

Cnidaria Anthozoa: Azooxanthellate Scleractinia from the Philippine and Indonesian Regions

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ABSTRACT

A total of 206 species of azooxanthellate Scleractinia are listed from the Philippine-Indonesian region, 176 of which are reported as new records. The newly reported specimens originate primarily from the MUSORSTOM 1-3 and KARUBAR expeditions, but also include specimens collected by the "Albatross", Danish Expedition to the Kei Islands, SNELLIUS 2 Expedition, "Galathea", Mortensen's Java-South Africa Expedition, "Hakuho Maru", "Siboga", CORINDON 2, and ESTASE 2 expeditions as well as some others. In all, approximately 15,600 specimens from some 640 stations are reported, the new records including the description of 26 new species and 3 new genera. Also, 4 new combinations and 1 new name are proposed (*Caryophyllia crosnieri* for *C. elongata* Cairns, 1993, non Duncan, 1873).

The distribution and bathymetric ranges of the 206 species known from the combined Philippine-Indonesian region are tabulated. 157 azooxanthellate species are now known from the Philippine Islands, with highest local diversities off Lubang Island (69 species) and the Sulu Archipelago (66 species). 174 species are known from the Indonesian region, the region with the highest diversity being the Banda Sea (138 species), specifically the Kai Islands (125 species). To a large degree, these high levels of diversity reflect the intensity of sampling effort. 65 (or 31.5%) of the Philippine-Indonesian species also occur in the Indian Ocean; 77 species (or 37%) off Japan; 67 species (or 32.5%) in the Australia and New Zealand region; and 47 species (or 23%) among the other western Pacific Islands. Only 11 of these species (or 5.3%) occur as far east as continental eastern Pacific, and 11 also occur in the Atlantic Ocean. These corals occur from 0 to 2570 m, the deepest being *Flabellum conuis*. The highest diversity of species (123 species) has been found in the 200-400 m depth range.

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The first example of sweeper tentacles in a deep-water coral is reported for *Madrepora arbuscula*. Examples of commensal/symbiotic relationships are reported to occur with petraroid ascothoracidan crustaceans (6 coral hosts), acrothoracidan cirripede crustaceans (4 coral hosts), eunicid polychaetes (4 coral hosts), and lumbrinerid polychaetes (11 coral hosts). Several cases of epifauna living on live corals are the brachiopod *Discradisca stella* and the gastropod *Malluvium* sp. attached to *Truncatoflabellum mortenseni*, and a stalked suberitid sponge growing on *Truncatoflabellum paripavoninum*.

RÉSUMÉ

Cnidaria Anthozoa : Scléactiniaires sans zooxanthelles des Philippines et d'Indonésie.

206 espèces de scléactiniaires sans zooxanthelles sont recensées dans la région des Philippines et de l'Indonésie. Pour 176 d'entre elles, des données nouvelles sont apportées. Le matériel étudié provient principalement des campagnes MUSORSTOM 1 à 3 (1976, 1980, 1985) aux Philippines et KARUBAR (1991) dans l'est de l'Indonésie. Diverses autres collections sont également prises en compte, dont notamment: "Challenger" (1874), "Siboga" (1899-1900), "Albatross" (1908-1909), expédition danoise aux îles Kei (1922), expédition de Th. MORTENSEN à Java (1929), "Galathea" (1951), "Hakuho-Maru" (1972, 1973, 1985), SNELLIUS 2 (1984), campagnes CORINDON 2 (1980) et ESTASE 2 (1984). Les échantillons étudiés sont au nombre de 15.600 et proviennent d'environ 640 stations.

Trois genres nouveaux sont décrits (*Confluphyllia*, *Ericicyathus*, *Sympodangia*) et 26 espèces nouvelles (*Balanophyllia crassiseptum*, *B. generatrix*, *B. serrata*, *Caryophyllia cornulum*, *C. karubarica*, *C. octonaria*, *C. secta*, *C. unicristata*, *Confluphyllia juncta*, *Deltocyathus philippinensis*, *D. stella*, *Endopachys bulbosa*, *Ericicyathus echinatus*, *Fungiacyathus fissidiscus*, *Madrepora minutiseptum*, *Rhizosmilia elata*, *Stephanocyathus regius*, *Sympodangia albatrossi*, *Trochocyathus apertus*, *T. brevispina*, *T. discus*, *T. longispina*, *T. semperi*, "*Tropidocyathus labidus*", *Truncatoflabellum angustum*, *T. mortenseni*). Un nom nouveau est introduit (*Caryophyllia crosnieri*, nomen novum) et 4 combinaisons nouvelles résultent de transferts dans un autre genre (*Colangia moseleyi*, *Premocyathus dentiformis*, *Trochocyathus burchae*, *Deltocyathoides orientalis*). Une espèce étrange, aux affinités incertaines (*incertae sedis*), est présentée, mais non décrite formellement.

Un tableau résume la répartition géographique et bathymétrique des 206 espèces recensées dans la région des Philippines et de l'Indonésie. Aux Philippines (157 espèces), la diversité est la plus élevée autour de l'île Lubang (69 espèces) et dans l'archipel de Sulu (66 espèces). En Indonésie (174 espèces), elle est la plus élevée dans la mer de Banda (138 espèces) et plus spécialement aux îles Kai (125 espèces). Ces remarquables richesses en espèces reflètent aussi une prospection particulièrement intense dans les secteurs en question. 65 des 206 espèces inventoriées dans la région des Philippines et de l'Indonésie vivent aussi dans l'océan Indien tropical, 77 au Japon, 67 autour de l'Australie ou au nord de la Nouvelle-Zélande, et 47 autour d'autres îles du Pacifique occidental. Mais seulement 11 de ces espèces sont connues dans le Pacifique oriental et 11 espèces également dans l'océan Atlantique. La répartition en profondeur des espèces étudiées s'étale entre 0 et 2700 m, *Flabellum conuis* étant l'espèce qui atteint la plus grande profondeur. L'intervalle de 200-400 m est habité par environ les 2/3 des espèces. Le genre *Leptopenus*, au squelette extrêmement fragile, a été reconnu pour la première fois dans des fonds de 300 m seulement.

De nombreuses espèces présentent un mode de multiplication asexuée: division transversale, fractionnement suivi de régénération, détachement de bourgeons. Pour la première fois des tentacules spéciaux, particulièrement allongés ("sweeper tentacles"), ont été reconnus chez un scléactiniaire bathyal (*Madrepora arbuscula*); auparavant ce type de tentacule était connu seulement chez divers scléactiniaires récifaux. Divers types d'associations symbiotiques plus ou moins spécialisées ont été reconnus. Les partenaires sont les suivants: crabes Cryptochiridae (avec *Phyllangia papuensis*), crustacés ascothoracides causant des galles (dans *Madrepora oculata*, *Balanophyllia carinata*, *Balanophyllia* sp., *Deltocyathoides orientalis*, *Dendrophyllia* sp. cf. *D. ijimai*, *Flabellum lamellulosum*); cirripèdes acrothoraciques perforants (dans *Balanophyllia crassiseptum*, *Balanophyllia* sp., *Javania lamprotichum*, *Tethocyathus virgatus*); polychètes Eunicidae liés aux déformations de colonies de *Madrepora* et de *Neohelia*, leurs tubes y étant incorporés; polychète *Lumbrineris flabellicola* corrodant la surface du squelette (de *Balanophyllia* sp., *Caryophyllia grayi*, *C. spinigera*, *C. transversalis*, *Conotrochus brunneus*, *Flabellum lamellulosum*, *F. patens*, *Flabellum* sp., *Rhizotrochus typus*, *Dendrophylliidae*).

Des cas plus remarquables d'épifaune installée sur des coraux vivants, mais n'en dépendant probablement pas, sont le brachiopode *Discradisca stella* et le gastropode *Malluvium* sp. sur *Truncatoflabellum mortenseni*, et un spongiaire Suberitidae pédonculé sur *Truncatoflabellum paripavoninum*.

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INTRODUCTION

This work may be considered as the concluding part 2 of the partial revision by CAIRNS (1989a) of the azooxanthellate Scleractinia of the Philippines and adjacent waters. Whereas CAIRNS included only 58 Philippine species from 5 families, this work lists 206 species in 11 families from the Philippine-Indonesian region, including additional records of most species reported in Part 1. This work differs conceptually from Part 1 (CAIRNS, 1989a) in that it covers a larger geographic region, including most of Indonesia, and was based on a much larger and varied collection.

LIST OF ABBREVIATIONS

MUSEUMS:

AMS	Australian Museum, Sydney.
MNHN	Muséum national d'Histoire naturelle, Paris.
MoNZ	Museum of New Zealand Te Papa Tonga-rewa, Wellington (formerly the National Museum of New Zealand: NMNZ).
NHM	The Natural History Museum, London [formerly the British Museum (Natural History): BMNH].
NMW	Naturhistorisches Museum, Wien.
NNM	Nationaal Natuurhistorisch Museum, Leiden (formerly the Rijksmuseum van Natuurlijke Historie: RMNH).
NMNH	National Museum of Natural History, Smithsonian, Washington, D. C. (formerly the United States National Museum: USNM).
NZOI	New Zealand Oceanographic Institute, Wellington.

ORI	Ocean Research Institute, Tokyo.
POLIPI	Puslitbang Oseanologi (National Institute of Oceanology), Jakarta.
ZMA	Zöologisch Museum, Amsterdam.
ZMB	Zoologisches Museum, Berlin.
ZMUC	Zoologisk Museum, København.

EXPEDITIONS AND VESSELS:

CORINDON 2	French-Indonesian expedition (1980) that collected mainly in the Makassar Strait.
DEKI	Danish Expedition to the Kei Islands (1922).
ESTASE 2	French expedition (1984) that collected in the Philippines.
KARUBAR	French-Indonesian expedition (1991) that collected in the southeastern Banda Sea. Named for the Kai , Aru , and Tanimbar Islands.
MUSORSTOM	Cruises organized jointly by the Muséum National d'Histoire Naturelle and Institut Français de Recherche Scientifique pour le Développement en Coopération (formerly: Office de la Recherche Scientifique et Technique d'Outre-Mer , = ORSTOM).
SIPHILEXP	Smithsonian Institution Philippine Expedition (1978).
TM	R/V " <i>Tansei Maru</i> ."

MORPHOLOGICAL TERMS:

D:H	Ratio of diameter to height of a solitary corallum.
GCD	Greater calicular diameter.
GCD:H	Ratio of greater calicular diameter to height of a solitary corallum.
GCD:LCD	Ratio of greater calicular diameter to lesser calicular diameter.
H:D	Ratio of height to diameter of a solitary corallum.
LCD	Lesser calicular diameter.
LEL:H	Ratio of lateral edge length to height of a solitary corallum, <i>i.e.</i> , of a <i>Flabellum</i> .
PD:GCD	Ratio of pedicel diameter to greater calicular diameter of a solitary corallum.
SCI	Septal concavity index: ratio of distance from thecal edge to point of greatest septal inflection to length of thecal face along that septum.
SEM	Scanning Electron Microscopy.
SSI	Septal sinuosity index: ratio of amplitude of sinuosity of lower inner edge of a major septum to the thickness of same septum (see CAIRNS, 1989b).
S_x, C_x, P_x	Septa, costae, or pali (respectively) of cycle designated by numerical subscript.
S_x>S_y	In the context of a septal formula, septa of cycle x wider than septa of cycle y.

COMBINED LIST OF STATIONS AND OF SPECIES OBTAINED PER STATION

This list provides the data of all stations mentioned in this report (ships, respectively cruises, in alphabetical order) and of those stations of the "*ALBATROSS*" Philippines Expedition and of cruises MUSORSTOM 1, 2, 3 (Philippines) and CORINDON 2 (Indonesia) that were previously mentioned by CAIRNS (1989a). For some of the stations previously mentioned by CAIRNS (1989a) the data are herein corrected.

The following abbreviations are used and placed after the species names:

CSD: (= confused station data) species found labeled as from this station, but certainly from another station because of the unlikely depth;

C89: already reported by CAIRNS (1989a);

C89*: reported by CAIRNS (1989a), but under another name (see synonymy, remarks).

"ACHERON" NEW ZEALAND NATIONAL MUSEUM (= NZNM),

Stn BS441. — 28.10.1975, Kermadec Isl., Raoul Isl., 3.7 km off Nugent Isl., 366-402 m: *Truncatoflabellum angustum*.

"AKADEMIK OPARIN"

Stn 18. — 3.12.1990, 13°56.1'S, 140°57.4'E, 36 m, Gulf of Carpentaria: *Truncatoflabellum spheniscus*.

"ALBATROSS" PHILIPPINES EXPEDITION

Stn 5106. — 9.1.1908, 14°23'55"N, 120°32'33"E, 68 m, SW Luzon: *Placotrochus laevis* C89.

Stn 5107. — 9.1.1908, 14°24'30"N, 120°33'40"E, 51 m, SW Luzon: *Placotrochus laevis* C89.

Stn 5110. — 15.1.1908, 13°59'20"N, 120°15'45"E, 247 m, 15.0°C, SW Luzon: *Balanophyllia cornu*, *Deltocyathus vaughani*, *Flabellum (U.) deludens* C89, *Fungiacyathus (F.) stephanus* C89.

Stn 5113. — 17.1.1908, 13°51'30"N, 120°50'30"E, 291 m, SW Luzon: *Fungiacyathus (B.) variegatus* C89.

Stn 5116. — 20.1.1908, 13°41'00"N, 120°47'05"E, 366 m, 10.1°C, SW Luzon: *Caryophyllia (C.) secta*, *Flabellum (F.) lamellulosum* C89, *Flabellum (F.) magnificum* C89.

Stn 5117. — 21.1.1908, 13°52'22"N, 120°46'22"E, 216 m, SW Luzon: *Caryophyllia (A.) spinigera*, *Flabellum (F.) lamellulosum* C89, *Flabellum (U.) deludens* C89.

Stn 5118. — 21.1.1908, 13°48'45"N, 120°41'51"E, 291 m, SW Luzon: *Caryophyllia (A.) spinicarens*, *Flabellum (F.) magnificum* C89, *Flabellum (U.) deludens* C89.

Stn 5123. — 2.2.1908, 13°12'45"N, 121°38'45"E, 518 m, E Mindoro: *Madrepora oculata*.

Stn 5124. — 2.2.1908, 12°52'00"N, 121°48'30"E, 514 m, E Mindoro: *Flabellum (U.) japonicum* C89, *Madrepora oculata*.

Stn 5130. — 5.2.1908, 7°35'00"N, 122°04'45"E, 187 m, 15.1°C, W Mindanao: *Leptopsammia crassa*.

Stn 5133. — 6.2.1908, 7°41'00"N, 122°01'00"E, 70 m, W Mindanao: *Asterosmilia marchadi*, *Balanophyllia imperialis*, *Balanophyllia stimpsonii*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*) CSD?, *Endocyathopora laticostata* C89, *Endopachys grayi*, *Flabellum (F.) politum* C89 CSD?, *Notocyathus venustus* C89 CSD?, *Placotrochus laevis* C89, *Trochocyathus (T.) burchae*, *Trochocyathus (T.) cooperi*, *Trochocyathus (T.) semperi*, *Tropidocyathus lessonii* C89.

Stn 5134. — 7.2.1908, 6°44'45"N, 121°48'00"E, 46 m, Jolo: *Balanophyllia carinata*, *Cyathelia axillaris*, *Endocyathopora laticostata* C89, *Placotrochus laevis* C89.

Stn 5135. — 7.2.1908, 6°11'50"N, 121°08'20"E, 294 m, Jolo: *Balanophyllia gemma*, *Deltocyathus magnificus*.

Stn 5136. — 14.2.1908, 6°04'20"N, 120°59'20"E, 40 m, Jolo: *Flabellum (F.) politum* C89 CSD, *Flabellum (U.) deludens* C89 CSD, *Trochocyathus (T.) cooperi*.

Stn 5137. — 14.2.1908, 6°04'25"N, 120°58'30"E, 37 m, Jolo: *Balanophyllia stimpsonii*, *Deltocyathoides orientalis* CSD, *Trochocyathus (T.) cooperi*, *Truncatoflabellum incrustatum* C89* (ex *T. formosum*).

Stn 5139. — 14.2.1908, 6°06'00"N, 121°02'30"E, 37 m, Jolo: *Balanophyllia carinata*.

Stn 5141. — 15.2.1908, 6°09'00"N, 120°58'00"E, 53 m, Jolo: *Truncatoflabellum aculeatum*.

Stn 5142. — 15.2.1908, 6°06'10"N, 121°02'40"E, 38 m, Jolo: *Trochocyathus (T.) cooperi*, *Trochocyathus (T.) semperi*.

Stn 5143. — 15.2.1908, 6°05'50"N, 121°02'15"E, 35 m, Jolo: *Balanophyllia stimpsonii*, *Trochocyathus (T.) cooperi*.

Stn 5144. — 15.2.1908, 6°05'50"N, 121°02'15"E, 35 m, Jolo: *Placotrochus laevis* C89, *Trochocyathus (T.) cooperi*.

Stn 5145. — 15.2.1908, 6°04'30"N, 120°59'30"E, 42 m, Jolo: *Sphenotrochus (S.) hancocki* C89, *Truncatoflabellum irregulare* C89.

Stn 5146. — 16.2.1908, 5°46'40"N, 120°48'50"E, 44 m, Siasi: *Balanophyllia imperialis*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*) CSD, *Truncatoflabellum phoenix*, *Trochocyathus (T.) cooperi*.

Stn 5147. — 16.2.1908, 5°41'40"N, 120°47'10"E, 38 m, Siasi: *Trochocyathus (T.) cooperi*, *Truncatoflabellum phoenix*.

Stn 5151. — 18.2.1908, 5°24'40"N, 120°27'15"E, 44 m, Tawitawi group: *Balanophyllia carinata*, *Premocyathus dentiformis*, *Trochocyathus (T.) cooperi*.

- Stn 5152. — 18.2.1908, 5°22'55"N, 120°15'45"E, 62 m, Tawitawi group: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Notocyathus conicus* C89.
- Stn 5153. — 19.2.1908, 5°18'10"N, 120°02'55"E, 90 m, Tawitawi group: *Fungiacyathus* (*B.*) *paliferus* C89.
- Stn 5155. — 19.2.1908, 5°13'40"N, 119°57'20"E, 22 m, Tawitawi group: *Premocyathus dentiformis*.
- Stn 5156. — 21.2.1908, 5°12'50"N, 119°55'55"E, 33 m, Tawitawi group: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Trochocyathus* (*T.*) *apertus*, *Truncatoflabellum aculeatum* C89.
- Stn 5159. — 21.2.1908, 5°11'50"N, 119°54'00"E, 18 m, Tawitawi group: *Truncatoflabellum phoenix*.
- Stn 5161. — 22.2.1908, 5°10'15"N, 119°53'00"E, 29 m, Tawitawi group: *Truncatoflabellum aculeatum* C89.
- Stn 5162. — 22.2.1908, 5°10'00"N, 119°47'30"E, 421 m, 11.6°C, Tawitawi group: *Anthemiphyllia dentata*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Fungiacyathus* (*B.*) *paliferus* C89, *Idiotrochus kikutii* C89, *Madracis* cf. *pharensis*, *Notocyathus conicus* C89, *Tropidocyathus lessonii* C89, *Truncatoflabellum formosum* C89, *Truncatoflabellum phoenix*, *Truncatoflabellum pusillum*, *Truncatoflabellum* sp. C89* (ex *T. formosum*).
- Stn 5164. — 24.2.1908, 5°01'40"N, 119°52'20"E, 33 m, Tawitawi group: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Paracyathus rotundatus*, *Trochocyathus* (*T.*) *apertus*, *Truncatoflabellum aculeatum* C89.
- Stn 5171. — 28.2.1908, 5°05'00"N, 119°28'00"E, 458 m, 11.9°C, Sulu Sea: *Conotrochus brunneus*.
- Stn 5172. — 5.3.1908, 6°03'15"N, 120°35'30"E, 582 m, Jolo: *Caryophyllia* (*C.*) *rugosa*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Idiotrochus kikutii* C89, *Peponocyathus minimus* C89* (ex *P. folliculus*).
- Stn 5173. — 5.3.1908, 6°02'55"N, 120°53'00"E, 340 m, Jolo: *Flabellum* (*F.*) *patens* C89.
- Stn 5174. — 5.3.1908, 6°03'45"N, 120°57'00"E, 37 m, Jolo: *Balanophyllia imperialis*.
- Stn 5178. — 25.3.1908, 12°43'00"N, 122°06'15"E, 143 m, Romblon: *Anthemiphyllia dentata*, *Asterosmilia marchadi*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Flabellum* (*F.*) *politum* C89, *Fungiacyathus* (*B.*) *paliferus* C89, *Idiotrochus kikutii* C89, *Letepsammia formosissima* C89, *Notocyathus conicus* C89, *Stephanophyllia neglecta* C89, *Tropidocyathus lessonii* C89, "*Tropidocyathus*" *pileus* C89, *Trochocyathus* (*T.*) *philippinensis*, *Truncatoflabellum pusillum* C89.
- Stn 5179. — 25.3.1908, 12°38'15"N, 122°12'30"E, 68 m, 24.3°C, Romblon: *Incertae sedis*, *Tropidocyathus lessonii* C89, *Truncatoflabellum phoenix*.
- Stn 5197. — 9.4.1908, 9°52'30"N, 123°40'45"E, 318 m, 12.4°C, W Bohol: *Flabellum* (*U.*) *deludens* C89.
- Stn 5198. — 9.4.1908, 9°40'50"N, 123°39'45"E, 403 m, 12.2°C, W Bohol: *Caryophyllia* (*A.*) *spinicarens*, *Deltocyathus magnificus*, *Deltocyathus vaughani*, *Flabellum* (*U.*) *japonicum* C89, *Fungiacyathus* (*F.*) *stephanus* C89.
- Stn 5201. — 10.4.1908, 10°10'00"N, 125°04'15"E, 1014 m, 11.6°C, S Leyte: *Madrepora oculata*.
- Stn 5202. — 10.4.1908, 10°12'00"N, 125°04'10"E, 919 m, S Leyte: *Flabellum* (*U.*) *deludens*, *Madrepora oculata*, *Trochocyathus* (*T.*) *cooperi* CSD.
- Stn 5212. — 24.4.1908, 12°04'15"N, 124°04'36"E, 198 m, 15.5°C, E Masbate: *Flabellum* (*F.*) *lamellulosum* C89, *Flabellum* (*F.*) *politum* C89.
- Stn 5213. — 20.4.1908, 12°15'00"N, 123°57'30"E, 146 m, E Masbate: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Stephanophyllia neglecta* C89, *Trochocyathus* (*T.*) *philippinensis*, *Truncatoflabellum candeanum* C89.
- Stn 5217. — 22.4.1908, 13°20'00"N, 123°14'15"E, 192 m, 17.3°C, between Luzon and Burias: *Caryophyllia* (*C.*) *rugosa*, *Conotrochus brunneus*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Flabellum* (*F.*) *politum* C89, *Gardinieria philippinensis* C89, *Letepsammia formosissima* C89, *Madracis* sp. A, *Peponocyathus minimus* C89* (ex *P. folliculus*), *Premocyathus dentiformis*, *Thrypticotrochus multilobatus* C89, *Trochocyathus* (*T.*) *philippinensis*.
- Stn 5221. — 24.4.1908, 13°38'15"N, 121°48'15"E, 353 m, 16.9°C, between Luzon and Marinduque: *Flabellum* (*U.*) *japonicum* C89.
- Stn 5222. — 24.4.1908, 13°38'30"N, 121°42'45"E, 357 m, 17.1°C, between Luzon and Marinduque: *Flabellum* (*U.*) *japonicum* C89.
- Stn 5236. — 11.5.1908, 8°50'45"N, 126°26'52"E, 903 m, 5.1°C, NE Mindanao: *Peponocyathus minimus*.
- Stn 5244. — 14.5.1908, 6°52'05"N, 126°14'15"E, 313 m, SE Mindanao: *Rhizosmilia elata*.

- Stn 5248. — 18.5.1908, 7°07'05"N, 125°40'24"E, 33 m, SE Mindanao, Gulf of Davao: *Eguchipsammia wellsi*.
- Stn 5249. — 18.5.1908, 7°06'06"N, 125°40'08"E, 42 m, SE Mindanao, Gulf of Davao: *Eguchipsammia gaditana*, *Eguchipsammia wellsi*, *Truncatoflabellum formosum* C89, *Truncatoflabellum incrustatum* C89.
- Stn 5250. — 18.5.1908, 7°05'07"N, 125°39'45"E, 42 m, SE Mindanao, Gulf of Davao: *Truncatoflabellum incrustatum* C89.
- Stn 5251. — 18.5.1908, 7°05'12"N, 125°39'35"E, 37 m, SE Mindanao, Gulf of Davao: *Truncatoflabellum incrustatum* C89.
- Stn 5253. — 18.5.1908, 7°04'48"N, 125°39'38"E, 51 m, SE Mindanao, Gulf of Davao: *Truncatoflabellum aculeatum*, *Truncatoflabellum incrustatum* C89.
- Stn 5255. — 18.5.1908, 7°03'00"N, 125°39'00"E, 183 m, SE Mindanao, Gulf of Davao: *Cyathelia axillaris*, *Javania insignis* C89, *Rhizosmilia sagamiensis*, *Thalamophyllia tenuescens*.
- Stn 5256. — 22.5.1908, 7°21'45"N, 124°07'15"E, 289 m, S Mindanao, Illana Bay: *Caryophyllia* (A.) *spinicarens*, *Flabellum* (U.) *deludens* C89.
- Stn 5260. — 3.6.1908, 12°25'35"N, 121°31'35"E, 428 m, 10.8°C, SE Mindoro: *Caryophyllia* (A.) *spinicarens*, *Fungiacyathus* (B.) *granulosus* C89.
- Stn 5265. — 6.6.1908, 13°41'15"N, 120°00'50"E, 247 m, SW Luzon: *Caryophyllia* (C.) *secta*, *Flabellum* (U.) *marenzelleri* C89, *Truncatoflabellum formosum* C89, *Truncatoflabellum incrustatum* C89.
- Stn 5268. — 8.6.1908, 13°42'00"N, 120°57'15"E, 311 m, SW Luzon: *Balanophyllia cornu*, *Cyathelia axillaris*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Endopachys grayi*, *Flabellum* (U.) *marenzelleri* C89, *Madracis* cf. *pharensis*.
- Stn 5272. — 14.7.1908, 14°00'00"N, 120°22'30"E, 216 m, 14.1°C, SW Luzon: *Notocyathus conicus* C89.
- Stn 5273. — 14.7.1908, 13°58'45"N, 120°21'35"E, 209 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Deltocyathus andamanicus*, *Flabellum* (F.) *lamellulosum* C89, *Flabellum* (U.) *deludens* C89, *Stephanocyathus* (A.) *spiniger*.
- Stn 5277. — 17.7.1908, 13°56'55"N, 120°13'45"E, 146 m, 14.8°C, SW Luzon: *Asterosmilia marchadi*, *Conotrochus brunneus*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Madracis asanoi*, *Notocyathus conicus* C89, *Peponocyathus folliculus* C89, "*Tropidocyathus*" *pileus* C89, *Truncatoflabellum pusillum* C89.
- Stn 5278. — 17.7.1908, 14°00'10"N, 120°17'15"E, 187 m, 15.3°C, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Fungiacyathus* (B.) *variegatus* C89, *Flabellum* (U.) *deludens* C89, *Letepsammia formosissima* C89.
- Stn 5279. — 17.7.1908, 13°57'30"N, 120°22'15"E, 214 m, SW Luzon: *Dendrophyllia arbuscula*.
- Stn 5280. — 17.7.1908, 13°55'20"N, 120°25'55"E, 353 m, 9.8°C, SW Luzon: *Balanophyllia cornu*, *Dendrophyllia arbuscula*, *Flabellum* (F.) *magnificum* C89.
- Stn 5281. — 18.7.1908, 13°52'45"N, 120°25'00"E, 368 m, 10.2°C, SW Luzon: *Balanophyllia cornu*, *Flabellum* (F.) *magnificum* C89, *Flabellum* (U.) *messum* C89.
- Stn 5282. — 18.7.1908, 13°53'00"N, 120°26'45"E, 454 m, 8.6°C, SW Luzon: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Fungiacyathus* (B.) *granulosus* C89.
- Stn 5283. — 18.7.1908, 13°48'30"N, 120°28'40"E, 512 m, 8.2°C, SW Luzon: *Fungiacyathus* (B.) *granulosus* C89, *Rhombopsammia niphada* C89, *Truncatoflabellum paripavoninum* C89.
- Stn 5284. — 18.7.1908, 13°42'05"N, 120°30'45"E, 772 m, 5.7°C, SW Luzon: *Flabellum* (U.) *sexcostatum* C89, *Truncatoflabellum paripavoninum* C89.
- Stn 5289. — 22.7.1908, 13°41'50"N, 120°58'30"E, 315 m, SW Luzon: *Flabellum* (F.) *patens* C89, *Flabellum* (U.) *marenzelleri* C89, *Truncatoflabellum formosum* C89, *Truncatoflabellum incrustatum* C89.
- Stn 5297. — 24.7.1908, 13°41'20"N, 120°58'00"E, 362 m, SW Luzon: *Flabellum* (U.) *deludens* C89.
- Stn 5298. — 24.7.1908, 13°43'25"N, 120°57'40"E, 256 m, SW Luzon: *Flabellum* (U.) *deludens* C89, *Flabellum* (U.) *marenzelleri* C89.
- Stn 5301. — 8.8.1908, 20°37'00"N, 115°43'00"E, 381 m, 10.3°C, South China Sea, SE Hong Kong: *Caryophyllia* (A.) *spinicarens*, *Conotrochus brunneus*, *Flabellum* (F.) *patens* C89, *Thrypticotrochus multilobatus* C89.
- Stn 5310. — 4.11.1908, 21°33'00"N, 116°13'00"E, 183 m, 18.6°C, South China Sea, SE Hong Kong: *Balanophyllia parvula*, *Caryophyllia* (C.) *hawaiiensis*.
- Stn 5311. — 4.11.1908, 21°33'00"N, 116°15'00"E, 161 m, South China Sea, SE Hong Kong: *Asterosmilia marchadi*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Dendrophyllia alcocki*, *Flabellum* (F.) *politum* C89, *Idiotrochus kikutii* C89, *Madracis* sp. A, *Notocyathus venustus* C89, *Peponocyathus minimus* C89*

- (ex *P. folliculus*), *Sphenotrochus* (*S.*) *hancocki* C89, *Stephanophyllia fungulus* C89, *Trochocyathus* (*T.*) *philippinensis*, *Tropidocyathus lessonii* C89, *Truncatoflabellum candeanum* C89, *Truncatoguynia irregularis* C89.
- Stn 5312. — 4.11.1908, 21°30'00"N, 116°32'00"E, 256 m, 14.2°C, South China Sea, SE Hong Kong: *Conotrochus funiculumna*, *Deltocyathoides orientalis* C89, *Flabellum* (*F.*) *pavoninum* C89, *Flabellum* (*F.*) *politum* C89 (not 5212), *Notocyathus venustus* C89, *Peponocyathus minimus*, *Sphenotrochus* (*S.*) *hancocki* C89, *Stephanophyllia fungulus* C89, "*Tropidocyathus*" *pileus* C89, *Truncatoflabellum carinatum* C89.
- Stn 5313. — 4.11.1908, 21°30'00"N, 116°43'00"E, 274 m, 12.0°C, South China Sea, SE Hong Kong: *Anthemiphyllia frustum*, *Caryophyllia* (*C.*) *quadrigenaria*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Flabellum* (*F.*) *politum*, *Peponocyathus minimus*, *Sphenotrochus* (*S.*) *hancocki* C89, *Truncatoflabellum carinatum* C89.
- Stn 5314. — 5.11.1908, 21°41'00"N, 116°46'00"E, 223 m, 15.3°C, South China Sea, SE Hong Kong: *Caryophyllia* (*A.*) *spinicarens*, *Deltocyathoides orientalis* C89, *Deltocyathus magnificus*, *Fungiacyathus* (*B.*) *variegatus* C89, *Madrepora oculata*, *Trochocyathus* (*T.*) *philippinensis*, *Truncatoflabellum candeanum* C89, *Truncatoflabellum carinatum* C89.
- Stn 5315. — 5.11.1908, 21°40'00"N, 116°58'00"E, 271 m, 12.4°C, South China Sea, SE Hong Kong: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Peponocyathus minimus*, *Sphenotrochus* (*S.*) *hancocki* C89.
- Stn 5317. — 5.11.1908, 21°36'00"N, 117°27'00"E, 421 m, 10.3°C, South China Sea, SE Hong Kong: *Caryophyllia* (*C.*) *diomedeeae*, *Caryophyllia* (*C.*) *quadrigenaria*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Enallopsammia marenzelleri*, *Madrepora oculata*, "*Tropidocyathus*" *pileus* C89.
- Stn 5318. — 5.11.1908, 21°32'00"N, 117°46'00"E, 622 m, South China Sea, SE Hong Kong: *Conotrochus funiculumna*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Fungiacyathus* (*B.*) *turbinolioides* C89.
- Stn 5327. — 12.11.1908, 18°31'30"N, 122°03'00"E, 362 m, N Luzon: *Madrepora oculata*.
- Stn 5331. — 22.11.1908, 15°36'45"N, 119°47'45"E, 326 m, 12.6°C, W Luzon: *Trochocyathus* (*A.*) *longispina*.
- Stn 5336. — 18.12.1908, 11°37'45"N, 119°46'E, 84 m, Linapacan Strait: *Dactylotrachus cervicornis* (fide Wells, 1954).
- Stn 5348. — 27.12.1908, 10°57'45"N, 118°38'15"E, 686 m, 13.6°C, NW Palawan: *Caryophyllia* (*C.*) *scobinosa*, *Fungiacyathus* (*F.*) *stephanus* C89, *Madrepora oculata*, *Rhombopsammia niphada* C89, *Stephanocyathus* (*O.*) *weberianus*.
- Stn 5349. — 27.12.1908, 10°54'00"N, 118°26'20"E, 1336 m, 4.8°C, NW Palawan: *Fungiacyathus* (*F.*) *stephanus* C89, *Madrepora oculata*, *Stephanocyathus* (*O.*) *weberianus*.
- Stn 5353. — 1.1.1909, 7°50'45"N, 116°43'15"E, 271 m, S Balabac: *Caryophyllia* (*A.*) *spinigera*.
- Stn 5355. — 5.1.1909, 8°08'10"N, 117°19'15"E, 81 m, N Balabac: *Trochocyathus* (*T.*) *cooperi*.
- Stn 5357. — 5.1.1909, 8°06'00"N, 117°17'10"E, 124 m, N Balabac: *Asterosmilia marchadi*, *Eguchipsammia wellsii*, *Javania insignis* C89, *Endopachys grayi*, *Rhizotrochus typus* C89.
- Stn 5367. — 22.2.1909, 13°34'37"N, 121°07'30"E, 329 m, SW Luzon: *Balanophyllia cornu*, *Cyathelia axillaris*.
- Stn 5369. — 24.2.1909, 13°48'00"N, 121°43'00"E, 194 m, Marinduque: *Caryophyllia* (*A.*) *spinigera*, *Flabellum* (*U.*) *deludens* C89, *Letepsammia formosissima* C89, *Stephanocyathus* (*A.*) *spiniger*, *Truncatoflabellum candeanum* C89.
- Stn 5371. — 24.2.1909, 13°49'40"N, 121°40'15"E, 152 m, Marinduque: *Caryophyllia* (*A.*) *spinigera*, *Letepsammia formosissima* C89, *Stephanocyathus* (*A.*) *spiniger*, *Truncatoflabellum candeanum* C89.
- Stn 5372. — 24.2.1909, 13°49'12"N, 121°36'09"E, 274 m, Marinduque: *Caryophyllia* (*A.*) *spinigera*, *Flabellum* (*U.*) *deludens* C89 (not 5392), *Stephanocyathus* (*A.*) *spiniger*.
- Stn 5373. — 2.3.1909, 13°40'00"N, 121°31'10"E, 619 m, 11.0°C, Marinduque: *Flabellum* (*U.*) *japonicum* C89, *Madrepora oculata*.
- Stn 5374. — 2.3.1909, 13°46'45"N, 121°35'08"E, 348 m, Marinduque: *Caryophyllia* (*A.*) *spinicarens*, *Caryophyllia* (*A.*) *spinigera*, *Deltocyathus magnificus*, *Flabellum* (*U.*) *deludens* C89.
- Stn 5376. — 2.3.1909, 13°42'50"N, 121°51'30"E, 165 m, Marinduque: *Caryophyllia* (*A.*) *spinigera*, *Letepsammia formosissima* C89, *Truncatoflabellum candeanum* C89.
- Stn 5378. — 4.3.1909, 13°17'45"N, 122°22'00"E, 723 m, 10.2°C, Marinduque: *Madrepora oculata*.
- Stn 5380. — 4.3.1909, 13°02'45"N, 122°29'00"E, depth?, Marinduque: *Notocyathus venustus* C89, CSD (net lost).

- Stn 5381. — 6.3.1909, 13°14'15"N, 122°44'45"E, 161 m, S Luzon, Gulf of Ragai: *Caryophyllia* (A.) *grayi*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Madracis asanoi*, *Madrepora oculata*, *Trochocyathus* (T.) *philippinensis*.
- Stn 5387. — 11.3.1909, 12°54'40"N, 123°20'30"E, 382 m, 11.3°C, between Luzon and Burias: *Flabellum* (U.) *deludens* C89.
- Stn 5391. — 13.3.1909, 12°13'15"N, 124°05'03"E, 216 m, between Masbate and Samar: *Balanophyllia cornu*, *Flabellum* (F.) *lamellulosum* C89, *Flabellum* (F.) *politum* C89, *Truncatoflabellum candeanum* C89.
- Stn 5392. — 13.3.1909, 12°13'35"N, 124°02'48"E, 247 m, between Masbate and Samar: *Balanophyllia cornu*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Flabellum* (F.) *lamellulosum* C89, *Flabellum* (F.) *politum* C89.
- Stn 5393. — 13.3.1909, 12°03'30"N, 124°03'36"E, 249 m, between Masbate and Samar: *Balanophyllia cornu*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Flabellum* (F.) *lamellulosum* C89, *Flabellum* (F.) *politum* C89, *Truncatoflabellum candeanum* C89.
- Stn 5398. — 15.3.1909, 11°35'12"N, 124°13'48"E, 209 m, between Masbate and Leyte: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Letepsammia formosissima* C89, *Madracis* sp. A, *Sympodangia albatrossi*.
- Stn 5403. — 16.3.1909, 11°10'00"N, 124°17'15"E, 333 m, 13.2°C, between Cebu and Leyte: *Caryophyllia* (A.) *spinicarens*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Deltocyathus andamanicus*, *Flabellum* (U.) *deludens* C89, *Fungiacyathus* (B.) *variegatus* C89, *Madrepora oculata*, *Notocyathus conicus* C89.
- Stn 5405. — 17.3.1909, 10°49'20"N, 124°24'23"E, 479 m, W Leyte: *Madrepora oculata*.
- Stn 5406. — 17.3.1909, 10°49'03"N, 124°22'30"E, 545 m, W Leyte: *Madrepora oculata*.
- Stn 5407. — 17.3.1909, 10°51'38"N, 124°20'54"E, 640 m, W Leyte: *Madrepora oculata*.
- Stn 5408. — 18.3.1909, 10°40'15"N, 124°15'00"E, 291 m, 13.0°C, between Cebu and Leyte: *Caryophyllia* (A.) *spinicarens*, *Flabellum* (U.) *deludens* C89, *Madrepora oculata*.
- Stn 5411. — 23.3.1909, 10°10'30"N, 123°51'15"E, 265 m, 12.9°C, between Cebu and Bohol: *Caryophyllia* (A.) *spinicarens*, *Flabellum* (U.) *deludens* C89, *Madrepora oculata*.
- Stn 5412. — 23.3.1909, 10°09'15"N, 123°52'00"E, 296 m, 12.7°C, between Cebu and Bohol: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus andamanicus*, *Flabellum* (F.) *magnificum* C89, *Flabellum* (U.) *deludens* C89.
- Stn 5417. — 25.3.1909, 10°10'00"N, 123°53'15"E, 302 m, 12.4°C, between Cebu and Bohol: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus andamanicus*, *Flabellum* (U.) *deludens* C89, *Madrepora oculata*.
- Stn 5418. — 25.3.1909, 10°08'50"N, 123°52'30"E, 291 m, 12.4°C, between Cebu and Bohol: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens* C89, *Madrepora oculata*.
- Stn 5419. — 25.3.1909, 9°58'30"N, 123°46'00"E, 320 m, 12.5°C, between Cebu and Bohol: *Flabellum* (U.) *deludens* C89.
- Stn 5423. — 31.3.1909, 9°38'30"N, 121°11'00"E, 930 m, 9.9°C, Sulu Sea, Cagayan Isl.: *Deltocyathus rotulus*, *Madrepora oculata*, *Eriocyathus echinatus*, *Rhombosammia squiresi* C89.
- Stn 5424. — 31.3.1909, 9°37'50"N, 121°12'37"E, 622 m, 10.2°C, Sulu Sea, Cagayan Isl.: *Fungiacyathus* (B.) *turbinolioides*, *Madrepora oculata*, *Peponocyathus minimus*, *Rhombosammia squiresi* C89.
- Stn 5425. — 31.3.1909, 9°37'45"N, 121°11'00"E, 906 m, 9.7°C, Sulu Sea, Cagayan Isl.: *Deltocyathus rotulus*, *Fungiacyathus* (F.) *stephanus* C89, *Madrepora oculata*, *Eriocyathus echinatus*.
- Stn 5426. — 3.4.1909, 9°12'00"N, 118°28'00"E, 49 m, SE Palawan: *Stephanophyllia neglecta* C89.
- Stn 5428. — 3.4.1909, 9°13'00"N, 118°51'15"E, 2022 m, 9.8°C, SE Palawan: *Enallopsammia rostrata*, *Flabellum* (U.) *?conuis* C89, *Madrepora oculata*.
- Stn 5429. — 5.4.1909, 9°41'30"N, 118°50'22"E, 1402 m, E Palawan: *Deltocyathus rotulus*, *Eriocyathus echinatus*, *Rhombosammia squiresi* C89 (not 5425).
- Stn 5438. — 8.5.1909, 15°54'42"N, 119°44'42"E, 544 m, 7.9°C, W Luzon: *Deltocyathus rotulus*.
- Stn 5439. — 9.5.1909, 15°58'15"N, 119°40'20"E, 1720 m, 2.6°C, W Luzon: *Deltocyathus rotulus*.
- Stn 5440. — 10.5.1909, 16°33'52"N, 119°52'54"E, 315 m, 11.8°C, W Luzon: *Stephanocyathus* (A.) *spiniger*.
- Stn 5444. — 3.6.1909, 12°43'51"N, 124°50'50"E, 564 m, 7.4°C, N Samar: *Caryophyllia* (C.) *scobinosa*, *Deltocyathus magnificus*, *Stephanocyathus* (O.) *weberianus*, *Stephanocyathus* (S.) *regius*.
- Stn 5445. — 3.6.1909, 12°44'42"N, 124°59'50"E, 701 m, 6.8°C, N Samar: *Caryophyllia* (C.) *scobinosa*, *Deltocyathus rotulus*, *Fungiacyathus* (F.) *stephanus* C89, *Stephanocyathus* (O.) *weberianus*, *Stephanocyathus* (S.) *regius*.

- Stn 5447. — 4.6.1909, 13°28'00"N, 123°46'18"E, 567 m, 7.4°C, SE Luzon: *Caryophyllia* (C.) *scobinosa*, *Deltocyathus rotulus*, *Stephanocyathus* (S.) *regius*.
- Stn 5453. — 7.6.1909, 13°12'00"N, 123°49'18"E, 267 m, SE Luzon: *Flabellum* (U.) *deludens* C89.
- Stn 5454. — 7.6.1909, 13°12'00"N, 123°50'30"E, 280 m, SE Luzon: *Flabellum* (U.) *deludens* C89.
- Stn 5483. — 30.7.1909, 10°27'30"N, 125°19'15"E, 135 m, E Leyte: *Truncatoflabellum* sp. C89* (ex *T. formosum*).
- Stn 5484. — 30.7.1909, 10°28'00"N, 125°20'00"E, 139 m, E Leyte: *Truncatoflabellum incrustatum* C89* (ex *T. formosum*).
- Stn 5487. — 31.7.1909, 10°02'45"N, 125°05'33"E, 1340 m, 11.3°C, SE Leyte: *Ericiocyathus echinatus*.
- Stn 5499. — 4.8.1909, 8°41'30"N, 124°35'40"E, 1014 m, 11.8°C, N Mindanao: *Enallopsammia rostrata*.
- Stn 5505. — 5.8.1909, 8°37'15"N, 124°36'00"E, 403 m, N Mindanao: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus philippinensis*, *Flabellum* (F.) *lamellulosum* C89, *Flabellum* (U.) *japonicum* C89.
- Stn 5506. — 5.8.1909, 8°40'00"N, 124°31'45"E, 479 m, 11.8°C, N Mindanao: *Deltocyathus magnificus*, *Deltocyathus philippinensis*, *Flabellum* (U.) *deludens* C89, *Trochocyathus* (A.) *longispina*, "*Tropidocyathus*" *pileus* C89.
- Stn 5508. — 5.8.1909, 8°17'24"N, 124°11'42"E, 494 m, 11.8°C, N Mindanao: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus magnificus*, *Flabellum* (U.) *deludens* C89, *Gardineria philippinensis* C89, "*Tropidocyathus*" *pileus* C89.
- Stn 5510. — 7.8.1909, 8°16'00"N, 124°03'50"E, 774 m, 11.7°C, N Mindanao: *Fungiacyathus* (F.) *stephanus* C89.
- Stn 5512. — 7.8.1909, 8°16'02"N, 123°58'26"E, 814 m, 11.6°C, N Mindanao: *Ericiocyathus echinatus*.
- Stn 5513. — 7.8.1909, 8°16'45"N, 124°02'48"E, 924 m, 11.6°C, N Mindanao: *Madrepora oculata*, *Notocyathus conicus* C89, *Ericiocyathus echinatus*, *Rhombopsammia squiresi* C89.
- Stn 5516. — 9.8.1909, 8°46'00"N, 123°32'30"E, 320 m, 12.4°C, NW Mindanao: *Madrepora oculata*.
- Stn 5519. — 9.8.1909, 8°47'00"N, 123°31'15"E, 333 m, 12.4°C, NW Mindanao: *Crispatotrochus rubescens*.
- Stn 5523. — 10.8.1909, 8°48'44"N, 123°27'35"E, depth?, NW Mindanao: *Flabellum* (F.) *magnificum* C89, *Flabellum* (U.) *marenzelleri*.
- Stn 5527. — 11.8.1909, 9°22'30"N, 123°42'40"E, 717 m, 11.8°C, between Bohol and Siquijor: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (C.) *octonaria*, *Deltocyathus magnificus*, *Deltocyathus rotulus*, *Flabellum* (F.) *politum* C89, *Flabellum* (U.) *japonicum* C89, *Madrepora oculata*, *Truncatoflabellum paripavoninum* C89.
- Stn 5528. — 11.8.1909, 9°24'45"N, 123°39'15"E, 803 m, 11.7°C, between Bohol and Siquijor: *Truncatoflabellum paripavoninum* C89.
- Stn 5529. — 11.8.1909, 9°23'45"N, 123°39'30"E, 807 m, 11.7°C, between Bohol and Siquijor: *Madrepora oculata*, *Deltocyathus vaughani*, *Truncatoflabellum paripavoninum* C89.
- Stn 5535. — 19.8.1909, 9°20'30"N, 123°23'45"E, 567 m, 11.8°C, between Negros and Siquijor: *Caryophyllia* (A.) *spinicarens*, *Flabellum* (U.) *japonicum* C89.
- Stn 5536. — 19.8.1909, 9°15'45"N, 123°22'00"E, 511 m, 11.9°C, between Negros and Siquijor: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus magnificus*, *Deltocyathus vaughani*, *Flabellum* (U.) *deludens* C89, *Flabellum* (U.) *japonicum* C89.
- Stn 5537. — 19.8.1909, 9°11'00"N, 123°23'00"E, 465 m, 11.9°C, between Negros and Siquijor: *Caryophyllia* (A.) *spinicarens*, *Flabellum* (U.) *japonicum* C89, *Trochocyathus* (A.) *longispina*.
- Stn 5538. — 19.8.1909, 9°08'15"N, 123°23'20"E, 468 m, 11.8°C, between Negros and Siquijor: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus philippinensis*, *Flabellum* (U.) *japonicum* C89.
- Stn 5541. — 20.8.1909, 8°49'38"N, 123°34'30"E, 401 m, 11.8°C, NW Mindanao: *Caryophyllia* (A.) *spinicarens*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Madrepora oculata*, *Stephanocyathus* (A.) *spiniger*.
- Stn 5543. — 20.8.1909, 8°47'15"N, 123°35'00"E, 296 m, 12.5°C, NW Mindanao: *Balanophyllia generatrix*, *Coenosmilia arbuscula*, *Madrepora oculata*.
- Stn 5545. — 15.9.1909, 6°04'45"N, 121°20'20"E, 209 m, 14.6°C, Jolo: *Stephanocyathus* (A.) *spiniger*.
- Stn 5551. — 17.9.1909, 5°54'48"N, 120°44'24"E, 353 m, 11.8°C, Jolo: *Caryophyllia* (C.) *scobinosa*, *Conotrochus funiculumna*.
- Stn 5554. — 18.9.1909, 5°52'27"N, 120°52'18"E, 46 m, Jolo: *Tubastraea micranthus*.

- Stn 5564. — 20.9.1909, 5°50'00"N, 120°31'00"E, 432 m, 11.3°C, between Jolo and Tawitawi: *Caryophyllia* (*C.*) *scobinosa*, *Flabellum* (*U.*) *japonicum* C89.
- Stn 5565. — 21.9.1909, 5°51'42"N, 120°30'30"E, 445 m, 11.3°C, between Jolo and Tawitawi: *Caryophyllia* (*A.*) *spinicarens*, *Caryophyllia* (*C.*) *scobinosa*, *Deltocyathoides orientalis*.
- Stn 5567. — 21.9.1909, 5°48'00"N, 120°33'45"E, 490 m, 11.1°C, between Jolo and Tawitawi: *Caryophyllia* (*C.*) *secta*, *Conotrochus funiculumna*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Deltocyathus magnificus*, *Flabellum* (*U.*) *deludens* C89, *Notocyathus venustus* C89, *Trochocyathus* (*T.*) *gardineri*, "*Tropidocyathus*" *pileus* C89, *Truncatoflabellum angustum*.
- Stn 5569. — 22.9.1909, 5°33'15"N, 120°15'30"E, 554 m, 11.3°C, N Tawitawi: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Notocyathus venustus* C89, *Stephanophyllia neglecta* C89.
- Stn 5574. — 23.9.1909, 5°30'45"N, 120°07'57"E, 622 m, N Tawitawi: *Madrepora oculata*.
- Stn 5576. — 23.9.1909, 5°25'56"N, 120°03'39"E, 507 m, 11.8°C, N Tawitawi: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Notocyathus venustus* C89, *Thrypticotrochus multilobatus* C89.
- Stn 5577. — 23.9.1909, 5°20'36"N, 119°58'51"E, 439 m, 12.4°C, N Tawitawi: *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Flabellum* (*F.*) *patens* C89, *Fungiacyathus* (*B.*) *paliferus* C89, *Peponocyathus folliculus* C89.
- Stn 5579. — 25.9.1909, 4°54'15"N, 119°09'52"E, 320 m, 12.9°C, NE Borneo, Sabah: *Fungiacyathus* (*B.*) *paliferus* C89, *Notocyathus venustus*, *Peponocyathus minimus*.
- Stn 5580. — 25.9.1909, 4°52'45"N, 119°06'45"E, 296 m, 13.2°C, NE Borneo, Sabah: *Javania insignis* C89, *Rhizotrochus typus* C89.
- Stn 5582. — 26.9.1909, 4°19'54"N, 118°58'38"E, 1629 m, 3.5°C, NE Borneo, Sabah: *Deltocyathus rotulus*, *Fungiacyathus* (*F.*) *stephanus* C89, *Placotrochides scaphula* C89.
- Stn 5584. — 27.9.1909, 4°17'40"N, 118°57'42"E, 534 m, 6.8°C, NE Borneo, Sabah: *Anthemiphyllia dentata*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Idiotrochus kikutii* C89, *Javania pachytheca*, *Madrepora arbuscula*, *Peponocyathus folliculus* C89.
- Stn 5585. — 28.9.1909, 4°07'00"N, 118°49'54"E, 871 m, 5.1°C, NE Borneo, Sabah: *Aulocyathus recidivus*, *Deltocyathus rotulus*, *Flabellum* (*U.*) *messum* C89, *Leptopenus* sp. A C89, *Stephanocyathus* (*S.*) *regius*.
- Stn 5586. — 28.9.1909, 4°06'50"N, 118°47'20"E, 635 m, 6.7°C, NE Borneo, Sabah: *Aulocyathus recidivus*, *Conotrochus funiculumna*, *Crispatotrochus rugosus*, *Deltocyathus rotulus*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Dendrophyllia alcocki*, *Flabellum* (*F.*) *magnificum* C89, *Fungiacyathus* (*B.*) *turbinolioides* C89, *Goniocorella dumosa*, *Idiotrochus kikutii* C89, *Lochmaetrochus oculus*, *Madrepora oculata*, *Notocyathus* sp. C89 (ex *N. conicus*), *Peponocyathus minimus*, *Placotrochides scaphula* C89, *Stephanocyathus* (*O.*) *weberianus*, *Stephanophyllia fungulus* C89, *Sympodangia albatrossi*, *Truncatoflabellum paripavoninum* C89.
- Stn 5587. — 28.9.1909, 4°10'35"N, 118°37'12"E, 759 m, 6.7°C, NE Borneo, Sabah: *Fungiacyathus* (*F.*) *stephanus* C89, *Stephanocyathus* (*O.*) *weberianus*.
- Stn 5589. — 29.9.1909, 4°12'10"N, 118°38'08"E, 366 m, 7.6°C, NE Borneo, Sabah: *Caryophyllia* (*C.*) *grandis*, *Flabellum* (*U.*) *messum* C89, *Fungiacyathus* (*B.*) *granulosus* C89, *Paraconotrochus zeidleri*, *Placotrochides scaphula* C89, *Stephanocyathus* (*A.*) *explanans*, *Truncatoflabellum paripavoninum* C89.
- Stn 5590. — 29.9.1909, 4°10'50"N, 118°39'35"E, 567 m, 6.8°C, NE Borneo, Sabah: *Caryophyllia* (*C.*) *grandis*, *Flabellum* (*F.*) *magnificum* C89, *Fungiacyathus* (*B.*) *granulosus* C89, *Paraconotrochus zeidleri*, *Truncatoflabellum paripavoninum* C89.
- Stn 5591. — 29.9.1909, 4°11'48"N, 118°38'20"E, 476 m, NE Borneo, Sabah: *Deltocyathus rotulus*, *Flabellum* (*U.*) *messum* C89, *Placotrochides scaphula* C89.
- Stn 5592. — 29.9.1909, 4°12'44"N, 118°27'44"E, 558 m, 6.3°C, NE Borneo, Sabah: *Caryophyllia* (*C.*) *grandis*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Fungiacyathus* (*B.*) *granulosus* C89, *Lochmaetrochus oculus*, *Paraconotrochus zeidleri*, *Trochocyathus* (*A.*) *longispina*, *Truncatoflabellum aculeatum*.
- Stn 5593. — 29.9.1909, 4°02'40"N, 118°11'20"E, 70 m, NE Borneo, Sabah: *Caryophyllia* (*A.*) *grayi*, *Endopachys grayi*, *Rhizotrochus typus* C89, *Truncatoflabellum candeanum* C89.
- Stn 5601. — 13.11.1909, 1°13'10"N, 125°17'05"E, 1400 m, NE Celebes, Moluccan Sea: *Deltocyathus rotulus*, *Stephanocyathus* (*O.*) *weberianus*.
- Stn 5605. — 16.11.1909, 0°21'33"N, 121°34'10"E, 1184 m, Celebes, Gulf of Tomini: *Fungiacyathus* (*F.*) *stephanus* C89.

- Stn 5606. — 17.11.1909, 0°16'28"N, 121°33'30"E, 1526 m, Celebes, Gulf of Tomini: *Caryophyllia* (*C.*) *cornulum*.
- Stn 5618. — 27.11.1909, 0°37'00"N, 127°15'00"E, 763 m, Molucca Passage: *Fungiacyathus* (*B.*) *sibogae* C89, *Fungiacyathus* (*F.*) *stephanus* C89.
- Stn 5619. — 27.11.1909, 0°35'00"N, 127°14'40"E, 796 m, Molucca Passage. *Fungiacyathus* (*B.*) *sibogae* C89, *Fungiacyathus* (*F.*) *stephanus* C89.
- Stn 5622. — 29.11.1909, 0°19'20"N, 127°28'30"E, 503 m, Makian: *Caryophyllia* (*A.*) *spinicarens*.
- Stn 5625. — 29.11.1909, 0°07'00"N, 127°28'00"E, 421 m, Kayoa: *Caryophyllia* (*A.*) *spinicarens*, *Madrepora oculata*.
- Stn 5626. — 29.11.1909, 0°07'30"N, 127°29'00"E, 485 m, Kayoa: *Caryophyllia* (*A.*) *spinicarens*.
- Stn 5630. — 2.12.1909, 0°56'30"S, 128°05'00"E, 1041 m, S Patiente Strait, Doworra: *Fungiacyathus* (*F.*) *stephanus* C89.
- Stn 5634. — 3.12.1909, 1°54'00"S, 127°36'00"E, 602 m, Pitt Passage, Gomomo: *Caryophyllia* (*C.*) *diomedae*, *Javania pachytheca*.
- Stn 5636. — 3.12.1909, 1°55'00"S, 127°42'30"E, 2309 m, Pitt Passage, Gomomo: *Caryophyllia* (*C.*) *diomedae*.
- Stn 5645. — 16.12.1909, 5°29'06"S, 122°36'06"E, 377 m, Butung Strait: *Madrepora oculata*.
- Stn 5647. — 16.12.1909, 5°34'00"S, 122°18'15"E, 950 m, Butung Strait: *Flabellum* (*U.*) *messum* C89.
- Stn 5648. — 16.12.1909, 5°35'00"S, 122°20'00"E, 1023 m, 4.0°C, Butung Strait: *Fungiacyathus* (*B.*) *sibogae* C89, *Fungiacyathus* (*F.*) *stephanus* C89, *Deltocyathus rotulus*, *Stephanocyathus* (*O.*) *weberianus*, *Truncatoflabellum paripavoninum* C89.
- Stn 5650. — 17.12.1909, 4°53'45"S, 121°29'00"E, 988 m, 4.5°C, S Celebes, Gulf of Boni: *Caryophyllia* (*C.*) *scobinosa*, *Stephanocyathus* (*O.*) *weberianus*, *Stephanocyathus* (*S.*) *regius*.
- Stn 5656. — 19.12.1909, 3°17'40"S, 120°36'45"E, 886 m, 5.1°C, S Celebes, Gulf of Boni: *Caryophyllia* (*C.*) *diomedae*, *Truncatoflabellum paripavoninum* C89.
- Stn 5658. — 19.12.1909, 3°32'40"S, 120°31'30"E, 933 m, 5.1°C, S Celebes, Gulf of Boni: *Truncatoflabellum formosum* C89, *Truncatoflabellum paripavoninum* C89.
- Stn 5668. — 29.12.1909, 2°28'15"S, 118°49'00"E, 1649 m, 3.4°C, Macassar Strait: *Deltocyathus rotulus*, *Fungiacyathus* (*F.*) *stephanus* C89.
- Stn 5670. — 30.12.1909, 1°19'00"S, 118°43'00"E, 2161 m, 3.4°C, Macassar Strait: *Caryophyllia* (*C.*) *cornulum*, *Fungiacyathus* (*F.*) *stephanus* C89, *Stephanocyathus* (*S.*) *regius*.
- Stn 5671. — 30.12.1909, 1°05'00"S, 118°56'00"E, 1647 m, 3.4°C, Macassar Strait: *Stephanocyathus* (*O.*) *weberianus*.

"ALPHA HELIX"

- Stn 1769. — date?, 4°32'S, 129°52'E, 25 m, Banda: *Tubastraea micranthus*.
- Stn 79-M21. — 7.6.1979, 8°45.0'S, 144°05.8'E, 55 m, Gulf of Papua: *Paracyathus rotundatus*.
- Stn 79-M26. — 10.6.1979, 9°29.7'S, 147°06.6'E, 1 m, Papua-New Guinea, Port Moresby: *Endopsammia philippensis*.
- Stn 79-M48. — 18.6.1979, 6°41.7'S 147°53.1'E, 0-8 m, Papua-New Guinea, Cape Cretin: *Endopsammia philippensis*.
- Stn 79-M59. — 21.6.1979, 3°23.8'S, 143°40.7'E, 1-6 m, Papua-New Guinea, Schouten Isl.: *Endopsammia philippensis*.
- Stn 79-M122. — 15.7.1979, 1°40.9'N, 127°32.2'E, 0-3 m, NW Halmahera: *Tubastraea micranthus*.
- Stn 79-M140. — 23.7.1979, 9°36.5'N, 123°53'E, 14-20 m, SW Bohol: *Culicia stellata*.

"CHALLENGER"

- Stn 174. — 3.8.1874, Fiji, Kandavu, 384 m: *Caryophyllia* (*A.*) *dentata*.
- Stn 190. — 12.9.1874, 8°56'S, 136°05'E, 90 m, Arafura Sea: *Paracyathus* sp.
- Stn 192. — 26.9.1874, 5°42'S, 132°25'E, 236 m, Kai Isl.: *Balanophyllia cornu*, *Balanophyllia rediviva*, *Caryophyllia* (*C.*) *transversalis*.

- Stn 194. — 29.9.1874, 4°33'S, 129°58'E, 366 m or 659 m, Banda: *Madrepora arbuscula*.
 Stn 201. — 26.10.1874, Philippines, Basilan Strait, 187 m: *Balanophyllia gemma*, *Balanophyllia parvula*.
 Stn 219. — 10.3.1874, 1°50'S, 146°42'E, 274 m, Admiralty Isl.: *Paraconotrochus zeidleri*.

CORINDON 2, "CORIOLIS"

- Stn 208. — 31.10.1980, 0°14.6'S, 117°52.0'E, 150 m, W Makassar Strait: *Caryophyllia* (A.) *grayi*.
 Stn 210. — 31.10.1980, 0°12.6'S, 117°53.5'E, 338 m, W Makassar Strait: *Fungiacyathus* (F.) *paliferus*, *Peponocyathus minimus*.
 Stn 216. — 1.11.1980, 0°40.1'N(!), 117°51.4'E, 96 m, W Makassar Strait: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*, *Flabellum* (F.) *pavoninum*, *Truncatoflabellum formosum*.
 Stn 220. — 2.11.1980, 0°13.6'S, 118°12.3'E, 2350 m, W Makassar Strait: *Caryophyllia* (C.) *cornulum*.
 Stn 235. — 4.11.1980, 0°04.7'S, 119°48.4'E, 1110 m, E Makassar Strait: *Madrepora minutiseptum* CSD, *Notocyathus conicus* C89, *Peponocyathus minimus*.
 Stn 240. — 5.11.1980, 0°37.6'S, 119°33.5'E, 675 m, E Makassar Strait: *Caryophyllia* (C.) *ambrosia ambrosia*, *Caryophyllia* (C.) *scobinosa*, *Rhombopsammia squiresi*.
 Stn 241. — 6.11.1980, 0°57.7'S, 119°15.3'E, 1525-1550 m, E Makassar Strait: *Caryophyllia* (C.) *cornulum*, *Deltocyathus rotulus*, *Stephanocyathus* (S.) *regius*.
 Stn 248. — 6.11.1980, 0°54.2'S, 119°28.7'E, 170 m, E Makassar Strait: *Balanophyllia imperialis*, *Balanophyllia rediviva*, *Caryophyllia* (C.) *hawaiiensis*, *Cyathohelia axillaris*, *Deltocyathoides orientalis*, *Javania insignis*, *Madracis* sp. A, *Madrepora minutiseptum*, *Neohelia* cf. *porcellana*, *Rhizosmilia sagamiensis*, *Thalamophyllia tenuescens*, *Trochocyathus* (T.) *philippinensis*, *Truncatoflabellum pusillum*.
 Stn 251. — 6.11.1980, 0°53.7'S, 119°29.6'E, 65 m, E Makassar Strait: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*, *Trochocyathus* (T.) *semperi*.
 Stn 260. — 6.11.1980, 1°56.9'S, 119°17.6'E, 15-50 m, E Makassar Strait: *Truncatoflabellum aculeatum*.
 Stn 261. — 6.11.1980, 1°56.8'S, 119°16.8'E, 60 m, E Makassar Strait: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*.
 Stn 263. — 6.11.1980, 1°56.8'S, 119°16.7'E, 80 m, E Makassar Strait: *Asterosmilia marchadi*.
 Stn 266. — 7.11.1980, 1°56.6'S, 119°15.8'E, 95 m, E Makassar Strait: *Asterosmilia marchadi*, *Balanophyllia desmophyllioides*.
 Stn 275. — 7.11.1980, 1°53.9'S, 119°13.7'E, 530 m, E Makassar Strait: *Fungiacyathus* (F.) *paliferus*.
 Stn 286. — 9.11.1980, 2°04.4'S, 118°46.9'E, 1710-1730 m, E Makassar Strait: *Caryophyllia* (C.) *cornulum*, *Deltocyathus rotulus*, *Fungiacyathus* (F.) *stephanus*.
 Stn 292. — 10.11.1980, 2°37.2'S, 117°53.0'E, 46 m, Central Makassar Strait: *Balanophyllia carinata*, *Truncatoflabellum aculeatum*.

DANISH EXPEDITION TO THE KEI ISLANDS (= DEKI)

- Stn unnumbered. — 22.2.1922, Bay of Amboina, 91 m: *Neohelia* cf. *porcellana*.
 Stn unnumbered. — 3.3.1922, Bay of Amboina, 91 m: *Endocyathopora laticostata*.
 Stn unnumbered. — 3.6.1922, Banda, Komkir, 75-90 m: *Balanophyllia carinata*.
 Stn unnumbered. — 3.6.1922, Banda, Waling Bezar, 30 m: *Incertae sedis*.
 Stn unnumbered. — Between Neira and Lontor, Banda Isl., 70-90 m: *Caryophyllia* (A.) *dentata*.
 Stn 1. — 30.3.1922, 5°34'S, 132°50'E, 370 m, Kai Isl.: *Enallopsammia pusilla*.
 Stn 2. — 31.3.1922, 5°32'S, 132°27'E, 180-222 m, Kai Isl.: *Caryophyllia* (A.) *dentata*, *Fungiacyathus* (F.) *paliferus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
 Stn 3. — 31.3.1922, 5°32'S, 132°36'E, 245 m, Kai Isl.: *Caryophyllia* (A.) *dentata*, *Caryophyllia* (C.) *crosnieri*, *Caryophyllia* (C.) *rugosa*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, *Crispatotrochus rubescens*, *Deltocyathus magnificus*, *Dendrophyllia arbuscula*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *magnificum*, *Flabellum* (F.) *politum*, *Fungiacyathus* (F.) *paliferus*, *Letepsammia formosissima*, *Rhombopsammia niphada*, *Stephanocyathus* (A.) *spiniger*, *Truncatoflabellum pusillum*.
 Stn 4. — 3.4.1922, 5°31'40"S, 132°26'E, 250 m, Kai Isl.: *Caryophyllia* (A.) *grayi*, *Conotrochus brunneus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, *Tubastraea micranthus* CSD.

- Stn 5. — 4.4.1922, 5°31'30"S, 132°38'E, 90-250 m, Kai Isl.: *Conotrochus brunneus*, *Fungiacyathus* (F.) *paliferus*, *Rhizotrochus typus*, *Stephanocyathus* (A.) *spiniger*.
- Stn 6. — 4.4.1922, 5°32'S, 132°36'30"E, 210 m, Kai Isl.: *Asterosmilia marchadi*, *Caryophyllia* (A.) *dentata*, *Caryophyllia* (A.) *grayi*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, *Deltocyathoides orientalis*, *Deltocyathus magnificus*, *Deltocyathus rotulus*, *Fungiacyathus* (F.) *paliferus*, *Notocyathus conicus*, *Stephanophyllia complicata*, *Stephanophyllia fungulus*, *Trochocyathus* (T.) *philippinensis*, *Trochocyathus* (T.) *semperi*, *Stephanocyathus* (A.) *spiniger*.
- Stn 7. — 5.4.1922, 5°38'30"S, 132°26'E, 196 m, Kai Isl.: *Balanophyllia cornu*, *Balanophyllia crassiseptum*, *Deltocyathoides orientalis*, *Dendrophyllia arbuscula*, *Trochocyathus* (T.) *caryophylloides*.
- Stn 8. — 5.4.1922, 5°39'S, 132°26'E, 300 m, Kai Isl.: *Trochocyathus* (T.) *rhombocolumna*.
- Stn 10. — 6.4.1922, off Doelah, 50 m, Kai Isl.: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Peponocyathus folliculus*, *Placotrochus laevis*, *Trochocyathus* (T.) *burchae*, *Trochocyathus* (T.) *apertus*, *Tubastraea micranthus*.
- Stn 12. — 9.4.1922, 5°30'S, 132°35'E, 325 m, Kai Isl.: *Balanophyllia generatrix*, *Caryophyllia* (C.) *croisneri*, *Deltocyathus magnificus*, *Enallopsammia pusilla*, *Flabellum magnificum*, *Trochocyathus* (A.) *brevispina*.
- Stn 13. — 9.4.1922, 5°31'S, 132°36'30"E, 275 m, Kai Isl.: *Trochocyathus* (A.) *brevispina*.
- Stn 14. — 10.4.1922, S of Doe Roa, 40 m, Kai Isl.: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Truncatoflabellum aculeatum*.
- Stn 15. — 10.4.1922, S of Doe Roa, ca. 5-20 m, Kai Isl.: *Trochocyathus* (T.) *cooperi*.
- Stn 17. — 12.4.1922, 5°34'40"S, 132°35'E, 100 m, Kai Isl.: *Trochocyathus* (T.) *cooperi*.
- Stn 18. — Doe Roa Strait, 40 m, Kai Isl.: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Placotrochus laevis*.
- Stn 20. — 14.4.1922, Doe Roa Bassin, 50 m, Kai Isl.: *Balanophyllia carinata*.
- Stn 22. — 15.4.1922, 5°30'40"S, 132°51'E, 340 m, Kai Isl.: *Madrepora oculata*, *Stephanocyathus* (A.) *spiniger*.
- Stn 24. — 15.4.1922, 5°37'S, 132°56'E, 100 m, Kai Isl.: *Balanophyllia carinata*, *Caryophyllia* (C.) *lamellifera*, *Cyathelia axillaris*, *Deltocyathoides orientalis*, *Dendrophyllia arbuscula*, *Fungiacyathus* (B.) *variegatus*, *Fungiacyathus* (F.) *paliferus*, *Javania insignis*, *Madracis* cf. *pharensis*, *Notocyathus venustus*, *Phyllangia papuensis*, *Rhizotrochus typus*, *Trochocyathus* (T.) *cooperi*, *Trochocyathus* (T.) *philippinensis*.
- Stn 25. — 16.4.1922, 5°34'20"S, 132°55'E, 85 m, Kai Isl.: *Caryophyllia* (A.) *grayi*, *Caryophyllia* (C.) *hawaiiensis*, *Rhizotrochus typus*.
- Stn 26. — 16.4.1922, 5°38'S, 132°55'20"E, 90 m, Kai Isl.: *Deltocyathoides orientalis*, *Rhizotrochus typus*.
- Stn 27. — 17.4.1922, 2 miles N of Elat, 60-70 m, Kai Isl.: *Rhizosmilia elata*, *Rhizotrochus typus*.
- Stn 30. — 18.4.1922, between Doe Roa and Kai Doelah, 40 m, Kai Isl.: *Balanophyllia stimpsonii*.
- Stn 31. — 18.4.1922, Doe Roa Bassin, 50 m, Kai Isl.: *Balanophyllia carinata*.
- Stn 32. — 22.4.1922, 5°32'20"S, 132°34'E, 260 m, Kai Isl.: *Caryophyllia* (C.) *transversalis*.
- Stn 33. — 22.4.1922, 5°31'S, 132°34'E, 285 m, Kai Isl.: *Madrepora oculata*.
- Stn 35. — 23.4.1922, Bay N of Noehoe Roa, 32 m, Kai Isl.: *Asterosmilia marchadi*.
- Stn 38. — 24.4.1922, NE of Doe Roa, 35 m, Kai Isl.: *Balanophyllia carinata*.
- Stn 41. — 25.4.1922, 5°28'40"S, 132°28'E, 245 m, Kai Isl.: *Caryophyllia* (C.) *transversalis*, *Deltocyathus magnificus*, *Flabellum* (F.) *lamellosum*, *Flabellum* (F.) *magnificum*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, *Trochocyathus* (A.) *brevispina*.
- Stn 42. — 26.4.1922, 5°35'S, 132°29'E, 225 m, Kai Isl.: *Caryophyllia* (A.) *spinigera*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, *Flabellum* (F.) *magnificum*, *Fungiacyathus* (F.) *paliferus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn 44. — 30.4.1922, 5°39'S, 132°23'E, 268 m, Kai Isl.: *Alatotrochus rubescens*, *Caryophyllia* (A.) *grayi*, *Caryophyllia* (C.) *transversalis*, *Conotrochus funiculumna*, *Deltocyathoides orientalis*, *Deltocyathus magnificus*, *Deltocyathus suluensis*, *Letepsammia formosissima*, *Notocyathus venustus*, *Placotrochides laevis*, *Trochocyathus* (T.) *philippinensis*.
- Stn 45. — 1.5.1922, 5°48'30"S, 132°14'E, 270 m, Kai Isl.: *Madrepora oculata*.
- Stn 46. — 2.5.1922, 5°47'20"S, 132°13'E, 300 m, Kai Isl.: *Balanophyllia gemma*, *Balanophyllia parvula*, *Caryophyllia* (C.) *quadragenaria*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, *Deltocyathoides orientalis*, *Deltocyathus magnificus*, *Flabellum* (U.) *deludens*, *Idiotrochus kikutii*, *Letepsammia formosissima*, *Thrypticotrochus multilobatus*, *Truncatoflabellum pusillum*.

- Stn 48. — 3.5.1922, 5°40'10"S, 130°21'E, 263 m, Kai Isl.: *Balanophyllia cornu*, *Bourneotrochus stellulatus*, *Caryophyllia* (A.) *dentata*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, *Crispatotrochus rubescens*, *Fungiacyathus* (B.) *variegatus*, *Rhizotrochus flabelliformis*.
- Stn 49. — 3.5.1922, 5°37'10"S, 132°23'E, 245 m, Kai Isl.: *Alatotrochus rubescens*, *Balanophyllia cornu*, *Caryophyllia* (A.) *grayi*, *Deltocyathoides orientalis*, *Endopachys grayi*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (F.) *paliferus*, *Fungiacyathus* (F.) *stephanus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, *Stephanophyllia fungulus*, *Trochocyathus* (T.) *philippinensis*, *Tropidocyathus lessonii*, "*Tropidocyathus*" *pileus*.
- Stn 50. — 4.5.1922, 5°34'S, 132°25'40"E, 233 m, Kai Isl.: *Balanophyllia gigas*, *Caryophyllia* (C.) *transversalis*, *Flabellum* (F.) *lamellulosum*, *Fungiacyathus* (B.) *sibogae*, *Fungiacyathus* (B.) *variegatus*, *Madrepora oculata*, *Notocyathus venustus*, *Stephanocyathus* (A.) *spiniger*, *Stephanophyllia complicata*, *Stephanophyllia neglecta*.
- Stn 51. — 7.5.1922, 5°46'30"S, 132°51'E, 348 m, Kai Isl.: *Deltocyathus magnificus*, *Deltocyathus suluensis*.
- Stn 52. — 7.5.1922, 5°46'S, 132°49'35"E, 352 m, Kai Isl.: *Conotrochus funiculocumna*, *Deltocyathus suluensis*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *marenzelleri*, *Lochmaetrochus oculus*, *Madrepora oculata*, *Paraconotrochus zeidlerii*, *Stephanocyathus* (A.) *spiniger*, *Stephanophyllia complicata*, *Stephanophyllia fungulus*, "*Tropidocyathus*" *labidus*.
- Stn 53. — 9.5.1922, 5°36'S, 132°55'E, 85 m, Kai Isl.: *Caryophyllia* (A.) *grayi*, *Caryophyllia* (C.) *hawaiiensis*, *Deltocyathoides orientalis*, *Flabellum* (F.) *politum*, *Rhizotrochus typus*, *Trochocyathus* (T.) *cooperi*, *Trochocyathus* (T.) *semperi*, *Tropidocyathus lessonii*, *Truncatoflabellum pusillum*.
- Stn 54. — 9.5.1922, 5°34'S, 132°55'E, 85 m, Kai Isl.: *Flabellum* (F.) *politum*, *Rhizotrochus typus*, *Thalamophyllia tenuescens*, *Truncatoflabellum candeanum*.
- Stn 56. — 10.5.1922, 5°30'20"S, 132°51'E, 345 m, Kai Isl.: *Flabellum* (U.) *hoffmeisteri*, *Lochmaetrochus oculus*, *Rhizotrochus flabelliformis*.
- Stn 57. — 10.5.1922, 5°32'S, 132°49'25"E, ca. 200 m, Kai Isl.: "*Cryptotrochus*" *venustus*, *Deltocyathus suluensis*, *Fungiacyathus* (B.) *sibogae*.
- Stn 58. — 12.5.1922, 5°29'S, 132°37'E, 290 m, Kai Isl.: *Balanophyllia generatrix*, "*Cryptotrochus*" *venustus*, *Conotrochus brunneus*, *Deltocyathus rotulus*, *Deltocyathus suluensis*, *Fungiacyathus* (F.) *paliferus*, *Letepsammia formosissima*, *Madrepora oculata*, *Truncatoflabellum candeanum*.
- Stn 59. — 12.5.1922, 5°28'S, 132°36'E, 385 m, Kai Isl.: *Balanophyllia gemma*, *Caryophyllia* (C.) *quadrigenaria*, *Crispatotrochus rubescens*, *Confluphyllia juncta*, *Deltocyathus andamanicus*, *Enallopsammia pusilla*, *Madrepora oculata*, *Polymyces wellsii*, *Rhizotrochus flabelliformis*, *Trochocyathus* (T.) *rhombocolumna*.
- Stn 60. — 14.5.1922, S of Doe Roa, 25 m, Kai Isl.: *Truncatoflabellum aculeatum*.
- Stn 61. — 14.5.1922, between Doe Roa and Kai Doelah, 50 m, Kai Isl.: *Enallopsammia pusilla*.
- Stn 62. — 15.5.1922, 5°29'25"S, 132°50'E, 290 m, Kai Isl.: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (C.) *transversalis*, *Deltocyathus suluensis*, *Deltocyathus vaughani*, *Notocyathus venustus*.
- Stn 63. — 16.5.1922, 5°32'S, 132°36'25"E, ca. 250 m, Kai Isl.: *Balanophyllia crassiseptum*, *Caryophyllia* (A.) *dentata*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Fungiacyathus* (B.) *variegatus*, *Fungiacyathus* (F.) *paliferus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, *Truncatoflabellum pusillum*.
- Stn 64. — 26.7.1922, 5°51'S, 106°22'E, 35 m, Java Sea: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Placotrochus laevis*.
- Stn 65. — 27.7.1922, 5°52'05"S, 106°17'E, 25 m, Java Sea: *Placotrochus laevis*.
- Stn 66. — 27.7.1922, 5°54'S, 106°12'E, 24 m, Java Sea: *Placotrochus laevis*.
- Stn 67. — 27.7.1922, 5°48'S, 106°12'E, 38 m, Java Sea: *Placotrochus laevis*, *Truncatoflabellum spheniscus*.
- Stn 68. — 27.7.1922, 5°47'S, 106°14'E, 55 m, Java Sea: *Balanophyllia stimpsonii*, *Paracyathus rotundatus*.
- Stn 69. — 27.7.1922, 5°47'S, 106°17'E, 50 m, Java Sea: *Placotrochus laevis*.
- Stn 70. — 28.7.1922, 5°40'S, 106°21'E, 35m, Java Sea: *Balanophyllia carinata*.
- Stn 71. — 28.7.1922, 5°40'S, 106°08'E, 54 m, Java Sea: *Paracyathus rotundatus*, *Truncatoflabellum spheniscus*.
- Stn 73. — 28.7.1922, 5°57'S, 105°57'E, 30 m, Sunda Strait: *Eguchipsammia gaditana*.
- Stn 74. — 29.7.1922, 6°03'S, 105°54'E, 30 m, Sunda Strait: *Rhizopsammia nuda*, *Truncatoflabellum spheniscus*.
- Stn 82. — 30.7.1922, 6°38'S, 105°21'E, 35 m, Sunda Strait: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Paracyathus rotundatus*, *Trochocyathus* (T.) *burchae*, *Truncatoflabellum aculeatum*.

- Stn 84. — 31.7.1922, 5°55'S, 105°31'E, 38 m, Sunda Strait: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Truncatoflabellum aculeatum*.
 Stn 89. — 31.7.1922, 5°55'S, 105°31'E, 38 m, Sunda Strait: *Placotrochus laevis*, *Truncatoflabellum aculeatum*.
 Stn 90. — 1.8.1922, 5°55'S, 105°30'E, 36 m, Sunda Strait: *Trochocyathus (T.) cooperi*, *Truncatoflabellum aculeatum*, *Truncatoflabellum spheniscus*.
 Stn 91. — 1.8.1922, 5°53'S, 105°27'E, 42 m, Sunda Strait: *Placotrochus laevis*.
 Stn 92. — 1.8.1922, 5°49'S, 105°29'E, 32 m, Sunda Strait: *Truncatoflabellum aculeatum*.
 Stn 95. — 1.8.1922, 5°44'S, 105°20'E, 25 m, Sunda Strait: *Trochocyathus (T.) cooperi*.
 Stn 100. — 3.8.1922, 5°49'S, 105°25'E, 54 m, Sunda Strait: *Balanophyllia stimpsonii*.
 Stn 103. — 4.8.1922, 5°52'S, 106°05'E, 52 m, Sunda Strait: *Trochocyathus (T.) cooperi*, *Truncatoflabellum spheniscus*.
 Stn 104. — 4.8.1922, 5°52'S, 105°04'E, 38 m, Java Sea: *Cyathelia axillaris*, *Rhizopsammia nuda*.
 Stn 105. — 5.8.1922, 5°56'S, 106°07'E, 13 m, Java Sea: *Cyathelia axillaris*.
 Stn 106. — 5.8.1922, 5°50'S, 106°16'E, 32 m, Java Sea: *Truncatoflabellum spheniscus*.
 Stn 110. — 5.8.1922, 5°25'S, 105°53'E, 12 m, Java Sea: *Placotrochus laevis*.
 Stn 116. — 7.8.1922, 5°57'S, 106°34'E, 22 m, Java Sea: *Placotrochus laevis*.

ESTASE 2, "JEAN CHARCOT"

- Stn 42/CP6. — 5.12.1984, 4°38.00'N, 119°49.00'E, 2570 m, S Sibutu: *Flabellum (U.) conuis*.

"GALATHEA"

- Stn 330. — 15.5.1951, 4 miles SE Singapore, 40 m: *Truncatoflabellum spheniscus*.
 Stn 423. — 25.7.1951, 10°27'N, 124°18'E, 750 m, E Cebu: *Caryophyllia (A.) spinicarens*.
 Stn 436. — 9.8.1951. — 10°12'N, 124°14'E, 710 m, E Cebu: *Caryophyllia (A.) spinicarens*, *Deltocyathus magnificus*, *Flabellum (U.) japonicum*, *Madrepora oculata*.
 Stn 443. — 16.8.1951, 8°48'N, 124°09'E, 1500 m, N Mindanao: *Madrepora oculata*.
 Stn 476. — 11.9.1951, 9°04'S, 114°43'E, 1555 m, S Bali: *Deltocyathus rotulus*.
 Stn 477. — 9°01'N, 114°48'E, 780 m, S Bali: *Peponocyathus minimus*.
 Stn 480. — 19.9.1951, 8°49'S, 115°00'E, 440 m, S Bali: *Fungiacyathus (F.) variegatus*.
 Stn 485. — 12.9.1951, 8°48'S, 115°16'E, 62 m, S Bali: *Blastotrochus nutrix*.
 Stn 488. — 12.9.1951, 8°49'S, 115°19'E, 202 m, S Bali: *Balanophyllia desmophyllioides*.
 Stn 489. — 13.9.1951, 7°38'S, 116°08'E, 1160 m, N Lombok: *Flabellum (U.) conuis*.
 Stn 490. — 14.9.1951, 5°25'S, 117°03'E, 570-545 m, SW Sulawesi: *Cryptotrochus javanus* (see CAIRNS, 1988), *Fungiacyathus (B.) turbinolioides*, *Madrepora oculata*, *Premocyathus dentiformis*.
 Stn 500. — 25.9.1951, 7°34'N, 132°44'E, 390 m, Arafura Sea, E Tanimbar Isl.: *Balanophyllia cornu*, *Conotrochus funiculumna*, *Deltocyathoides orientalis*, *Paraconotrochus zeidlereri*, *Deltocyathus suluensis*, *Rhizotrochus flabelliformis*, "*Tropidocyathus*" *labidus*.
 Stn 501. — 27.9.1851, 10°43'S, 139°17'E, 54 m, Arafura Sea: *Truncatoflabellum spheniscus*.

"GAZELLE"

- Stn 37. — 25.8.1875, 6°29.5'S, 154°45'E, 88 m, Bougainville Isl.: *Phyllangia papuensis*.

"HAKUHO MARU"

- Stn KH72-1-8. — 25.5.1972, 8°44.6'N, 119°05.4'E, 2030 m, Sulu Sea: *Flabellum (U.) conuis*.
 Stn KH72-1-20. — 10.6.1972, 5°40.9'N, 119°46.3'E, 460-514 m, Sulu Sea, Sibutu Passage: *Alatotrochus rubescens*, *Anthemiphyllia dentata*, *Conotrochus brunneus*, *Conotrochus funiculumna*, *Deltocyathoides orientalis*, *Deltocyathus magnificus*, *Enallopsammia pusilla*, *Fungiacyathus (F.) turbinolioides*, *Madrepora oculata*, *Notocyathus conicus*, *Stephanophyllia fungulus*, "*Tropidocyathus*" *pileus*.

- Stn KH72-1-26. — 18-19.6.1972, 9°27.0'S, 127°58.6'E, 610-690 m, SE Timor: *Caryophyllia* (C.) *ambrosia*, *Fungiacyathus* (F.) *stephanus*, *Stephanocyathus* (O.) *weberianus*, *Stephanocyathus* (S.) *regius*.
- Stn KH72-1-28. — 19.6.1972, 9°34.4'S, 128°06.0'E, 295-296 m, SE Timor: *Balanophyllia cornu*, *Conotrochus funiculumna*, *Deltocyathus magnificus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *patens*, *Flabellum* (U.) *marenzelleri*, *Madrepora oculata*, *Letepsammia formosissima*.
- Stn KH72-1-29. — ?6.1972, 12°17.3'S, 129°40.9'E, 49-52 m, NW Australia, Beagle Gulf: *Truncatoflabellum aculeatum*, *Truncatoflabellum spheniscus*.
- Stn KH72-1-30. — 25.6.1972, 12°24.8'S, 128°00.1'E, 115 m, NW Australia, Beagle Gulf: *Balanophyllia imperialis*, *Truncatoflabellum aculeatum*, *Truncatoflabellum spheniscus*.
- Stn KH72-1-50. — 10-11.7.1972, 6°51.6'N, 108°47.2'S, 132-137 m, South China Sea: *Caryophyllia* (A.) *grayi*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn KH72-1-52. — 11.7.1972, 7°26.3'N, 109°14.9'E, 265-286 m, South China Sea: *Caryophyllia* (A.) *spincarens*, *Conotrochus brunneus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Madrepora oculata*.
- Stn KH73-2-44-2. — 18.3.1973, 21°42.1'N, 117°36.8'E, 412-430 m, South China Sea: *Crispatotrochus rubescens*, *Dendrophyllia alcocki*, *Desmophyllum dianthus*, *Enallopsammia pusilla*, *Goniocorella dumosa*, *Lochmaeotrochus oculus*, *Madrepora oculata*.
- Stn KH85-1-A1. — 12.2.1985, 5°47.3'S, 119°35.4'E, 250-285 m, S Celebes: *Flabellum* (U.) *marenzelleri*.
- Stn KH85-1-A2. — 12.2.1985, 5°47.1'S, 119°35.5'E, 250-285 m, S Celebes: *Balanophyllia cornu*, *Balanophyllia desmophyllioides*, *Conotrochus brunneus*, *Flabellum* (U.) *marenzelleri*.

KARUBAR, "BARUNA JAYA I"

- Stn 1. — 22.10.1991, 5°46'45"S, 132°11'10"E, 156-305 m, Kai Isl.: *Anthemiphyllia dentata*, *Caryophyllia* (C.) *hawaiiensis*, *Conotrochus brunneus*, *Deltocyathus stella*, *Flabellum* (F.) *pavoninum*, *Letepsammia superstes*, *Stephanophyllia neglecta*, *Tropidocyathus lessonii*, *Truncatoflabellum formosum*, *Truncatoflabellum mortenseni*.
- Stn 2. — 22.10.1991, 5°47'00"S, 132°11'35"E, 209-300 m, Kai Isl.: *Alatocyathus rubescens*, *Anthemiphyllia frustum*, *Caryophyllia* (C.) *quadragenaria*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, "*Cryptotrochus*" *venustus*, *Deltocyathoides orientalis*, *Deltocyathus rotulus*, *Deltocyathus stella*, *Deltocyathus suluensis*, *Endopachys grayi*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *marenzelleri*, *Guynia annulata*, *Idiotrochus kikutii*, *Letepsammia formosissima*, *Notocyathus conicus*, *Notocyathus venustus*, *Peponocyathus minimus*, *Stephanophyllia complicata*, *Thrypticotrochus multilobatus*, *Trochocyathus* (A.) *brevispina*, *Trochocyathus* (T.) *discus*, *Trochocyathus* (T.) *philippinensis*, "*Tropidocyathus*" *labidus*, *Tropidocyathus lessonii*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum angustum*, *Truncatoflabellum dens*.
- Stn 3. — 22.10.1991, 5°47'40"S, 132°12'11"E, 278-300 m, Kai Isl.: *Alatocyathus rubescens*, *Bourneotrochus stellulatus*, *Caryophyllia* (C.) *diomedae*, *Caryophyllia* (C.) *quadragenaria*, *Caryophyllia* (C.) *secta*, *Conotrochus brunneus*, "*Cryptotrochus*" *venustus*, *Deltocyathoides orientalis*, *Deltocyathus magnificus*, *Deltocyathus suluensis*, *Fungiacyathus* (B.) *fissidiscus*, *Fungiacyathus* (B.) *granulosus*, *Fungiacyathus* (F.) *?paliferus* (irregular), *Guynia annulata*, *Idiotrochus kikutii*, *Leptopenus* sp., *Letepsammia formosissima*, *Notocyathus venustus*, *Peponocyathus minimus*, *Stephanophyllia complicata*, *Thrypticotrochus multilobatus*, *Trochocyathus* (A.) *brevispina*, *Trochocyathus* (T.) *discus*, *Trochocyathus philippinensis*, "*Tropidocyathus*" *labidus*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum angustum*, *Truncatoflabellum formosum*.
- Stn 5. — 22.10.1991, 5°46'39"S, 132°20'04"E, 285-323 m, Kai Isl.: *Caryophyllia crosnieri*, *Flabellum* (F.) *patens*, *Gardineria paradoxa*, *Stephanophyllia complicata*.
- Stn 7. — 22.10.1991, 5°47'35"S, 132°20'39"E, 282-287 m, Kai Isl.: *Balanophyllia cornu*, *Bourneotrochus stellulatus*, *Caryophyllia* (C.) *transversalis*, *Conotrochus brunneus*, "*Cryptotrochus*" *venustus*, *Deltocyathoides orientalis*, *Deltocyathus magnificus*, *Deltocyathus suluensis*, *Fungiacyathus* (B.) *granulosus*, *Fungiacyathus* (B.) *fissidiscus*, *Fungiacyathus* (F.) *?paliferus* (irregular), *Guynia annulata*, *Idiotrochus kikutii*, *Leptopenus* sp. A, *Letepsammia formosissima*, *Letepsammia superstes*, *Notocyathus venustus*, *Peponocyathus minimus*, *Stephanophyllia complicata*, *Thrypticotrochus multilobatus*, *Trochocyathus* (A.) *brevispina*, "*Tropidocyathus*" *labidus*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum phoenix*.
- Stn 9. — 23.10.1991, 5°19'21"S, 132°30'35"E, 361-389 m, Kai Isl.: *Flabellum* (U.) *hoffmeisteri*, *Madrepora oculata*.

- Stn 10. — 23.10.1991, 5°26'11"S, 132°27'37"E, 329-389 m, Kai Isl.: *Caryophyllia* (A.) *karubarica*, *Flabellum* (U.) *hoffmeisteri*.
- Stn 12. — 23.10.1991, 5°25'23"S, 132°36'59"E, 412-434 m, Kai Isl.: *Caryophyllia* (A.) *karubarica*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *magnificum*, *Flabellum* (U.) *hoffmeisteri*, *Fungiacyathus* (F.) *stephanus*.
- Stn 13. — 24.10.1991, 5°26'27"S, 132°37'37"E, 393-417 m, Kai Isl.: *Balanophyllia desmophyllioides*, *Balanophyllia gigas*, *Caryophyllia* (A.) *karubarica*, *Deltocyathoides orientalis*, *Enallopsammia rostrata*, *Flabellum* (U.) *hoffmeisteri*, *Lochmaetrochus oculatus*, *Madrepore oculata*, *Polymyces wellsi*.
- Stn 15. — 24.10.1991, 5°17'38"S, 132°40'51"E, 214-221 m, Kai Isl.: *Anthemiphyllia frustum*, *Caryophyllia* (P.) *dentiformis*, *Conotrochus brunneus*, *Deltocyathoides orientalis*, *Flabellum* (F.) *politum*, *Fungiacyathus* (F.) *?paliferus* (irregular), *Guynia annulata*, *Idiotrochus kikutii*, *Leptopenus* sp., *Notocyathus conicus*, *Notocyathus venustus*, *Peponocyathus folliculus*, *Peponocyathus minimus*, *Stephanophyllia complicata*, *Trochocyathus philippinensis*, "*Tropidocyathus*" *labidus*, *Truncatoflabellum pusillum*.
- Stn 16. — 24.10.1991, 5°17'06"S, 132°51'19"E, 315-348 m, Kai Isl.: *Balanophyllia cornu*, *Balanophyllia generatrix*, *Crispatotrochus rubescens*, *Madrepore oculata*, *Tethocyathus virgatus*.
- Stn 18. — 24.10.1991, 5°17'49"S, 133°00'51"E, 205-212 m, Kai Isl.: *Balanophyllia cornu*, *Balanophyllia desmophyllioides*, *Balanophyllia parvula*, *Bourneotrochus stellulatus*, *Caryophyllia* (C.) *lamellifera*, *Caryophyllia* (C.) *rugosa*, *Conotrochus brunneus*, *Dactylotrochus cervicornis*, *Deltocyathoides orientalis*, *Deltocyathus stella*, *Deltocyathus suluensis*, *Dendrophyllia alcocki*, *Eguchipsammia gaditana*, *Fungiacyathus* (F.) *paliferus*, *Idiotrochus kikutii*, *Letepsammia superstes*, *Madrepore arbuscula*, *Madrepore minutiseptum*, *Notocyathus conicus*, *Peponocyathus minimus*, *Premocyathus dentiformis*, *Symphodangia albatrossi*, *Thrypticotrochus multilobatus*, *Trochocyathus* (T.) *philippinensis*, *Truncatoflabellum angustum*, *Truncatoflabellum pusillum*.
- Stn 19. — 25.10.1991, 5°15'52"S, 133°00'01"E, 576-604 m, Kai Isl.: *Madrepore oculata*.
- Stn 20. — 25.10.1991, 5°16'30"S, 132°58'20"E, 768-810 m, Kai Isl.: *Fungiacyathus* (F.) *stephanus*, *Rhombopsammia niphada*, *Stephanocyathus* (O.) *weberianus*.
- Stn 21. — 25.10.1991, 5°16'25"S, 132°59'03"E, 688-694 m, Kai Isl.: *Caryophyllia* (C.) *hawaiiensis*, *Deltocyathus rotulus*, *Fungiacyathus* (F.) *stephanus*, *Rhombopsammia niphada*.
- Stn 22. — 25.10.1991, 5°16'23"S, 133°00'23"E, 85-124 m, Kai Isl.: *Balanophyllia rediviva*, *Caryophyllia* (C.) *hawaiiensis*, *Cyathelia axillaris*, *Deltocyathoides orientalis*, *Guynia annulata*, *Idiotrochus kikutii*, *Javania insignis*, *Madracis* sp. A, *Notocyathus venustus*, *Peponocyathus minimus*, *Thalamophyllia tenuescens*, *Truncatoflabellum phoenix*.
- Stn 25. — 26.10.1991, 5°31'30"S, 132°50'40"E, 318-352 m, Kai Isl.: *Enallopsammia pusilla*, *Confluphyllia juncta*.
- Stn 27. — 26.10.1991, 5°34'22"S, 132°51'29"E, 304-314 m, Kai Isl.: *Tethocyathus virgatus*, *Trochocyathus* (T.) *rhombocolumna*.
- Stn 28. — 26.10.1991, 5°31'27"S, 132°54'07"E, 448-468 m, Kai Isl.: *Deltocyathoides orientalis*, *Deltocyathus vaughani*, *Fungiacyathus* (F.) *?paliferus* (irregular), *Guynia annulata*.
- Stn 29. — 26.10.1991, 5°35'49"S, 132°55'44"E, 181-184 m, Kai Isl.: *Deltocyathoides orientalis*, *Guynia annulata*, *Madracis* sp. A.
- Stn 30. — 26.10.1991, 5°37'34"S, 132°55'34"E, 111-116 m, Kai Isl.: *Caryophyllia lamellifera*, *Cyathelia axillaris*, *Dendrophyllia* cf. *ijimai*, *Flabellum* (F.) *pavoninum*, *Thalamophyllia tenuescens*, *Truncatoflabellum mortenseni*.
- Stn 31. — 26.10.1991, 5°39'39"S, 132°50'41"E, 288-289 m, Kai Isl.: *Caryophyllia* (C.) *crosnieri*, *Conotrochus brunneus*, *Deltocyathus magnificus*, *Deltocyathus suluensis*, *Flabellum* (F.) *patens*, *Flabellum* (F.) *politum*, *Fungiacyathus* (B.) *variegatus*, *Notocyathus venustus*, *Truncatoflabellum angustum*.
- Stn 32. — 26.10.1991, 5°46'31"S, 132°50'42"E, 170-206 m, Kai Isl.: *Balanophyllia desmophyllioides*, *Caryophyllia* (C.) *crosnieri*, *Conotrochus brunneus*, *Deltocyathus stella*, *Javania insignis*, *Madrepore arbuscula*, *Notocyathus conicus*, *Trochocyathus* (T.) *caryophylloides*, *Trochocyathus* (T.) *philippinensis*, "*Tropidocyathus*" *labidus*.
- Stn 35. — 27.10.1991, 6°07'22"S, 132°43'45"E, 390-502 m, Kai Isl.: *Deltocyathus suluensis*, *Flabellum* (U.) *marenzelleri*, *Flabellum* (U.) *hoffmeisteri*, *Fungiacyathus* (F.) *stephanus*, *Letepsammia formosissima*, *Madrepore oculata*, *Stephanocyathus* (A.) *explanans*, "*Tropidocyathus*" *pileus*.

- Stn 36. — 27.10.1991, 6°05'50"S, 132°44'29"E, 210-268 m, Kai Isl.: *Conotrochus brunneus*, *Deltocyathus suluensis*, *Flabellum (F.) lamellulosum*, *Flabellum (F.) magnificum*, *Flabellum (U.) marenzelleri*, *Fungiacyathus (F.) stephanus*, *Labyrinthocyathus sp. A*, *Letepsammia formosissima*, "*Tropidocyathus*" *pileus*.
- Stn 39. — 28.10.1991, 7°45'43"S, 132°28'22"E, 466-477 m, Tanimbar Isl.: *Caryophyllia (A.) karubarica*, *Caryophyllia (A.) unicristata*, *Caryophyllia (C.) grandis*, *Deltocyathus vauhani*, *Flabellum (U.) hoffmeisteri*, *Fungiacyathus (F.) stephanus*, *Madrepora oculata*, *Rhombopsammia niphada*, *Stephanocyathus (A.) explanans*, *Truncatoflabellum paripavoninum*.
- Stn 40. — 28.10.1991, 7°47'53"S, 132°28'19"E, 442-468 m, Tanimbar Isl.: *Caryophyllia (A.) unicristata*, *Caryophyllia (C.) ambrosia ambrosia*, *Caryophyllia (C.) grandis*, *Deltocyathus vauhani*, *Flabellum (U.) hoffmeisteri*, *Fungiacyathus (B.) granulosus*, *Rhombopsammia niphada*, *Stephanocyathus (A.) explanans*.
- Stn 42. — 28.10.1991, 7°49'48"S, 132°43'29"E, 350-353 m, Tanimbar Isl.: *Madrepora oculata*.
- Stn 44. — 29.10.1991, 7°52'27"S, 132°48'24"E, 291-295 m, Tanimbar Isl.: *Conocyathus zelandiae*, *Deltocyathoides orientalis*, *Javania sp.*, *Peponocyathus minimus*, *Tethocyathus virgatus*, *Truncatoflabellum angustum*, *Truncatoflabellum phoenix*, *Truncatoflabellum pusillum*.
- Stn 49. — 29.10.1991, 7°59'51"S, 132°58'50"E, 206-209 m, Tanimbar Isl.: *Balanophyllia gemma*, *Balanophyllia desmophyllioides*, *Balanophyllia crassiseptum*, *Balanophyllia parvula*, *Caryophyllia (A.) dentata*, *Deltocyathoides orientalis*, *Fungiacyathus (F.) ?paliferus* (irregular), *Idiotrochus kikutii*, *Javania sp.*, *Notocyathus venustus*, *Peponocyathus minimus*, *Trochocyathus (T.) caryophylloides*, *Trochocyathus (T.) rhombocolumna*.
- Stn 50. — 29.10.1991, 7°59'09"S, 133°01'56"E, 184-185 m, Tanimbar Isl.: *Balanophyllia gemma*, *Balanophyllia crassiseptum*, *Letepsammia superstes*, *Notocyathus venustus*, *Trochocyathus (T.) caryophylloides*.
- Stn 56. — 31.10.1991, 8°12'39"S, 132°01'15"E, 549-552 m, Tanimbar Isl.: *Caryophyllia (C.) ambrosia ambrosia*, *Deltocyathus rotulus*, *Deltocyathus vauhani*, *Flabellum (U.) messum*, *Fungiacyathus (B.) granulosus*, *Fungiacyathus (F.) stephanus*, *Madrepora oculata*, *Truncatoflabellum paripavoninum*.
- Stn 57. — 31.10.1991, 8°15'39"S, 131°56'38"E, 603-622 m, Tanimbar Isl.: *Caryophyllia (C.) ambrosia ambrosia*, *Flabellum (U.) messum*, *Truncatoflabellum paripavoninum*.
- Stn 58. — 31.10.1991, 8°21'47"S, 132°00'55"E, 457-461 m, Tanimbar Isl.: *Caryophyllia (A.) karubarica*, *Caryophyllia (A.) unicristata*, *Fungiacyathus (B.) granulosus*, *Stephanocyathus (A.) explanans*.
- Stn 59. — 31.10.1991, 8°20'01"S, 132°09'32"E, 399-405 m, Tanimbar Isl.: *Caryophyllia (A.) unicristata*, *Caryophyllia (C.) grandis*, *Conotrochus funiculocolumna*, *Deltocyathus magnificus*, *Deltocyathus vauhani*, *Flabellum (F.) lamellulosum*, *Flabellum (F.) magnificum*, *Flabellum (U.) deludens*, *Flabellum (U.) hoffmeisteri*, *Fungiacyathus (B.) granulosus*, *Fungiacyathus (F.) stephanus*, *Madrepora oculata*, *Paraconotrochus zeidleri*, *Rhombopsammia niphada*, *Stephanocyathus (A.) explanans*.
- Stn 61. — 1.11.1991, 9°05'09"S, 132°44'35"E, 235 m, Tanimbar Isl.: *Balanophyllia cornu*, *Deltocyathoides orientalis*, *Peponocyathus minimus*, *Stephanocyathus (A.) spiniger*, *Trochocyathus (T.) caryophylloides*.
- Stn 62. — 1.11.1991, 9°02'10"S, 132°43'05"E, 245-251 m, Tanimbar Isl.: *Caryophyllia (A.) unicristata*, *Caryophyllia (A.) spinigera*, *Caryophyllia (C.) grandis*, *Endopachys bulbosa*, *Flabellum (U.) deludens*, *Fungiacyathus (F.) stephanus*, "*Tropidocyathus*" *pileus*.
- Stn 63. — 1.11.1991, 8°59'59"S, 132°56'40"E, 213-214 m, Tanimbar Isl.: *Flabellum (U.) deludens*.
- Stn 65. — 1.11.1991, 9°14'01"S, 132°28'28"E, 174-176 m, Tanimbar Isl.: *Caryophyllia (A.) dentata*, *Flabellum (F.) politum*, *Flabellum (U.) deludens*, *Placotrochus laevis*, *Truncatoflabellum spheniscus*.
- Stn 67. — 1.11.1991, 8°58'59"S, 132°07'20"E, 233-246 m, Tanimbar Isl.: *Caryophyllia (C.) transversalis*, *Crispatotrochus rubescens*, *Deltocyathus suluensis*, *Endopachys bulbosa*, *Flabellum (F.) lamellulosum*, *Flabellum (F.) magnificum*, *Letepsammia formosissima*, "*Tropidocyathus*" *pileus*.
- Stn 68. — 1.11.1991, 8°55'09"S, 132°03'13"E, 280-296 m, Tanimbar Isl.: *Caryophyllia (C.) transversalis*.
- Stn 69. — 2.11.1991, 8°45'17"S, 131°51'35"E, 356-367 m, Tanimbar Isl.: *Caryophyllia (A.) unicristata*, *Conotrochus brunneus*, *Deltocyathus magnificus*, *Flabellum (F.) lamellulosum*, *Flabellum (F.) magnificum*, *Flabellum (U.) hoffmeisteri*, *Madrepora oculata*, *Paraconotrochus zeidleri*.
- Stn 70. — 2.11.1991, 8°39'14"S, 131°49'16"E, 410-411 m, Tanimbar Isl.: *Caryophyllia (A.) unicristata*, *Caryophyllia (C.) grandis*, *Deltocyathus magnificus*, *Flabellum (F.) lamellulosum*, *Flabellum (F.) magnificum*, *Flabellum (U.) hoffmeisteri*, *Rhombopsammia niphada*, *Stephanocyathus (A.) explanans*, *Truncatoflabellum paripavoninum*.

- Stn 71. — 2.11.1991, 8°39'39"S, 131°42'29"E, 477-480 m, Tanimbar Isl.: *Caryophyllia* (A.) *karubarica*, *Caryophyllia* (A.) *unicristata*, *Caryophyllia* (C.) *grandis*, *Conotrochus brunneus*, *Deltocyathus magnificus*, *Deltocyathus vaughani*, *Flabellum* (U.) *hoffmeisteri*, *Rhombopsammia niphada*, *Stephanocyathus explanans*, *Truncatoflabellum paripavoninum*.
- Stn 72. — 2.11.1991, 8°33'19"S, 131°35'10"E, 676-699 m, Tanimbar Isl.: *Caryophyllia* (C.) *ambrosia ambrosia*, *Flabellum* (U.) *messum*, *Stephanocyathus* (A.) *explanans*.
- Stn 75. — 3.11.1991, 8°46'52"S, 131°33'37"E, 451 m, Tanimbar Isl.: *Caryophyllia* (C.) *grandis*, *Flabellum* (U.) *hoffmeisteri*, *Rhombopsammia niphada*, *Stephanocyathus* (A.) *explanans*.
- Stn 76. — 3.11.1991, 8°49'08"S, 131°35'36"E, 400 m, Tanimbar Isl.: *Caryophyllia* (A.) *unicristata*, *Deltocyathus magnificus*, *Deltocyathus vaughani*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*.
- Stn 77. — 3.11.1991, 8°55'38"S, 131°29'12"E, 347-351 m, Tanimbar Isl.: *Conotrochus brunneus*, *Deltocyathus suluensis*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *magnificum*, *Flabellum* (U.) *hoffmeisteri*, *Madrepora oculata*, *Paraconotrochus zeidleri*.
- Stn 79. — 3.11.1991, 9°13'34"S, 131°22'35"E, 239-250 m, Tanimbar Isl.: *Caryophyllia* (A.) *spinigera*, *Caryophyllia* (C.) *transversalis*, *Endopachys bulbosa*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*.
- Stn 82. — 4.11.1991, 9°30'00"S, 131°02'41"E, 215-218 m, Tanimbar Isl.: *Balanophyllia generatrix*.
- Stn 84. — 4.11.1991, 9°22'41"S, 131°07'17"E, 246-275 m, Tanimbar Isl.: *Caryophyllia* (C.) *transversalis*.
- Stn 85. — 4.11.1991, 9°22'51"S, 131°12'04"E, 239-244 m, Tanimbar Isl.: *Flabellum* (F.) *magnificum*, *Letepsammia formosissima*, "*Tropidocyathus*" *pileus*.
- Stn 86. — 4.11.1991, 9°23'59"S, 131°14'29"E, 222-226 m, Tanimbar Isl.: *Cladopsammia echinata*, *Conocyathus zelandiae*, *Crispatotrochus rubescens*, *Dendrophyllia arbuscula*, *Gardineria philippinensis*, *Javania* sp., *Letepsammia formosissima*, *Rhizosmilia elata*, *Stephanocyathus* (A.) *spiniger*, *Trochocyathus* (T.) *caryophylloides*, *Trochocyathus* (T.) *rhombocolumna*.
- Stn 87. — 5.11.1991, 8°48'13"S, 130°46'37"E, 1016-1024 m, Tanimbar Isl.: *Caryophyllia* (C.) *ambrosia ambrosia*, *Deltocyathus rotulus*, *Rhombopsammia squiresi*, *Stephanocyathus* (A.) *explanans*, *Truncatoflabellum paripavoninum*.
- Stn 89. — 5.11.1991, 8°39'41"S, 131°05'25"E, 1048-1084 m, Tanimbar Isl.: *Caryophyllia* (C.) *ambrosia ambrosia*, *Deltocyathus rotulus*, *Rhombopsammia squiresi*, *Stephanocyathus* (O.) *weberianus*.
- Stn 91. — 5.11.1991, 8°44'54"S, 131°03'10"E, 884-890 m, Tanimbar Isl.: *Caryophyllia* (C.) *ambrosia ambrosia*, *Caryophyllia* (C.) *scobinosa*, *Deltocyathus rotulus*, *Flabellum* (U.) *messum*, *Stephanocyathus* (O.) *weberianus*, *Truncatoflabellum paripavoninum*.

MORTENSEN'S JAVA (-SOUTH AFRICA) EXPEDITION

- Stn 1. — 3.4.1929, 7°34'S, 114°18'E, 100 m, N Bali: *Caryophyllia* (A.) *grayi*.
- Stn 2. — 3.4.1929, 7°33'S, 114°36'E, 200 m, N Bali: *Caryophyllia* (A.) *spinigera*.
- Stn 5. — 5.4.1929, 8°23'S, 114°29'E, 70 m, Bali Strait: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Caryophyllia* (A.) *grayi*, *Endopachys grayi*, *Stephanophyllia neglecta*, *Tropidocyathus lessonii*, *Trochocyathus* (T.) *burchae*, *Truncatoflabellum mortenseni*.
- Stn 6. — 5.4.1929, 8°26'S, 114°29'E, 70 m, Bali Strait: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Caryophyllia* (A.) *grayi*, *Endopachys grayi*, *Stephanophyllia neglecta*, *Truncatoflabellum mortenseni*.
- Stn 8. — 6.4.1929, 8°23'S, 114°24'E, 50 m, Bali Strait: *Asterosmilia marchadi*, *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Caryophyllia* (A.) *grayi*, *Endopachys grayi*, *Stephanophyllia neglecta*, *Tropidocyathus lessonii*, *Truncatoflabellum mortenseni*.
- Stn 9. — 6.4.1929, 8°30-35'S, 114°28'E, 70-150 m, Bali Strait: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*, *Endocyathopora laticostata*, *Trochocyathus* (T.) *burchae*, *Trochocyathus* (T.) *apertus*, *Truncatoflabellum mortenseni*.
- Stn 15. — 10.4.1929, 7°29'S, 114°49'E, 240 m, N Bali: *Balanophyllia cornu*, *Caryophyllia* (C.) *secta*, *Deltocyathus suluensis*, *Lochmaeotrochus oculus*, *Tethocyathus virgatus*.
- Stn 18. — 11.4.1929, 7°15'S, 114°45'E, 100 m, N Bali: *Notocyathus venustus*, *Truncatoflabellum mortenseni*.

MORTENSEN'S PACIFIC EXPEDITION

- Stn unnumbered. — 14.3.1914, W Mindanao, Zamboanga Peninsula, 301-373 m: *Caryophyllia* (C.) *secta*.
 Stn unnumbered. — 19.3.1914, Sulu Archipelago, Jolo, 46 m: *Leptopsammia stokesiana*.

MUSORSTOM I, "VAUBAN"

- Stn 2. — 19.3.1976, 14°02.8'N, 120°18.8'E, 182-187 m, SW Luzon: *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
 Stn 3. — 19.3.1976, 14°01.7'N, 120°16.0'E, 183-185 m, SW Luzon: *Balanophyllia cornu*, *Balanophyllia desmophyllioides*, *Balanophyllia rediviva*.
 Stn 4. — 19.3.1976, 14°01.8'N, 120°17.2'E, 182-194 m, SW Luzon: *Letepsammia formosissima*.
 Stn 5. — 19.3.1976, 14°01.5'N, 120°23.5'E, 200-215 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*.
 Stn 9. — 19.3.1976, 14°01.8'N, 120°17.6'E, 180-194 m, SW Luzon: *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
 Stn 10. — 19.3.1976, 13°59.8'N, 120°18.2'E, 187-205 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
 Stn 11. — 20.3.1976, 13°59.8'N, 120°23.7'E, 217-230 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*.
 Stn 12. — 20.3.1976, 14°00.8'N, 120°20.5'E, 187-210 m, SW Luzon: *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
 Stn 13. — 20.3.1976, 14°00.5'N, 120°17.0'E, 190 m, SW Luzon: *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Trochocyathus* (T.) *philippinensis*, "*Tropidocyathus*" *pileus*.
 Stn 14. — 20.3.1976, 14°00.2'N, 120°17.2'E, 190 m, SW Luzon: *Balanophyllia cornu*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*, *Trochocyathus* (T.) *philippinensis*.
 Stn 15. — 20.3.1976, 14°00.3'N, 120°18.0'E, 188-192 m, SW Luzon: *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*.
 Stn 20. — 21.3.1976, 13°59.2'N, 120°20.3'E, 208-222 m, SW Luzon: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
 Stn 24. — 22.3.1976, 14°00.0'N, 120°18.0'E, 189-209 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
 Stn 25. — 22.3.1976, 14°02.7'N, 120°20.3'E, 191-200 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
 Stn 27. — 22.3.1976, 13°59.8'N, 120°18.6'E, 188-192 m, SW Luzon: *Balanophyllia serrata*, *Flabellum* (F.) *lamellulosum*.
 Stn 31. — 22.2.1976, 14°00.0'W, 120°16.0'E, 187-195 m, SW Luzon: *Flabellum* (F.) *lamellulosum*.
 Stn 32. — 23.2.1976, 14°02.2'W, 120°17.7'E, 184-193m, SW Luzon: *Asterosmilia marchadi*, *Balanophyllia crassisepta*, *Flabellum* (F.) *lamellulosum*, *Tethocyathus virgatus*.
 Stn 35. — 23.3.1976, 13°59.0'N, 120°18.5'E, 186-187 m, SW Luzon: *Letepsammia formosissima*, *Trochocyathus* (T.) *philippinensis*.
 Stn 40. — 24.3.1976, 13°57.4'N, 120°27.8'E, 265-287 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Flabellum* (U.) *marenzelleri*, "*Tropidocyathus*" *pileus*.
 Stn 42. — 24.3.1976, 13°55.1'N, 120°28.6'E, 379-407 m, SW Luzon: "*Tropidocyathus*" *pileus*.
 Stn 43. — 24.3.1976, 13°50.5'N, 120°28.0'E, 448-484 m, SW Luzon: *Fungiacyathus* (B.) *granulosus*.
 Stn 44. — 24.3.1976, 13°46.9'N, 120°29.5'E, 592-610 m, SW Luzon: *Caryophyllia* (C.) *scobinosa*, *Fungiacyathus* (B.) *granulosus*, *Truncatoflabellum paripavoninum*.
 Stn 45. — 24.3.1976, 13°46.0'N, 120°23.8'E, 100-180 m, SW Luzon: *Caryophyllia* (A.) *grayi*.
 Stn 47. — 25.3.1976, 13°40.7'N, 120°30.0'E, 685-757 m, SW Luzon: *Caryophyllia* (C.) *scobinosa*, *Flabellum* (U.) *sexcostatum*, *Rhombopsammia niphada*, *Truncatoflabellum paripavoninum*.

- Stn 49. — 25.3.1976, 13°49.1'N, 119°59.8'E, 750-925 m, SW Luzon: *Caryophyllia (C.) ambrosia ambrosia*, *Caryophyllia (C.) diomedea*, *Fungiacyathus (F.) stephanus*, *Madrepora oculata*, *Stephanocyathus (O.) weberianus*, *Stephanocyathus (S.) regius*.
- Stn 50. — 25.3.1976, 13°49.2'N, 120°01.8'E, 415-510 m, SW Luzon: *Fungiacyathus (B.) granulatus*, *Trochocyathus (A.) longispina*.
- Stn 54. — 26.3.1976, 13°54.2'N, 119°57.9'E, 975-1125 m, SW Luzon: *Caryophyllia (C.) ambrosia ambrosia*, *Deltocyathus rotulus*, *Fungiacyathus (F.) stephanus*, *Stephanocyathus (O.) weberianus*, *Stephanocyathus (S.) regius*.
- Stn 55. — 26.3.1976, 13°55.0'N, 120°12.5'E, 194-200 m, SW Luzon: *Flabellum (F.) lamellulosum*, "*Tropidocyathus*" *pileus*.
- Stn 56. — 26.3.1976, 13°53.1'N, 120°08.9'E, 129-134 m, SW Luzon: *Caryophyllia (A.) grayi*, *Truncatoflabellum candeanum*.
- Stn 57. — 26.3.1976, 13°53.1'N, 120°13.2'E, 96-107m, SW Luzon: *Asterosmilia marchadi*, *Balanophyllia rediviva*, *Endopachys grayi*, *Trochocyathus (T.) cooperi*.
- Stn 58. — 26.3.1976, 13°58.0'N, 120°13.7'E, 143-178 m, SW Luzon: "*Tropidocyathus*" *pileus*.
- Stn 61. — 27.3.1976, 14°02.2'N, 120°18.1'E, 184-202 m, SW Luzon: *Balanophyllia cornu*, *Balanophyllia* sp., *Caryophyllia (A.) spinigera*, *Flabellum (F.) lamellulosum*, *Flabellum (U.) deludens*, *Letepsammia formosissima*, *Stephanocyathus (A.) spiniger*.
- Stn 62. — 27.3.1976, 13°59.5'N, 120°15.6'E, 179-194 m, SW Luzon: *Jvania lamprotichum*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*.
- Stn 63. — 27.3.1976, 14°00.8'N, 120°15.8'E, 191-195 m, SW Luzon: *Balanophyllia cornu*, *Balanophyllia desmophyllioides*, *Balanophyllia serrata*, *Gardinieria philippinensis*, *Jvania lamprotichum*, *Stephanocyathus (A.) spiniger*, *Tethocyathus virgatus*, *Trochocyathus (T.) caryophylloides*.
- Stn 64. — 27.3.1976, 14°00.5'N, 120°16.3'E, 194-195 m, SW Luzon: *Balanophyllia desmophyllioides*, *Caryophyllia (C.) octonaria*, *Letepsammia formosissima*, *Trochocyathus (T.) philippinensis*, *Tropidocyathus lessonii*, *Truncatoflabellum angustum*, *Truncatoflabellum candeanum*.
- Stn 65. — 27.3.1976, 14°00.0'N, 120°19.2'E, 194-202 m, SW Luzon: *Balanophyllia desmophyllioides*, *Balanophyllia serrata*, *Jvania lamprotichum*, *Rhizosmilia robusta*, *Stephanocyathus (A.) spiniger*.
- Stn 68. — 27.3.1976, 14°00.8'N, 120°17.4'E, 183-199 m, SW Luzon: *Flabellum (F.) lamellulosum*, *Flabellum (U.) deludens*.
- Stn 69. — 27.3.1976, 13°58.8'N, 120°17.3'E, 187-199 m, SW Luzon: *Balanophyllia serrata*.
- Stn 71. — 28.3.1976, 14°09.3'N, 120°26.2'E, 174-204m, SW Luzon: *Caryophyllia (A.) spinigera*, *Flabellum (F.) lamellulosum*.
- Stn 72. — 28.3.1976, 14°11.8'N, 120°28.7'E, 122-127 m, SW Luzon: *Caryophyllia (A.) grayi*, *Caryophyllia (A.) spinigera*, *Trochocyathus (T.) philippinensis*, *Truncatoflabellum candeanum*.
- Stn 73. — 28.3.1976, 14°15.0'N, 120°31.2'E, 70-76 m, SW Luzon: *Asterosmilia marchadi*.

MUSORSTOM 2, "CORIOLIS"

- Stn 1. — 20.11.1980, 14°00.3'N, 120°19.3'E, 188-198 m, SW Luzon: *Balanophyllia gigas*, *Caryophyllia (A.) spinigera*, *Flabellum (F.) lamellulosum*, *Flabellum (U.) deludens*, *Letepsammia formosissima*.
- Stn 2. — 20.11.1980, 14°01.0'N, 120°17.1'E, 184-186 m, SW Luzon: *Alatotrochus rubescens*, *Balanophyllia gigas*, *Caryophyllia (C.) octonaria*, *Flabellum (F.) politum*, *Letepsammia formosissima*, *Tethocyathus virgatus*, *Trochocyathus (T.) caryophylloides*, *Truncatoflabellum candeanum*, *Truncatoflabellum formosum*.
- Stn 4. — 20.11.1980, 14°01.2'N, 120°18.4'E, 183-190 m, SW Luzon: *Caryophyllia (A.) spinigera*, *Fungiacyathus (B.) variegatus*, *Letepsammia formosissima*.
- Stn 6. — 20.11.1980, 13°56.5'N, 120°20.7'E, 136-152 m, SW Luzon: *Flabellum (F.) politum*, *Letepsammia formosissima*, *Trochocyathus (T.) philippinensis*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*.
- Stn 8. — 21.11.1980, 13°55.0'N, 120°20.0'E, 85-90 m, SW Luzon: *Asterosmilia marchadi*.
- Stn 9. — 21.11.1980, 13°53.4'N, 120°20.7'E, 66 m, SW Luzon: *Balanophyllia stimpsonii*, *Paracyathus rotundatus*.

- Stn 10. — 21.11.1980, 14°00.1'N, 120°18.5'E, 188-195 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Trochocyathus* (T.) *philippinensis*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*.
- Stn 11. — 21.11.1980, 14°00.4'N, 120°19.7'E, 194-196 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, *Notocyathus conicus* C89.
- Stn 12. — 21.11.1980, 14°01.0'N, 120°19.7'E, 197-210 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn 13. — 21.11.1980, 14°00.5'N, 120°20.7'E, 193-200 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
- Stn 15. — 21.11.1980, 13°55.1'N, 120°28.4'E, 326-330 m, SW Luzon: *Balanophyllia cornu*, *Caryophyllia* (C.) *crossneri*, *Caryophyllia* (C.) *diomedae*, *Crispatotrochus rubescens*, *Flabellum* (F.) *magnificum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
- Stn 17. — 22.11.1980, 14°00.0'N, 120°17.1'E, 174-193 m, SW Luzon: *Balanophyllia desmophyllioides*, *Trochocyathus* (T.) *philippinensis*.
- Stn 18. — 22.11.1980, 14°00.0'N, 120°18.6'E, 188-195 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn 19. — 22.11.1980, 14°00.5'N, 120°16.5'E, 189-192 m, SW Luzon: *Flabellum* (F.) *lamellulosum*.
- Stn 20. — 22.11.1980, 14°00.9'N, 120°18.1'E, 185-192m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*.
- Stn 21. — 22.11.1980, 14°00.2'N, 120°17.8'E, 191-192 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Stephanocyathus* (A.) *spiniger*.
- Stn 24. — 23.11.1980, 13°37.2'N, 120°42.3'E, 640-647 m, SW Luzon: *Fungiacyathus* (F.) *stephanus*.
- Stn 25. — 23.11.1980, 13°39.0'N, 120°42.6'E, 520-550 m, SW Luzon: *Caryophyllia* (C.) *scobinosa*, *Fungiacyathus* (B.) *granulosus*, *Fungiacyathus* (F.) *stephanus*, *Placotrochides scaphula* C89, *Rhombopsammia niphada*, *Truncatoflabellum paripavoninum*.
- Stn 26. — 23.11.1980, 13°49.6'N, 120°51.0'E, 299-300 m, SW Luzon: *Flabellum* (F.) *lamellulosum*, *Stephanocyathus* (A.) *spiniger*.
- Stn 27. — 23.11.1980, 13°41.5'N, 120°50.1'E, 95-100 m, SW Luzon: *Balanophyllia gigas*.
- Stn 29. — 23.11.1980, 13°42.1'N, 120°50.1'E, 119-204 m, SW Luzon: *Caryophyllia* (A.) *grayi*, *Endopachys grayi*, *Tropidocyathus lessonii*.
- Stn 32. — 24.11.1980, 13°40.5'N, 120°53.9'E, 192-220 m, SW Luzon: *Balanophyllia cornu*, *Balanophyllia parvula*, *Balanophyllia* sp., *Caryophyllia* (C.) *secta*, *Conotrochus brunneus*, *Crispatotrochus rugosus*, *Gardineria musorstomica* C89, *Idiotrochus kikutii* C89, *Javania insignis*, *Letepsammia superstes*, *Trochocyathus* (T.) *caryophylloides*, *Truncatoflabellum formosum*.
- Stn 33. — 24.11.1980, 13°32.3'N, 121°07.5'E, 130-137 m, S Luzon: *Anthemiphyllia dentata*, *Balanophyllia desmophyllioides*, *Balanophyllia gemma*, *Balanophyllia rediviva*, *Balanophyllia* sp., *Caryophyllia* (C.) *hawaiiensis*, *Caryophyllia* (C.) *rugosa*, *Conotrochus brunneus*, *Deltocyathoides orientalis* C89* (ex *P. australiensis*), *Deltocyathus stella*, *Dendrophyllia* cf. *ijimai*, *Dendrophylliidae* (colonial), *Guynia annulata* C89, *Idiotrochus kikutii* C89, *Javania insignis*, *Letepsammia formosissima*, *Notocyathus conicus* C89, *Stephanophyllia neglecta*, *Tethocyathus virgatus*, *Trochocyathus* (T.) *philippinensis*, *Tropidocyathus lessonii* C89, *Thrypticotrochus multilobatus* C89, *Truncatoflabellum mortenseni*, *Truncatoflabellum pusillum*.
- Stn 34. — 24.11.1980, 13°27.9'N, 121°12.0'E, 155-167 m, N Mindoro: *Balanophyllia* sp.
- Stn 36. — 24.11.1980, 13°31.4'N, 121°23.9'E, 569-595 m, S Luzon: *Flabellum* (U.) *japonicum*, *Madrepora oculata*.
- Stn 39. — 25.11.1980, 13°02.8'N, 122°37.1'E, 1030-1190 m, S Luzon: *Madrepora oculata*.
- Stn 40. — 25.11.1980, 13°07.7'N, 122°39.1'E, 280-440 m, S Luzon: *Flabellum* (U.) *deludens*, *Flabellum* (U.) *japonicum*.
- Stn 44. — 26.11.1980, 13°23.2'N, 122°20.7'E, 760-820 m, S Luzon: *Flabellum* (U.) *japonicum*, *Trochocyathus* (A.) *longispina*.
- Stn 45. — 26.11.1980, 13°26.8'N, 122°18.5'E, 447-500 m, S Luzon: *Caryophyllia* (A.) *spinicarens*.
- Stn 46. — 26.11.1980, 13°25.7'N, 122°17.0'E, 445-520 m, S Luzon: *Flabellum* (U.) *deludens*, *Caryophyllia* (A.) *spinicarens*.

- Stn 47. — 26.11.1980, 13°33.0'N, 122°10.1'E, 81-84 m, S Luzon: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*, *Phyllangia papuensis*, *Trochocyathus* (T.) *cooperi*.
- Stn 49. — 26.11.1980, 13°38.4'N, 121°44.1'E, 416-425 m, S Luzon: *Flabellum* (U.) *japonicum*, *Madrepora oculata*.
- Stn 53. — 27.11.1980, 13°59.2'N, 120°18.3'E, 215-216m, SW Luzon: *Javania lamprotichum*.
- Stn 62. — 29.11.1980, 14°00.4'N, 120°17.0'E, 186-189 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn 63. — 29.11.1980, 14°07.3'N, 120°15.0'E, 215-230 m, SW Luzon: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (A.) *spinigera*, *Conotrochus brunneus*, *Deltocyathus andamanicus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum angustum*.
- Stn 64. — 29.11.1980, 14°01.5'N, 120°18.9'E, 191-195 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Fungiacyathus* (B.) *variegatus*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*.
- Stn 66. — 29.11.1980, 14°00.6'N, 120°20.3'E, 192-209 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens* C89, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*.
- Stn 68. — 29.11.1980, 14°01.9'N, 120°18.8'E, 195-199 m, SW Luzon: *Balanophyllia cornu*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, *Truncatoflabellum candeanum*.
- Stn 75. — 1.12.1980, 13°50.5'N, 120°30.3'E, 300-330 m, SW Luzon: *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *magnificum*.
- Stn 77. — 1.12.1980, 13°48.8'N, 120°30.3'E, 529-552 m, SW Luzon: *Truncatoflabellum paripavoninum*.
- Stn 78. — 1.12.1980, 13°49.1'N, 120°28.0'E, 441-550 m, SW Luzon: *Flabellum* (F.) *magnificum*, *Flabellum* (U.) *sp.*
- Stn 82. — 2.12.1980, 13°46.1'N, 120°28.4'E, 550 m, SW Luzon: *Fungiacyathus* (B.) *granulosus*.
- Stn 83. — 2.12.1980, 13°55.2'N, 120°30.5'E, 318-320 m, SW Luzon: *Caryophyllia* (A.) *spinicarens*, *Deltocyathus magnificus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, "*Tropidocyathus*" *pileus*.

MUSORSTOM 3, "*CORIOLIS*"

- Stn 86. — 31.5.1985, 14°00.4'N, 120°17.8'E, 187-192 m, SW Luzon: *Alatotrochus rubescens*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Letepsammia formosissima*.
- Stn 87. — 31.5.1985, 14°00.6'N, 120°19.6'E, 191-197 m, SW Luzon: *Aulocyathus ?juvenescens*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Guynia annulata*, *Letepsammia formosissima*, *Truncatoflabellum pusillum*.
- Stn 88. — 31.5.1985, 14°00.5'N, 120°17.4'E, 183-187 m, SW Luzon: *Alatotrochus rubescens*, *Balanophyllia cornu*, *Caryophyllia* (C.) *octonaria*, *Caryophyllia* (A.) *spinigera*, *Deltocyathus andamanicus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Javania lamprotichum*, *Letepsammia formosissima*, *Rhizosmilia sagamiensis*, *Trochocyathus* (T.) *caryophylloides*, *Trochocyathus* (T.) *philippinensis*, *Tropidocyathus lessonii* C89, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*, *Stephanocyathus* (A.) *spiniger*.
- Stn 89. — 31.5.1985, 14°01.0'N, 120°17.1'E, 187-191 m, SW Luzon: *Madrepora oculata*.
- Stn 90. — 31.5.1985, 14°00.1'N, 120°18.6'E, 195 m, SW Luzon: *Caryophyllia* (C.) *octonaria*, *Caryophyllia* (A.) *spinigera*, *Letepsammia formosissima*, *Truncatoflabellum candeanum*.
- Stn 91. — 31.5.1985, 14°00.1'N, 120°17.8'E, 190-203 m, SW Luzon: *Alatotrochus rubescens*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, *Stephanophyllia neglecta* C89, *Truncatoflabellum candeanum*.
- Stn 92. — 31.5.1985, 14°03.0'N, 120°11.5'E, 224 m, SW Luzon: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (A.) *spinigera*, *Conotrochus brunneus*, *Deltocyathus andamanicus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum angustum*, *Truncatoflabellum candeanum*.
- Stn 93. — 1.6.1985, 13°48.6'N, 120°02.4'E, 540 m, SW Luzon: *Deltocyathus suluensis*.
- Stn 94. — 1.6.1985, 13°47.4'N, 120°03.4'E, 842 m, SW Luzon: *Caryophyllia* (C.) *ambrosia ambrosia*, *Deltocyathus rotulus*, *Javania lamprotichum*, *Polymyces wellsi*.

- Stn 95. — 1.6.1985, 13°55.8'N, 119°59.3'E, 865 m, SW Luzon: *Caryophyllia* (C.) *diomedeeae*, *Flabellum* (U.) *japonicum*, *Fungiacyathus* (B.) *variegatus*.
- Stn 96. — 1.6.1985, 14°00.3'N, 120°17.3'E, 190-194 m, SW Luzon: *Alatotrochus rubescens*, *Balanophyllia cornu*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima* C89, *Stephanocyathus* (A.) *spiniger*, *Trochocyathus* (T.) *philippinensis*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*, *Truncatoflabellum pusillum*.
- Stn 97. — 1.6.1985, 14°00.7'N, 120°18.8'E, 189-194 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn 98. — 1.6.1985, 14°00.2'N, 120°17.9'E, 194-205 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, *Trochocyathus* (T.) *philippinensis*.
- Stn 99. — 1.6.1985, 14°01.0'N, 120°19.5'E, 196-204 m, SW Luzon: *Caryophyllia* (A.) *grayi*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*.
- Stn 100. — 1.6.1985, 14°00.0'N, 120°17.6'E, 189-199 m, SW Luzon: *Balanophyllia cornu*, *Caryophyllia* (C.) *octonaria*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*, *Thrypticotrochus multilobatus*.
- Stn 101. — 1.6.1985, 14°00.1'N, 120°19.2'E, 194-196 m, SW Luzon: *Caryophyllia* (C.) *octonaria*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Guynia annulata*, *Letepsammia formosissima*.
- Stn 102. — 1.6.1985, 14°00.8'N, 120°17.8'E, 192 m, SW Luzon: *Alatotrochus rubescens*, *Asterosmilia marchadi*, *Balanophyllia cornu*, *Caryophyllia* (C.) *octonaria*, *Caryophyllia* (A.) *spinigera*, *Conotrochus brunneus*, *Deltocyathoides orientalis*, *Endopachys grayi*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (F.) *paliferus*, *Fungiacyathus* (B.) *variegatus*, *Guynia annulata*, *Idiotrochus kikutii*, *Letepsammia formosissima*, *Notocyathus conicus* C89, *Stephanocyathus* (A.) *spiniger*, *Stephanophyllia neglecta* C89, *Trochocyathus* (T.) *philippinensis*, *Truncatoflabellum candeanum*, *Truncatoflabellum pusillum*.
- Stn 103. — 1.6.1985, 14°00.4'N, 120°18.1'E, 193-200 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*.
- Stn 105. — 1.6.1985, 13°52.6'N, 120°29.6'E, 398-417 m, SW Luzon: *Balanophyllia cornu*, *Madrepora oculata*.
- Stn 106. — 2.6.1985, 13°47.0'N, 120°30.3'E, 640-668 m, SW Luzon: *Fungiacyathus* (B.) *granulosus*, *Madrepora oculata*, *Notocyathus conicus*, *Truncatoflabellum paripavoninum*.
- Stn 107. — 2.6.1985, 14°01.9'N, 120°27.9'E, 111-115 m, SW Luzon: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*, *Flabellum* (F.) *politum*, *Letepsammia formosissima*, *Truncatoflabellum candeanum*.
- Stn 108. — 2.6.1985, 14°01.1'N, 120°17.9'E, 188-195 m, SW Luzon: *Anthemiphyllia dentata*, *Balanophyllia cornu*, *Balanophyllia serrata*, *Balanophyllia parvula*, *Caryophyllia* (A.) *grayi*, *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima* C89, *Tethocyathus virgatus*, *Trochocyathus* (T.) *philippinensis*, *Tropidocyathus lessonii*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*.
- Stn 109. — 2.6.1985, 14°00.2'N, 120°17.6'E, 188-190 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Conotrochus brunneus*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima* C89, *Stephanocyathus* (A.) *spiniger*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum candeanum*, *Truncatoflabellum pusillum*.
- Stn 110. — 2.6.1985, 13°59.5'S, 120°18.2'E, 187-193 m, SW Luzon: *Flabellum* (F.) *politum*, *Letepsammia formosissima*, *Truncatoflabellum candeanum*.
- Stn 111. — 2.6.1985, 14°00.1'N, 120°17.5'E, 193-205 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*.
- Stn 112. — 2.6.1985, 14°00.2'N, 120°19.2'E, 187-199 m, SW Luzon: *Caryophyllia* (A.) *spinigera*, *Flabellum* (F.) *lamellulosum*, *Flabellum* (U.) *deludens*, *Fungiacyathus* (B.) *variegatus*, *Letepsammia formosissima*.

- Stn 116. — 3.6.1985, 12°32.2'N, 120°46.4'E, 804-812 m, SW Mindoro: *Fungiacyathus* (F.) *stephanus*, *Rhombopsammia niphada*.
- Stn 117. — 3.6.1985, 12°31.2'N, 120°39.3'E, 92-97 m, SW Mindoro: *Balanophyllia rediviva*, *Caryophyllia* (C.) *hawaiiensis*, *Conotrochus brunneus*, *Deltocyathoides orientalis*, *Dendrophyllia* cf. *ijimai*, *Guynia annulata*, *Idiotrochus kikutii*, *Madracis* cf. *pharensis*, *Rhizosmilia sagamiensis*.
- Stn 119. — 3.6.1985, 11°59.7'N, 121°12.7'E, 320-327 m, S Mindoro: *Caryophyllia* (A.) *spinicarens*.
- Stn 120. — 3.6.1985, 12°05.6'N, 121°15.6'E, 219-220 m, S Mindoro: *Balanophyllia cornu*, *Caryophyllia* (A.) *spinigera*, *Deltocyathus magnificus*, *Flabellum* (U.) *deludens*, *Stephanocyathus* (A.) *spiniger*.
- Stn 121. — 3.6.1985, 12°08.3'N, 121°17.3'E, 73-84 m, S Mindoro: *Fungiacyathus* (B.) *variegatus*.
- Stn 122. — 4.6.1985, 12°20.0'N, 121°41.6'E, 673-675m, SE Mindoro: *Flabellum* (U.) *japonicum*, *Madrepora oculata*.
- Stn 123. — 4.6.1985, 12°10.6'N, 121°45.5'E, 700-702 m, NW Panay: *Flabellum* (U.) *japonicum*, *Madrepora oculata*.
- Stn 124. — 4.6.1985, 12°02.6'N, 121°35.3'E, 120-123 m, between Panay and Mindoro: *Caryophyllia* (A.) *grayi*, *Letepsammia formosissima*, *Trochocyathus* (T.) *philippinensis*, "*Tropidocyathus*" *pileus*, *Truncatoflabellum mortenseni*.
- Stn 125. — 4.6.1985, 11°57.7'N, 121°28.5'E, 388-404 m, between Panay and Mindoro: *Caryophyllia* (A.) *spinicarens*.
- Stn 126. — 4.6.1985, 11°49.2'N, 121°22.1'E, 266 m, between Panay and Mindoro: *Anthemiphyllia dentata*, *Balanophyllia cornu*, *Confluphyllia juncta*, *Conotrochus brunneus*, *Caryophyllia* (C.) *secta*, *Deltocyathus andamanicus*, *Flabellum* (F.) *patens*, *Letepsammia formosissima*, *Madrepora arbuscula*, *Truncatoflabellum angustum*.
- Stn 128. — 5.6.1985, 11°49.7'N, 121°41.2'E, 815-821 m, NW Panay: *Flabellum* (U.) *japonicum*, *Madrepora oculata*.
- Stn 130. — 5.6.1985, 11°36.7'N, 121°43.5'E, 178-195 m, NW Panay: *Anthemiphyllia dentata*, *Deltocyathus andamanicus*, *Flabellum* (F.) *lamellulosum*, *Fungiacyathus* (F.) *paliferus*, *Truncatoflabellum angustum*.
- Stn 131. — 5.6.1985, 11°36.6'N, 121°43.0'E, 120-122 m, NW Panay: *Anthemiphyllia dentata*, *Asterosmilia marchadi*, *Balanophyllia* sp., *Caryophyllia* (A.) *grayi*, *Caryophyllia* (C.) *lamellifera*, *Cyathelia axillaris*, *Dendrophyllia arbuscula*, *Endopachys grayi*, *Flabellum* (F.) *pavoninum*, *Fungiacyathus* (F.) *paliferus*, *Guynia annulata*, *Javana insignis*, *Letepsammia formosissima*, *Madracis* cf. *pharensis*, *Rhizosmilia sagamiensis*, *Rhizotrochus typus*, *Stephanophyllia neglecta* C89, *Thalamophyllia tenuescens*, *Trochocyathus* (T.) *philippinensis*, *Tropidocyathus lessonii* C89, *Truncatoflabellum mortenseni*, *Truncatoflabellum formosum*.
- Stn 133. — 5.6.1985, 11°57.8'N, 121°52.25'E, 334-390 m, NW Panay: *Balanophyllia cornu*, *Flabellum* (F.) sp.
- Stn 134. — 5.6.1985, 12°01.1'N, 121°57.3'E, 92-95 m, N Panay: *Caryophyllia* (C.) *lamellifera*, *Madracis* cf. *pharensis*, *Rhizosmilia sagamiensis*, *Trochocyathus* (T.) *maculatus*.
- Stn 135. — 5.6.1985, 11°58.6'N, 122°01.8'E, 486-551 m, N Panay: *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *magnificum*.
- Stn 137. — 6.6.1985, 12°03.5'N, 122°05.8'E, 56 m, N Panay: *Eguchipsammia wellsii*, *Trochocyathus* (T.) *cooperi*, *Truncatoflabellum phoenix*.
- Stn 138. — 6.6.1985, 11°53.8'N, 122°15.9'E, 252-370 m, N Panay: *Deltocyathus andamanicus*, *Caryophyllia* (A.) *spinicarens*.
- Stn 139. — 6.6.1985, 11°52.9'N, 122°14.7'E, 240-267 m, N Panay: *Caryophyllia* (A.) *spinicarens*, *Caryophyllia* (A.) *spinigera*, *Conotrochus brunneus*, *Deltocyathoides orientalis*, *Deltocyathus andamanicus*, *Flabellum* (U.) *deludens*, *Letepsammia formosissima*, *Madrepora oculata*.
- Stn 140. — 6.6.1985, 11°42.6'N, 122°34.5'E, 93-99 m, N Panay: *Asterosmilia marchadi*, *Caryophyllia* (A.) *grayi*, *Fungiacyathus* (B.) *variegatus*, *Guynia annulata*, *Trochocyathus* (T.) *semperi*.
- Stn 142. — 6.6.1985, 11°47.3'N, 123°01.5'E, 26-27 m, N Panay: *Balanophyllia imperialis*, *Eguchipsammia wellsii*, *Truncatoflabellum aculeatum*.
- Stn 143. — 7.6.1985, 11°28.3'N, 124°11.6'E, 205-214 m, NW Leyte: *Flabellum* (F.) *lamellulosum*, *Flabellum* (F.) *politum*, *Letepsammia formosissima*, *Stephanocyathus* (A.) *spiniger*, *Truncatoflabellum angustum*, *Truncatoflabellum candeanum*.

Stn 145. — 7.6.1985, 11°01.6'N, 124°04.2'E, 214-246 m, NE Cebu: *Caryophyllia* (A.) *spincarens*, *Flabellum* (U.) *deludens*.

"SIBOGA"

Stn 12. — 14.3.1899, 7°15'S, 115°15.6'E, 289 m, Bali Sea, S Kangeang Isl., Bali Sea: *Caryophyllia* (C.) *transversalis*, *Madrepora arbuscula*.

Stn 41. — 3.4.1899, 7°25'S, 117°50.5'E, 96 m, Pulau Tenga (= Paternoster) Isl.: *Balanophyllia generatrix*.

Stn 49a. — 14.4.1899, 8°23.5'S, 119°04.6'E, 69 m, E Sumbawa, Sapeh Strait: *Fungiacyathus* (F.) *paliferus*, *Truncatoflabellum* sp.

Stn 52. — 20.4.1899, 9°03.4'S, 119°56.7'E, 959 m, SW Flores: *Sabinotrochus bipatella* (= *Stephanocyathus*).

Stn 59. — 26.4.1899, 10°22.7'S, 123°16.5'E, 390 m, W entrance Samau Strait: *Caryophyllia* (C.) *diomedea*, *Premocyathus dentiformis*.

Stn 91. — 22.6.1899, E Borneo, Moeras reef, max. 54 m: *Placotrochus laevis*.

Stn 95. — 26.6.1899, 5°43.5'N, 119°40'E, 522 m, Sulu Isl.: *Balanophyllia gemma*, *Caryophyllia* (C.) *diomedea*, *Deltocyathus philippinensis*, *Flabellum* (U.) *japonicum*, *Fungiacyathus* (F.) *stephanus*, *Madrepora oculata*, *Truncatoflabellum dens*.

Stn 100. — 29.6.1899, 6°11'N, 120°37.5'E, 450 m, Sulu Isl.: *Deltocyathus philippinensis*.

Stn 102. — 1.7.1899, 6°04.1'N, 120°44'E, 535 m, Sulu Isl., "dredge full of fine yellow sand, nearly no animals : *Balanophyllia generatrix* CSD?, *Thrypticotrochus multilobatus* CSD?

Stn 105. — 4.7.1899, 6°08'N, 121°19'E, 275 m, Sulu Isl.: *Crispatotrochus rubescens*, *Javania ?lamprotichum*.

Stn 116. — 12.7.1899, 0°58.5'N, 122°42.5'E, 72 m, N Sulawesi, W Kwandang Bay entrance: *Placotrochus laevis*.

Stn 133. — 25-27.7.1899, Talaut Isl., Salibabu Isl., Lirung, anchorage, max. 36 m: *Placotrochus laevis*.

Stn 150. — 11.7.1899, 0°06'N, 129°07.2'E, 1089 m, E Halmahera: *Conotrochus brunneus* CSD?

Stn 156. — 15.8.1899, 0°29.2'S, 130°05.3'E, 469 m, SW Waigeu: *Madrepora oculata*.

Stn 159. — 16.8.1899, 0°59.1'S, 129°48.8'E, 411 m, SE Halmahera: *Lochmaetrochus oculus*.

Stn 204. — 20.9.1899, 4°20'S, 122°58'E, 75-94 m, N entrance Buton Strait: *Caryophyllia* (A.) *grayi*, *Flabellum* (F.) *politum*.

Stn 211. — 25.9.1899, 5°40.7'S, 120°45.5'E, 1158 m, NE Saleyer: *Sabinotrochus flatiliseptis* (= *Stephanocyathus*).

Stn 212. — 26.9.1899, 5°54.5'S, 120°19.2'E, 462 m, Saleyer: *Flabellum* (U.) *hoffmeisteri*, *Placotrochides scaphula*.

Stn 231. — 14-18.11.1899, Ambon, anchorage, 40 m: *Tubastraea coccinea*.

Stn 240. — 22.11.-1.12.1899, Banda, anchorage, 9-45 m: *Blastotrochus nutrix*, *Tubastraea micranthus*.

Stn 251. — 8.12.1899, 5°28.4'S, 132°00.2'E, 204 m, Kai Isl.: *Balanophyllia parvula*, *Deltocyathus suluensis*, *Flabellum* (F.) *patens*.

Stn 253. — 10.12.1899, 5°48.2'S, 132°13'E, 304 m, Kai Isl.: *Truncatoflabellum* sp.

Stn 256. — 11.12.1899, 5°26.6'S, 132°32.5'E, 397 m, Kai Isl.: *Caryophyllia* (C.) *transversalis*, *Paracyathus* sp.

Stn 258. — 12-16.12.1899, Kai Isl., Tual anchorage, 22 m: *Leptopsammia crassa*.

Stn 259. — 16.12.1899, 5°29.2'S, 132°52.5'E, 487 m, Kai Isl.: *Desmophyllum dianthus*, *Lochmaetrochus oculus*, *Madrepora oculata*.

Stn 260. — 16.12.1899, 5°36.5'S, 132°55.2'E, 90 m, Kai Isl.: *Cyathelia axillaris*, *Flabellum* (F.) *politum*, *Rhizotrochus typus*.

Stn 262. — 18.12.1899, 5°53.8'S, 132°48.8'E, 560 m, Kai Isl.: *Trochocyathus* (T.) *brevispina*.

Stn 266. — 19.12.1899, 5°56.5'S, 132°47.7'E, 595 m, Kai Isl.: *Enallopsammia pusilla*.

Stn 273. — 23-26.12.1899, NE Aru Isl., Pulu Jedan, anchorage, 13 m: *Placotrochus laevis*.

Stn 274. — 26.12.1899, 5°28.2'S, 134°53.9'E, 57 m, NE Aru Isl.: *Truncatoflabellum formosum*.

Stn 277. — 9-11.1.1900, Banda Sea, Dammer Isl., Kullewatti (Sollot) Bay, 45 m: *Dendrophyllia arbuscula*.

Stn 279. — 11-13.1.1900, Banda Sea, Roma Isl., Rumah-Kuda Bay, 36 m: *Placotrochus laevis*.

Stn 289. — 20.1.1900, 9°00.3'S, 126°24.5'E, 112 m, S Timor: *Caryophyllia* (A.) *grayi*, *Neohelia* cf. *porcellana*.

Stn 297. — 27.1.1900, 10°39'S, 123°40'E, 520 m, E Rotti Isl.: *Balanophyllia cornu*, *Placotrochides scaphula*.

- Stn 299. — 27-29.1.1900, 10°52.4'S, 123°01.1'E, max. 34 m (dive), S Rotti Isl., Boeka or Cyrus Bay: *Truncatoflabellum spheniscus*.
- Stn 303. — 2-5.1.1900, Samau Isl., Haingsisi, max. 36 m: *Truncatoflabellum incrustatum*, *Truncatoflabellum irregulare*.
- Stn 305. — 8.2.1900, mid-channel in Solor Strait off Kampong Menanga, 113 m: *Neohelia cf. porcellana*.
- Stn 310. — 12.2.1900, 8°30'S, 119°07.5'E, 73 m, E Sumbawa: *Cyathelia axillaris*, *Eguchipsammia gaditana*.
- Stn 315. — 17-18.2.1900, Pulau Tenga (Paternoster) Isl., anchorage east of Sailus Besar, max. 36 m: *Blastotrochus nutrix*.

SMITHSONIAN INSTITUTION MARQUESAS EXPEDITION, "PELE"

- Stn TH1. — 28.9.1967, 10°S, 139°10'W, 75-79 m, Marquesas: *Trochocyathus (T.) cooperi*.

SMITHSONIAN INSTITUTION PHILIPPINE EXPEDITION (= SIPHILEXP), "STING RAY" (mainly)

- Stn 78-CAC189. — 7.5.1978, Cebu, Tanon Strait, Pescador Isl., 12-18 m: *Tubastraea micranthus*.
- Stn 78-CAC194. — 11.5.1978, 9°04'15"N, 123°16'10"E, 1-6 m, SE Negros: *Tubastraea coccinea*.
- Stn 78-SP1-1. — 8.5.1978, 9°25'15"N, 123°18'10"E, 1-5 m, SE Negros: *Tubastraea diaphana*.
- Stn 78-SP40. — 11.6.1978, 9°31'14"N, 123°40'00"W, depth? (bought), Bohol Strait: *Stephanocyathus (A.) spiniger*.
- Stn 78-T10. — 6.6.1978, 11°35'46"N, 123°55'32"E, 75 m, Visayan Sea: *Asterosmia marchadi*.
- Stn 78-T14. — 6.6.1978, 11°34'45"N, 123°52'08"E, 84 m, Visayan Sea: *Balanophyllia carinata*.

SNELLIUS 2 EXPEDITION, "TYRO" (mainly)

- Stn 81.2. — 28.8.1984, 6°59'S, 131°30'E, 340 m, Tanimbar Isl.: *Anthemiphyllia frustum*, *Bourneotrochus stellulatus*, *Caryophyllia (C.) quadragenaria*, *Deltocyathoides orientalis*, *Javana pacytheca*, *Notocyathus venustus*, *Peponocyathus minimus*.
- Stn D2. — 3.3.1985, 6°57.9'S, 131°39.7'E, 91 m, Tanimbar Isl.: *Deltocyathoides orientalis*, *Idiotrochus kikutii*, *Notocyathus venustus*, *Truncatoflabellum phoenix*.
- Stn 4.019. — 9.9.1984, 5°57.5'S, 123°46.5'E, 285-305 m, Tukang Besi Isl., S Karang Kaledupa: *Fungiacyathus (F.) paliferus*, *Stephanophyllia fungulus*.
- Stn 4.032. — 10.9.1984, 5°52.5'S, 123°58.5'E, ca. 385 m, Tukang Besi Isl., NW Binongko: *Truncatoflabellum dens*.
- Stn 4.033. — 10.9.1984, 5°52.5'S, 123°58.5'E, 250-290 m, Tukang Besi Isl., NW Binongko: *Anthemiphyllia dentata*, *Fungiacyathus (F.) paliferus*.
- Stn 4.034. — 10.9.1984, 5°52.5'S, 123°58.5'E, 280 m, Tukang Besi Isl., NW Binongko: *Anthemiphyllia dentata*, *Deltocyathus stella*, *Fungiacyathus (F.) paliferus*.
- Stn 4.039. — 10.9.1984, 5°54'S, 123°57.7'E, ca. 525 m, Tukang Besi Isl., NW Binongko: *Stephanophyllia neglecta*.
- Stn 4.056. — 14.9.1984, 9°54'S, 120°44.8'E, 125 m, NE Sumba, E Melolo: *Conocyathus zelandiae*.
- Stn 4.057. — 14.9.1984, 9°52.8'S, 120°44.7'E, 154 m, NE Sumba, E Melolo: *Letepsammia formosissima*.
- Stn 4.066. — 16.9.1984, 9°53'S, 120°53'E, 295 m, NE Sumba: *Crispatotrochus rubescens*.
- Stn 4.070. — 17.9.1984, 8°36'S, 119°31.2'E, rocky shore, E Komodo, Teluk Slawi: *Endopsammia philippensis*.
- Stn 4.099. — 19.9.1984, 8°29'S, 119°38.2'E, 81 m, E Komodo: *Truncatoflabellum aculeatum*.
- Stn 4.100. — 19.9.1984, 8°28.6'S, 119°37.3'E, 91 m, E Komodo: *Javana insignis*, *Rhizopsammia nuda*.
- Stn 4.104. — 20.9.1984, 8°25.3'S, 119°36.2'E, 140-150 m, NE Komodo: *Neohelia cf. porcellana*.
- Stn 4.105. — 20.9.1984, 8°25.7'S, 119°37.8'E, 105-120 m, NE Komodo: *Neohelia cf. porcellana*.
- Stn 4.106. — 20.9.1984, 8°26.9'S, 119°37.9'E, 80 m, NE Komodo: *Cyathelia axillaris*, *Rhizotrochus typus*.
- Stn 4.115. — 21.9.1984, 8°19.4'S, 118°15.3'E, 60-75 m, N Sumbawa, Bay of Sanggar: *Rhizotrochus typus*.
- Stn 4.130. — 23.9.1984, 8°17.9'S, 118°17.8'E, 700-730 m, N Sumbawa, Bay of Sanggar: *Deltocyathus rotulus*.
- Stn 4.134. — 25.9.1984, 6°31'S, 121°08.2'E, 53-59 m, NE Taka Bone Rate (Tiger Isl.), SE Tarupa Kecil: *Truncatoflabellum aculeatum*.

- Stn 4.144. — 26.9.1984, 6°26.7'S, 121°10'E, 730-850 m, NE Taka Bone Rate (Tiger Isl.), NE Tarupa Besar: *Enallopsammia pusilla*, *Madrepora oculata*.
- Stn 4.173. — 1.10.1984, 6°28.5'S, 120°24.3'E, 300-340 m, SW Salayer, NW Pulau Bahuluang: *Deltocyathus andamanicus*.
- Stn 4.174. — 1.10.1984, 6°28.1'S, 120°24.2'E, 330 m, SW Salayer, NW of Pulau Bahuluang: *Fungiacyathus (F.) variegatus*.
- Stn 4.196. — 9.10.1984, 6°23.0'S, 120°26.5'E, 150-200 m, SW Salayer, off Tanjung Batu Kerapo: *Madrepora minutiseptum*.
- Stn 4.226. — 17.10.1984, 6°32'S, 121°10.5'E, NE Taka Bone Rate (Tiger Isl.), N Pulau Tinanja, scuba diving along reef edge: *Thalamophyllia tenuescens* CSD?
- Stn 4.228. — 15.10.1984, 6°32.1'S, 121°07.5'E, 60 m, NE Taka Bone Rate (Tiger Isl.), N Pulau Tarupa Kecil: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Truncatoflabellum aculeatum*.
- Stn 4.232. — 16.10.1984, 6°32.1'S, 121°09.0'E, 59 m, NE Taka Bone Rate (Tiger Isl.), S Pulau Tarupa Kecil: *Balanophyllia stimpsonii*, *Placotrochides laevis*, *Truncatoflabellum aculeatum*.
- Stn 4.234. — 17.10.1984, 6°31.6'S, 121°07.5'E, 58 m, NE Taka Bone Rate (Tiger Isl.), S Pulau Tarupa Kecil: *Balanophyllia carinata*, *Balanophyllia stimpsonii*, *Placotrochides laevis*, *Trochocyathus (T.) cooperi*, *Truncatoflabellum aculeatum*.
- Stn 4.235. — 18.10.1984, 6°32.7'S, 121°08.7'E, 53-57 m, NE Taka Bone Rate (Tiger Isl.), S Pulau Tarupa Kecil: *Asterosmilia marchadi*, *Balanophyllia stimpsonii*, *Placotrochides laevis*.

"TANGAROA" NEW ZEALAND OCEANOGRAPHIC INSTITUTE (= NZOI),

- Stn G3. — 27.9.1966, 26°25.0'S, 167°15.0'E, 710 m, Norfolk Ridge: *Flabellum (U.) sp.*
- Stn K858. — 30.7.1974, 30°34.2'S, 178°29.8'W, 465 m, Kermadec Isl.: *Truncatoflabellum angustum*.
- Stn Q47. — 24.5.1978, 33°06'S, 156°11'E, 135 m, Tasman Sea, Taupo Seamount: *Dendrophyllia cf. ijimai*.
- Stn T243. — 24.3.1982, 30°05.0'S, 178°15.0'W, 1035 m, Kermadec Isl.: *Stephanocyathus (S.) regius*.
- Stn U582. — 5.2.1988, 31°52.0'S, 172°26.5'E, 988-1058 m, Three Kings Ridge: *Flabellum (U.) sp.*

"TANSEI MARU"

- Stn KT86-16-F. — 3.11.1986, 31°55.3'N, 133°23.9'E, 2576-2603 m, S Shikoku: *Caryophyllia (C.) cornulum*, *Flabellum (U.) conuis*.
- Stn KT90-13-T6. — 3.9.1990, 32°14.23'N, 134°01.3'E, 2547-2565 m, S Shikoku: *Caryophyllia (C.) cornulum*.
- Stn KT93-09-AM6. — 22.6.1993, 28°20.48'N, 129°40.18'E, 107-108 m, Ryukyu, Amami: *Trochocyathus (T.) philippinensis*.
- Stn KT93-09-AM7. — 22.6.1993, 28°17.07'N, 129°40.15'E, 191-196 m, Ryukyu, Amami: *Guynia annulata*, *Trochocyathus (T.) philippinensis*.
- Stn KT93-09-AM8. — 25.6.1993, 28°11'N, 129°43'E, 422-425 m, Ryukyu, Amami: "*Tropidocyathus*" *labidus*.

"TE VEGA"

- Stn 1-54. — 25.9.1963, 1°08.6'N, 128°01'E, 46-55 m, Halmahera: *Balanophyllia imperialis*, *Balanophyllia stimpsonii*.

HISTORICAL REVIEW (INDONESIAN REGION)

Perhaps the earliest azooxanthellate corals reported from the Indonesian region were those collected by the *H. M. S. "Challenger"* at stations 191-198 and 214, as reported by MOSELEY (1876, 1881). Sixteen species were described, including 11 from one station ("*Challenger*" stn 192) at the Kai Islands at 256 m, 9 of those new species. The "*Challenger*" specimens are deposited at the BMNH and were examined by both authors.

The historically most significant collection of Indonesian deep-water corals, reported in at least 8 publications, was that of the "Siboga" expedition of 1899-1900, which made 323 stations throughout the Indonesian region and Sulu Archipelago (WEBER, 1902; TYDEMAN, 1902). ALCOCK (1902a, b, July) published 2 preliminary accounts in which he described 45 new species of deep-water corals from this expedition. Although the descriptions are adequate, he did not include illustrations of these species or station numbers for the specimens. Just one month later (ALCOCK, 1902c, August) his report on the deep-water (*i.e.*, over 100 fathoms, 183 m) corals of the "Siboga" Expedition ("Siboga" Report 16a) appeared, in which he published *verbatim* the description of 37 of the 45 species he described the previous month, 3 additional new species (*Paracyathus pruinus*, *Flabellum laciniatum* var. *messum*, and *Pourtalesmilia dumosa*), 26 previously described species, and 7 lots identified only to the generic level (a total of 73 azooxanthellate species). Illustrations and station data were included for all taxa in the "Siboga" report, and, although ALCOCK (1902c: 2) noted that most of the new species had been published in a "preliminary communication ... of the Journal of the Netherland Zoological Society", the 2 earlier publications were largely forgotten until 1991 (HOEKSEMA & BEST, 1991). It is unknown why ALCOCK omitted 8 species from his *Siboga* report that were included in his preliminary accounts. These species were shallow water (0-183 m) azooxanthellates, on which he perhaps intended to write a separate "Siboga" report (ALCOCK, 1902c: 2); nonetheless, 2 of these 8 species were later redescribed by VAN DER HORST (1922) inadvertently as new species using ALCOCK's original names: *Dendrophyllia florulenta* and *Leptopsammia poculum* (the latter described as *Endopsammia poculum* by ALCOCK, 1902a). Even VAN DER HORST (1922) was apparently unaware of ALCOCK's preliminary papers. Only one of the other 6 species was ever cited; *Flabellum weberi*, a junior synonym of *Javania insignis* was cited by CAIRNS (1989a, 1994), based on a collection label, not the ALCOCK publication. The remaining 5 species: *Trochocyathus weberi* (= ? *T. cooperi*), *T. cavatus*, *Endopachys weberi* (= *E. grayi*), *Heteropsammia pisum*, and *Rhodopsammia* (= *Balanophyllia*) *corniculans*, all described in ALCOCK (1902a), were not subsequently reported. Aside from the 2 species redescribed by VAN DER HORST, the types of only 2 of the other 6 species are now known to exist at the ZMA: *Flabellum weberi* and *Endopachys weberi*.

In a paper describing the shallow-water fungiids collected by the "Siboga", VAN DER HORST (1921, "Siboga" Report 16b) also reported 2 specimens of *Bathyactis* (= *Fungiacyathus palifera*); and in a paper dedicated to the study of *Fungia patella*, BOSCHMA (1923, "Siboga" Report 16d) also described a new Indonesian species, *Stephanophyllia neglecta*, from a "Siboga" station off the Kai Islands. Another paper on "Siboga" azooxanthellates (VAN DER HORST, 1922, "Siboga" Report 16c) was an account of the dendrophylliids of the expedition, which included 36 species from Indonesian waters, 11 of these new; however, as mentioned above, 2 of these 11 new species were previously described by ALCOCK (1902a). Most "Siboga" specimens are deposited at the ZMA (see VAN SOEST, 1979 for type deposition) and have been examined by the authors.

Two more papers include reidentifications of "Siboga" specimens: ZIBROWIUS (1973) reidentified the "Siboga" *Dendrophyllia* reported by ALCOCK (1902c) in the context of a revision of the genus *Enallopsammia*; and ZIBROWIUS & GRYGIER (1985) reidentified two lots of *Balanophyllia* reported by VAN DER HORST (1922).

BEDOT (1907) reported *Cyathelia axillaris* from the Ceram Sea (depth unknown), a species previously reported by MOSELEY (1881) from the adjacent Molucca Sea.

Azooxanthellate Scleractinia collected on the Danish Expedition to the Kai Islands (DEKI) in 1922 have been reported in 3 publications. BOSCHMA (1923) listed 1 species, *Stephanophyllia formosissima*; VAN DER HORST (1926) reported 5 dendrophylliid species, including the new species *Rhizopsammia nuda*; and BOSCHMA (1953) reported *Tubastraea aurea* (= *T. coccinea* and *T. faulkneri*) from the Kai Islands and Ambon. However, the bulk of the specimens from that expedition are reported herein and are deposited at the NNM and ZMK (see Material).

More recent reports of Indonesian azooxanthellates from miscellaneous sources include: *Polycyathus furanaensis* from Sulawesi (VERHEIJ & BEST, 1987); *Anthemiphyllia dentata* from the Banda Sea (BEST & HOEKSEMA, 1987); *Cryptotrochus javanus* from the Java Sea (CAIRNS, 1988); and a revision of *Heterocyathus* and *Heteropsammia* from the Indonesian region (HOEKSEMA & BEST, 1991).

A common theme in previous expedition reports has been a high diversity of deep-water species from the Kai Islands, and the Indonesian region in general, as evidenced by the collections of the "Challenger", "Siboga", and the Danish Expedition to the Kai Islands (DEKI). This is confirmed herein on the basis of collections from the SNELLIUS 2 and KARUBAR expeditions. ALCOCK (1902c: 3) alluded to the Kai Islands as second only to the Sulu

Archipelago in coral biodiversity; however, as a result of this study, 122 species are known from the Kai Islands, and only 65 from the Sulu Archipelago.

Works containing references to fossil azooxanthellates from the Indonesian region include: GERTH (1921), Miocene of Java; UMBGROVE (1938), Pleistocene of Talaud; UMBGROVE (1950), Pleistocene of Java; and BOEKSCHOTEN *et al.* (1989), Pliocene-Pleistocene of Nias.

A review of previous records of azooxanthellate Scleractinia from the Philippines can be found in CAIRNS (1989a).

MATERIAL

This study is based on the examination of approximately 15,600 coral specimens collected throughout the Philippine-Indonesian region from some 640 stations. A specimen equates to an individual solitary corallum or a colony or branch of a colonial species. Many of the new specimens were collected by the French and French-Indonesian expeditions: MUSORSTOM cruises 1-3 (1976, 1980, 1986, respectively), which concentrated on southwestern Luzon (vicinity of Lubang Island and Verde Island Passage), and also did some collecting near southern Luzon (Mindoro and Panay) (FOREST, 1981, 1985, 1989); CORINDON 2 (1980), on the R.V. *Coriolis*, which collected in Makassar Strait (MOOSA, 1984); and KARUBAR (1991) on the R.V. *Baruna Jaya 1*, which made extensive deep-water collections in the Banda Sea (Kai Islands) and Arafura Sea (southeast of Tanimbar Islands) (CROSNIER, RICHER DE FORGES & BOUCHET, 1997). Many of the MUSORSTOM 1 stations were made in a small area north of Lubang Island near "Albatross" stn 5278 (the type locality of *Neoglyphea inopinata*), a "living fossil" decapod crustacean. The French collections are divided among the MNHN, NMNH, and Puslitbang Oseanologi, Jakarta. Many additional specimens from the Philippines and Banda Sea also came from the "Albatross" expedition (1906-1909; see ANONYMOUS, 1910 for a history and station list of the expedition), and are deposited at the NMNH. A remarkably large and diverse collection of azooxanthellates was also made available from the Danish Expedition to the Kei Islands made in 1922 by Th. MORTENSEN and H. BOSCHMA. This expedition collected not only near the Kai Islands but also in the Java Sea (MORTENSEN, 1923). Specimens are deposited primarily in the NNM and to a lesser extent at the ZMK. Few specimens of shallow water azooxanthellates were found at the NNM from the "Snellius" expedition to Indonesia in 1930, but many upper slope specimens were available for study at the NNM from the SNELLIUS 2 (R/V *Tyro*) expedition of 1984, which made deep-water stations throughout the Indonesian region (VAN DER LAND & SUKARNO, 1986). Specimens from the following expeditions were also examined: "Galathea" expedition (1950-1952), throughout the Philippine and Indonesian region (see BRUUN, 1957; WOLFF, 1964), deposited at the ZMK; Mortensen's Java-South African Expedition (1929-1930), primarily from the Bali Strait, deposited at the ZMK; stations made by the "Hakuho Maru" (1972-1985) in the South China Sea, Philippine, and Indonesian waters (see NISHIWAKI, 1974; HORIKOSHI *et al.*, 1983; HORIKOSHI & OHTA, 1987), deposited at the ORI and NMNH; and specimens from "Siboga" stations (1899-1900) in Indonesian waters that were not previously reported (see TYDEMAN, 1902).

In addition to the newly reported specimens listed above, all previously reported specimens from the "Siboga" Expedition (ALCOCK, 1902a-c; HORST, 1921, 1922; BOSCHMA, 1923) and specimens from the Indonesian and Philippine stations of the "Challenger" Expedition (stations 191-213) were re-examined by the first author in 1994 and by the second author on various occasions. SEMPER's (1872) Philippine specimens were examined by the second author.

Although not politically part of Indonesia or the Philippines, specimens from the eastern coast of Sabah, Malaysia (*e.g.*, Darvel Bay, Celebes Sea) were included in this study, and their depth ranges included with those of the Indonesian region.

METHODS

Species descriptions and illustrations are provided only for those species described as new or for those for which no adequate description previously existed. Shorter diagnoses are provided for the remaining species for which new material is reported, with an indication as to where to find a more complete description. New material was collected

of 176 (85%) of the 206 species known from the Philippine-Indonesian region, the remaining 30 species being indicated in Table 1 by an asterisk but not discussed in the text. Most of these 30 are rarely collected species, indeterminate species (*e.g.*, those described but not illustrated by ALCOCK, 1902a, b), or probable junior synonyms of species better known under other names (*e.g.*, *Balanophyllia dubia*, *B. ovalis*, *B. parallela*). Although some species of *Heterocyathus* and *Heteropsammia* occur in this region and are acknowledged to be azooxanthellate, they are not included in this report.

Species synonymies are complete unless otherwise indicated with a reference to a more complete account; however, it was attempted to include in the synonymies all references to specimens reported from the Philippine-Indonesian region. When possible, all historical records were verified, but when material was unavailable and the published account unclear, the synonymy entry and corresponding distribution record are queried.

In the "Material examined" sections, the number of specimens examined follows the station number, followed by the museum of deposition, and its catalog number, if any. Holotypes and paratypes are deposited primarily at the MNHN and NMNH, as well as Puslitbang Oseanologi - LIPI, Indonesia, in the case of KARUBAR material. Essentially, only new material is reported in the Material Examined sections, not types or previously reported specimens.

In order to avoid erroneous depth ranges for species as a result of bathymetrically wide-ranging trawls, a confirmed depth range is employed in this paper, which is defined as the deepest shallow to the shallowest deep component of all trawls considered. For example, if a species was trawled at a station indicating 20-300 m and again at a station indicating 250-500 m, the confirmed depth range is 250-300 m, a depth range within which it most likely was collected.

The SEM and most conventional photography was done by the first author, the former on a Cambridge Stereoscan 100 in the SEM Laboratory of the NMNH.

COMMENSAL RELATIONSHIPS

Several types of specialized coral symbionts (other than simple epibionts) have been found associated with various members of the species-rich fauna of the Philippines and Indonesia studied here.

Lumbrinerid polychaete eroding the coral skeleton. — This association has been described in detail by ZIBROWIUS *et al.* (1975) on the basis of material from the northeastern Atlantic and the southwestern Indian Ocean (South Africa), with additional records from Madagascar, the China Sea, and Japan. The coral-skeleton-eroding polychaete *Lumbrineris flabellicola* (Fage, 1936) inhabits a soft tube exteriorly attached to the host, and causes a superficial to deep erosion of the coral skeleton. The worm itself is easily lost by the mechanical constraints of dredging and the subsequent manipulations, but frequently empty tube fragments remain attached to the coral, or a corrosion trace can be detected on the coral even after the worm and tube have disappeared. This association occurs in the Philippines and Indonesia. Worms obtained during cruise MUSORSTOM 2 in the Philippines have been compared by T. MIURA with *Lumbrineris flabellicola* from the northeastern Atlantic and Japan and have been found to be the same species (*L. flabellicola*) in these widely distant areas (T. MIURA, *in litt.*, 1989).

The following species have been found to be the coral partner of this association, specimens still bearing the worm (WO), or still having empty tubes fragments attached (ET), or showing only a characteristic erosion trace left over (TR):

Caryophyllia (C.) transversalis: DEKI stn 32 (WO).

Caryophyllia (A.) grayi: MUSORSTOM 2 stn 29 (ET); MUSORSTOM 3 stn 131 (ET, TR).

Caryophyllia (A.) spinigera: MUSORSTOM 2 stn 63 (WO).

Caryophyllia (A.) spinicarens: "Albatross" stn 5256 (ET), stn 5418 (TR), stn 5535 (ET), stn 5536 (TR), stn 5538 (TR); MUSORSTOM 1 stn 20 (TR?); MUSORSTOM 2 stn 63 (ET).

Conotrochus brunneus: MUSORSTOM 3 stn 92 (ET, TR).

Flabellum (F.) patens: KARUBAR stn 31 (TR).

Flabellum (F.) lamellulosum: MUSORSTOM 1 stn 27 (TR?), stn 31 (TR); MUSORSTOM 2 stn 63 (ET); MUSORSTOM 3 stn 86 (WO), stn 92 (WO, TR).

Flabellum (F.) sp.: MUSORSTOM 3 stn 133 (ET).

Rhizotrochus typus: MUSORSTOM 3 stn 131 (ET).

Balanophyllia sp.: MUSORSTOM 2 stn 33 (WO).

Dendrophylliidae, colonial: MUSORSTOM 2 stn 33 (WO).

Eunicid polychaete causing deformation of the coral colony. — Some colonies of *Madrepora oculata* from Indonesia ("Albatross" stn 5645; KARUBAR stn 56) show deformations similar to those found in colonies of *Madrepora oculata*, *Lophelia pertusa*, and *Solenosmilia variabilis* from the northeastern Atlantic, in which the parchment-like tube of *Eunice norvegica* (Linnaeus, 1767) is overgrown by the coral coenosteum and incorporated into the colony (ZIBROWIUS, 1980). We have no information whether the deformations of Indonesian *M. oculata* is caused by the same *Eunice* species. Similar deformations characterize all colonies of *Madrepora arbuscula* and of *Madrepora minutiseptum* studied here. Even though no overgrown soft tube has been formally identified in this material and no worm been extracted, it is presumed that the commensal organism is an eunicid polychaete. Overgrown parchment-like *Eunice* tubes have also been found in some colonies of *Neohelia* sp. cf. *N. porcellana*.

Acrothoracican cirripede crustacean boring the coral skeleton. — Acrothoracican cirripeds may bore the skeleton of live corals and when penetrating through the wall cause the polyp to deposit additional wall material that is intended to seal off the borer. The orifice of the burrow may migrate upward along the growing coral (GRYGIER & NEWMAN, 1985). Orifice motility is particularly marked in a specimen of *Javania lamprotichum* (MUSORSTOM 2 stn 53) bored by 4 large acrothoracids. Other species bored alive are *Tethocyathus virgatus* (MUSORSTOM 3 stn 108), *Balanophyllia crassiseptum* (KARUBAR stn 50) and *Balanophyllia* sp. (MUSORSTOM 1 stn. 61; MUSORSTOM 2 stn 32; MUSORSTOM 3 stn 131).

Ascothoracidan crustacean inducing a skeleton gall. — The most common aspect of this association has been described in detail by ZIBROWIUS & GRYGIER (1985), who already reported some examples from the Philippines and Indonesia: "internal galls" are recognizable as a spongy proliferation of the columella that covers the underlying cavity occupied by the parasite. The list from the Philippines and Indonesia now includes: *Deltocyathoides orientalis* ("Albatross" stn 5178, 5313, 5314, 5315, 5317, 5403, 5569); *Flabellum lamellulosum* (MUSORSTOM 2 stn 83); *Balanophyllia carinata* ("Siboga" stn 240); *Balanophyllia* sp. (MUSORSTOM 2 stn 34); *Balanophyllia* sp. (MUSORSTOM 3 stn 131); and *Dendrophyllia* sp. cf. *D. ijimai* (MUSORSTOM 2 stn 33). A newly recognized expression (GRYGIER & CAIRNS, 1996) of ascothoracidan gall induction are abnormally hypertrophied corallites in *Madrepora oculata* ("Albatross" stn 5529; DEKI stn 50; "Hakuho Maru" stn KH-73-2-44-2; KARUBAR stn 9, 13, 19, 77).

Cryptochirid crab inhabiting a crypt in the coral skeleton. — Cryptochirid (formerly hapalocarinid) crabs are obligate symbionts of scleractinians. The crypts (or in some cases cage-like galls) they inhabit are due to dissolution of the coral skeleton and to induced modified coral growth (ZIBROWIUS, 1982; ZIBROWIUS & GILI, 1990). Previous to these authors, cryptochirids had always been considered as typical of the reef fauna, but new deep-water species continue to be discovered. *Zibovia galea* Kropp & Manning, 1995, has thus been found on *Phyllangia papuensis* from the Philippines (MUSORSTOM 2 stn 47) and from Madagascar.

DISTRIBUTION

Regional Diversity. — VAUGHAN & WELLS (1943), ALCOCK (1902c), and CAIRNS (1989a) have all suggested that the highest diversity of deep-water corals (azooxanthellates) occurs in the Philippine-Indonesian region. ALCOCK mentioned the Sulu Archipelago and the Kai Islands as areas with a particularly diversified fauna. With the possible exception of the New Caledonia-Chesterfield Islands region, which even though a much smaller region, may have more species, the Philippine-Indonesian region does have the highest recorded number of azooxanthellate species, *i.e.*, 206 species (Table 1).

	Philippine-Indonesian Region														Depth (m)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
CARYOPHYLLIIDAE															
<i>Caryophyllia (C.) diomedea</i> Marenzeller, 1904			x		x	x	x				x	x	x		300-885
<i>C. (C.) crosnieri</i> nom. nov.			x			x				x		x			206-330
<i>C. (C.) secta</i> sp. nov.			x			x	x								220-366
* <i>C. (C.) panda</i> Alcock, 1902						x									1633
<i>C. (C.) lamellifera</i> Moseley, 1881			x			x						x			95-212
<i>C. (C.) transversalis</i> Moseley, 1881						x	x	x							210-397
<i>C. (C.) rugosa</i> Moseley, 1881	x		x			x				x	x	x			137-581
<i>C. (C.) octonaria</i> sp. nov.			x												186-194
<i>C. (C.) hawaiiensis</i> Vaughan, 1907		x	x	x		x					x	x			85-170
<i>C. (C.) quadragenaria</i> Alcock, 1902	x	x		x		x	x						x		112-385
<i>C. (C.) scobinosa</i> Alcock, 1902	?		x	x		x	x			x	x	x			353-1270
<i>C. (C.) cornulum</i> sp. nov.	x			x	x										1525-2350
<i>C. (C.) ambrosia ambrosia</i> Alcock, 1898	x		x	x			x			x	x	x		x	468-1048
<i>C. (C.) grandis</i> Gardiner & Waugh, 1938				x			x			x					251-567
<i>C. (A.) grayi</i> (ME & H, 1848)	x	x	x	x	x	x	x	x		x					54-268
<i>C. (A.) dentata</i> (Moseley, 1881)						x	x				x				90-263
<i>C. (A.) spinigera</i> (Saville Kent, 1871)	x		x			x	x	x							127-347
<i>C. (A.) spinicarens</i> (Moseley, 1881)		x	x		x	x	x								70-750
<i>C. (A.) karubarica</i> sp. nov.						x	x								389-477
<i>C. (A.) unicastata</i> sp. nov.							x								251-477
<i>Premocyathus dentiformis</i> (Alcock, 1902)	x	+	x			x	x		x			x			22-545
<i>Crispatotrochus rubescens</i> (Moseley, 1881)	x	x	x			x	x				x				226-522
<i>C. rugosus</i> Cairns, 1995			?	x								x			220-616
<i>Labyrinthocyathus</i> sp. A							x								210-268
<i>Trochocyathus (T.) caryophylloides</i> Alcock, 1902	x		x			x	x								185-304
<i>T. (T.) rhombocolumna</i> Alcock, 1902			x			x	x			x	x	x			209-522
<i>T. (T.) maculatus</i> Cairns, 1995			x									x			92-95
#* <i>T. (T.) cavatus</i> Alcock, 1902															unknown
<i>T. (T.) philippinensis</i> Semper, 1872	x	x	x	x		x									54-268
<i>T. (T.) semperi</i> sp. nov.			x	x		x									38-245
<i>T. (T.) apertus</i> sp. nov.			x			x		x							33-70
<i>T. (T.) burchae</i> (Cairns, 1984)			x			x		x	x		x				35-70
<i>T. (T.) cooperi</i> (Gardiner, 1905)	x		x			x	x	x	x	x	x				25-100
<i>T. (T.) gardineri</i> (Vaughan, 1907)			x									x			490
<i>T. (T.) discus</i> sp. nov.						x									240-278
<i>T. (Aplocyathus) brevispina</i> sp. nov.						x									240-282
<i>T. (A.) longispina</i> sp. nov.			x	x											326-558
<i>Tethocyathus virgatus</i> (Alcock, 1902)			x			x	x	x				x			137-315
<i>Bourneotrochus stellulatus</i> (Cairns, 1984)						x					x	x			263-340
<i>Paracyathus rotundatus</i> Semper, 1872		x	x						x		x				18-66
<i>Paracyathus</i> sp.						x	x								90-397
* <i>P. pruinus</i> Alcock, 1902	x		x							x					?15
* <i>Polycyathus hodgsoni</i> Verheij & Best, 1987			x							x					35
* <i>P. marigondoni</i> Verheij & Best, 1987			x												35
* <i>P. furanaensis</i> Verheij & Best, 1987				x						x					6-52
<i>Stephanocyathus (S.) regius</i> sp. nov.		x	x	x			x					x			563-2160
<i>S. (A.) spiniger</i> (Marenzeller, 1888)	x	x	x			x	x			x	x	x			52-401

	Philippine-Indonesian Region														Depth (m)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<i>S. (A.) explanans</i> (Marenzeller, 1904)				x		x	x			x					405-1016
<i>S. (O.) weberianus</i> (Alcock, 1902)	x	x	x	x	x	x	x					x			563-1756
<i>Ericocyathus echinatus</i> gen. nov., sp. nov.			x												814-1401
<i>Deltocyathus vaughani</i> Yabe & Eguchi, 1932	x		x			x	x								247-807
<i>D. philippinensis</i> sp. nov.		x	x												402-522
<i>D. stella</i> sp. nov.			x			x	x								130-280
<i>D. andamanicus</i> Alcock, 1898			x			x	x			x	x				187-385
<i>D. suluensis</i> Alcock, 1902			x			x	x	x				x			204-540
<i>D. rotulus</i> (Alcock, 1898)	x		x	x	x	x	x	x		x					210-1719
<i>D. magnificus</i> Moseley, 1881	x	x	x	x	x	x	x					x			118-717
<i>Conotrochus funiculumna</i> (Alcock, 1902)	x	x	x	x		x	x				x	x			268-616
<i>C. brunneus</i> (Moseley, 1881)		x	x		x	x	x	x		x		x			97-477
<i>Lochmaetrochus oculus</i> Alcock, 1902		x		x	x	x		x							240-616
<i>Aulocyathus recidivus</i> (Dennant, 1906)	x			x						x		x			616-871
<i>Paratrotrochus zaidleri</i> Cairns & Parker, 1992				x		x	x				x	x			351-558
<i>Desmophyllum dianthus</i> ME & H, 1848	x	x		x		x				x	x	x	x	x	487-522
<i>Dactylotrichus cervicornis</i> (Moseley, 1881)		x		x		x					x				84-205
<i>Asterosmilia marchadi</i> (Chevalier, 1966)		x	x	x		x		x		x				x	32-210
<i>Thalamophyllia tenuescens</i> (Gardiner, 1899)			x	x		x		x			x	x			22-288
<i>Rhizosmilia robusta</i> Cairns, 1993			x							x					194-202
<i>R. sagamiensis</i> (Eguchi, 1968)	x		x	x											97-183
<i>R. elata</i> sp. nov.	?		x												70-313
<i>Phyllangia papuensis</i> Studer, 1878			x			x				x	x				81-183
<i>Sympodangia albatrossi</i> gen. nov., sp. nov.			x	x		x									208-616
** <i>Colangia moseleyi</i> (Faustino, 1927)			x												18-54
<i>Coenosmilia arbuscula</i> Pourtalès, 1874	x		x											x	296
<i>Goniocorella dumosa</i> (Alcock, 1902)	x	x		x	x	x				x		x			469-616
<i>Confluphyllia juncta</i> gen. nov., sp. nov.			x			x									266-385
TURBINOLIIDAE															
<i>Conocyathus zelandiae</i> Duncan, 1876								x		x		x			125
<i>Endocyathopora laticostata</i> Cairns, 1989			x			x	+	x							46-100
<i>Alatotrochus rubescens</i> (Moseley, 1876)	x		x			x						x			136-460
* <i>Sphenotrochus hancocki</i> Durham & Barnard, 1952		x	x										x		42-274
" <i>Cryptotrochus</i> " <i>venustus</i> (Alcock, 1902)						x						x			200-397
* <i>C. javanus</i> Cairns, 1988										x					585
<i>Notocyathus venustus</i> (Alcock, 1902)	x	x	x	x		x	x		x						70-555
<i>N. conicus</i> (Alcock, 1902)	x		x	x		x						x			34-923
<i>Deltocyathoides orientalis</i> (Duncan, 1876)	x	x	x	x		x	x			x	x	x		x	44-635
<i>P. minimus</i> (Yabe & Eguchi, 1937)	x	x	x	x		x		x							161-903
<i>Peponocyathus folliculus</i> (Portalès, 1868)	x		x	x		x	x							x	50-534
<i>Tropidocyathus lessonii</i> (Michelin, 1842)	x	x	x			x	x	x		x					50-421
" <i>T.</i> " <i>pileus</i> (Alcock, 1902)	x	x	x			x	x			x		x			143-522
" <i>T.</i> " <i>labidus</i> sp. nov.	x					x	x								206-390
<i>Idiotrochus kikutii</i> (Yabe & Eguchi, 1941)	x	x	x			x									97-645
<i>Thrypticotrochus multilobatus</i> Cairns, 1989		x	x			x				x		x			192-535

	Philippine-Indonesian Region														Depth (m)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
GUYNIIDAE															
<i>Guynia annulata</i> Duncan, 1872	x		x		x	x				x	x	x		x	97-194
FLABELLIDAE															
<i>Flabellum (F.) pavoninum</i> Lesson, 1831	x	x	x	x		x				x	x				96-156
<i>F. (F.) magnificum</i> Marenzeller, 1904	x		x	x		x	x			x					225-567
<i>F. (F.) patens</i> Moseley, 1881	x	x	x			x	x								204-439
<i>F. (F.) lamellosum</i> Alcock, 1902		x	x			x	x		x						187-486
<i>F. (F.) politum</i> Cairns, 1989	x	x	x			x	x								40-288
<i>F. (U.) deludens</i> Marenzeller, 1904	x	x	x			x	x			x					176-480
<i>F. (U.) marenzelleri</i> Cairns, 1989			x			x	x	x							240-390
<i>F. (U.) japonicum</i> Moseley, 1881	x		x					x							425-1060
<i>F. (U.) hoffmeisteri</i> Cairns & Parker, 1992						x	x	x					x		345-477
<i>F. (U.) messum</i> Alcock, 1902			x	x				x	x	x			x		368-949
<i>F. (U.)</i> sp.			x										x		441-550
<i>F. (U.) sexcostatum</i> Cairns, 1989			x												685-772
<i>F. (U.) conuis</i> Moseley, 1881	x		x					x			x				1160-2570
<i>Polymyces wellsii</i> Cairns, 1991			x			x						x	x		385-842
<i>Rhizotrochus typus</i> ME & H, 1848	x	x	x	x		x		x		x					70-296
"R." <i>flabelliformis</i> Cairns, 1989			x			x	x						x		263-390
<i>Gardineria philippinensis</i> Cairns, 1989			x				x								192-494
* <i>G. hawaiiensis</i> Vaughan, 1907			x								x	x			192-220
<i>G. paradoxa</i> (Pourtalès, 1868)						x								x	285-323
<i>Javania insignis</i> Duncan, 1876	x		x	x		x		x		x	x				73-296
<i>J. lamprotichum</i> (Moseley, 1880)			x								x	x			191-842
<i>J. pachytheca</i> Cairns, 1995				x	x							x			534-601
<i>J.</i> sp.							x								209-291
<i>Truncatoflabellum spheniscus</i> (Dana, 1846)	x	x					x		x			x			30-174
<i>T. aculeatum</i> (ME & H, 1848)		x	x	x	+	x	x	x	x						11-81
* <i>T. crassum</i> (ME & H, 1848)			x												unknown
* <i>T. stokesi</i> (ME & H, 1848)		x	x				x		+	x					256
* <i>T. cumingi</i> (ME & H, 1848)			x		x										46-55
<i>T. candeanum</i> (ME & H, 1848)	x	x	x	x		x									70-290
<i>T. incrustatum</i> Cairns, 1989		x	x				x	x							30-415
<i>T. irregulare</i> (Semper, 1872)			x				x								18-42
<i>T. paripavoninum</i> (Alcock, 1894)			x	x		x	x	x		x		x			411-1022
<i>T. formosum</i> Cairns, 1989	x		x	x		x				?					42-933
<i>T. pusillum</i> Cairns, 1989			x	x		x				x					85-300
<i>T. dens</i> (Alcock, 1902)			x			x					x	x			300-522
<i>T. phoenix</i> Cairns, 1995	x		x			x	x						x		18-421
<i>T. mortenseni</i> sp. nov.			x			x		x							50-156
<i>T. angustum</i> sp. nov.			x			x						x			195-490
<i>Blastotrochus nutrix</i> ME & H, 1848			x	x		x	x	x	x						11-62
<i>Placotrochides scaphula</i> Alcock, 1902	x	+	x	x			x	x		x		x			462-1628
<i>Placotrochus leavis</i> ME & H, 1848		x	x	x	x	x	x	x	x	x		x			12-289
DENDROPHYLLIIDAE															
<i>Balanophyllia carinata</i> (Semper, 1872)			x	x	+	x		x	x	x	x				33-100

	Philippine-Indonesian Region														Depth (m)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<i>B. stimpsonii</i> (Verrill, 1865)			x	x	x		x			x	x				18-75
* <i>B. parallela</i> (Semper, 1872)			x				x			?					18-55
<i>B. desmophyllioides</i> Vaughan, 1907			x	x		x	x	x			x				95-393
<i>B. cornu</i> Moseley, 1881	x	x	x			x	x	x							185-520
<i>B. gemma</i> (Moseley, 1881)			x			x	x			?					137-522
* <i>B. ovalis</i> (Semper, 1872)			x												11-18
## <i>B. corniculans</i> (Alcock, 1902)															unknown
* <i>B. dubia</i> (Semper, 1872)			x												55
* <i>B. cumingi</i> ME & H, 1848	x		x							?					unknown
<i>B. parvula</i> Moseley, 1881		x	x			x	x								192-300
<i>B. crassiseptum</i> sp. nov.			x			x	x								183-250
* <i>B. tenuis</i> van der Horst, 1922			x												unknown
<i>B. rediviva</i> Moseley, 1881			x	x	+	x									90-235
<i>B. gigas</i> Moseley, 1881	x		x			x					x	x			90-393
<i>B. serrata</i> sp. nov.			x												190-194
<i>B. generatrix</i> sp. nov.			x			x	x	x							96-535
<i>B. imperialis</i> Saville Kent, 1871		x	x	x	x					x					27-170
<i>Endopachys grayi</i> ME & H, 1848	x	x	x	x	x	x	x	x		x	x	x	x		50-245
<i>E. bulbosa</i> sp. nov.								x							233-251
<i>Leptopsammia stokesiana</i> ME & H, 1848			x					x		x					46-69
<i>L. crassa</i> van der Horst, 1922			x			x									22-187
* <i>L. poculum</i> (Alcock, 1902)						x									90
<i>Endopsammia philippensis</i> ME & H, 1848			x			x		x	x	x	x	x			2-10
* <i>Rhizopsammia minuta</i> van der Horst, 1922						x									36
<i>R. verrilli</i> van der Horst, 1922			x			x				x			x		6-278
<i>R. nuda</i> van der Horst, 1926		x	x				x	x		?					25-105
<i>Eguchipsammia gaditana</i> (Duncan, 1873)	x		x			x		x	x	x	x	x		x	30-212
<i>E. wellsii</i> (Eguchi, 1968)	x		x												32-124
* <i>E. fistula</i> (Alcock, 1902)			x			x				x		x			90-275
* <i>E. japonica</i> Rehberg, 1892	x					x						x			245
<i>Cladopsammia echinata</i> Cairns, 1984							x				x				222-226
* <i>C. gracilis</i> ME & H, 1848	x					x				x	x		x		27-54
<i>Dendrophyllia</i> sp. cf. <i>D. ijimai</i>			x			x		x				x			69-130
<i>D. arbuscula</i> van der Horst, 1922	x		x			x	x			x		x			45-353
* <i>D. sphaerica</i> Nemenzo, 1960			x												unknown
<i>D. alcocki</i> (Wells, 1954)		x		x		x				x	x	x			205-616
* <i>D. florulenta</i> Alcock, 1902	x							x			?				91-113
* <i>D. cribrata</i> ME & H, 1851		x													unknown
<i>Enallopsammia pusilla</i> (Alcock, 1902)		x	x			x		x		x		x			325-730
<i>E. rostrata</i> (Pourtalès, 1878)	x		x		x	x				x	x	x		x	417-2021
<i>Tubastraea micranthus</i> (Ehrenberg, 1834)			x		x	x				x	x				0-60
<i>T. diaphana</i> (Dana, 1846)			x			x	x			x	x				1-54
<i>T. coccinea</i> Lesson, 1829	x		x			x				x	x		x	x	3-40
* <i>T. faulkneri</i> Wells, 1982			x			x					x		x		3-8

TOTALS: Area 1: 77. — Area 2: 60. — Area 3: 157. — Area 4: 66. — Area 5: 30. — Area 6: 138. — Area 7: 83. — Area 8: 51. — Area 9: 20. — Area 10: 64. — Area 11: 47. — Area 12: 67. — Area 13: 11. — Area 14: 11.

Currently, 157 species of azooxanthellate Scleractinia are known from the Philippine Islands (Table 1), which, when combined with the 410 species of zooxanthellate species known from this country (VERON & HODGSON, 1989), results in 567 species of Scleractinia from this archipelago. 69 of the 157 azooxanthellate species (44%) are known from a small region north and northeast of Lubang Island, Verde Island Passage, which was intensively sampled by MUSORSTOM 1, 2 and 3. 66 azooxanthellate species (42%) of the Philippine fauna are recorded from the Sulu Archipelago, mainly as a result of the "*Siboga*" and "*Albatross*" expeditions early in the century. CAIRNS (1989a) reported no azooxanthellate species from the eastern coasts of the Philippines (*i.e.*, Pujada Bay, Mindanao to the Batan Islands); however, the present study indicates 10 such species, primarily found in Leyete and Lagonoy Gulfs: *Fungiacyathus stephanus*, *Caryophyllia scobinosa*, *Stephanocyathus regius*, *S. weberianus*, *Deltocyathus magnificus*, *Rhizosmilia elongata*, *Peponocyathus minimus*, *Flabellum deludens*, *Truncatoflabellum incrustatum*, and *T. formosum*.

A total of 174 azooxanthellate species are known from the Indonesian region (Table 1), the most species-rich subregion being the Banda Sea (138 species) and the most species-rich archipelago the Kai Islands, from which 125 species are known. As can be seen from Table 1, 66 species are known from the Celebes Sea (Sabah) and Makassar Strait; only 30 from the combined region of the Molucca, Halmahera, and Ceram Seas; 83 from the Arafura, Timor, and Savu Seas; 51 from the Flores and Bali Seas; and 20 from the Java Sea. It is highly probable that the wide variation in numbers of species for various seas reflects the unequal collecting effort. For example, the impressive total from the Kai Islands reflects collections made by the "*Challenger*", "*Siboga*", Danish Expedition to the Kei Islands, and the KARUBAR expeditions, making it one of the most intensively sampled upper slope areas in the world. Conversely, little collecting has been done in the Java Sea and even less off the southern coast of Java, which results in low numbers for these regions.

Regional Affinities. — The Philippine-Indonesian region lies at the heart of the largest and most diverse tropical marine province — the Indo-Polynesian — extending from the Persian Gulf to the Tuamotu Archipelago (BRIGGS, 1974). 65 of the 206 species known from this region (31.5%) are also known from the tropical regions of the Indian Ocean. ALCOCK (1902c) was surprised to discover that only 10% of his Indonesian "*Siboga*" species also occurred in the Indian Ocean; later, CAIRNS (1989a) was able to report an overlap of 25%, and the current ratio of 31.5% will probably continue to increase as Indian Ocean corals become better known. An even higher number of Philippine-Indonesian species are found to the north in the warm temperate region of southern Japan (77/206, or 37%). This may be due to the better-known nature of the Japanese fauna (CAIRNS, 1994) and/or suggests that the boundaries that distinguish shallow-water tropical and temperate regions do not coincide with boundaries of deep-water organisms. The number of shared species with southern tropical regions (*i.e.*, Australia and ridges/islands north of New Zealand) is similar to that shared with the Indian Ocean (*i.e.*, 67/206, or 32.5%). Only 47 (or 23%) of the Philippine-Indonesian species are known from other western and central Pacific islands (*e.g.*, Pelau, New Guinea, Fiji, Hawaiian Islands), which, except for the Hawaiian Islands (VAUGHAN, 1907; CAIRNS, 1984), have been poorly sampled. Only 11 Philippine-Indonesian species occur as far east as the west coast of the Americas (Table 1): of these, 4 are restricted to the Pacific Ocean, 4 have an Indo-Pacific distribution, and 3 are cosmopolitan in distribution. Of the 11 species that also occur in the Atlantic, most (9) are cosmopolitan species, 1 occurs in the eastern Atlantic and Pacific (*i.e.*, *Asterosmilia marchadi*), and 1 (*i.e.*, *Gardinieria paradoxa*) is known only from the western Atlantic and western Pacific. The disjunct nature of the last 2 categories may be the result of inadequate collection.

Depth Distribution. — 198 azooxanthellate species were scored for their occurrence in 8 bathymetric zones. The remaining 8 of the 206 species known from this region are not considered because their depth distribution is unknown or uncertain (Table 1). The results were: 0-100 m (82 species), 100-200 m (89 species), 200-400 m (123 species), 400-600 m (79 species), 600-800 m (40 species), 800-1000 m (25 species), 1000-2000 m (19 species), and over 2000 m (4 species). When these data are graphed (depth range on the x-axis, number of species on the y-axis), a bell-shaped curve results, in this case peaking at the 200-400 m category (62%) and gradually attenuating with greater depth to only 2.5% at over 2000 m. This is consistent with a peak diversity of 53% at 200-300 fathoms (= 366-549 m) for Philippine azooxanthellates given by VAUGHAN & WELLS (1943, table 2), although their data were limited to only 51 species. A similar unpublished analysis of the southwest

Indian Ocean (CAIRNS & KELLER, 1993) and New Zealand (CAIRNS, 1995) azooxanthellates results in similar bell-shaped curves, but in the case of the southwest Indian Ocean (N = 97), peaking at a shallower depth of 100-200 m (55%), and for the New Zealand fauna (N=104) at a greater depth of 400-600 m (54%). The bell-shaped maximum at various depths in different parts of the world is probably correlated with regional water characteristics, especially temperature.

Although the depth record for a scleractinian coral is 6328 m (KELLER, 1976), only 4 species are known from the Philippine-Indonesian region at depths slightly in excess of 2000 m: *Flabellum conuis* (1160-2570 m), *Caryophyllia cornulum* (1525-2350 m), *Stephanocyathus regius* (563-2160 m), and *Enallopsammia rostrata* (417-2021 m).

SYSTEMATIC ACCOUNT

Order SCLERACTINIA

Suborder ASTROCOENIINA

Family POCILLOPORIDAE Gray, 1842

Genus *MADRACIS* H. Milne Edwards & Haime, 1849

Madracis asanoi Yabe & Sugiyama, 1936

Figs 1 a-d

Madracis (sic) *asanoi* Yabe & Sugiyama, 1936: 349, figs 4-4a.

Madracis palaoensis Yabe & Sugiyama, 1936: 349, figs 5-5a; 1941: 71, pl. 62, figs 1-1a (**new synonym**).

Madracis asanoi - YABE & SUGIYAMA, 1941: 71, pl. 61, fig. 4, pl. 62, fig. 2. — ? EGUCHI, 1968: C11.

MATERIAL EXAMINED. — **Philippines.** "Albatross": stn 5277, 1 branch (USNM 96671). — Stn 5381, 1 branch (USNM 96672).

TYPE LOCALITY. — West channel of Pelau barrier reef, Pelau, 160 m.

DESCRIPTION. — Corallum ramose, sparsely branched in 3 dimensions; distal branches blunt, 3.5-4.0 mm in diameter. Calices circular to slightly elliptical; GCD from 1.07-1.62-2.04, with large calices directly adjacent to some of the smallest. Calices at branch tips relatively close to one another (e.g., 0.3 mm apart), this intercalicular distance increasing to 1.0-1.5 mm on large-diameter branches. Coenosteum covered with short (0.15-0.17 mm in height) spines arranged in rows, 1 row occurring between closely packed distal calices and 3 or 4 rows between spaced out calices on larger-diameter branches.

Ten primary septa 0.20-0.25 mm exsert and 0.25-0.30 mm in width, their inner edges fused to the massive columella. In some larger calices traces of secondary septa occur in some interseptal chambers formed by the primary septa, these secondaries irregular in development, quite small, and having dentate inner edges. Columella a large dome-shaped structure occupying most of calice and rising slightly above coenosteal level. In centre of dome is a wedge-shaped columellar lamella that rises as high as primary septa.

REMARKS. — *Madracis asanoi* is similar to *M. interjecta* Marenzeller, 1907, which is known only from the Red Sea, but differs in having calices of very unequal size — the calices of *M. interjecta* being of a uniform size. *M. asanoi* is distinguished from *M. kauaiensis* Vaughan, 1907 (Hawaiian Islands) by having thicker and blunt terminal branches; a shallower fossa; and nonuniform calicular sizes. The record of *M. asanoi* from Japan (EGUCHI, 1968) is queried because of its delicate, attenuate branching; deep calicular fossa; and large calices (up to 3 mm).

Madracis palaoensis is considered to be synonymous with *M. asanoi* given the similarity evident in their respective illustrations; the differences cited by YABE & SUGIYAMA (1936) are considered as intraspecific variation.

DISTRIBUTION. — *Philippines*: Lubang Island; Ragay Gulf, Luzon; 146-161 m. *Elsewhere*: Palau; ? Sagami Bay, Honshu; 110-183 m.

Madracis sp. cf. *M. pharensis* (Heller, 1868)

Figs 1 g-h

Madracis sp. - WELLS, 1954: 414, pl. 99, fig. 5.

Madracis pharensis - WELLS, 1983: 224, pl. 16, figs 1, 5-6.

Madracis sp. cf. *M. pharensis* - CAIRNS, 1991: 6, pl. 1, figs b-e, pl. 11, fig. g (synonymy). — GARDINER & WAUGH, 1939: 229.

Madracis sp. A - CAIRNS, 1994: 36-37 (in part: USNM 88378, not pl. 13, figs c-f).

MATERIAL EXAMINED. — **Philippines**. "Albatross": stn 5162, 1 (USNM 96674). — Stn 5268, 1 (USNM 96675).

MUSORSTOM 3: stn 117, 1 (USNM 96676). — Stn 131, 1 (MNHN). — Stn 134, 5 (MNHN).

Indonesia. DEKI: stn 24, 1 (ZMUC).

Fiji. Korolevu, 27 m, 10 colonies (USNM 96673).

Gulf of California. Las Animas, La Paz, Gulf of California, 12 m, 1 colony (USNM 93920).

TYPE LOCALITY. — Hvarski Kanal, Adriatic Sea, 36 m.

DIAGNOSIS. — Coralla exclusively encrusting, forming relatively small colonies (usually less than 20 corallites) shaped as: thin, irregular masses; stoloniferous ribbons; or small nodules. Perimeter of colonies usually enclosed by a smooth, low epithecal lip. Corallites polygonal in shape and 1.5-2.5 mm in diameter, each calice sharing a thin (0.07-0.09 mm) common wall with its adjacent calices. Intercalicular walls bear tall (up to 0.2 mm) triangular spines, one corresponding to each of the 20 septa in corallite.

Septa decamerally arranged in 2 cycles (20 septa), the 10 primary septa rising as high as the costal spines, but their outer edges separated from the costal spines by a deep notch. Inner edges of primary septa smooth and vertical, each primary bearing a discrete paliform lobe; however, paliform lobes of 5 primary septa are wider and taller than the lobes of the other 5 alternate primaries, the larger lobes being 0.12-0.15 mm in width, the smaller, 0.06-0.07 mm (Fig. 1h). Septal faces covered with tall (40-50 μ m), blunt spines. Secondary septa 1/2 to 2/3 width of primaries and much less thick, having dentate to lacinate inner edges. Columella a massive pointed style rising well above paliform lobes as high as the exsert septa. Columellar style varies from cylindrical to slightly elliptical or flattened in cross section and is surrounded by a crown of 10 P₁.

REMARKS. — Three species of *Madracis* are characterised as having exclusively encrusting coralla: *M. decactis* (Lyman, 1859); *M. kirbyi* Veron & Pichon, 1976; and *M. pharensis*. *M. pharensis* is distinguished from the other two by having well-developed secondary septa and a distinct ring of P₁. *M. kirbyi* is also reported from the Philippines (VERON & HODGSON, 1989), but is not discussed herein because it is considered to be a zooxanthellate.

Although no skeletal differences could be found between Atlantic and Pacific populations of *Madracis* reported herein, the second author believes that characteristics of the soft parts of these populations may ultimately place the Atlantic and Indo-Pacific populations in different species or subspecies.

DISTRIBUTION. — *Philippines*: Verde Island Passage; Mindoro Strait; Sibuyan Sea; Sulu Sea (west of Panay and Sulu Archipelago); 95-421 m. *Indonesia*: Banda Sea (Kai Islands); 85-124 m. *Elsewhere*: Marshall Islands; Galápagos; Fiji; Gulf of California; 5-343 m.

Madracis sp. A

Figs 1 e-f

Madracis asperula ? - GARDINER & WAUGH, 1939: 229. — DURHAM & BARNARD, 1952: 14-15, pl. 1, figs 2 a-b. — WELLS, 1983: 224. [Not *Madracis asperula* H. Milne Edwards & Haime, 1849].

Madracis sp. cf. *M. asperula* - CAIRNS, 1991: 5-6, pl. 1, fig. a.

Madracis sp. A - CAIRNS & KELLER, 1993: 228-229, pl. 3, figs A-B (in part: not USNM 91499). — CAIRNS, 1994: 36-37, pl. 13, figs c-f (in part: not USNM 88378).

MATERIAL EXAMINED. — **Philippines.** "Albatross": stn 5217, 3 branches (USNM 96679). — Stn 5311, 1 branch (USNM 96680). — Stn 5398, 2 branches (USNM 96681).

Indonesia. CORINDON 2: stn 248, 1 branch (USNM 96684).

KARUBAR: stn 22, 1 fragment (POLIPI). — Stn 29, 1 fragment (MNHN).

DIAGNOSIS. — Corallum ramose, sparsely branched in all directions; distal branches slender and attenuate, about diameter of a calice. Calices circular to slightly elliptical, 1.75-2.5 mm in GCD, and usually separated by 0.4-0.5 mm of coenosteum, although calices more crowded near branch tips. Coenosteum spinose. Septa decamerally arranged in 2 cycles (20 septa). The 10 primary septa are exsert, having spinose faces, each bearing a small axial paliform lobe. The 10 secondary septa are rudimentary, each expressed as a row of small spines. Fossa shallow. Columella consists of a central, circular platform from which a pointed, laterally compressed style projects. 10 P₁ encircle the columellar style at the edge of the circular platform.

REMARKS. — *Madracis* sp. A was compared to *M. asperula* H. Milne Edwards & Haime, 1849 (type locality: Madeira), primarily because both species have slender branches and decamerall symmetry; however, *Madracis* sp. A consistently differs in having rudimentary secondary septa and a ring of small P₁. *Madracis* sp. A is more similar to *M. profunda* Zibrowius, 1980 (northeastern Atlantic, 112-327 m), both species having slender branches, 10 primary and 10 small secondary septa. *M. sp. A* appears to differ in having a distinct crown of P₁. In calicular features, *Madracis* sp. A is similar to *M. pharensis*, but differs significantly in having a ramose corallum.

DISTRIBUTION OF SIMILAR FORMS. — *Philippines*: Ragay Gulf, Luzon; Samar Sea; 161-208 m. *Indonesia*: Makassar Strait; Banda Sea (Kai Islands); 124-181 m. *Elsewhere*: southwestern Indian Ocean; Arabian Sea; Galápagos; 46-274 m.

Suborder FUNGIINA

Superfamily FUNGIOIDEA Dana, 1846

Family FUNGIACYATHIDAE Chevalier, 1987

Genus *FUNGIACYATHUS* Sars, 1872

Subgenus *FUNGIACYATHUS (FUNGIACYATHUS)* Sars, 1872

DISCUSSION. — The nominate subgenus has recently been defined (CAIRNS, 1989a) as including those species that have 5 cycles of septa (96 septa), the subgenus *Bathyactis* reserved for those species having 4 cycles of septa (48). However, the second author suggests that a more meaningful division of the genus would be based on the characteristic of their septal edges, the nominate subgenus, defined by type species *F. fragilis*, having corrugated septa with sinuous edges, and the subgenus *Bathyactis*, defined by the type species *F. symmetricus*, having planar septa with straight edges. Under this suggestion, 3 Recent species would be placed in the nominate subgenus: *F. fragilis*, *F. stephanus*, and *F. pliciseptus* Keller, 1981, only the last having 4 cycles of septa. The 15 remaining Recent species would be placed in the subgenus *Bathyactis*, all but 3 having 4 cycles of septa.

Fungiacyathus (F.) stephanus (Alcock, 1893)

Bathyactis symmetrica - MOSELEY, 1881: 189 (in part: "Challenger" stn 194). — ALCOCK, 1902c: 37 (in part: "Siboga" stn 12 and 18). [Not *Fungia symmetrica* Pourtalès, 1871].

Bathyactis stephanus Alcock, 1893: 149, pl. 5, figs 12, 12a; 1902c: 38.

Bathyactis sibogae Alcock, 1902a: 108 (in part); 1902c: 38 (in part: "*Siboga*" stn 95 and large specimen of 57 mm GCD).

Fungiacyathus (F.) stephanus - ZOU *et al.*, 1988: 195. — CAIRNS, 1989a: 7-9, pl. 1, figs a-k, pl. 2, figs a-b (synonymy); 1994: 37, pl. 13, figs g-i; 1995: 31-32, pl. 1, figs a-c. — CAIRNS & KELLER, 1993: 230.

MATERIAL EXAMINED. — **Philippines.** "*Siboga*": stn 95, 1 with flat base (ZMA).

MUSORSTOM 1: stn 49, 1 with flat base (MNHN). — Stn 54, 1 with flat base (USNM 96694).

MUSORSTOM 2: stn 24, 17 with concave bases (MNHN). — Stn 25, 26 with concave bases (MNHN).

MUSORSTOM 3: stn 116, 20 with concave bases: 5 (MNHN), 15 (USNM 96696).

Indonesia. "*Hakuho Maru*": stn KH72-1-26, 4 with flat bases (USNM 96698).

DEKI: stn 49, 1 (NNM 22472).

CORINDON 2: stn 286, 1 with flat base (MNHN).

KARUBAR: stn 12, 2 with flat bases (USNM 96686). — Stn 20, 3 with concave bases (POLIPI). — Stn 21, 4 with flat bases: 3 (MNHN), 1 (POLIPI). — Stn 35, 1 with flat base (USNM 96687). — Stn 36, 2 with flat bases (MNHN). — Stn 39, 2 with concave bases (MNHN). — Stn 56, 1 with concave base (USNM 96693). — Stn 59, 9 with flat bases (MNHN). — Stn 62, 2 with flat bases (USNM 96691).

TYPE LOCALITY. — "*Investigator*" stn 133: 15°43'30"N, 81°19'30"E (off Kristna Delta, Bay of Bengal), 1240 m.

DIAGNOSIS. — Two forms of the species occur, one having a flat base and another with a highly concave base. Corallum large and fragile, the flat-based form up to 62 mm in diameter (KARUBAR stn 36); concave-based coralla usually smaller and may have a marginal shelf. Costae consist of thin, finely serrate ridges. Septa hexamerally arranged in 5 full cycles, the inner septal edges highly sinuous. Each S_1 bears 20-23 trabecular ridges on each face and is linked to adjacent septa by 12-15 T-shaped synapticalae. Septal canopies porous and rudimentary. Small P_2 usually present adjacent to columella. Columella crispate and flat.

REMARKS. — *Fungiacyathus stephanus* is distinguished from *F. paliferus* (Alcock, 1902), the only other Indonesian species having 5 cycles of septa, by having a larger, more fragile corallum; sinuous septa; and smaller P_2 . It is more fully described and illustrated by CAIRNS (1989a, 1994).

DISTRIBUTION. — **Philippines:** Lubang Island; Verde Island Passage; Bohol Sea; Sulu Sea (Palawan and Sulu Archipelago); South China Sea (Palawan); 245-1335 m. **Indonesia:** Makassar Strait; Halmahera Sea; Banda Sea (Kai Islands, Banda Islands, and Tukangbesi Islands); Arafura Sea (southeast of Tanimbar Islands); Timor Sea (south of Leti Islands); Bali Sea; 245-1977 m. **Elsewhere:** Malaysia (Celebes Sea off Sabah); southwestern Indian Ocean; Bay of Bengal; Lord Howe Rise; Norfolk and Kermadec Ridges; Japan (Honshu, Kyushu, and Ryukyu Islands); 446-2000 m.

Fungiacyathus (F.) paliferus (Alcock, 1902)

Bathyactis palifera Alcock, 1902a: 108; 1902c: 38, pl. 5, figs 34, 34a. — VAN DER HORST, 1921: 38. — FAUSTINO, 1927: 214, pl. 71, figs 1-2.

Bathyactis symmetrica - ALCOCK, 1902c: 37 (in part: "*Siboga*" stn 95). — FAUSTINO, 1927: 213 (in part: "*Siboga*" stn 95). [Not *Fungia symmetrica* Pourtalès, 1871].

Bathyactis kikaiensis Yabe & Eguchi, 1942b: 138, 155-156, pl. 12, figs 6-7.

Fungiacyathus (F.) paliferus - CAIRNS, 1989a: 9-10, pl. 2, figs c-i, pl. 3, figs a-c (synonymy); 1994: 37-38, pl. 14, figs a-e. — CAIRNS & PARKER, 1992: 6-7, pl. 1, figs a-b. — CAIRNS & KELLER, 1993: 230.

Not *Bathyactis palifera* - LATYPOV, 1986: 266, 268 [probably a juvenile fungiid].

Not *Fungiacyathus palifera* - KELLER, 1976: 33-34, pl. 1, figs 1-2 [= *Fungiacyathus* sp., see CAIRNS, 1994].

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 3: stn 102, 2 (USNM 96700). — Stn 130, 2 (MNHN). — Stn 131, 2 (MNHN).

Indonesia. "*Siboga*": stn 49a, 1 (ZMA Coel. 706).

DEKI: stn 2, 1 (NNM 22475). — Stn 3, 2 (NNM 22476). — Stn 5, 1 (NNM 22477). — Stn 6, 1 (NNM 22478). — Stn 24, 1 (NNM 22479). — Stn 42, 1 (NNM 22482). — Stn 49, 4 (NNM 22481). — Stn 58, 1 (NNM 22483). — Stn 63, 1 (NNM 22482).

CORINDON 2: stn 210, 1 (MNHN). — Stn 275, 1 irregular fragment (MNHN).
 SNELLIUS 2: stn 4.019, 2 (NNM 22529). — Stn 4.033, 3 (NNM 22528). — Stn 4.034, 2 (NNM 22484).
 KARUBAR: stn 2, 1 (MNHN). — Stn 3, 10 irregular fragments (MNHN). — Stn 7, 15 irregular fragments (MNHN). — Stn 15, 6 irregular fragments (MNHN). — Stn 18, 1 (USNM 96699). — Stn 28, 2 irregular fragments (MNHN). — Stn 49, 2 irregular fragments (MNHN).

TYPE LOCALITY. — Sulu Sea and Moluccas, 141-350 m.

DIAGNOSIS. — Corallum robust, up to 21 mm in calicular diameter, having a slight to only slightly concave base covered with rounded, granular costae. 5 cycles of hexamerally arranged, straight, planar septa. Each S_1 bears 15-20 trabecular ridges on each face and is linked to its 2 adjacent septa by 9-14 solid synapticalae. Septal canopies porous and rudimentary. Well-developed P_2 and sometimes even P_3 present. Columella crispate and rudimentary.

REMARKS. — Comparisons to the other species in this subgenus known from the Indonesian region, *F. stephanus* (Alcock, 1893), are made in that account and by CAIRNS (1989a, table 1). *F. paliferus* is more fully described and illustrated by CAIRNS (1989a, 1994) and CAIRNS & PARKER (1992).

Small (up to 5 mm CD) irregularly regenerated specimens thought to be *F. paliferus* were obtained from KARUBAR stations 3, 7, 15, 28, and 49.

DISTRIBUTION. — *Philippines*: Lubang Island; Sulu Sea (west of Panay and Sulu Archipelago); 90-522 m. *Indonesia*: Makassar Strait; Halmahera Sea; Banda Sea (Kai and Tukangbesi Islands; Teluk Bone, Sulawesi); Flores Sea (Sumbawa); 69-530 m. *Elsewhere*: Malaysia (Celebes Sea off Sabah); southwestern Indian Ocean; Great Australian Bight; Japan (Honshu, Korea Strait, and Ryukyu Islands); 70-823 m.

Subgenus *FUNGIACYATHUS* (*BATHYACTIS*) Moseley, 1881

Fungiacyathus (*B.*) *sibogae* (Alcock, 1902)

Bathyactis sibogae Alcock, 1902a: 108; 1902c: 38 (in part: "*Siboga*" stn 175). — FAUSTINO, 1927: 214 (in part: "*Siboga*" stn 175). — VAN SOEST, 1979: 109 (in part: "*Siboga*" stn 175), pl. 2, figs 1-2.
Bathyactis symmetrica - ALCOCK, 1902c: 37 (in part: "*Siboga*" stn 208). [Not *Fungia symmetrica* Pourtalès, 1871].
Bathyactis stabilis Gardiner & Waugh, 1939: 231-232, text-figs 1-2.
Fungiacyathus sibogae - WELLS, 1977: 7. — CAIRNS, 1989a: 10-11, pl. 3, figs d-k, pl. 4, figs a-c. — CAIRNS & KELLER, 1993: 229-230 (synonymy).

MATERIAL EXAMINED. — *Indonesia*. DEKI: stn 50, 1 (NNM 22474). — Stn 57, 5 (NNM 22473).

TYPE LOCALITY. — "*Siboga*" stn 175: 2°37.7'S, 130°33.4'E (Ceram Sea), 1914 m.

DIAGNOSIS. — Corallum fragile, up to 14.5 mm in GCD; base flat, covered with narrow ridged, serrate costae. Septa hexamerally arranged in 4 cycles of planar septa, each S_1 composed of 14-19 trabeculae, the innermost 5 or 6 forming tall exsert spines. Synaptical plates T-shaped, approximately 6 per S_1 . Columella papillose and rounded.

REMARKS. — It was previously thought that 2 of the paralectotypes of *Bathyactis sibogae*, those from "*Siboga*" stn 95 and 159, were missing (CAIRNS, 1989a: 11); however, in 1994 the specimen from "*Siboga*" stn 95 was found in the collections of the ZMA (Coel. 5098). It was mounted on a board along with a specimen of *Flabellum japonicum* in a bottle of preservative, filed under the name of the latter species. It is the flat-based form of *Fungiacyathus stephanus* and measures about 48 mm in diameter. *F. sibogae* is more fully described and illustrated by CAIRNS (1989a), which also includes a key to the species from this region.

DISTRIBUTION. — *Indonesia*: Molucca Sea; Ceram Sea; Banda Sea (Kai Islands and southeast of Sulawesi); 200-1914 m. *Elsewhere*: southwest Indian Ocean; 463-1948 m (CAIRNS & KELLER, 1993).