, ZMA database) (6, Burton MS)
Haliclona "conulosa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Haliclona cratera Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Haliclona ('Sigmadocia') cymaeformis (Esper, 1794); Van Soest, 1980 (Hong Kong, Indonesia, ZMA database) (5,6)
Haliclona delicatula (Dendy, 1889) (Indonesia, ZMA database) (6, Burton MS)
Haliclona digitata Baer, 1906 (Indonesia, ZMA database) (6)
Haliclona elastica Kieschnick, 1900 (Ternate, Moluccas, Indonesia) (6)
Haliclona fascigera (Hentschel, 1912:398); Wilson, 1925:413 (Aru Is, Indonesia; Philippines) (6,7)
Haliclona flabello-digitatus Burton, 1934; Caberoy, 1981:18 (Batangas, Philippines) (7)
Haliclona flagellifer Ridley & Dendy, 1886 (Indonesia, ZMA database) (6)
Haliclona forcipata Thiele, 1903 (Indonesia, ZMA database) (6)
Haliclona glaberrima Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Haliclona hispidula Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Haliclona incrustata Hentschel, 1912 (Aru Is, Indonesia) (6)
Haliclona irregularis Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Haliclona jugosa Bowerbank, 1866 (Indonesia, ZMA database) (6)
Haliclona korema (Dendy, 1895:238); Caberoy, 1981:16 (Mindoro Oriental, Quezon, Batangas, Marinduque, Philippines) (7)
Haliclona "lieberkuehni" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Haliclona ligulata (Whitelegge, 1901:74); Caberoy, 1981:18 (Batangas, Philippines) (7)
Haliclona "longispiculus" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Haliclona madrepora Dendy, 1889 (Indonesia, ZMA database) (6)
Haliclona microsigma Dendy, 1916 (Indonesia, ZMA database) (6)
Haliclona minima (Lendenfeld, 1889) (Indonesia, ZMA database) (6, Burton MS)
Haliclona minor Dendy, 1916 (Indonesia, ZMA database) (6)
Haliclona mirabilis (Bowerbank, 1866) (Indonesia, ZMA database) (6, Burton MS)
Haliclona "montagui" Bowerbank, 1866 (Indonesia, ZMA database) (6)
Haliclona nigra Burton, 1929 (Indonesia, ZMA database) (6)
Haliclona ("Chalina") oculata var. *fibrosa* (Carter), 1887:66 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Haliclona ('Rhaphisia') pallida (Ridley); Su et al., 1996 (South China Sea) (5)
Haliclona cf. *permollis* (Bowerbank, 1866:278); Caberoy, 1981:18 (Quezon, South Cotabota, Philippines) (7) [misidentification for a european species]
Haliclona pigmentifera Dendy, 1905 (Indonesia, ZMA database) (6)
Haliclona pulvinar Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Haliclona "rectangularis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Haliclona seychellensis Dendy, 1922 (Indonesia, ZMA database) (6)
Haliclona similis Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Haliclona "siphonella" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Haliclona sorongae Brondsted, 1934 (Java, Banda, Indonesia) (6)
Haliclona ("Chalina") spinifera (Carter, 1887:66, pl.5, figs 1-2) (King I., Mergui Archipelago, Burma, 12° 08'N) (1)

Haliclona subarmigera (Ridley); Lindgren, 1897: 481; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N) (3)
Haliclona subcapitata Lévi, 1961:527 (Zamboanga, Philippines) (7)
Haliclona tabernacula Row, 1911 (Indonesia, ZMA database) (6)
Haliclona tenuiramosa Burton, 1930 (Indonesia, ZMA database) (6)
Haliclona tenuispiculata Burton, 1934 (Indonesia, ZMA database) (6)
Haliclona toxius Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Haliclona toxophorus Hentschel, 1912 (Aru Is, Indonesia) (6)
Haliclona toxotes Hentschel, 1912 (Aru Is, Indonesia) (6)
Haliclona varia Bowerbank, 1875 (Indonesia, ZMA database) (6)
Haliclona variabilis (Dendy, 1890:353); Caberoy, 1981:15 (Batangas, Quezon, Marinduque, Philippines) (7)
Haliclona vasiforme Wilson, 1925 (Philippines, Indonesia, ZMA database) (6,7)
Haliclona venusta Bowerbank, 1875 (Indonesia, ZMA database) (6, Burton MS)
Haliclona violacea de Laubenfels, 1950 (Indonesia, ZMA database) (6)
Haliclona viridenigra Vacelet & Vasseur, 1971 (Indonesia, ZMA database) (6)
Haliclona "weberi" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Haliclona zamboangae Lévi, 1961:527 (Zamboanga, Philippines) (7)
Haliclona ('Adocia') sp. 950 (Phuket region Thailand) (1, QM/NTM collection)
Haliclona ('Adocia') sp. 967 (Phuket region, Thailand) (1, QM/NTM collection)
Haliclona ('Adocia') sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Haliclona ('Adocia') sp.; Lévi, 1961:528 (Zamboanga, Philippines) (7)
Haliclona sp.; Zeng et al., 1995b,c (South China Sea) (5)
Haliclona spp. (Indonesia, ZMA database) (6)
Haliclona sp. 937 (Sattahip region, Thailand) (3, QM/NTM collection)
Haliclona sp. 945 (Phuket and Ko Samui regions Thailand) (1,3, QM/NTM collection)
Haliclona sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Haliclona sp.; Lévi, 1961: 145 (Vietnam) (3)
Haliclona sp.; Lévi, 1961: 145 (Vietnam) (3)
Haliclona sp. 1022 (Negros Orientale, Philippines) (7, QM/NTM collection)
Haliclona sp. 1031 (SW. Cebu I., Philippines) (7, QM/NTM collection)
Haliclona sp. 1705 (Kalimantan, Indonesia) (6, QM/NTM collection)
Haliclona spp. (Singapore; QM/ZRC collections) (2)
Haliclona spp. (Nha Trang, Vietnam, PIBOC database) (3)
Haliclona ('Sigmadocia') sp. 49 (Phuket and Ko Samui regions, Thailand) (1,3, QM/NTM collection)
Reniera aquaeductus Schmidt *infundibularis* Ridley & Dendy; Lindgren, 1897: 481; Lindgren, 1898 (Edam, Java) (2)
Reniera australis Lendenfeld, 1888; Dragnewitsch, 1906:443 (Singapore, 1° 30'N) (2)
Reniera baeri (Wilson, 1925); de Laubenfels, 1935; Pulitzer-Finali, 1980 (Philippines; Indonesia; Hong Kong) (5,6,7)
Reniera camerata Ridley, 1884; Dawydoff, 1952 (Vietnam, Cambodia; Indonesia, ZMA database) (3,6)
Reniera cinerea (Grant) (Indonesia, ZMA database) (6)
Reniera crateriformis Carter, 1882; Carter, 1887:71 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Reniera cribriformis (Ridley, 1884); Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Reniera decidua (Topsent, 1906); Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Reniera fistulosa (Bowerbank, 1866); Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Reniera implexa Schmidt, 1868; Dragnewitsch, 1906:443 (Singapore, 1° 30'N) (2)
Reniera madrepora Dendy; Lindgren, 1897: 481; Lindgren, 1898; Dawydoff, 1952 (Java; Vietnam) (2,3)
Reniera rosea (Bowerbank, 1866); Dawydoff, 1952 (Vietnam; Indonesia, ZMA database) (3,6)
Reniera scyphanoides (Lamarck); Lindgren, 1897: 481; Lindgren, 1898; Dawydoff, 1952 (S of Amoy, China Sea; Vietnam) (3)
Reniera sp.; Sollas 1902:210, pl.14, fig.5 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Reniera sp.; Sollas 1902:210, pl.15, fig.11 (Great Redang I., E coast of Malay Peninsula, 5° 50'N) (3)
Reniera sp.; Sollas 1902:211 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Reniera sp.; Sollas 1902:211 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Reniera sp.; Sollas 1902:211, pl.15, fig.3 (Pulau Bidang, NE of Penang, 5° 30'N) (2)

Reniera sp.; Sollas 1902:211 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Reniera sp.; Sollas 1902:212 (Pulau Bidang, NE of Penang, 5° 30'N) (2)
Reniera sp. 944 (Phuket region, Thailand) (1, QM/NTM collection)
Reniera sp.; van Soest, 1980 (Hong Kong) (5)

Family Niphatidae Van Soest, 1980

Definition. - Encrusting, massive, fan-shaped, vase-shaped and branching growth forms, often with chimney-like oscular processes; ectosomal skeleton consists of a dense multispicular, three-dimensional, paratangential reticulation of diactinal spicules (oxeas or strongyles), usually more compact than the choanosomal skeleton; erect spicule brushes characteristically at the surface; choanosomal skeleton a reticulation of ascending and transverse-connecting spongin fibres, cored by multispicular tracts of oxeas; interstitial spicules also common; microscleres, if present, are sigmas or microxeas.

SOUTH CHINA SEA SPECIES.
Aka mucosa (Bergquist, 1965), Phuket region, Thailand (AIMS/NCI collection); Indonesia (ZMA database) (1,6, QM/NTM collection)
Aka sp.; George & George, 1987 (as 'Siphonodictyon') (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Aka sp. 962 (Phuket region, Thailand) (1, QM/NTM collection)
Aka spp. (Indonesia, ZMA database) (6)
Aka sp. 1633 (SW. Cebu, Philippines) (7, QM/NTM collection)
Aka sp. (Singapore; ZRC) (2)
Amphimedon conica Brondsted, 1924 (Indonesia, ZMA database) (6)
Amphimedon ('Pachychalina') fibrosa (Ridley & Dendy, 1886); Lindgren, 1897: 481; Lindgren, 1898; Dragnewitsch 1906:444; Wilson, 1925:411; Dawydoff, 1952 (Singapore, 1° 30'N; Vietnam, China Sea, 11° 5'N, Java) (2,3)
Amphimedon ('Pachychalina') fragilis (Ridley & Dendy, 1886); Lindgren, 1897: 481; Lindgren 1898; Dawydoff, 1952 (Java Sea; Vietnam) (2,3)
Amphimedon ('Pachychalina') melior (Ridley & Dendy, 1886); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Amphimedon melior Ridley & Dendy *tubulifera* Lindgren, 1897: 481; Lindgren, 1898 (Vietnam, China Sea, 11° 5'N) (3)
Amphimedon ('Pachychalina') megalorrhapis (Ridley & Dendy, 1886); Lindgren, 1897: 481; Lindgren, 1898; Dawydoff, 1952 (Vietnam, China Sea, 11° 5'N) (3)
Amphimedon cf. *viridis* Duchassaing & Michelotti, 1864 (Indonesia, ZMA database) (6)
Amphimedon sp. 881 (Sattahip Navy Base region, Thailand) (3, QM/NTM collection)
Amphimedon sp. 1894 (Sulawesi, Indonesia) (6, QM/NTM collection)
Amphimedon spp. (Indonesia, ZMA database) (6)
Amphimedon ('Pachychalina') spinulosa Lendenfeld, 1887; Dragnewitsch, 1906:444 (Singapore, 1° 30'N) (2)
Amphimedon ('Pachychalina') sp.; Zeng et al., 1996 (South China Sea) (5)
Amphimedon spp. (Nha Trang, Vietnam, PIBOC database) (3)
Cribrochalina chinensis Pulitzer-Finali, 1980 (Hong Kong) (5)
Cribrochalina koremella (de Laubenfels, 1954) (Singapore; ZRC) (2)
Cribrochalina olemda (de Laubenfels, 1954) (Kalimantan, Indonesia) (6, QM/NTM collection)
Cribrochalina sp. 1023 (SW. Cebu I., Philippines) (7, QM/NTM collection)
Cribrochalina sp. 1025 (Negros Orientale, SW. Cebu I., Philippines) (7, QM/NTM collection)
Cribrochalina sp. 792 (Negros Orientale, Philippines) (7, QM/NTM collection)
Cribrochalina sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Cribrochalina sp.; George & George, 1987 (photo 3F)(Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Cribrochalina sp. (Singapore; ZRC) (2)
Cribrochalina sp. (Singapore; ZRC) (2)
Cribrochalina sp. (Singapore; ZRC) (2)
Gelliodes callista de Laubenfels; Lévi, 1961: 141 (Vietnam) (3)

Gelliodes fibroreticulata Dendy, 1916 (Indonesia, ZMA database) (6)
Gelliodes fibrosa (Wilson, 1925:388); de Laubenfels, 1935:329 (Philippines) (7)
Gelliodes fibulata (Ridley, 1884); Burton, 1928:115; Dawydoff, 1952; Lévi, 1961: 141; Pattanayak, 1997 (Cinque I., Andaman Is, 11° 25'N, Nicobar and Andaman Islands; Indonesia, ZMA database; Vietnam; Singapore; QM/ZRC collections) (1,2,3,6)
Gelliodes fibulatus (Carter 1881); Burton, 1928; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Gelliodes gracilis Hentschel, 1912; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Aru Is, Indonesia) (4,6)
Gelliodes hamata Thiele, 1903 (Indonesia, ZMA database) (6)
Gelliodes macrosigma Hentschel, 1912 (Aru Is, Indonesia) (6)
Gelliodes obtusa Hentschel, 1912 (Aru Is, Indonesia) (6)
Gelliodes petrosioides Dendy, 1905 (Indonesia, ZMA database) (6)
Gelliodes pumila (Lendenfeld, 1887); van Soest, 1980 (Hong Kong, Indonesia, ZMA database) (5,6)
Gelliodes spinosella Thiele, 1899; Dragnewitsch, 1906:442 (Singapore, 1° 30'N) (2)
Gelliodes truncatus Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Gelliodes spp. (Indonesia, ZMA database) (6)
Gelliodes sp. 1595 (Bohol Sea, Philippines) (7, QM/NTM collection)
Gelliodes sp. 964 (Phuket region, Thailand) (1, QM/NTM collection)
Gelliodes sp. 1759 (Sulawesi, Indonesia) (6, QM/NTM collection)
Gelliodes spp. (Singapore; QM/ZRC collections) (2)
Gelliodes sp.nov.; Dawydoff, 1952 (Cape Varella, Vietnam) (3)
Niphates brevispiculifera (Dendy, 1905) (Indonesia, ZMA database) (6)
Niphates spp. (Indonesia, ZMA database) (6)
Niphates sp.; Pettit et al., 1996 (Singapore) (2)
Niphates sp. 1026 (Bohol Sea, Philippines) (7, QM/NTM collection)
Niphates sp. 1713 (Kalimantan, Indonesia) (6, QM/NTM collection)
Niphates sp. (Singapore; ZRC) (2)
Niphates sp. (Singapore; ZRC) (2)
Niphates sp. (Singapore; ZRC) (2)
Niphates spp. (Singapore; QM/ZRC collections) (2)
Niphates spp. (Nha Trang, Vietnam, PIBOC database) (3)

Family Phloeodictyidae Carter, 1882

Definition. - Encrusting, massive, lobate, or more frequently spherical and tubular growth forms buried in the substrate, usually with fistules on upper surface bearing apical oscules, occasionally excavating coralline substrates; ectosomal skeleton multilayered, irregular, tangential reticulation of diactinal spicules (oxeas or strongyles), forming a distinct, usually detachable. parchment-like crust; choanosomal skeleton an irregular reticulation of diactinal spicules forming multispicular tracts, typically producing a pulpy effect, with or without spongin fibres, together with an irregularly dispersed isotropic reticulation of single spicules scattered between these major tracts; microscleres may include centrangulate sigmas and toxas.

SOUTH CHINA SEA SPECIES.
Calyx clavata (Burton, 1928:117); Pattanayak, 1997 (off Cinque I., Andaman Is, 240-340m, 11° 25'N; Nicobar and Andaman Islands) (1)
Calyx ('Vagocia') imperialis (Dendy, 1922) (Indonesia, ZMA database) (6)
Oceanapia amboinensis Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Oceanapia ('Phloeodictyon') cagayanense (Wilson, 1925:420) (Philippines; Indonesia, ZMA database) (6,7)
Oceanapia crassispicula Kieschnick, 1896 (Ternate, Moluccas, Indonesia) (6)
Oceanapia dura Vacelet & Vasseur, 1971 (Indonesia, ZMA database) (6)
Oceanapia elastica Keller, 1891 (Indonesia, ZMA database) (6)
Oceanapia eusiphonia (Ridley, 1884) (Indonesia, ZMA database) (6, Burton MS)

Oceanapia incrustata Dendy, 1922 (Indonesia, ZMA database) (6)
Oceanapia ('Phloeodictyon') cf. isodictyiforme (Carter, 1882); Carter, 1887:69 (King I., Mergui Archipelago, Burma, 12° 08'N) (1) [misidentification for a european species]
Oceanapia fragilis Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Oceanapia media Thiele, 1900 (Indonesia, ZMA database) (6)
Oceanapia mollis (Dendy, 1895) (Indonesia, ZMA database) (6, Burton MS)
Oceanapia pellucida (Ridley, 1884) (Indonesia, ZMA database) (6, Burton MS)
Oceanapia "petrosia" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Oceanapia polysiphonia Dendy, 1922 (Indonesia, ZMA database) (6)
Oceanapia ('Phloeodictyon') putridosum (Lamarck); Wilson, 1925:419 (Philippines) (7)
Oceanapia ramsayi (Lendenfeld); George & George, 1987 (photo 3C)(Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Oceanapia renieroides Burton, 1934 (Indonesia, ZMA database) (6)
Oceanapia sagittaria (Sollas, 1902:212); Hooper, Kelly-Borges & Riddle, 1993 (Pulau Bidang, NE of Penang, 5° 30'N; AIMS/NCI collection, Ko Samui region, Thailand (QM/NTM collections); Singapore (QM/ZRC collections) (2,3)
Oceanapia toxophila Dendy, 1922 (Indonesia, ZMA database) (6)
Oceanapia tuberosa Dendy, 1922 (Indonesia, ZMA database) (6)
Oceanapia zoologica Dendy, 1905 (Indonesia, ZMA database) (6)
Oceanapia spp. (Indonesia, ZMA database) (6)
Oceanapia sp. 1712 (Kalimantan, Indonesia) (6, QM/NTM collection)
Oceanapia sp. 618 (Kalimantan, Indonesia) (6, QM/NTM collection)
Oceanapia spp. (Singapore; QM/ZRC collections) (2)
Oceanapia ('Pachypellina') fibrosa gracilis (Wilson, 1925:412) (Philippines) (7)
Pellina integra Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)

Family Petrosiidae van Soest 1980

Definition. - Typically massive, vase-shaped or volcano-shaped sponges, sometimes encrusting, bulbous, and less commonly branching growth forms; texture characteristically stony, brittle, reflecting that in most species siliceous spicules are clearly dominant over spongin; ectosomal skeleton an isotropic reticulation of single spicules or spicule tracts forming a crust, giving the surface a smooth appearance; choanosomal skeleton more-or-less a regular isotropic reticulation of multispicular tracts, without distinction between primary or secondary tracts, bound together with minimal spongin, forming oval meshes; microscleres may include microxeas and microstrongyles; reproduction oviparous.

SOUTH CHINA SEA SPECIES.
Acanthostrongylophora ashmorica Hooper, 1985 (Indonesia, ZMA database) (6)
Petrosia chaliniformis Thiele, 1899 (Indonesia, ZMA database) (6)
Petrosia contignata Thiele, 1899 (Indonesia, ZMA database) (6)
Petrosia crustata Wilson, 1925:408 (Philippines) (7)
Petrosia densissima Dendy, 1905 (Indonesia, ZMA database) (6)
Petrosia dura (Nardo); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Petrosia elastica (Keller); Lindgren, 1897: 480; Lindgren, 1898; Dawydoff, 1952 (Gaspar Straits, Java; Vietnam) (2,3)
Petrosia ficiformis Olivi, 1791 (Indonesia, ZMA database) (6)
Petrosia expansa Thiele, 1903 (Indonesia, ZMA database) (6)
Petrosia expansa Thiele *aruensis* Hentschel, 1912 (Aru Is, Indonesia) (6)
Petrosia hebes (Lendenfeld, 1890) (Indonesia, ZMA database) (6)
Petrosia ingens Thiele, 1899 (Indonesia, ZMA database) (6)
Petrosia lignosa Wilson, 1925:403 (Philippines) (7)
Petrosia microxea Vacelet, Vasseur & Lévi, 1976 (Indonesia, ZMA database) (6)
Petrosia nigricans Lindgren, 1897: 480; Lindgren, 1898 (Java) (2)
Petrosia pulvilla Thiele, 1899 (Indonesia, ZMA database) (6)
Petrosia rava Thiele, 1899 (Indonesia, ZMA database) (6)

Petrosia seriata (Hentschel); Lévi, 1961: 140 (Vietnam) (3)
Petrosia similis (Ridley & Dendy), var. *compacta* Ridley & Dendy, 1887; Dragnewitsch, 1906:443; Hentschel, 1912; Dawydoff, 1952; Lévi, 1961:529 (Singapore, 1° 30'N; Aru Is, Indonesia; Vietnam) (2,3,6,7)
Petrosia similis granulosa Wilson, 1925:406 (Philippines, Indonesia, ZMA database) (6,7)
Petrosia similis seriata Hentschel, 1912 (Aru Is, Indonesia) (6)
Petrosia strongylata Thiele, 1903 (Indonesia, ZMA database) (6)
Petrosia truncata aruensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Petrosia spp. (Indonesia, ZMA database) (6)
Petrosia sp. 113 (Phuket region, Thailand) (1, QM/NTM collection)
Petrosia sp. 963 (Phuket region, Thailand) (1, QM/NTM collection)
Petrosia sp. 966 (Phuket region, Thailand) (1, QM/NTM collection)
Petrosia sp. 1021 (Negros Orientale, Philippines) (7, QM/NTM collection)
Petrosia sp. 1634 (SW Cebu, Philippines) (7, QM/NTM collection)
Petrosia sp. 1601 (Sulawesi, Indonesia) (6, QM/NTM collection)
Petrosia sp. (Singapore; ZRC) (2)
Petrosia spp. (Singapore; QM/ZRC collections) (2)
Petrosia spp. (Nha Trang, Vietnam, PIBOC database) (3)
Strongylophora durissima Dendy, 1922 (Indonesia, ZMA database) (6)
Strongylophora sp. (Indonesia, ZMA database) (6)
Strongylophora sp. (Singapore; ZRC) (2)
Xestospongia carbonaria (Lamarck, 1815) (Indonesia, ZMA database) (6)
? Xestospongia ('Protoschmidtia') cerebrum (Burton, 1928:116, pl.1, fig.2); Pattanayak, 1997 (8 mls W of Interview I., Andaman Is, 90-540m, 13°N; off Cinque I., Andaman Is, 240-340m, 11° 25'N; Nicobar and Andaman Islands) (1)
Xestospongia exigua (Kirkpatrick, 1900); George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Indonesia, ZMA database);(Singapore; QM/ZRC collections) (2,4,6)
Xestospongia exigua "samarensis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Xestospongia cf. *exigua* (Kirkpatrick); (Singapore; QM/ZRC collections) (2)
? Xestospongia ('Protoschmidtia') expansa (Thiele, 1903); Burton, 1928:116 (NW of Cape Negrais, Bay of Bengal, Burma, 16° 45'N, 2600m) (1)
Xestospongia cf. *mamillata* Pulitzer-Finali, 1982 (Indonesia, ZMA database) (6)
Xestospongia testudinaria (Lamarck, 1814); Pattanayak, 1997 (Sattahip region , Thailand; Nicobar and Andaman Islands); George & George, 1987; Li et al., 1981 [as "muta"] (Bodgaya Islands and Pulau Sipadan, Sabah; Indonesia, ZMA database); (Singapore; QM/ZRC collections) (1,2,3,4,6)
Xestospongia testudinaria fistulophora Hentschel, 1912; Wilson, 1925:401 (Aru Is, Indonesia; Philippines) (6,7)
Xestospongia cf. *testudinaria* (Lamarck) (Singapore; QM/ZRC collections) (2)
Xestospongia "wiedenmayeri"; Pinder, 1992 (South China Sea) (5)
Xestospongia sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Xestospongia sp. 947 (Phuket region, Thailand) (1, QM/NTM collection)
Xestospongia sp. 954 (Phuket region, Thailand) (1, QM/NTM collection)
Xestospongia spp. (Indonesia, ZMA database) (6)
Xestospongia sp. 1897 (Sulawesi, Indonesia) (6, QM/NTM collection)
Xestospongia sp. (Singapore; ZRC) (2)
Xestospongia spp. (Nha Trang, Vietnam, PIBOC database) (3)

Order Dictyoceratida

Definition. - "Keratose sponges" lacking mineral spicules, although detritus and contaminating spicules may be acquired; sponges usually tough, difficult to tear, and frequently with differences in pigmentation between the surface and subectosomal regions; main skeleton a reticulation of spongin fibres, often organised into primary, secondary and sometimes tertiary networks; fibres usually homogenous or lightly laminated in cross-section, with or without central pith, and collagenous spongin filaments may be scattered within the mesohyl; larvae are large, incubated parenchymella, evenly covered with short cilia except

at one pole where tufts of large flagella occur, and both poles have rings of pigmented cilia-free cells.

Remarks. - Four families are included in the dictyoceratids, differentiated by their fibre characteristics, although there is currently some debate about whether Dysideidae should be included here or with the Dendroceratida (based on affinities inferred by comparative choanosomal ultrastructures and supporting chemical evidence for affinities to dendroceratids).

Family Dysideidae Gray, 1867

Definition. - Encrusting, massive or branching growth forms, typically with conulose surface; surface conulose developed to various degrees, often characteristically sculptured by tangential spongin fibres cored by sand, giving it a delicate lace-like appearance; texture usually soft and compressible, sometimes brittle due to interstitial detritus; choanosome a wide reticulation of spongin fibres, concentrically stratified although to varying degrees; fibres laminated and cored by a central pith, but this may be obscured by abundant detritus which is frequently incorporated into the spongin fibres; mesohyl contains only light collagen; choanocyte chambers are large and eurypylous.

SOUTH CHINA SEA SPECIES.

Dysidea arenaria Bergquist, 1965 (Indonesia, ZMA database) (6)
Dysidea cinerea Keller, 1889; van Soest, 1980 (Indonesia, ZMA database, Hong Kong) (5,6)
Dysidea elastica Brondsted, 1934 (Java, Banda, Indonesia) (6)
Dysidea ('Spongelia') elastica (Schulze), var. *massa* Schulze, 1879; Dragnewitsch, 1906:443 (Singapore, 1° 30'N) (2)
Dysidea fragilis (Montagu, 1818); Dawydoff, 1952 (South and Central Annam, Poulo Dama, Vietnam); Caberoy, 1979: 16; Caberoy, 1981:12 (Indonesia, ZMA database; Quezon, Philippines); Su et al., 1993a, 1995a,b; Zhong et al., 1993 (South China Sea, Taiwan) (3,5,6,7)
Dysidea ('Spongelia') fragilis Schulze, var. *fasciculata* (Wilson, 1925:476) (Philippines) (7)
Dysidea ('Spongelia') fragilis Schulze, var. *tubulosa* (Schulze, 1879); Dragnewitsch, 1906:442 (Singapore, 1° 30'N) (2)
Dysidea granulosa Bergquist, 1965 (Indonesia, ZMA database) (6)
Dysidea herbacea (Keller, 1889); Dawydoff, 1952 (South and Central Annam, Poulo Dama, Vietnam); George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah); Pinder, 1992 (South China Sea (Indonesia, ZMA database) (3,4,5,6)
Dysidea ('Spongelia') pallescens (Keller, 1889); Dawydoff, 1952 (South Annam, Vietnam) (3)
Dysidea ramoglomerata Carter, 1887:64 (mud flats, King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Dysidea ramoglomerata var. *ramotubulata* Carter, 1887:65 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Dysidea ramoglomerata var. *granulata* Carter, 1881; Carter, 1887:65 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Dysidea reticulata Thiele, 1899 (Indonesia, ZMA database) (6)
Dysidea sp.; Zhong et al., 1992 (South China Sea) (5)
Dysidea sp.; Su et al., 1993b (South China Sea) (5)
Dysidea sp. 16 (Phuket region, Thailand) (1, QM/NTM collection)
Dysidea sp. 229 (Sattahip and Phuket regions Thailand) (1,3, QM/NTM collection)
Dysidea sp. 940 (Sattahip region, Thailand) (3, QM/NTM collection)
Dysidea sp. (Indonesia, ZMA database) (6)
Dysidea sp. 1709 (Kalimantan, Indonesia) (6, QM/NTM collection)
Dysidea spp. (Singapore; QM/ZRC collections) (2)
Euryspongia lobata Bergquist, 1965 (Indonesia, ZMA database) (6)
Euryspongia sp. (Indonesia, ZMA database) (6)
Spongionella ('Spongiella') monoprocta (Lévi, 1961: 145) (Vietnam) (3)
Spongionella spp. (Singapore; QM/ZRC collections) (2)

Family Ircinidae Gray, 1867

Definition. - Massive, lobate, spherical, digitate, cup shaped, encrusting growth forms, always with a conulose surface, except in forms with an organised superficial sand crust where conules may be reduced to mammiform protruberances; fibres making up anastomosing skeleton laminated in cross section with a central pith region, often obscured by large quantities of debris incorporated into fibres and interstitially; skeleton irregularly arranged; primary fibres always fasciculate, often forming very complex arrays; secondary fibres generally uncored; a third element consists of fine collagen filaments dispersed in wavy tangled tracts throughout the mesohyl; filaments have terminal knobs, sometimes studded with lepidocrocite granules, composed of collagen distinct from that found in the mesohyl matrix or in the fibres; presence of filaments makes the sponge very tough, almost impossible to tear; choanocyte chambers spherical and diplodal; mmesohyl only lightly infiltrated with collagen (like the Spongiidae).

SOUTH CHINA SEA SPECIES.

Ircinia anomala Dendy, 1905 (Indonesia, ZMA database) (6, Burton MS)
Ircinia aruensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Ircinia "atrovirens" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Ircinia clavosa (Ridley, 1884); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Ircinia collectrix Lendenfeld, 1889 (Indonesia, ZMA database) (6, Burton MS)
Ircinia conulosa Lendenfeld, 1889 (Indonesia, ZMA database) (6, Burton MS)
Ircinia dendroides Poléjaeff, 1884; Lévi, 1961:531 (Indonesia, ZMA database; Palawan, Philippines) (6,7)
Ircinia dendroides "dura" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Ircinia echinata Keller, 1889 (Indonesia, ZMA database) (6)
Ircinia fasciculata (Pallas,1766:361); Caberoy, 1981 (Kalayangi, Pitogo, Quezon, Zamboanga, Pangasinan, Batangas, Masbate, Philippines) (7)
Ircinia fusca Carter, 1880 (Indonesia, ZMA database) (6)
Ircinia "grossa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Ircinia mutans Wilson, 1925:491 (Philippines) (7)
Ircinia pinna Hentschel, 1912; van Soest, 1980 (Indonesia, Hong Kong) (5,6)
Ircinia ramodigitata Burton, 1934 (Indonesia, ZMA database) (6)
Ircinia ramosa (Keller, 1889); George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Indonesia, ZMA database) (4,6)
Ircinia schulzei Dendy, 1905 (Indonesia, ZMA database) (6)
Ircinia simpliccima (Sollas); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Ircinia spiculosa Hentschel, 1912 (Aru Is, Indonesia) (6)
Ircinia tuberosa Dendy, 1905 (Indonesia, ZMA database) (6, Burton MS)
Ircinia variabilis (Schmidt); Wilson, 1925:494; Dawydoff, 1952 (Philippines, Vietnam, Cambodia) (3,7)
Ircinia spp. (Indonesia, ZMA database) (6)
Ircinia ('Hircinia') sp.; Carter, 1887:63 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Ircinia sp. 1 (Phuket region, Thailand) (1, QM/NTM collection)
Ircinia sp. (Singapore; ZRC collections) (2)
Ircinia sp. (Singapore; QM/ZRC collections) (2)
Ircinia sp. (Nha Trang, Vietnam, PIBOC database) (3)
Psammocinia arenosa Lendenfeld, 1889 (Indonesia, ZMA database) (6, Burton MS)
Psammocinia "rugosa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Psammocinia sp. (Singapore; ZRC) (2)
Sarcotragus ('Stenospongia') aligera (Burton, 1928:135, pl.2, fig.6) (W of Mergui Archipelago, 13° 04'N, 130m) (1)

Family Thorectidae Bergquist, 1978

Definition. - Sponge body often tubular organised around a series of long cylindrical canals, and stalked; yellowish or brick-red internal pigmentation with dark exterior common; surface often armoured in complex fashion, frequently thrown into ridges and hollows; where unarmoured the surface is conulose and may resemble Spongiidae; spongin fibres making up the anastomosing skeleton are laminated in cross-section, with clear zones of disjunction between successive layers; central region with more diffuse pith, not sharply disjunct from the investing more dense layer (as is the pith in Verongida), but merges into the outer layer; pith always evident in the primary fibres and may or may not extend into the secondary elements of the skeleton; fibres often extremely regular with almost perfectly rectangular meshes; some fibres extremely stout; primary fibres may be greatly reduced in number, absent in one genus; choanocyte chambers spherical and diplodal.

SOUTH CHINA SEA SPECIES.

Aplysinopsis elegans Lendenfeld, 1885 (Indonesia, ZMA database) (6)
Cacospongia sp. (Indonesia, ZMA database) (6)
Cacospongia sp.; Carter, 1887:64 (King I., Mergui Archipelago, Burma, 12° 08'N) (1)
Fascaplysinopsis reticulata Hentschel, 1912 (Aru Is, Indonesia) (6)
Fasciospongia cava Hentschel, 1912 (Aru Is, Indonesia) (6)
Fasciospongia euplectelloides Hentschel, 1912 (Aru Is, Indonesia) (6)
Fasciospongia pulcherrima (Ridley, 1884); Dawydoff, 1952 (Paracels Archipelago, Spratly Is, Macclesfield, Atoll de Tizard) (3)
Fasciospongia ('Stelospongia') sp.; Sollas, 1902:220 (Great Redang I., E. coast of Malay Peninsula, 5° 50'N) (3)
Hyrtios elegans Thiele, 1899 (Indonesia, ZMA database) (6)
Hyrtios erecta (Keller, 1889); Dawydoff, 1952 (Poulo Condore; Réam, Vietnam; Indonesia, ZMA database) (3,6)
Hyrtios sp. (Indonesia, ZMA database) (6)
Hyrtios sp. 796 (Phuket region, Thailand) (1, QM/NTM collection)
Luffariella geometrica Kirkpatrick, 1900 (Phuket region, Thailand) (1, QM/NTM collection)
Luffariella variabilis Poléjaeff, 1884 (Indonesia, ZMA database) (6)
Luffariella herdmani (Dendy, 1905) (Indonesia, ZMA database) (6, Burton MS)
Smenospongia spp. (Indonesia, ZMA database) (6)
Thorecta sp. 957 (Phuket region, Thailand) (1, QM/NTM collection)

Family Spongiidae Gray, 1867

Definition. - Encrusting, massive, cup-shaped and branching sponges, including the commercial 'bath-sponges'; surface typically conulose or with a distinct sand cortex; texture compressible, fibrous, resilient except where heavily sand encrusted, and interior is rough to touch reflecting the density of spongin skeleton in relation to soft tissue; choanosomal skeleton consists of reticulate spongin fibres, usually organised into a heirarchy of sizes: the primary elements are reduced in some genera and completely absent in one; fibres homogenous in cross section, showing no tendency to fracture around planes of concentric lamination, lacking a central pith but often incorporating detritus and foreign spicules into the spongin skeleton; choanocyte chambers small and diplodal.

SOUTH CHINA SEA SPECIES.

Carteriospongia "flabelliformis" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Carteriospongia foliascens (Pallas, 1766); Caberoy, 1979:15; Caberoy, 1981:8; Dawydoff, 1952 (Indonesia, ZMA database; Philippines; Vietnam, Cambodia) (3,6,7)

Carteriospongia otahitica Ehlers; Dawydoff, 1952 (Paracels Archipelago, Spratly Is, Macclesfield, Atoll de Tizard) (3)
Carteriospongia pennatula (Lamarck, 1814) (Indonesia, ZMA database) (6)
Carteriospongia radiata (Hyatt, 1877); Lévi, 1961:530 (Indonesia, ZMA database; Zamboanga, Philippines) (6,7)
Carteriospongia robusta (Keller, 1889) (Indonesia, ZMA database) (6, Burton MS)
Carteriospongia silicata Lendenfeld, 1885 (Indonesia, ZMA database) (6)
Carteriospongia supraoculata (Lendenfeld, 1889) (Indonesia, ZMA database) (6, Burton MS)
Carteriospongia sp. (Indonesia, ZMA database) (6)
Coscinoderma sp. (Indonesia, ZMA database) (6)
Dactylospongia elegans Thiele, 1899; Lopez et al., 1994 (Indonesia, ZMA database; South China Sea; Singapore; ZRC) (2,5,6)
Dactylospongia sp. (Singapore; ZRC) (2)
Hippospongia cerebrum (Manila region, Philippines) (7, QM/NTM collection)
Hippospongia fistulosa Lendenfeld, 1889; Lévi, 1961:529 (Zamboanga, Philippines) (7)
Hippospongia mollissima Lendenfeld, 1889; Dragnewitsch, 1906:446 (Singapore, 1° 30'N) (2)
Hippospongia sp. (Indonesia, ZMA database) (6)
Hyattella clathrata (Carter, 1881) (Indonesia, ZMA database) (6)
Hyattella intestinalis (Lamarck 1814) (Phuket region, Thailand; AIMS/NCI collection; Indonesia, ZMA database) (1,6, QM/NTM collection)
Hyattella sp. 398 (Bohol Sea, Philippines) (7, QM/NTM collection)
Hyattella sp. (Singapore; QM/ZRC collections) (2)
Phyllospongia aliena Wilson, 1925:481 (Philippines) (7)
Phyllospongia coriacea Thiele, 1899 (Indonesia, ZMA database) (6)
Phyllospongia dendyi Lendenfeld, 1885 (Indonesia, ZMA database) (6)
Phyllospongia ectoscula Lévi, 1961:530 (Zamboanga, Philippines) (7)
Phyllospongia foliascens (Pallas, 1766:395); Pattanayak, 1997 (Nicobar and Andaman Islands); George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; SW. Cebu, Manila region, Philippines); Zeng et al., 1991a,d; Fu et al., 1991a,c, 1992a,b; Fu et al., 1993a,b; Su et al., 1995a (South China Sea, Taiwan) (1,4,5,7)
Phyllospongia palmata Thiele, 1899 (Indonesia, ZMA database) (6)
Phyllospongia papyracea (Esper, 1794); Lévi, 1961:530 (Indonesia, ZMA database; Zamboanga Norte, Philippines) (6,7, QM/NTM collection)
Phyllospongia vermicularis Lendenfeld, 1885 (Indonesia, ZMA database) (6)
Phyllospongia sp.; Wan et al., 1996 (South China Sea) (5)
Phyllospongia spp.; Dawydoff, 1952 (Paracels Archipelago, Spratly Is, Macclesfield, Atoll de Tizard; Vietnam, Cambodia) (3)
Spongia ceylonensis Dendy, 1905; van Soest, 1980 (Hong Kong, Indonesia, ZMA database) (5,6)
Spongia digitata Sollas, 1902:220, pl.14, fig.4, pl.15, fig.2 (Great Redang I., E. coast of Malay Peninsula, 5° 50'N) (3)
Spongia cf. *equina* (Schmidt); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Spongia irregularis Lendenfeld, 1885; Dawydoff, 1952 (Indonesia, ZMA database; Vietnam, Cambodia) (3,6)
Spongia irregularis mollior Topsent, 1897; Desqueyroux-Faundez, 1981 (Ambon, Indonesia) (6)
Spongia ('Euspongia') irregularis var. *suriganensis* (Wilson, 1925:486) (Philippines) (7)
Spongia irregularis villosa Hentschel, 1912 (Aru Is, Indonesia) (6)
Spongia nardorus Lendenfeld, 1885 (Indonesia, ZMA database) (6)
Spongia officinalis Linnaeus, 1794; Carter, 1887:63; Wilson, 1925:484; Lévi, 1967:529; Caberoy, 1979:14; Caberoy, 1981:7 (King I., Mergui Archipelago, Burma, 12° 08'N; Phuket region, Thailand; Negros Orientale, Mindanao, Sulu, Philippines; Indonesia, ZMA database) (1,6,7, QM/NTM collection)
Spongia officinalis var. *adriatica* Schulze, 1879; Dragnewitsch, 1906:445 (Singapore, 1° 30'N) (2)
Spongia officinalis var. *rotunda* (Hyatt, 1877); Sollas, 1902:220; Dragnewitsch, 1906:445 (Great Redang I., E coast of Malay Peninsula, 5° 50'N; Singapore, 1° 30'N) (2,3)
Spongia cf. *officinalis* (Lamarck); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Spongia tubulifera Lamarck, 1814 (Indonesia, ZMA database) (6)
Spongia zimocca Schmidt, 1862; Dragnewitsch, 1906:445 (Singapore, 1° 30'N) (2)
Spongia sp.; Utkina & Veselova, 1990 (South China Sea) (5)
Spongia sp. 262 (Phuket region, Thailand) (1, QM/NTM collection)
Spongia sp. 1711 (Kalimantan, Indonesia) (6, QM/NTM collection)
Spongia spp. (Nha Trang, Vietnam, PIBOC database) (3)

Order Dendroceratida

Definition. - "Keratose sponges", without mineral spicules, with dendritic or reticulate skeleton, and fibres originate from a basal plate, without any obvious differences between primary and secondary spongin fibre elements; fibres are strongly laminated, with distinct pith; larvae are incubated parenchymella, evenly ciliated, with or without a posterior tuft of long flagella.

Remarks. - Three families are traditionally included here, distinguished by their respective fibre development and skeleton arrangement.

Family Darwinellidae Merejkowsky, 1879

Definition. - Encrusting, massive, lobate, lamellate and erect columnar growth forms; choanosomal fibre skeleton, where present, is completely dendritic and sometimes supplemented by spongin spicules not attached to the primary skeleton; in massive species these fibres always arise from a flat basal spongin plate; one genus lacks spongin fibres but has the ectosome reinforced with collagenous fibrils; fibres have laminated bark surrounding the central pith; the pith is usually well developed but in 1 genus it is replaced by detritus; choanocyte chambers are eurypylous.

SOUTH CHINA SEA SPECIES.

Aplysilla cf. *rosea* Barrois, 1876; Dawydoff, 1952 (Vietnam, Cambodia; Indonesia, ZMA database) (3,6)
Aplysilla sulfurea Schulze, 1878:404; Caberoy, 1981:13 (Tabayas Bay, Batangas, Quezon, Marinduque, Philippines) (7)
Aplysilla sp. (Indonesia, ZMA database) (6) (Indonesia, ZMA database) (6)
Aplysilla sp. 1714 (Kalimantan, Indonesia) (6, QM/NTM collection)
Chelonaplysilla cf. *betinensis* Zea & van Soest, 1986
Chelonaplysilla erecta Keller, 1889 (Indonesia, ZMA database) (6)
Chelonaplysilla noevus (Carter, 1876); Lévi, 1961: 147 (Vietnam; Indonesia, ZMA database) (3,6)
Darwinella australiensis Carter, 1885 (Indonesia, ZMA database) (6)
Darwinella sp. 1030 (Negros Orientale, Philippines) (7, QM/NTM collection)
Dendrilla lacunosa Hentschel, 1912 (Aru Is, Indonesia) (6)
Dendrilla lendenfeldi Hentschel, 1912 (Aru Is, Indonesia) (6)
Dendrilla membranosa (Pallas); Dawydoff, 1952 (Vietnam, Cambodia) (3)
Dendrilla mertoni Hentschel, 1912 (Aru Is, Indonesia) (6)
Dendrilla rosea digitata Brondsted, 1934 (Java, Banda, Indonesia) (6)
Dendrilla rosea typica Hentschel, 1912 (Aru Is, Indonesia) (6)
Dendrilla sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Dendrilla sp. 1716 (Kalimantan, Indonesia) (6, QM/NTM collection)
Dendrilla sp. 221 (Phuket region Thailand) (1, QM/NTM collection)
Dendrilla sp.; Dawydoff, 1952 (Paracels Archipelago, Spratly Is, Macclesfield Is, Atoll de Tizard) (3)
Hexadella indica Dendy, 1905 (Indonesia, ZMA database) (6)
Hexadella purpurea Burton, 1937 (Indonesia, ZMA database) (6)
Hexadella sp. (Indonesia, ZMA database) (6)
Pleraplysilla australiensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Pleraplysilla sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)

Family Dictyodendrillidae Bergquist, 1980

Definition. - Growth form varies from spreading with digitate projections, to lobate or stalked forms; texture is delicate and cavernous; choanosomal skeleton has prominently reticulate spongin fibres which may be augmented by incorporation of free spongin spicules in one genus; fibres often dark purple, red, or black, and contrasts with the soft tissue which is either pale or densely and uniformly pigmented; fibre structure is heavy, concentrically laminated and pithed, but pith may be obscured by the incorporation of detritus into fibres; choanocyte chambers are large, eurypylous.

SOUTH CHINA SEA SPECIES.
Dictyodendrilla membranosa (Pallas, 1766) (Indonesia, ZMA database) (6)
Dictyodendrilla "praetensa" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Igernella mirabilis Lévi, 1961 (Indonesia, ZMA database) (6)

Family Halisarcidae Vosmaer, 1885

Definition. - Thin growth form, soft texture, gelatinous surface; fibrous skeleton absent entirely; choanocyte chambers consist of specialised wide-mouthed, extended tubular and branched eurypylous forms; parenchymella larvae are simple, lacking long terminal cilia; often confused with didemnid ascidians.

SOUTH CHINA SEA SPECIES.
Halisarca sp.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Order Verongida

Definition. -"Keratose sponges" lacking spicules, typically fleshy and soft, with pigment that oxidizes to purple colouration; skeleton with large, widely spaced spongin fibres forming dendritic or reticulate structures; fibres may be aggregated (fasciculated) into bundles; no differentiation of primary and secondary elements, and detritus is only rarely incorporated into fibres; fibres have a laminated cortical (bark) region and a distinct central pith of fine spongin fibrils, but the cortex may be reduced or disappear entirely in some species; mesohyl contains abundant collagenous fibrils.

Remarks. - Three families are known, all of which are thought to be oviparous.

Family Aplysinidae Carter, 1875

Definition. - Encrusting, massive, club-shaped and fan-shaped growth forms; reticulate, anastomosing spongin fibres produce polygonal meshes, not organised into one plane; fibres have normal bark and pith elements, without foreign detritus, and the collagenous spongin matrix is dense; choanocyte chambers small, spherical and diplodal.

SOUTH CHINA SEA SPECIES.
Aplysina mollis Row, 1911 (Indonesia, ZMA database) (6)
Aplysina mollis aruensis Hentschel, 1912 (Aru Is, Indonesia) (6)
Aplysina sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)

Aplysina sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)
Aplysina sp.; Jung et al., 1995 (South China Sea) (5)
Aplysina sp. (Indonesia, ZMA database) (6)

Family Druinellidae Lendenfeld, 1889

Definition. - Lobate and club-shaped sponges; pigmentation frequently sulphur yellow that usually oxidizes to purple, although some species have superficial pink to purple coloration and a beige to pale yellow interior; skeleton with dendritic fibres, widely spaced or greatly reduced in relation to the heavy collagenous spongin matrix, sometimes supplemented by spongin spicules; fibres with strong bark elements, and fibres have the pith component emphasised over the bark, which is typically reduced or absent; choanocyte chambers small, spherical and diplodal.

SOUTH CHINA SEA SPECIES.
Aplysinella strongylata Bergquist, 1980 (Indonesia, ZMA database) (6)
Aplysinella sp. (Indonesia, ZMA database) (6)
Druinella ('Psammaplysilla') purpurea Carter, 1880; van Soest, 1980 (Indonesia, ZMA database, Hong Kong) (5,6)
Druinella ('Psammaplysilla') kelleri (Wilson, 1925:488) (Philippines) (7)
Druinella ('Psammaplysilla') sp.; Jung et al., 1995 (South China Sea) (5)
Pseudoceratina durissima Carter, 1886 (Indonesia, ZMA database) (6)
Pseudoceratina durissima grisea Hentschel, 1912 (Aru Is, Indonesia) (6)
Pseudoceratina ianthelliformis Lendenfeld, 1888 (Indonesia, ZMA database) (6)
Pseudoceratina sp. (Singapore; ZRC) (2)

Family Ianthellidae Hyatt, 1875

Definition. - Lobate and fan-shaped, stalked growth forms common; pigmentation ranges from typically sulphur yellow, deep orange to deep purple with oxidation to deep purple; fibre skeleton, where present, is reticulate and frequently compressed into 2 dimensions, radiating from the contracted basal attachment; fibres typically large, particularly towards the base of the sponge, containing cellular elements in distinctive concentric annuli occurring mainly in the bark component of each fibre; choanocyte chambers large and eurypylous, sac-shaped, varying between genera from simply elongate to occasionally branched.

SOUTH CHINA SEA SPECIES.
Ianthella basta (Pallas, 1766); Wilson, 1925:475; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah; Indonesia, ZMA database; Philippines) (4,6,7)
Ianthella flabelliformis (Pallas, 1766); Wilson, 1925:474; Dawydoff, 1952 (Paracels Archipelago, Spratly Is, Macclesfield, Atoll de Tizard); Caberoy, 1981:9 (Indonesia, ZMA database, Philippines) (3,6,7)
Ianthella sp. 1706 (Kalimantan, Indonesia) (6, QM/NTM collection)

Class Calcarea

Definition. - With exclusively calcitic spicules ranging from discrete monactinal, diactinal, triactinal or tetractinal spicules, to reticulate skeletons composed of fused crystalline calcite spicules; megascleres and microscleres are not differentiated; skeleton and aquiferous system occurs in three grades of construction: (1) asconoid, with simple tubular construction

(olynthus), without folding of the body wall, with thin walls pierced externally by ostia, leading to tubular water canals (porocyte canals) opening onto a central choanocyte-line cavity (choanoderm), connected to the exterior, at the apex of the sponge, by a single osculum; (2) syconoid construction produced by folding of both the exterior (pinacoderm) and interior (choanoderm) walls, producing choanocyte chambers to lie within the body wall rather than only lining the central atrium as in more simple asconoid structures, but these chambers open directly onto the atrium; (3) leuconoid, found in most sponges (including the Demospongiae), with complex folding and in which the choanocyte chambers are oval and isolated in a maze of canals within the body wall, with chambers opening onto branching and complex excurrent canals; sexual reproduction in Calcarea is exclusively viviparous.

Remarks. - The Calcarea contains two subclasses, 5 orders, 18 families, 98 nominal genera (63 of which are apparently valid), and an estimated fauna of between 400-500 species worldwide. All species are marine.

Subclass Calcinea

Definition. - Regular triradiate spicules, equiangular and equiradiate or exceptionally parasagittal or sagittal, and a basal system of quadriradiates; most species have at least some spicules with the rays and angles between the rays being equal, with or without monactinal or diactinal free spicules; young sponges may have only triradiate spicules; choanocytes basinucleate, nuclei spherical, and basal body of flagellum not adjacent to the nucleus; larvae are entirely ciliated hollow blastula (coeloblastulae).

Order Clathrinida

Definition. - Skeleton composed exclusively of free spicules, without hypercalcified non-spicular reinforcements or spicule tracts.

Remarks. - Six families are currently recognised.

Family Clathrinidae Minchin, 1900

Definition. - Essentially tubular organisation, with continuous choanoderm lining all internal cavities; growth is by longitudinal median divisions and anastomosis of tubes to form large units called the cormus; neither a common cortex nor a well-defined inhalant and exhalant aquiferous system.

SOUTH CHINA SEA SPECIES.
Clathrina coriacea (Montagu, 1818); Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Clathrina sp.; George & George, 1987 (Bodgaya Islands and Pulau Sipadan, Sabah) (4)

Family Soleniscidae Borojevic et al., 1990

Definition. - Essentially tubular organisation; a continuous choanoderm lines all internal cavities; spicules are regular triradiates and/or quadriradiates, sometimes with tripods or biradiates; sponges grow in the form of an individual olynthus, with several olynthi growing from the basal stolon-like tubes, or in the form of distally branching tubes radially arranged around a central olynthus tube without any special skeletal differentiation.

SOUTH CHINA SEA SPECIES.
Dendya prolifera Dendy, 1913; Burton, 1930 (Rotti, Indonesia); Dawydoff, 1952 (Atoll de Tizard, Itu Aba) (3,6)

Family Levinellidae Borejevic et al., 1986

Definition. - Cormus composed of a central tube, sometimes ramified, and diverticuli isolated or grouped in clusters; skeleton of central and radial tubes composed of regular equiradiate and equiangular spicules; skeleton of diverticuli composed of regular and/or parasagittal spicules always clearly distinct from spicules composing the skeleton of the central tube; choanoderm either lines all the central cavity or is restricted to the diverticuli.

[no recorded species]

Family Leucaltidae Dendy & Row, 1913

Definition. - Tubular, branching or regularly anastomosing cormus, either with many oscules or with a large atrium and a single osculum; sponge wall composed of a distinct cortex and choanosome; skeleton of choanosome and atrial wall absent or composed of small and dispersed triradiates and quadriradiates.

[no recorded species]

Family Leucascidae Dendy, 1893

Definition. - Body differentiated into cortex and choanosome reminiscent of a clathroid body composed of anastomosed tubes; cortex composed of large triradiates and/or quadriradiate spicules; choanocyte chambers tubular, often highly ramified and anastomosed; choanoskeleton restricted to walls of the choanocyte chambers, maintaining a distinctly tubular organisation.

[no recorded species]

Family Leucettidae de Laubenfels, 1936

Definition. - Solid body; aquiferous system always leuconoid; choanoskeleton well-developed forming regular network composed of triradiates and/or quadriradiates; cortex thin and composed of spicules similar to those in the choanoskeleton.

SOUTH CHINA SEA SPECIES.

Pericharax canaliculata Burton & Rao, 1932:304, pl.18, fig.1 (2 mls NW of Torres Straits, Mergui Archipelago, 80m, 11° 50'N) (1)

Pericharax heterorhaphis (Poléjaeff, 1884); Burton, 1930 (Ubian, Jedan, Sumbawa, Rotti, Indonesia); Burton & Rao, 1932:304; George & George, 1987 (Off Rutland I., Andaman Is, 70m, 11° 25'N; Bodgaya Islands and Pulau Sipadan, Sabah) (1,4,6)

Leucetta haeckeliana Poléjaeff, 1884; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Order Murrayonida

Definition. - Reinforcement of the skeleton composed of either spicule tracts, calcareous plates or a rigid aspicular skeleton; canal system leuconoid; diapasons (tuning-fork shaped triradiates) or modified biradiates present and generally fasciculated.

Remarks. - There are 3 families and only 3 known species.

Family Murrayonidae Kirkpatrick, 1910

Definition. - Choanosomal skeleton composed of a rigid calcareous aspicular network; cortex composed chiefly of overlapping calcareous scales, with tuning-fork spicules below.

[no recorded species]

Family Paramurrayonidae Vacelet, 1967

Definition. - Choanosomal skeleton composed of bundles of diapsons (tuning-fork triradiates) without any rigid structure; cortical skeleton composed chiefly of a superficial layer of overlapping calcareous scales and an internal layer of free calcareous plates.

[no recorded species]

Family Lelapiellidae Borojevic, Boury-Esnault & Vacelet, 1990

Definition. - Choanosomal skeleton composed of bundles of biradiates without any rigid structure; cortical skeleton composed chiefly of a tangential layer of tripods (triradiates) and curved oxeotes (biradiates).

[no recorded species]

Subclass Calcaronea

Definition. - Calcarea with incubated amphiblastula larvae flagellated only on the anterior half; nuclei of choanocytes apical, and the flagellum arises directly from the nucleus; spicules are triradiate and sagittal (two rays are paired and the third ray is longer than the others), as well as free monaxonic (monactinal or diactinal) forms; aquiferous system ranges from asconoid to leuconoid grades of construction.

Order Leucosoleniida

Definition. - Only with free spicules, without calcified non-spicular reinforcements.

Remarks. - With seven families.

Family Leucosoleniidae Minchin, 1898

Definition. - Asconoid, erect growth forms, with long, individual, clustered, oscular tubes arising from stolon-like system of basal tubes; tubes may have diverticuli and often arborescent; monaxon spicules always present; triradiates, if present, typically bilateral, sagittal, inequiangular in form (where two of the rays form a pair, while the third differs in some way), and with the crystalline optic axis never vertical but always inclined to the facial plane of the rays; choanocytes with flagellum arising directly from the pear-shaped nucleus, situated at or near the apex of the cell; choanocytes line central cavity (spongocoele) of the individual tubes; larvae are amphiblastulae.

SOUTH CHINA SEA SPECIES.
Leucosolenia blanca Poléjaeff, 1884; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Leucosolenia coriacea (Montagu, 1818); Burton, 1930 (Saleyer, Saley Bay, Indonesia) (6)
Leucosolenia macleayi (Lendenfeld, 1885); Burton, 1930 (Karkaralong Is, Indonesia) (6)
Leucosolenia (Leucilla) sp.nov.; Dawydoff, 1952 (Vietnam, Cambodia) (3)

Family Amphoriscidae Dendy, 1892

Definition. - Massive, tubular, ovoid and spherical growth forms, grouped together, never solitary (one genus (*Syculmis*) has a root-like tuft of oxeas and anchoring quadriradiates); ectosomal cortex is distinct and supported by tangentially placed radiates, with or without oxeas; ectosomal radiates may have the large arm directed inwards, forming the main part of the choanosomal skeleton; no articulated choanosomal skeleton present, but leuconoid forms may have quadriradiates scattered in the choanosome and large quadri- or triradiates below the atrium (subgastral spicules); nuclei of choanocytes probably always apical; choanocyte chambers asconoid, elongate and radially arranged, or small, spherical and irregularly scattered in the choanosome (leuconoid).

SOUTH CHINA SEA SPECIES.
Leucilla australiensis (Carter, 1886); Burton, 1930 (Banda, Indonesia) (6)

Family Grantiidae Dendy, 1892

Definition. - Encrusting, lobate, tubular, sac-shaped, ovoid, spherical, vase-shaped and many other growth forms, either solitary or grouped and sessile, substipitate, or stipitate; surface with a distinct dermal cortex and a proper cortical skeleton of tangential radiates, sometimes supplemented by, and occasionally replaced by, oxeas; ectosomal cortex sometimes with quadriradiates in association with choanosomal triradiates; skeleton of the chamber layer ranging from regularly articulate to irregularly scattered, and typically with subgastral sagittal radiates; some subdermal pseudosagittal triradiates may occur but these are derived from normal choanosomal spicules, and do not form a continuous distict layer as in the

Heteropiidae; subgastral quadriradiates, if present, always associated with chamber-layer skeleton containing confused triradiates; nuclei of collared cells probably always apical; choanocyte chambers asconoid, elongate and radially arranged, or small, spherical and irregularly scattered in the choanosome (leuconoid).

SOUTH CHINA SEA SPECIES.
Anamixilla irregularis Burton, 1930 (Bima, Indonesia) (6)
Anamixilla torresi (Poléjaeff, 1884); Burton, 1930 (Banda, Ambon, Samau, Indonesia) (6)
Aphroceras alcicornis Gray, 1858 (Hong Kong) (5)
Grantia compressa Flemming; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Leucandra pumilla Schmidt; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Leucandra loricata Poléjaeff, 1884; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Leuconia capillata (Poléjaeff, 1884); Burton, 1930 (Banda, Indonesia); Dawydoff, 1952 (Indonesia, Philippines, Vietnam) (3,6,7)
Leuconia solida (Schmidt, 1862); Van Soest, 1980 (Hong Kong) (5)
Uteopsis argentea Poléjaeff, 1884; Burton, 1930 (Samau, Indonesia); Dawydoff, 1952 (Atoll de Tizard, Itu Aba) (3,6)

Family Heteropiidae Dendy, 1893

Definition. - Massive, tubular, pear-shaped and branching growth forms, occurring as solitary sponges or in groups; continous cortex, pierced by ostia and reinforced by asymmetrical triradiate spicules with unequal angles, covers the entirely choanocyte chamber layer; inarticulated or articulated tubular skeleton characterised by a distinct subcortical zone formed by pseudosagittal triactines, but articulated choanosomal spicule skeleton may be present or absent; cortical triradiate spicules probably originate from articulate chamber skeleton, through reorientation of the spicules, so that one of the paired rays becomes the sagittal ray and the latter pairs up with the remaining ray; choanocyte chambers asconoid, elongate and radially arranged, or spherical and irregularly scattered in the choanosome (leuconoid).

SOUTH CHINA SEA SPECIES.
Grantessa sibogae Burton, 1930 (Indonesia) (6)
Heteropia striata Hozowa; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Heteropia striata Hozawa *minor* Burton, 1930 (Indonesia) (6)

Family Lepidoleuconidae Vacelet, 1967

Definition. - Minute rounded sponges; ectosomal skeleton (exopinacoderm) consists of several layers of overlapping (not fused) triangular or rounded scales, derived from triradiate spicules; surface has a single osculum surrounded by several layers of quadriradiate spicules and diactines, and ostia surrounded by triradiates and microdiactinal spicules; choanosome lacks megascleres but has microquadriradiates scattered; basipinacoderm region (at the base of the sponge) has scales and triactines; tuning fork spicules or sagittal triactines never present; choanocytes with apical nuclei; larvae are amphiblastulae.

[no recorded species]

Family Sycettidae Dendy, 1892

Definition. - Tubular, spherical, flask-shaped, ovoid and branching growth forms, either solitary or in groups; ectosomal cortex is continuous and strengthened by tangential spicules, but these do not cover the choanocyte chamber layer; choanosomal spicules, supporting choanocyte chambers, have an articulated arrangement of overlapping sagittal triradiates, with the angle between the paired rays larger than the angles between each paired ray and the long, unpaired ray; sagittal triradiates have the longest ray pointing to the exterior of the sponge, and form a layer beneath the spongocoele lining (referred to as the subgastral position); choanocytes usually confined to the radial chambers in the adult, and probably always with apical nuclei; choanocyte chambers asconoid, arranged radially around a central cavity (spongocoele), with ends of chambers projecting into ectosomal surface.

SOUTH CHINA SEA SPECIES.
Leuconia barbata (Duchassaing & Michelotti, 1864); Burton & Rao, 1932; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Sycon raphanus Schmidt; Dawydoff, 1952 (Gulf of Tonkin, Vietnam) (3)

Family Staurorrhaphidae Jenkin, 1908

Definition. - Solitary, tubular sac-shaped growth forms with well-developed spicule fringe around terminal oscule; continuous cortex covers the choanosome, perforated by ostia; ectosomal tetractines never present, and tangential atrial skeleton present only in oscular region; subatrial quadriradiates ('chiactines') present and equiangular; symmetrical and asymmetrical triradiates and oxeas scattered freely within choanosomal skeleton, projecting through cortex; aquiferous system is syconoid or leuconoid.

[no recorded species]

Order Lithonida

Definition. - Generally restricted to shaded habitats such as caves and tunnels; massive reinforced calcitic (hypercalcified) skeleton, together with tuning fork spicules and sagittal tetractines as free spicules; larvae are amphiblastulae; choanocytes are apinucleate.

Family Lelapiidae Dendy & Row, 1913

Definition. - Tubular, sessile growth forms; surface even, non-hispid; apical oscule with fringed margin; ectosomal skeleton of tangential sagittal triradiates and microxeas set at right angles to surface; skeleton of the chamber layer composed of large scattered oxeotes, loose bundles of tuning-fork spicules and more rarely bundles of slender oxeas, and subgastral sagittal triradiates; choanosomal skeleton composed of tangential sagittal triradiates and more rarely sagittal quadriradiates.

[no recorded species]

Family Minchinellidae Dendy & Row, 1913

Definition. - Encrusting and lamellate growth forms; oscules may be supported by di-, tri- and tetractinal spicules; choanosome with a rigid skeleton of fused quadriradiate spicules cemented together, or formed by intertwined rays of the triradiate and quadriradiate spicules at the base of the sponge; free spicules may include tri- and quadriradiates, monactinal or diactinal and tuning fork spicules, some or all of in the ectosomal skeleton; subgastral sagittal radiates apparently absent; nuclei of choanocytes are apical; larvae are amphiblastulae; canal system in all known forms is leuconoid.

[no recorded species]

Family Petrobionidae Borojevic, 1979

Definition. - Hemispherical or conical growth forms; ectosomal skeleton contains sagittal triradiates, tuning fork spicules and quadriradiates, some of which also extend into the mesohyl; basal skeleton composed of spherulitic units of calcite, fused together to form hemispherical mass, each unit with terminal osculum surrounded by collars of quadriradiates; living tissue penetrates into the calcitic mass only for short distances, and free spicules in the mesohyl include microdiactines; triradiates, with a rudimentary fourth ray, also occur at the base of living tissue; nuclei of choanocytes are apical; larvae are amphiblastulae.

[no recorded species]

Subphylum Symplasma

Class Hexactinellida

Definition. - Skeleton composed of six-rayed siliceous spicules (hexacts), occurring individually or fused together, usually forming rigid lattice-like skeletons; body wall has a cavernous structure, with living tissue stretching across a framework around the cavities like a membrane; this tissue is syncytial, on both the dermal region (pinacoderm) and in the choanosome, in which the multinucleolate protoplasm is not divided into cells; uniflagellated choanocytes are absent from this class of sponges, and the choanocytes are really only collar-flagellum units lining cylindical chambers (hence they are referred to as "flagellated chambers" rather than "choanocyte chambers" as in the classes Calcarea and Demospongiae); these unusual choanocytes are embedded in the membraneous protoplasm stretched between spicules by "plugged bridges"; spicules occur in three different regions, and the localization of particular spicule types to particular areas is very precise; three zones differentiated: (1) lying on or just below the dermal membrane (dermal); (2) lying within the trabeculae (parenchymal); (3) lying below the membrane around the atrial cavity (gastral); diverse geometry of megascleres and microscleres; unlike other classes of sponges axial canals of spicules are always square in cross-section; larvae are incubated parenchymellae.

Remarks. - The Hexactinellida is divided into 2 subclasses, 4 orders, 19 families, 113 nominal genera [of which 101 are currently recognised but many may be synonyms], and an estimated 450-500 living species are found worldwide.

Subclass Amphidiscophora

Definition. - With birotulate microscleres but lacking hexaster microscleres; sponges embedded in soft sediments by single or tufts of basal monactine spicules, not attached directly to substratum; flagellated chambers are continuous at their openings, not sharply marked off from each other as in other classes of sponges.

Remarks.- One Recent order (Amphidiscosida), containing three families.

Order Amphidiscosida

As for subclass.

Family Hyalonematidae Gray, 1857

Definition. - Spheroid or ovoid bodies, although actual shape can be very variable; tufts of long basal spicules anchor sponges into soft sediments, each bearing a terminal "anchor" (consisting of an inverted-conical swelling bearing a circle of several short teeth); basal spicules compactly bundled and twisted dextrally, forming a single basal tuft extending into sponge body and forming a compact axial columella; apical end of basal spicules produce a small projection called the gastral cone; exhalant canals open on top of the body around the columella or gastral cone and are sharply set off from the inhalant surface by the oscular margin; four separate exhalant canals may open around the columella, or the entire exhalant region may be either inwardly depressed or outwardly bulging to form a "gastral" cavity, sometimes covered by a lattice-like sieve plate; neither uncinate spicules nor scepters are present; marginal prostals are pinular rhabdodiactines (i.e. diactinal with the distal end spined); pleural prostals are smooth diactines; choanosomal supporting spicules are mostly rhabdodiactines, often occurring in association with macrohexactines or macropentactines.

SOUTH CHINA SEA SPECIES.

Chalaronema sibogae Ijima, 1926 (Indonesia) (6)

Hyalonema aculeatum (Schulze, 1894); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema affine (Marshall, 1875); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema (Cyliconema) apertum maehrenthali Schulze, 1895; Ijima, 1926 (Indonesia) (6)

Hyalonema (Leptonema) flagelliferum Ijima, 1926 (Indonesia) (6)

Hyalonema (Euhyalonema) intermedium Ijima, 1926 (Indonesia) (6)

Hyalonema indicum (Schulze, 1894); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema (Euhyalonema) keianum Ijima, 1926 (Indonesia) (6)

Hyalonema (Cyliconema) keiense Ijima, 1926 (Indonesia) (6)

Hyalonema (Coscinonema) kirkpatricki Ijima, 1926 (Indonesia) (6)

Hyalonema lamella (Schulze, 1900); Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema martabanense (Schulze, 1900); Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema masoni (Schulze, 1894); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema nicobaricum (Schulze, 1904); Pattanayak, 1997 (Nicobar and Andaman Islands (1)

Hyalonema pirum Schulze, 1894; Dendy & Burton, 1927:230 (between N and S Sentinel Is, Andaman Is, 11° 30'N, 480m) (1)

Hyalonema rapa (Schulze, 1900); Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Hyalonema (Corynonema) rotundum Ijima, 1926 (Indonesia) (6)

Hyalonema (Thamnonema) thamnophorum Ijima, 1926 (Indonesia) (6)
Hyalonema (Cyliconema) timorense Ijima, 1926 (Indonesia) (6)
Hyalonema (Pteronema) topsenti Ijima, 1926 (Indonesia) (6)
Hyalonema (Paradisconema) vosmaeri Ijima, 1926 (Indonesia) (6)
Hyalonema sp.; Caberoy, 1979:20 (Marinduque, San Juan, Batangas, Philippines) (7)
Hyalonema spp.; Ijima, 1926 (Indonesia) (6)
Hyalonema sp.; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Lophophysema inflatum (Schulze, 1900); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Family Monorhaphididae Ijima, 1927

Definition. - Body cylindrical or rounded, with seive-like membranes along one side of the body covering openings to the aquiferous system; whole body is perched on the end of a huge single basal anchoring spicule, undoubtedly the largest siliceous structure produced by any animal; most choanosomal megascleres are stauractines, with a single short ray perpendicular to the long axis of the spicule, although sometimes this short ray is absent producing a pseudodiactinal spicule; prostals are absent (except for the elongated basal spicule), and uncinates are moderately common.

SOUTH CHINA SEA SPECIES.
Monorhaphis chuni Schulze, 1904; Ijima, 1926 (Indonesia) (6)
Monorhaphis sp.; Burton & Rao 1932:302 (Port Blair, Andaman Is, 11° 35'N) (1)

Family Pheronematidae Gray, 1870

Definition. - Thick-walled vase-shaped, or columnar and lamellate growth forms; oscules single, terminal, or grouped and dispersed on opposite sides of lamellae, or grouped into seive-plates and scattered indiscriminantly; dermal spicules are scepters derived from marginal prostals (i.e. spicules projecting around the oscules) and pleural prostals (i.e. spicules projecting from the sides of the body); choanosomal spicules are uncinates and scepters, and hexactine and/or pentactines support the choanosome; basal spicules have bidentate terminal anchors, and tufts of basal spicules are never twisted nor do they form axial columns.

SOUTH CHINA SEA SPECIES.
Pheronema echinatum Ijima, 1926 (Indonesia) (6)
Pheronema giganteum Schulze, 1886; Ijima, 1926 (Indonesia) (6)
Pheronema weberi Ijima, 1926 (Indonesia) (6)
Pheromena raphanus (Schulze, 1894); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Pheronema sp.; Dendy & Burton, 1927:229 (between N and S Sentinel Is, Andaman Is, 11° 30'N, 480m) (1)
Semperella cucumis (Schulze, 1864); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Semperella similis Ijima, 1926 (Indonesia) (6)
Sericolophus reflexus Ijima, 1894; Ijima, 1926 (Indonesia) (6)

Subclass Hexasterophora

Definition. - Hexasters microscleres present, birotulate microscleres absent; growth forms are diverse, usually fixed to substratum by a basal attachment; basal spicules, when present, consist of pentactines or anisodiactines usually in tufts.

Remarks. - Three extant orders and twelve families are recognized.

Order Hexactinosida

Definition. - Rigid parenchymal skeleton produced by fusion of hexactines; dermal and gastral spicules usually pentactines, with the unpaired ray directed inwards, or sometimes stauractines, and these spicules are usually connected by tissue only.

Family Aphrocallistidae Gray, 1867

Definition. - Vase-shaped or branching tubular growth forms; oscules on outpockets on the side walls; lateral wall dictyonal framework perforated by a system of tubular cavities (diarhyses), running radially through the skeleton; each cavity occupied by a single lobate flagellated chamber; cavities arranged in alternating or regularly hexagonal groups; dictyonal framework between cavities forms irregular meshes; choanosomal hexactines regular or compressed laterally so that all six rays lie in one plane; dermal spicules are hexactines or pentactines, with teeth on the distal ray; gastral spicules similar to dermals, or they are rhabdodiactines (curved diactinals); hexaster microscleres include oxy-, tylo- onycho- or discohexasters; scopules and uncinates always present.

SOUTH CHINA SEA SPECIES.

Aphrocallistes beatrix (Gray 1858); Schulze, 1902; Ijima, 1926; Dendy & Burton, 1927:226; Burton & Rao, 1932:302; Pattanayak, 1997 (off Port Blair, Andaman Is, 11° 40'N, 220m; 13 mls SW of North Sentinel I., Andaman Is., 11° 30'N; off N Sentinel I., Andaman Is, 11° 40'N, 500m; Nicobar and Andaman Islands; Indonesia) (1,6)

Aphrocallistes bocagei (Wright, 1870); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Aphrocallistes ramosus (Schulze, 1886); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)

Family Aulocalycidae Ijima, 1927

Definition. - Vasiform, spherical or tubular growth forms; main osculum above a number of lateral oscules on the sides; skeletal framework with irregular meshes, lacking canals in the dictyonal framework; hexactines inserted individually into dictyonal framework, with spicule rays frequently elongated and curved, intersecting one another at various angles, and fused together at points of their intersection (the rays often connected by synapticulae), or where they are laterally apposed or terminate by abutting on others; dermal and gastral spicules always pentactines; discohexasters always present, with or without oxyhexasters; scopules rarely present; uncinates present or absent.

SOUTH CHINA SEA SPECIES.
Rhabdodictyum kurense Ijima, 1926 (Indonesia) (6)
Tretopleura candelabrum Ijima, 1926 (Indonesia) (6)

Family Craticulariidae Rauff, 1893

Definition. - Cup-shaped growth forms; lateral wall skeleton has a dictyonal framework traversed by two sets of tubular cavities entering radially from opposite sides, running parallel but in opposite directions, forming an alternating longitudinal series originating either from the dermal or gastral sides of the framework (epirhyses or aporhyses, respectively); dermal and gastral spicules pentactines with toothed distal rays; scopules, oxyhexasters and discohexasters present; uncinates absent.

[no recorded species]

Family Euretidae Zittel, 1877

Definition. - Funnel-shaped, tubular and vase-shaped growth forms, the latter with tubular branches opening to the exterior through accessory oscules on the sides of vases and opening internally into a wide common gastral cavity; lateral wall of skeleton three dimensional dictyonal framework similar to Farreidae, although meshes always small, triangular, quadrangular or irregular, and certain nodes give off more than six internodal beams; body wall usually not canalized, and generally unaccompanied by aporhysis; dermal spicules pentactine or hexactines, with teeth on distal ray, or sometimes secondarily absent; gastral spicules either pentactines or hexactines, similar in form to dermal spicules; microscleres include diverse hexasters, scopules and uncinates; clavules absent, sarules rarely present.

SOUTH CHINA SEA SPECIES.
Eurete freelandi Ijima, 1926 (Indonesia) (6)
Eurete marshalli Schulze, 1886; Ijima, 1926 (Indonesia) (6)
Eurete schmidti treubi Ijima, 1926 (Indonesia) (6)
Eurete schmidti kampeni Ijima, 1926 (Indonesia) (6)
Eurete trachydocus Ijima, 1926 (Indonesia) (6)
Lefroyella ceramensis Ijima, 1926 (Indonesia) (6)
Myliusia callocyathus Gray, 1859; Ijima, 1926 (Indonesia) (6)
Myliusia verrucosa Ijima, 1926 (Indonesia) (6)
Pararete baliense Ijima, 1926 (Indonesia) (6)
Pararete farreopsis farreopsis (Carter, 1877); Ijima, 1926 (Indonesia) (6)
Pararete farreopsis fragiferum Ijima, 1926 (Indonesia) (6)
Pararete farreopsis subglobosum Ijima, 1926 (Indonesia) (6)
Pararete farreopsis jakosalemi Ijima, 1926 (Indonesia) (6)
Pararete freeri Ijima, 1926 (Indonesia) (6)
Pararete kangeanganum Ijima, 1926 (Indonesia) (6)
Pararete semperi (Schulze, 1886); Ijima, 1926 (Indonesia) (6)
Periphragella parva Ijima, 1926 (Indonesia) (6)
Periphragella irregularis Ijima, 1926 (Indonesia) (6)
Pleurochorium cornutum Ijima, 1926 (Indonesia) (6)

Family Farreidae Gray, 1872

Definition. - Funnel-shaped and tubular, simple or branched growth forms; branching tubes all approximately equal in width, each branch ending with an oscule; lateral wall of skeleton a single layer of paratangential dictyonal framework, with no or little space for canals but consisting of a secondary quadratic skeletal mesh consisting of nodes which are all a hexactin centre; six internodal beams radiate from these nodes, usually laterally apposed and amalgamated combinations of two rays, each from adjacent hexactins; this typically regularly-meshed structure may become irregular due to accretion of dictyonal hexactins, in indefinite orientation, formed after the primary framework is established; dermal and gastral spicules pentactines; uncinates usually present; microscleres include oxyhexasters, tylohexaster and discohexasters; sceptules present usually in the form of sarule, lonchiole or clavule, sometimes including monactinal triaxons, but lacking scopules; flagellated chambers laterally branched.

SOUTH CHINA SEA SPECIES.
Farrea hanitschi Ijima, 1926 (Indonesia) (6)
Farrea lendenfeldi Ijima, 1926 (Indonesia) (6)
Farrea nodulosa Ijima, 1926 (Indonesia) (6)
Farrea occa Carter; Dendy & Burton, 1927:226; Schulze, 1902 (8 mls W of Interview I., Andaman Is, 13°N, 90-540m; N Sentinel I., Andaman Is, 11° 30'N, 500m) (1)
Farrea occa erecta Ijima, 1926 (Indonesia) (6)
Farrea occa clavigera Schulze, 1886; Ijima, 1926 (Indonesia) (6)
Farrea occa subclavigera Ijima, 1926 (Indonesia) (6)
Farrea occa mammillata Ijima, 1926 (Indonesia) (6)
Farrea occa cuspidata Ijima, 1926 (Indonesia) (6)
Farrea occa ouwensi Ijima, 1926 (Indonesia) (6)
Farrea spirifera Ijima, 1926 (Indonesia) (6)
Farrea spp.; Ijima, 1926 (Indonesia) (6)

Family Tretodictyidae Schulze, 1886

Definition. - Thick-walled cup-shaped, funnel-shaped or plate-like growth forms, or reticulate masses of branching tubes or solid cylinders; lateral wall dictyonal framework composed of irregular tri- or quadrangular meshes with multiradiate nodes, marked by development of extensive canal system (schizorhyses) containing labyrinths of flagellated chambers; chambers interconnecting and/or dividing and branching, running from gastral side (covered by a membrane) to dermal side of dictyonal framework (the latter covered by seive-like membrane); diverse hexaster microscleres present; uncinates and scopules also present.

SOUTH CHINA SEA SPECIES.
Anomochone expansa Ijima, 1926 (Indonesia) (6)
Anomochone globosa Ijima, 1926 (Indonesia) (6)
Hexactinella lata (Schulze, 1886); Ijima, 1926 (Indonesia) (6)
Hexactinella lingua Ijima, 1926 (Indonesia) (6)
Hexactinella minor (Dendy & Burton, 1927:227, fig.1); Pattanayak, 1997 (8 mls W of Interview I., Andaman Is, 13°N, 90-540m; Nicobar and Andaman Islands) (1)
Hexactinella rugosa Ijima, 1926 (Indonesia) (6)
Hexactinella spongiosa Ijima, 1926 (Indonesia) (6)
Hexactinella vermiculosa Ijima, 1926 (Indonesia) (6)
Psilocalyx wilsoni Ijima, 1926 (Indonesia) (6)
Sclerothamnopsis schulzei Ijima, 1926 (Indonesia) (6)
Sclerothamnus clausi Marshall, 1875; Ijima, 1926 (Indonesia) (6)
Tretodictyum pumicosum Ijima, 1926 (Indonesia) (6)
Tretodictyum schrammeni Ijima, 1926 (Indonesia) (6)

Tretodictyum tubulosum Schulze, 1886; Ijima, 1926 (Indonesia) (6)
Tretorete incertum Ijima, 1926 (Indonesia) (6)

Order Lychniscosida

Definition. - Sponges firmly attached to substratum; parenchymal megascleres lychniscs, or derivatives, united in a rigid framework; central part of each spicule surrounded by twelve struts arranged like the edge of an octahedron.

Family Aulocystidae Schulze, 1886

Definition. - Ovoid and bulbous stalked growth forms, with branching and rejoining aquiferous tubes and interconnected canals; external surface with secondarily produced layer consisting of a feltwork of fine rays from projecting stauractines and pentactines; dermal and gastral pentactines present; microscleres include oxy-, disco- and graphiohexasters.

SOUTH CHINA SEA SPECIES.
Neoaulocystis zitteli zitteli (Marshall & Meyer, 1877); Ijima, 1926 (Indonesia) (6)
Neoaulocystis zitteli sibogae Ijima, 1926 (Indonesia) (6)
Diapleura maasi Ijima, 1926 (Indonesia) (6)

Family Dactylocalycidae Gray, 1867

Definition. - Vasiform growth forms with folded walls; lychniscs of dictyonal framework of lateral wall secondarily fused producing a "pseudohexactinosidan" skeleton; dermal pentactines and hexactines present, and free hexactines also occur as parenchymal spicules; microscleres include oxy- and discohexasters; uncinates and scopules absent.

[no recorded species]

Order Lyssacinosida

Definition. - Parenchymal megascleres vary from hexactines to rhabdodiactines, usually occurring free in tissues, sometimes secondarily fused to form rigid framework; dermal spicules consist of a single layer of large pentactines or hexactines, with single, long, proximal ray directed inwards, or with a layer of small dermal spicules overlying larger hypodermal pentactines, with the unpaired ray extending inwards.

Family Caulophacidae Schulze, 1886

Definition. - Solitary or branching, cup-shaped and mushroom-shaped growth forms, with the stalk firmly attached to substratum; dermal skeleton with small hexactines, sometimes pentactines bearing spined proximal rays; hypodermal spicules pentactines and sometimes rhabdodiactines; parenchymal spicules hexasters and rhabdodiactines; microscleres include disco-, onycho- or oxyhexasters, sometimes with strobiloplumicomes.

SOUTH CHINA SEA SPECIES.
Caulophacus sp.; Ijima, 1926 (Indonesia) (6)

Family Euplectellidae Gray, 1867

Definition. - Tubular, massive or cup-shaped growth forms ("venus flower baskets"), often with many open oscules; bases either stalked, firmly attached to substratum, or with tufts of monactinal or anisodiactinal basal spicules; dermal skeleton has large hexactinal spicules (dermalia) with proximal ray longest; hypodermal spicules absent; parenchymal spicules hexactines with two to six rays; hexasters diverse, including floricomes, graphio-, oxy- and onychohexasters.

SOUTH CHINA SEA SPECIES.
Bolosoma cavum Ijima, 1926 (Indonesia) (6)
Euplectella aspergillum Owen; Burton & Rao, 1932:302; Caberoy, 1979:20; Pattanayak, 1997 (N. Andaman Is., 13° 10'N; Nicobar and Andaman Islands; Cebu Is., Philippines) (1)
Euplectella ('Eudictyon') "elegans" Burton, unpublished MS name (Indonesia, ZMA database) (6, Burton MS)
Euplectella regalis (Schulze, 1900); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Euplectella simplex (Schulze, 1895); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Euplectella timorensis Ijima, 1926 (Indonesia) (6)
Euplectella sp.; Dawydoff, 1952 (Paracels Archipelago; Singapore region) (2,3)
Euplectella sp.; Dawydoff, 1952 (Spratly Is) (3)
Regadrella cylindrica Ijima, 1926 (Indonesia) (6)

Family Leucopsacasidae Ijima, 1903

Definition. - Thick-walled cup-shaped or ovoid, stalked growth forms; body anchored to substratum by basal spicules; dermal skeleton has large dermal pentactines with unpaired ray directed inwards, without hypodermal spicules; parenchymal spicules hexactines and rhabdodiactines; microscleres hexasters including discohexasters, sigmatocomes, floricomes, but not oxyhexasters.

SOUTH CHINA SEA SPECIES.
Chaunoplectella stelleta Ijima, 1926 (Indonesia) (6)
Leucopsacas scoliodocus Ijima, 1926 (Indonesia) (6)

Family Rossellidae Gray, 1872

Definition. - Cup-like or sac-shaped growth forms, often with a stalk, attached directly to substratum, or with basal processes, or with tufts of pentactinal basal spicules; secondary oscules may be present in addition to main terminal oscule; dermal skeleton with small roughened pentactines, stauractines or rhabdodiactine spicules, having similar rays and not markedly spined; distal rays of dermal spicules, if developed, similar to remaining rays and not markedly spined; hypodermal spicules pentactines or rhabdodiactines or both, sometimes protruding through surface so that spicule rays form veil-like covering over the sponge; parenchymal spicules hexactines and/or rhabdodiactines; microscleres oxy- and discohexasters, sometimes discoctasters.

SOUTH CHINA SEA SPECIES.
Bathydorus pedunculatus Ijima, 1926 (Indonesia) (6)
Lophocalyx spinosa (Schulze, 1900); Schulze, 1902; Pattanayak, 1997 (Nicobar and Andaman Islands) (1)
Lophocalyx suluanus Ijima, 1926 (Indonesia) (6)
Lophocalyx sp.; Dawydoff, 1952 (Vietnam, Cambodia) (3)
Staurocalyptus celebesianus Ijima, 1926 (Indonesia) (6)

INCERTAE SEDIS AND OTHER INVALID NAMES

SOUTH CHINA SEA SPECIES.
Cacochalina typica Lendenfeld, 1887; Dragnewitsch, 1906:443 (Singapore, 1° 30'N) (2)
Coscinospongia thomasi (Sollas, 1888; 307); Wilson, 1925:460 (Indonesia, ZMA database; Philippines) (6,7)
"Cryptospongia enigmatica" (Burton, 1928:133, pl.2, fig.5); Pattanayak, 1997 (off Ten Degree Channel, S of Andaman Is, 2090m, 10°N; Nicobar and Andaman Islands) (1) [this is a stalk of a gorgonian, not a sponge]
Polyfibrosa australis (Lendenfeld) *conulata* Lévi, 1961: 146 (Vietnam) (3)
Seliscothon chonelleides Doderlein, 1883; Burton & Rao, 1932:308 (N. of King I., Mergui Archipelago, 12° 48'N) (1) [*incertae sedis* within "Lithistida"]
Siphonidiella dendyi Burton, 1928:112, fig.3 (W of Mergui Archipelago, 13° 04'N) (1) [*incertae sedis* within "Lithistida"]
Tretolophus paniceus Sollas, 1888 (Indonesia, ZMA database) (6) [*incertae sedis* within "Lithistida"]

DISCUSSION

The inventory of sponges living in the South China Sea region is already substantial, consisting of more than 1500 species described in the literature and/or known from contemporary, unpublished collections. On the basis of these recent collections, particularly those acquired under US National Cancer Institute (NCI) funding, we estimate that sponge biodiversity in this region is much higher - possibly three times greater - than presently known.

This estimate is realistic given that NCI collections, for example, were restricted to samples of about one kilogram wet weight (an optimal requirement for biochemical analysis and elucidation of active molecular compounds), which virtually excluded the diverse encrusting and cryptic faunas.

However, accurate estimates of sponge diversity for the whole region are difficult to make for several reasons. There have been only a few comprehensive studies using modern collection methods. These mainly concern small embayments and reefs (e.g. Phuket in Thailand; Dumaguette in the Philippines) (Hooper, unpublished data), and whilst these may provide accurate inventories for small local faunas, these data cannot necessarily be extrapolated to larger regions. Unfortunately, so far, there have not been any comprehensive, modern taxonomic inventories made for broader regions within the South China Sea, and we still do not know the extent of regional endemism for species, nor the taxonomic relationships between species from adjacent biogeographic provinces. There has never been a taxonomic specialist based in this region studying the sponge fauna for any significant period, who could provide these sorts of data. Most existing collections have been made opportunistically, or as a coincidental by-product from other studies.

We do know that the Indo-Malay ('East Indies') fauna contains the highest diversity of any marine provinces for several marine invertebrate phyla (Briggs, 1987), with more recent empirical support provided by scleractinarian coral distributions (Veron, 1995). It is likely, although not yet certain, that this is also true for sponges. Lévi (1979) suggested that the Indo-Malay archipelago may be the centre of dispersal for Indo-west Pacific species, and Hooper & Lévi (1994) suggested that sponges showed higher apparent regional endemism than many other marine phyla; they were heterogeneous in their local regional distributions (possibly related to stringent ecological requirements); and they were probably most diverse in the Indo-Malay archipelago (although there are also areas outside this archipelago in which faunas show comparable 'megadiversity'). Each of these points has implication in estimating biodiversity, and in determining appropriate conservation and preservation strategies for these resources in the South China Sea region.

Low cosmopolitanism: Only about 5% of sponge species appear to be truly widely dispersed across the Indo-Pacific (usually associated with the distribution of coral reefs themselves), whereas most species have much higher regional endemism (apparently restricted to relatively small embayments, remote island groups and isolated patches of reef on the continental shelves).

Within the South China Sea there are a number of species that are known to have wide Indo-Pacific distributions and most of these are found in coral reef habitats (e.g. *Cinachyra australiensis*, "*Jaspis stellifera*" (which is neither a *Jaspis*, nor conspecific with "stellifera"; Kennedy, in prep.), *Spirastrella vagabunda*, *Terpios fugax*, *Astrosclera willeyana*, *Clathria (Microciona) atrasanguinea*, *Clathria (Thalysias) vulpina*, *Iotrochota baculifera*, *Tedania anhelans*, *Biemna tubulata*, *Acanthella cavernosa*, *Axinella carteri*, *Haliclona ('Sigmadocia') cymaeformis*, *Gelliodes fibulatus*, *Xestospongia testudinaria*, *Dysidea herbacea*, *Phyllospongia papyracea*, *Carteriospongia foliascens*, *Dactylospongia elegans*, *Hyrtios erecta*). Some species have clearly been introduced through human activities, such ship bilgewater and transport of shells used in oyster farming (e.g. *Mycale (Zygomycale) parishii*, *Tetilla dactyloidea*, *Cliona vastifica*). However, most species are only known from relatively restricted ranges within this broad region ('apparent endemics'), and many of these probably have relatively more specialised ecological requirements.

High ecological specialisation: Long thought to be 'ecological generalists', most sponges associated with coral reefs appear to have far more stringent ecological requirements and microhabitat distributions than previously acknowledged. Observations on heterogeneity amongst adjacent reef assemblages (Hooper, 1994) suggest that species composition may be more dependent upon reef geomorphology, and the availability of particular niches, than on the proximity of adjacent reef systems.

The diversity of geomorphological structures and other habitat types in shallow-waters may partially explain the observations of higher sponge diversity in shallow-waters than in the relatively more homogeneous deeper-waters, but there are undoubtedly other important factors that must be considered, as discussed below. Areas of high biodiversity value (and consequently traditionally legislated for protection and preservation by governments and other agencies), chiefly concern reef systems. Sponges are not substantially different in this regard except that, in general, they are more obvious and perhaps more diverse outside reef structures (such as at the base of reefs, in lagoonal areas, and on the submerged reefs lying on the continental shelf, surrounding the emergent coral reefs). Consequently, in designing appropriate models for species and habitat protection, which would include the sponge

biodiversity, it is important to consider these non-emergent reef structures associated with, or in proximity to, coral reef systems.

There are many specialised niches utilised by sponges, such as excavating soft and hard sediments (e.g. *Spirastrella vagabunda*), boring calcareous substrates (e.g. *Cliona lobata*), growing on, and smothering living corals (e.g. *Chondrilla australiensis, Iotrochota baculifera*), growing only in dimly lit or dark caves (e.g. *Astrosclera willeyana*), in seagrass beds (e.g. *Callyspongia ridleyi*), commensal with bivalves (e.g. *Monachora unguiculata*), commensal with cnidarians (e.g. *Mycale* sp. (*sensu* van Soest & Verseveldt, 1987)), anchored in deep soft sediments (e.g. *Poterion neptuni*), etc. The distribution of these sponges is presumably closely linked to the distribution and availability of the habitats themselves. Preservation of genetic diversity necessarily involves protection of all these types of habitats.

High speciation: An increasing number of apparently widely distributed sponge 'morpho-species' have since been discovered to be genetically distinct, allopatric sibling species (with restricted, localised distributions), presumably with speciation consequent to isolation (but perhaps also with the potential to rehybridise in the event of re-contact with parent populations, as in the case with scleractinarian corals (Veron, 1995)). Isolation, local extinctions, and speciation are predominant in the more transitory shallow-water environments, whereas in more stable deeper-water habitats species may be both more widely distributed and persistent (i.e. the many Mesozoic relict species described from deeper-waters by Lévi & Lévi (1983a,b, 1988)).

Consequently, whilst shallow-waters may contain a greater diversity of species, deeper-water assemblages usually contain a greater proportion of endemic species (Lévi & Lévi, 1983a,b, 1988; review in Hooper & Lévi, 1994). There are also many genera and families of sponges restricted to **either** shallow- or deeper-waters, with apparently very little mixing between these communities (Boury-Esnault & Lopes, 1985).

To maximise the outcomes during the implementation of a conservation strategy (i.e. to protect as many biological and genetic resources as possible using finite resources), regions containing high concentrations of various species are usually targeted (e.g. shallow-water coral reef systems). Whilst these areas are certainly more visible, and perhaps more readily susceptible to current human impacts, they do not necessarily contain the most unique genetic resources (i.e. species with the greatest taxonomic and genetic divergence). Marine reserves systems should contain strategies to preserve both diversity and endemism.

High apparent endemism: For sponges, probably more so than other marine phyla, we still know so little about marine biogeography. It is still uncertain whether closely adjacent marine biogeographic provinces are stable, and in which faunal composition is predominantly historical in origin (e.g. through tectonic events; Briggs, 1987), or ephemeral and predominantly influenced by changing patterns of water circulation, as for the scleractinarian corals (Veron, 1995). Probably both influences are important to the modern-day sponge distributions. Neither are we certain about the longevity of sponge individuals, recruitment rates, and the extent and capability of adults to disperse, nor the mobility and longevity of sponge larvae and asexual reproductive products. We do know, however, that there are many distinct regional sponge faunas throughout the Indo-west Pacific. Some faunas are separated from each other only by relatively narrow physical barriers yet contain dramatically divergent species' assemblages (e.g. Sahul Shelf, NW. Australia, and southern Indonesia (Hooper, 1994); east and west coasts of Palawan, Philippines (Hooper, unpublished data)), whereas

differences between faunas in other adjacent provinces may be more subtle (e.g. northern and southern regions of the Philippines).

There are several obvious, important endemic species in the South China Sea region that do not appear to have close relatives in adjacent provinces (such as the huge vase-shaped *Poterion neptuni*), whereas most 'apparent endemics' have at least some sister species elsewhere in the Indo-Pacific region (e.g. *Diacarnus megaspinorhabdosa* from the Philippines (and Papua New Guinea) and *D. bellae* from the west central Pacific (Kelly-Borges & Vacelet, 1995); *Clathria basilana* from the Philippines and Indonesia (Lévi, 1961; van Soest, 1989) and *C. oxyphila* from SE. Australia (Hooper, 1996); and *Acarnus primigenius* from Indonesia and *A. ternatus* from N. Australia (van Soest et al., 1991)). It is not presently possible to provide a realistic estimate of levels of species endemism for this region, but it would certainly be in the vicinity of many hundreds to over one thousand species.

There are so far no known endemic genera or families of sponges restricted to the South China Sea, which is not surprising given its claim as the centre for dispersal within the Indo-Pacific (Lévi, 1979).

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APPENDIX

Demospongiae and Hexactinellida of the South China Sea in the Institute of Oceanology, Academia Sinica.

Li Jinhe
Institute of Oceanology, Academia Sinica, Qingdao, China

The Hexactinellida listed here were collected over the last 40 years by the Institute of Oceanology, comprising 13 species, 2 possibly new. The Demospongiae were collected by the Chinese-German Conjoint Project on a marine biological survey of Hainan Island during 1991-92 to investigate the intertidal, subtidal and shallow water fauna, comprising more than one hundred specimens in 29 species (1 probably new).

Class Demospongiae

Order Spirophorida
Family Tetillidae
Tetilla leptodermata Sollas, 1886
Cinachyra albaobtusa Lendenfeld, 1907

Order Astrophorida
Family Ancorinidae
Rhabdastrella ('Stelletta') globostellata (Carter, 1883)

Order Hadromerida
Family Tethyidae
Tethya aurantium (Pallas, 1766)
Family Polymastiidae
Polymastia robusta Bowerbank, 1861
Family Spirastrellidae
Spirastrella cuncatrix Schmidt, 1868

Order Agelasida
Family Agelasidae
Agelas robusta Pulitzer-Finali, 1982

Order Poecilosclerida
Family Mycalidae
Mycale adhaerens (Lambe)
Mycale ('Zygomycale') parishii (Bowerbank, 1875)
Family Desmacellidae
Biemna fortis (Topsent, 1897)
Biemna "peripeduncula" MS name, possibly new
Family Myxillidae
Iotrochostyla iota de Laubenfels, 1951

Order Halichondrida
Family Halichondriidae
Halichondria panicea Johnston, 1842 [misidentification of an Indo-Pacific species for a N. Atlantic species]

Order Haplosclerida
Family Chalinidae
Adocia caminata Bergquist, 1980
Haliclona (Sigmadocia) cymiformis (Esper, 1794)
Haliclona melior (Ridley & Dendy)
Haliclona ('Rhaphisia') pallida (Ridley, 1895)

Haliclona tufa (Ridley)
Reniera cinerea (Grant)
Family Callyspongiidae
Callyspongia diffusa (Ridley, 1884)
Callyspongia ridleyi Burton, 1934
Family Niphatidae
Gelliodes incrustans Dendy, 1905

Order Dictyoceratida
Family Dysideidae
Dysidea fragilis (Montagu, 1818)
Spongionella gracilis Vosmaer, 1883
Family Spongiidae
Hyattella intestinalis (Lamarck, 1814)
Spongia officinalis Linnaeus, 1794
Spongia hispida Lendenfeld, 1888

Order Verongida
Family Druinellidae
Druinella ('Psammaplysilla') purpurea (Carter, 1880)
Family Aplysinidae
Aplysina fistularis (Pallas)

Class Hexactinellida
Subclass Amphidiscophora

Order Amphidiscosida
Family Hyalonematidae
Hyalonema (Pteronema) topsenti Ijima, 1926
Family Pheronematidae
Pheronema carpenteri (Thompson, 1877)
Pheronema "aslantuncinatum" MS name, possibly new
Semperella similis Ijima, 1926
Semperella "monactinalis" MS name, possibly new
Family Monorhaphididae
Monorhaphis sp.

Subclass Hexasterophora

Order Hexactinosida
Family Farreidae
Farrea occa Carter
Family Euretidae
Pararete fareopsis fareopsis (Carter)
Family Aphrocallistidae
Aphrocallistes beatrix (Gray, 1858)
Aphrocallistes ramosus (Schulze, 1886)

Order Lyssacinosida
Family Euplectellidae
Euplectella oweni Herklot & Marshall, 1868
Euplectella marshalli Ijima, 1895
Euplectella timorensis Ijima, 1926