STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS: No. 211

AHERMATYPIC SHALLOW-WATER SCLERACTINIAN CORALS OF TRINIDAD

by

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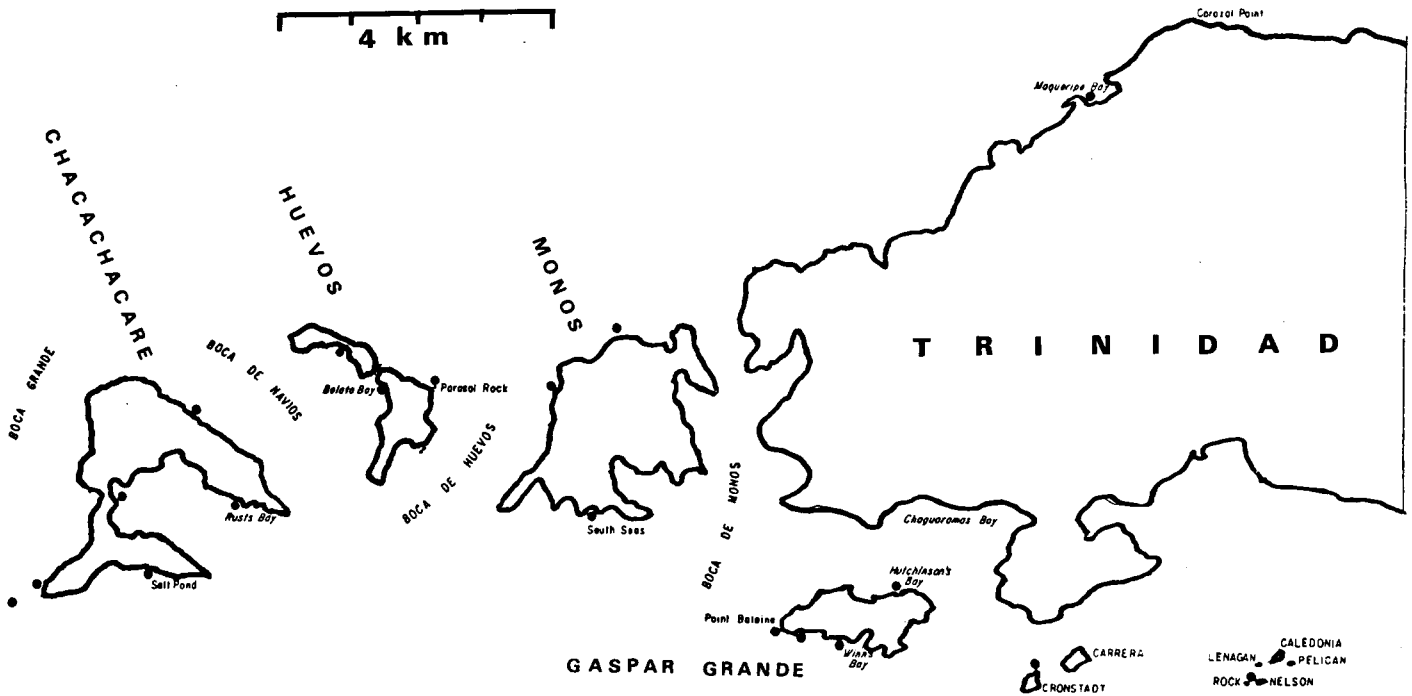


Collecting stations for shallow water ahermatypic scleractinian corals on the N.W. Peninsula of Trinidad.

Abstract

This paper gives an annotated, illustrated list of the ahermatypic scleractinian corals occurring in the shallow waters of Trinidad. Described are 19 species from 15 genera. One species of *Leptopsammia* is new, being the first record of this genus in the Western Atlantic – West Indian region.

INTRODUCTION

The deep water scleractinia of the tropical Western Atlantic have recently been well reviewed and studied by CAIRNS (1979). The scleractinian corals of Trinidad have received little attention in the literature except for the guide by KENNY *et al.* (1975), which gives descriptions and sketches of reef and non-reef forms from shallow water (< 100 m). Descriptions of 18 species from 13 genera of hermatypes (including *Millepora*) and 9 species from 8 genera of ahermatypes are described. In addition data on distribution, reefs, marine circulation and temperature are given. CAIRNS' monograph (1979) lists only 9 species from 8 genera from Trinidadian waters, 3 species of which also occur in shallow water.

LOCALITIES

Trinidad is the southernmost island of the Lesser Antilles and lies on the continental shelf. It is separated from the mainland by the Gulf of Paria, a shallow sedimentary basin of about 20 m average depth. Conditions in nearshore water are strongly influenced by riverine discharge, particularly the Orinoco and San Juan Rivers, and are characterized by marked seasonal variation in salinity, turbidity and light penetration (VAN ANDEL & POSTMA 1954, FUKUOKO 1964, RAMSAROOP 1976).

These conditions, coupled with the lack of suitable substrate, do not favour the development of coral reef communities of major significance. However, in the Boca del Dragon (depth 227 m) and to a lesser extent at other places in the adjacent area, there do occur patch reefs. Owing to the attenuated light, reef-building corals are rarely found at depths below 10 m (KENNY *et al.* 1975). Under these conditions significant communities

of ahermatypes are found. Most of the collecting stations were on the nearshore sub-littoral of the North Western Peninsula (see Map) but collections were also made mid-way between Trinidad and Tobago and at Soldado rock in the southern region of the Gulf of Paria.

MATERIALS

Most of the specimens studied and here illustrated, were collected by R. H. HUBBARD (RH) and the writers are indebted to Professor J. S. KENNY (JK) for the loan of additional material including a few not found by RH. Thanks are due to Dr. H. W. LEVI of the Museum of Comparative Zoology (MCZ) for the loan of and permission to figure the holotype of *Colangia immersa*. Types and most of the figured specimens (except for the type of *C. immersa*) are deposited in the National Museum of Natural History, Washington (USNM).

In addition to those already mentioned, the authors thank A. SIUNG-CHANG, M. STURM and Professor J. KENNY for advice and encouragement during the course of the work. A. CUMMINGS prepared the map, and A. DE HERE, R. QUINTERO, J. MASON, C. HECTOR, J. SAMUEL, L. CHU CHEONG, M. ACKRILL and A. PODZORSKI assisted in the field work.

Family POCILLOPORIDAE Gray, 1840

Genus **Madracis** Milne Edwards & Haime, 1849

Type species: *M. asperula* M.E. & H., 1849. Recent, Madeira.

Madracis decactis (Lyman, 1857)

Figures 1, 2 (USNM 68462)

Madracis decactis, KENNY et al. 1975, p. 78, fig. 14. — ZLATARSKI 1982, p. 39, pl. 5 figs 1–4, pl. 6 figs 1–3 (*cum syn.*).

The corallum is variable in form – encrusting, domed, or with stubby fingers.

Colour of the polyps – pink; reddish brown.

OCCURRENCE — Trinidad: Macqueripe Bay; Huevos Is., 10–33 m.
Distribution: Widespread throughout the Caribbean, Gulf of Mexico, Bahamas, Bermuda, Brazil.

Madracis myriaster (Milne Edwards & Haime, 1849)
Figure 3 (USNM 68463)

Axhelia myriaster, KENNY et al. 1975, p. 75 fig. 12. — ROOS 1971, p. 52, pls 6, 7. *Madracis decactis*, CAIRNS 1979, p. 26, pl. 1 figs 1, 2, 4, 5 (*cum syn.*).

KENNY (1975) reports colonies up to 25 cm in height from deep water. Some coralla are tinted a delicate pink. Slender (1.5–3 mm) branchlets resemble those of *M. asperula* but the intercalicular surface is smooth, faintly striated, rarely very faintly spinose.

Colour of the polyps – white or pink (JK); purple-pink-white (RH).

OCCURRENCE — Trinidad: Huevos Is., 20–33 m; between Huevos Is. and Chacachacare, 50 m, and to below 100 m on north coast.
Distribution: Fairly common in the Caribbean, Gulf of Mexico, Bermuda, 37–308 m; Suriname.

Family FAVIIDAE Gregory, 1900

Genus **Cladocora** Ehrenberg, 1834

Type species: *Madrepora caespitosa* Linnaeus, 1767. Recent, Mediterranean.

Cladocora debilis Milne Edwards & Haime, 1849
Figures 4, 5 (USNM 68464)

Cladocora debilis, KENNY et al. 1975, p. 100, fig. 13. — ZIBROWIUS 1980, p. 31, pl. 11 figs A–L (*cum syn.*).

Loosely branching small colonies, budding alternate at about right angles, the corallites with calices 2.5–3 mm in height. Septa in three cycles with part of the fourth. Paliform lobes before all but the last cycle, but usually reduced and confused with the papillary columella.

Colour of the polyps – pink; pink-purple.

OCCURRENCE — Trinidad: Gaspar Grande; Huevos Is. 25 m; dredged between Trinidad and Tobago, 25 m.

Distribution: from the Mediterranean into the eastern Atlantic, Ascension, St. Helena, Brazil, Uruguay, 20–290 m; Florida 11–150 m; Galápagos, 45–270 m.

Family RHIZANGIIDAE d'Orbigny, 1851

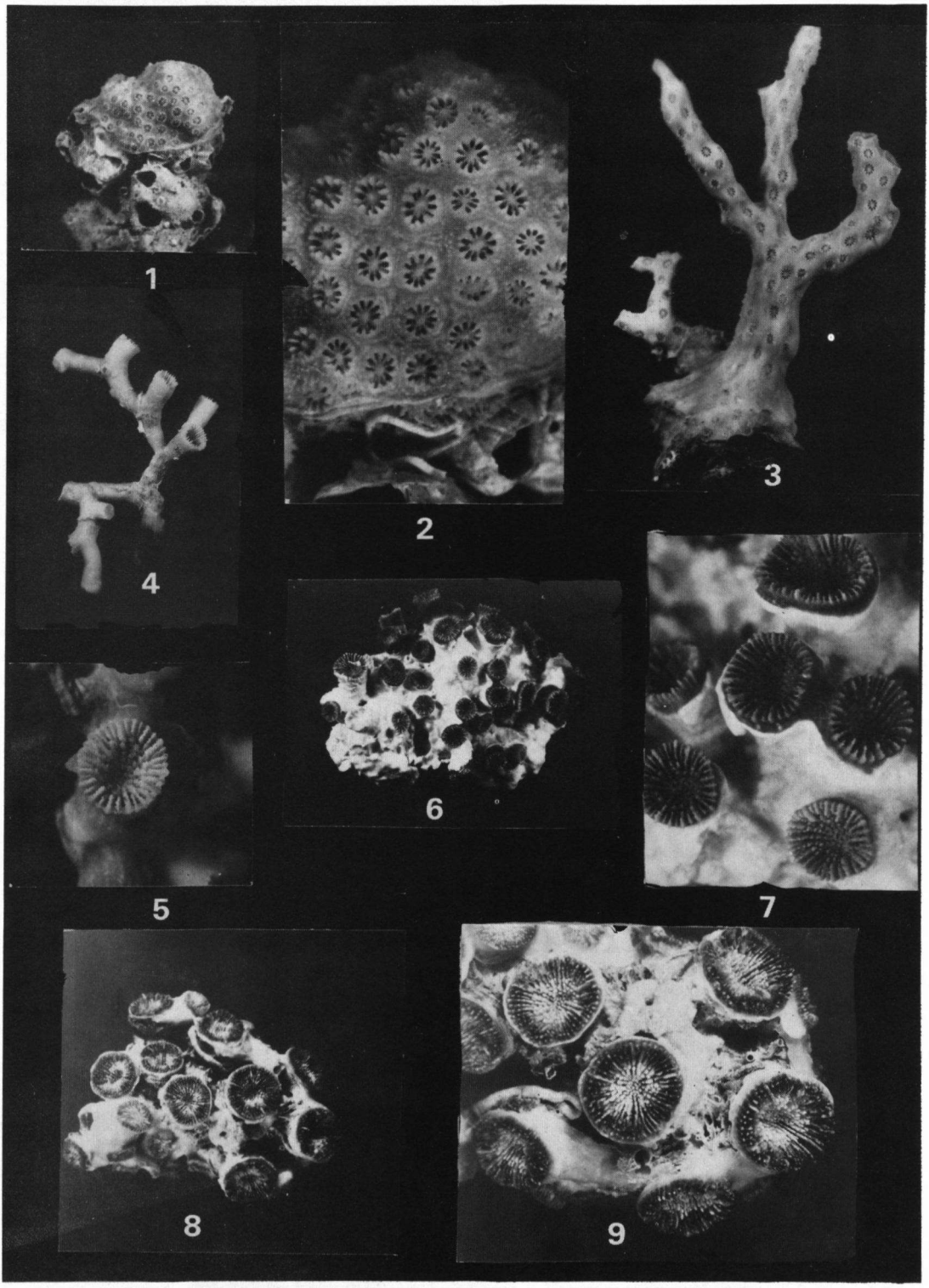
Genus **Astrangia** Milne Edwards & Haime, 1848

Type species: A. *michelini* M.E. & H., 1848, designated by M.E. & H., 1850, p. xliv.

The presumed holotype is No. 412, Michelin Collection, MNHN, Paris, locality unknown, but although labelled by MILNE EDWARDS & HAIME it does not resemble their illustration (1848, pl. 7, f. 5). It is identical to *A. astreiformis* M.E. & H., 1849, and to *A. danae* M.E. & H., 1849 (= *A. danae* M.E. & H., 1857, *A. edwardsi* Verrill, 1866, and *A. danae* Agassiz, 1850). *A. astreiformis* is the only syntype of the genus that has a definite locality "les côtes des États-Unis" and CAIRNS (1981, p. 10) takes it as typical of the genus. *Madrepora poculata* Ellis & Solander, 1786, figured by ELLIS in 1755 ("a stony coral found on the shore near New York ...") is certainly the same as *A. astreiformis* but is a *nomen oblitum*. Another early illustration of an *Astrangia* occurs in SEBA (1758, vol. 3, p. 152, pl. 55, fig. 11–12), low, closely-packed corallites encrusting the exterior of the large cone *C. spuria* from Professor SELLIUS' collections from "les côtes de l'Amérique Espagnole". The calices are 5 mm in diameter, considerably larger than in *A. astreiformis* and within the range of those of *A. rathbuni*.

FIGURES 1–9

1, 2. *Madracis decactus* (Lyman), USNM 68462. Macqueripe Bay, ×1, ×4.
3. *Madracis myriaster* (M.E. & H.), USNM 68463. Huevos Is., ×1.
4, 5. *Cladocora debilis* (M.E. & H.), USNM 68464. Huevos Is., ×1, ×4.
6, 7. *Astrangia solitaria* (Lesueur), USNM 68465. Huevos Is., ×1, ×4.
8, 9. *Astrangia* sp. cf. *A. rathbuni* Vaughan, USNM 68466. Chacachacare, ×1, ×2.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Astrangia solitaria (Lesueur, 1817)

Figures 6, 7 (USNM 68465)

Caryophyllia solitaria LESUEUR, 1817, p. 179, pl. 8 fig. 10; 1821, p. 273, pl. 15 figs a–c.
Astrangia solitaria, WEISBORD 1974, p. 399 (*cum syn.*). — ROOS 1971, p. 74, pl. 34. — CAIRNS 1982, p. 290, figs 128b–d.

Small reptoid or bushy colonies with short corallites united basally and organically isolated or apparently solitary with overgrown or eroded stolons. Corallites commonly tinted brown but some may be nearly white. Septa with internal lobes resembling the paliform lobes of *Paracyathus* or *Polycyathus* but clearly rhizangiid.

Colour of the polyps – white, pink, red, brown.

OCCURRENCE — "Common in most places" (RH).
Distribution: Shallow water (low tide to 20 m), Bermuda, Florida, Bahamas, Caribbean. Gulf of Mexico; reported from Fernando Noronha by DUNCAN.

Astrangia sp. cf. **A. rathbuni** Vaughan, 1906

Figures 8, 9 (USNM 68466)

Astrangia rathbuni VAUGHAN, 1906, p. 849, pl. 78 figs 1–3. — LABOREL 1967, p. 3; 1971, p. 200, pl. 6 fig. 1. — KENNY et al. 1975, p. 112, fig. 33.

Small groups of corallites united basally; calices 5–6 mm in diameter with 48 septa. Septa pale brown, columellar tubercles and larger inner septal dentations white. Reference to the Brazilian *A. rathbuni* is doubtful as in that species the corallites are untinted and the inner septal dentations are no more prominent than those higher on the septal margins, as in *A. astreiformis* of eastern United States which has smaller calices.

Colour of the polyps – very pale brown (JK).

OCCURRENCE — Trinidad: extremely common on shells and rocks, Bocas area and on east and north coasts; Monos Is., 3 m.
Distribution of *A. rathbuni*: Baqueta, Rio de Janeiro, and Bay of Rio Janeiro; south to 34°S, shallow to 90 m.

Genus **Phyllangia** Milne Edwards & Haime, 1848

Type species: *P. americana* M.E. & H., 1849. Recent, Martinique.

Phyllangia americana Milne Edwards & Haime, 1849

Figures 10, 12 (USNM 68467)

Phyllangia americana MILNE EDWARDS & HAIME, 1849, p. 182; 1857, p. 616, pl. D4 fig. 6. — WEISBORD 1968, p. 69 (*cum syn.*). — LABOREL 1971, p. 201, pl. 6 fig. 2. — KENNY et al. 1975, p. 112, fig. 34. — ZLATARSKI 1982, p. 127, pl. 41 figs 1–5, pl. 42 figs 1–3, pl. 43 figs 1–2 (*cum syn.*). — CAIRNS 1982, p. 290, fig. 128e.

Colour of the corallum – pale brown, occasionally nearly white.

Colour of the polyps – dull brown (JK), gray-white, dark red, orange; pale green (Dry Tortugas).

OCCURRENCE — Common nearly everywhere, low tide to 25 m; Soldado Rock, 10 m.

Distribution: Widespread throughout the Caribbean, Gulf of Mexico, Bahamas, Brazil.

Genus **Colangia** Pourtalès, 1871

Type species: *Colangia immersa* Pourtalès, 1871. Recent, Florida.

Colangia immersa Pourtalès, 1871

Figures 13, 14 (holotype MCZ 2787), 15, 16 (USNM 68468)

Colangia immersa POURTALÈS, 1871, p. 31; 1880, pl. 12 figs 13–15. — WELLS & LANG 1973, p. 57. — CAIRNS 1982, p. 290, fig. 128F.

Typical specimens from Trinidad form low, encrusting quasi-colonies of low, cylindrical corallites more or less connected by superimposed exothecal mural expansions. Calices from 6 to 10 mm. Small calices show 24 brown-speckled septa of which the S_1 septa are exert with very low internal lobes. S_2 septa with well-developed paliform lobes. With increase

in size S_4 septa appear irregularly fused to the S_3 septa which have large paliform lobes, and in large calices with 27–30 septa most of the septa have lobes. Columella trabecular, elongate, sometimes pseudo-lamellar.

Colour of the polyps – colourless: light green, tentacles colourless (CAIRNS); salmon-pink (Bermuda, P. COLIN photo).

Although this species was first described from Florida by POURTALÈS in 1871 (holotype MCZ No. 2787 – see Figs 13, 14) it was not figured until 1880, and only once since (CAIRNS 1982). It is allied to *Phyllangia* from which it differs by the prominent paliform lobes on most septa, the laying down of exothecal expansions, and the usual brown speckling of the septa (uniform brown tints in *Phyllangia*). The paliform lobes in small calices are uniformly developed before S_3 but in larger calices this regularity is lost. Small corallites from Jamaica (60 m) are thinly scattered 1 to 3 cm apart without exothecal connection, on the under surface of plates of *Agaricia undata* and except for the paliform lobes and brown speckling could be confused with *Phyllangia*. The exothecal expansions of *Colangia* – "forming anew as corallites increase in height" (POURTALÈS) are like those of *Rhizosmilia* and the two genera are scarcely distinct.

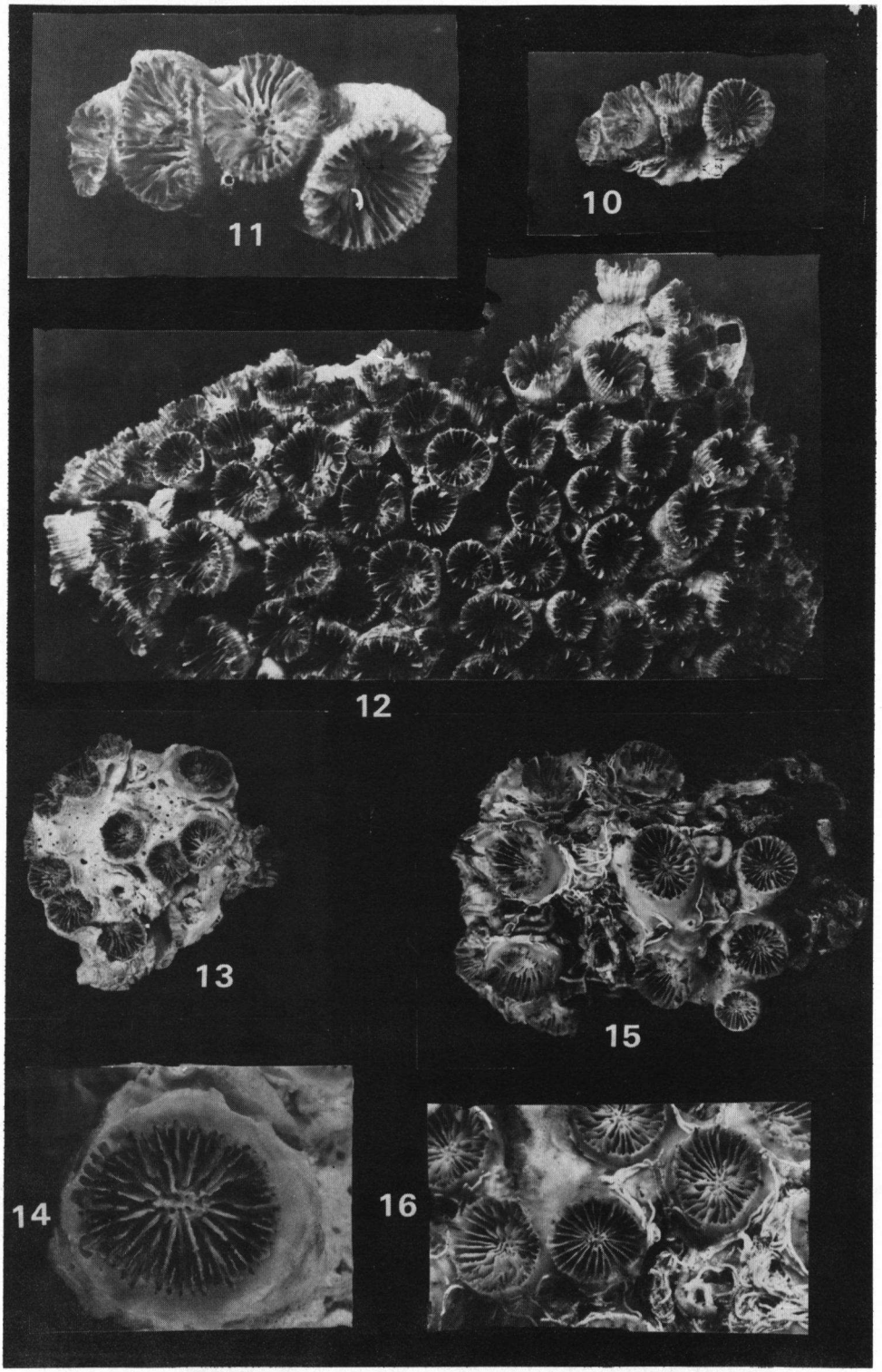
OCCURRENCE — Trinidad: Gaspar Grande; Huevos Is., 25 m.
Distribution: Lesser Antilles, Curaçao; Jamaica; Cuba; Bermuda; Straits of Florida; Honduras (Carrie Bow Cay); Panamá, 15–366 m.

Genus **Rhizosmilia** Cairns, 1978

Type species: *Rhizosmilia gerdae* Cairns, 1978. Recent, off Bimini, straits of Florida, 210 m.

FIGURES 10–16

10, 11. *Phyllangia americana* (M.E. & H.), USNM 68467. South of Soldado Rock, ×1, ×2.
12. *Phyllangia americana* (M.E. & H.), South of Soldado Rock, ×0.9.
13, 14. *Colangia immersa* Pourtalès. Holotype, MCZ 2787. Florida, ×1, ×4.
15, 16. *Colangia immersa* Pourtalès. USNM 68468. Between Pt. Balene and Winn's Bay, Gaspar Grande, ×1, ×2.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Rhizosmilia gerdae Cairns, 1978

Figures 17, 18 (USNM 68469)

Rhizosmilia gerdae CAIRNS, 1978, p. 219, pl. 1 figs 1–7; 1979, p. 142, pl. 27 figs 5–8.

According to CAIRNS *R. gerdae* is distinguished from *R. maculata* (Pourtalès) by absence of speckled brown pigmentation of the septa and costae, smaller corallites (7–15 mm), shallower fossa, and absence of S_6 septa. However, in a group of about 25 individuals from Balata Bay, 35 m, there occur together both *R. gerdae,* white with corallites up to 25 mm in major calicular diameter and deep fossae, and *R. maculata,* speckled brown with calices to 15 mm. Specific separation of these two forms is doubtful.

Colour of polyps – white.

OCCURRENCE — Trinidad: Balata Bay, Huevos Is., 25 m, with *R. maculata.*
Distribution: Straits of Florida, 125–287 m.

Rhizosmilia maculata (Pourtalès, 1874)

Figures 19, 20 (USNM 68470)

Bathycyathus maculatus POURTALÈS, 1874, p. 34, pl. 6 figs 5, 6.
Coenocyathus bartschi WELLS, 1947, p. 170, pl. 11 figs 1–3.
Caryophyllia maculata, CAIRNS 1977b, p. 9, pl. 1 figs 1–3; 1977, p. 86.
Rhizosmilia maculata, CAIRNS 1978, p. 219, pl. 1 fig. 1.
Coenocyathus bartschi, ZLATARSKI 1982, p. 259, pl. 113 figs 1–5.

This species is marked by the speckling of brown spots on the exsert parts of the septa. See remarks under *R. gerdae.*

Colour of the polyps – white.

OCCURRENCE — Trinidad: Chacachacare, Gulf of Paria, 25–40 m. Tobago: Charlotteville, 33 m.
Distribution: off Abrohlos, Brazil, 55 m (type); Bahamas; Straits of Florida; off West Florida; Yucatán Channel; off Jamaica; Lesser Antilles; off Curaçao, 3–161 m.

Family CARYOPHYLLIIDAE Gray, 1847

Genus **Paracyathus** Milne Edwards & Haime, 1848

Type species: *P. procumbens* M.E. & H., 1848. Middle Eocene, Hauteville (Manche), France.

Paracyathus pulchellus (Philippi, 1842)

Cyathina pulchellus PHILIPPI, 1842, p. 42.
Paracyathus defilippi, KENNY *et al.* 1975, p. 116, fig. 13.
Paracyathus pulchellus, CAIRNS 1979, p. 88, pl. 16 figs 1–6. — ZIBROWIUS 1980, p. 90, pl. 44 figs A–K, pl. 45 figs A–L (*cum syn.*).

This common solitary species, usually referred to as *P. defilippi* (Duchassaing & Michelotti, 1861), is best placed in PHILIPPI's species according to CAIRNS (1979) and ZIBROWIUS (1980). Corallites are usually tinted brown with white pali like *Polycyathus senegalensis,* single corallites of which are identical to *P. pulchellus.*

Colour of polyps – orange (Dry Tortugas); pale lemon-yellow and gray green (Mediterranean).

OCCURRENCE — Trinidad: passage between Trinidad and Tobago, 30 m; near Huevos Is.; Macqueripe, 40 m.
Distribution: Widespread in the Mediterranean, Eastern Atlantic, 6–500 m; Bermuda; Bahamas; Florida; Caribbean; Gulf of Mexico, 25–838 m.

Genus **Polycyathus** Duncan, 1876

Type species: *P. atlanticus* Duncan, 1876. Recent, St. Helena.

Polycyathus senegalensis Chevalier, 1966

Figures 21, 22 (USNM 68471)

Polycyathus senegalensis CHEVALIER 1966, p. 971, pl. 4 figs 1, 2. — WIJSMAN-BEST 1970, p. 83.

This is a quasi-colonial *Paracyathus pulchellus* with smaller corallites and the same brown tinted septa and costae and white pali.

OCCURRENCE — Trinidad: Huevos Is., 12–25 m; Gaspar Grande; Macquerripe.
Distribution: off Senegal, 46–100 m; Suriname; off Cape Canavaral, Florida, 70–82 m.

Polycyathus mullerae (Abel, 1959)

Figures 23, 24 (USNM 68472)

Polycyathus mullerae, ZIBROWIUS 1980, p. 95, pl. 47 figs A–L, pl. 48 figs A–M (*cum syn.*).

Small colonies with short (to 10 mm) corallites with shallow calices 3–5 mm in diameter. Three cycles of septa with part of the fourth, with stout wedge-shaped pali before the first three cycles and part of the fourth in larger calices. The corallites are smaller than in *P. senegalensis* and white in colour.

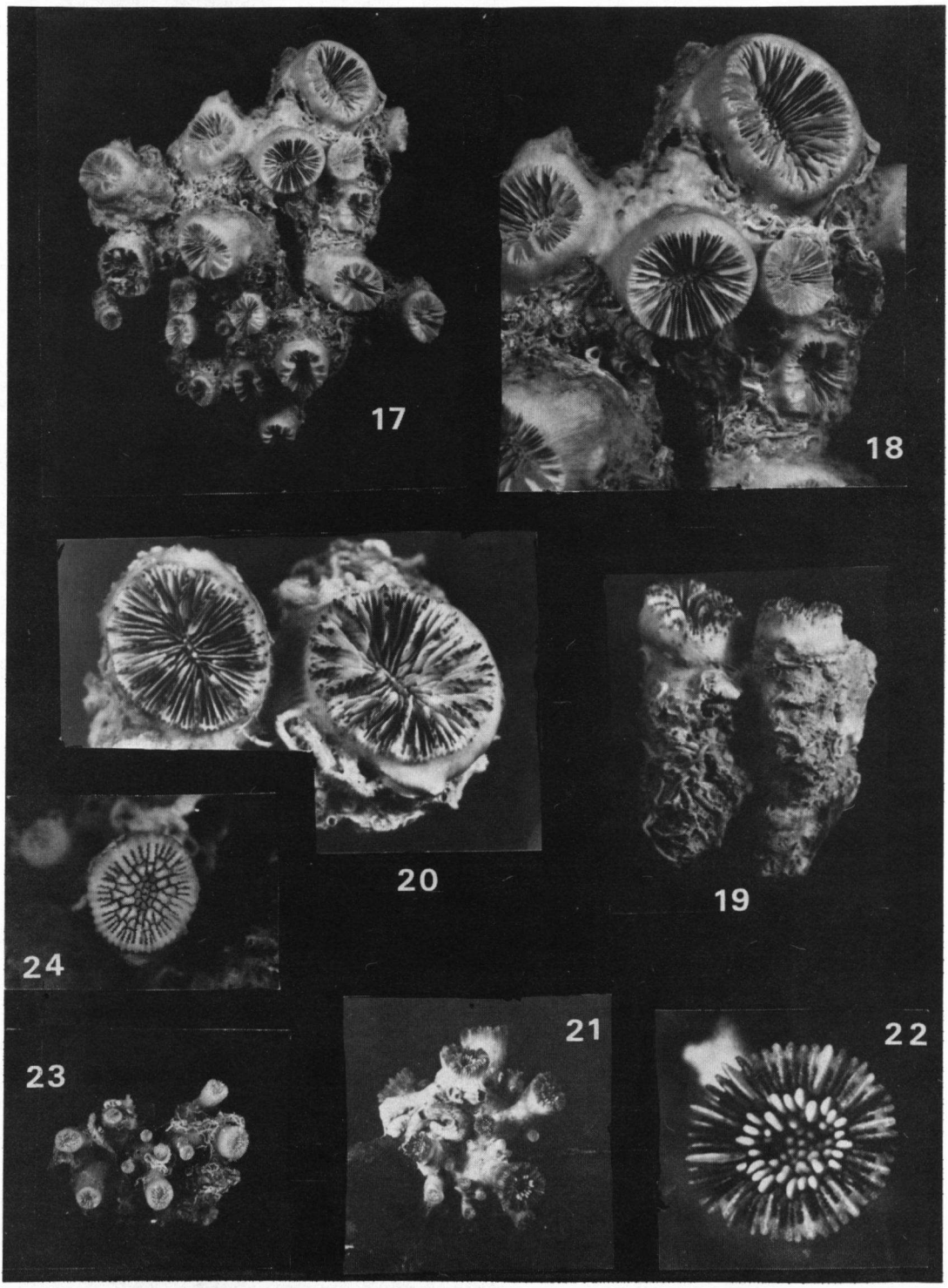
OCCURRENCE — Trinidad: Huevos Is., 18–25 m.
Distribution: widespread in the Mediterranean; Portugal, 6 m; and probably eastern tropical Atlantic.

Genus **Desmophyllum** Ehrenberg, 1834

Type species: *D. dianthus* Ehrenberg, 1834 (non *Madrepora dianthus* Esper, 1795) — *D. cristagalli* Milne Edwards & Haime, 1848. Recent, Mediterranean.

FIGURES 17–24

17, 18. *Rhizosmilia gerdae* Cairns, USNM 68469. Huevos Is., ×0.5, ×1.
19, 20. *Rhizosmilia maculata* (Pourtalès), USNM 68470. Balata Bay, Huevos Is., ×1, ×2.
21, 22. *Polycyathus senegalensis* Chevalier, USNM 68471. Gaspar Grande, ×1, ×4.
23, 24. *Polycyathus mullerae* (Abel), USNM 68472. Huevos Is., ×1, ×4.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Desmophyllum cristagalli Milne Edwards & Haime, 1848

Figures 25, 26

Desmophyllum cristagalli, CAIRNS 1979, p. 117, pl. 21 figs 7, 8, pl. 22 fig. 8. — ZIBROWIUS 1980, p. 117, pl. 61 figs A–D, pl. 62 figs A–M (*cum syn.*).

The single specimen from Trinidad resembles the form described by MILNE EDWARDS & HAIME as *D. cumingi* from the eastern Pacific, marked by the less exsert septa. Similar coralla are figured by ZIBROWIUS among the many variants of *D. cristagalli.*

Colour of the polyps – white (STUDER); light grayish brown (LACAZE-DUTHIERS); brick red tentacles (LE DANOIS).

OCCURRENCE — Trinidad: passage between Trinidad and Tobago, 30 m. Distribution: Cosmopolitan. Mediterranean, Atlantic, Caribbean, Gulf of Mexico, Indo-Pacific, 30–3,000 m.

Genus **Thalamophyllia** Duchassaing, 1870

Type species: *Desmophyllum riisei* Duchassaing & Michelotti, 1861. Recent, St. Thomas, V.I.

Thalamophyllia riisei (Duchassaing & Michelotti, 1861)

Figures 27, 28 (USNM 68473)

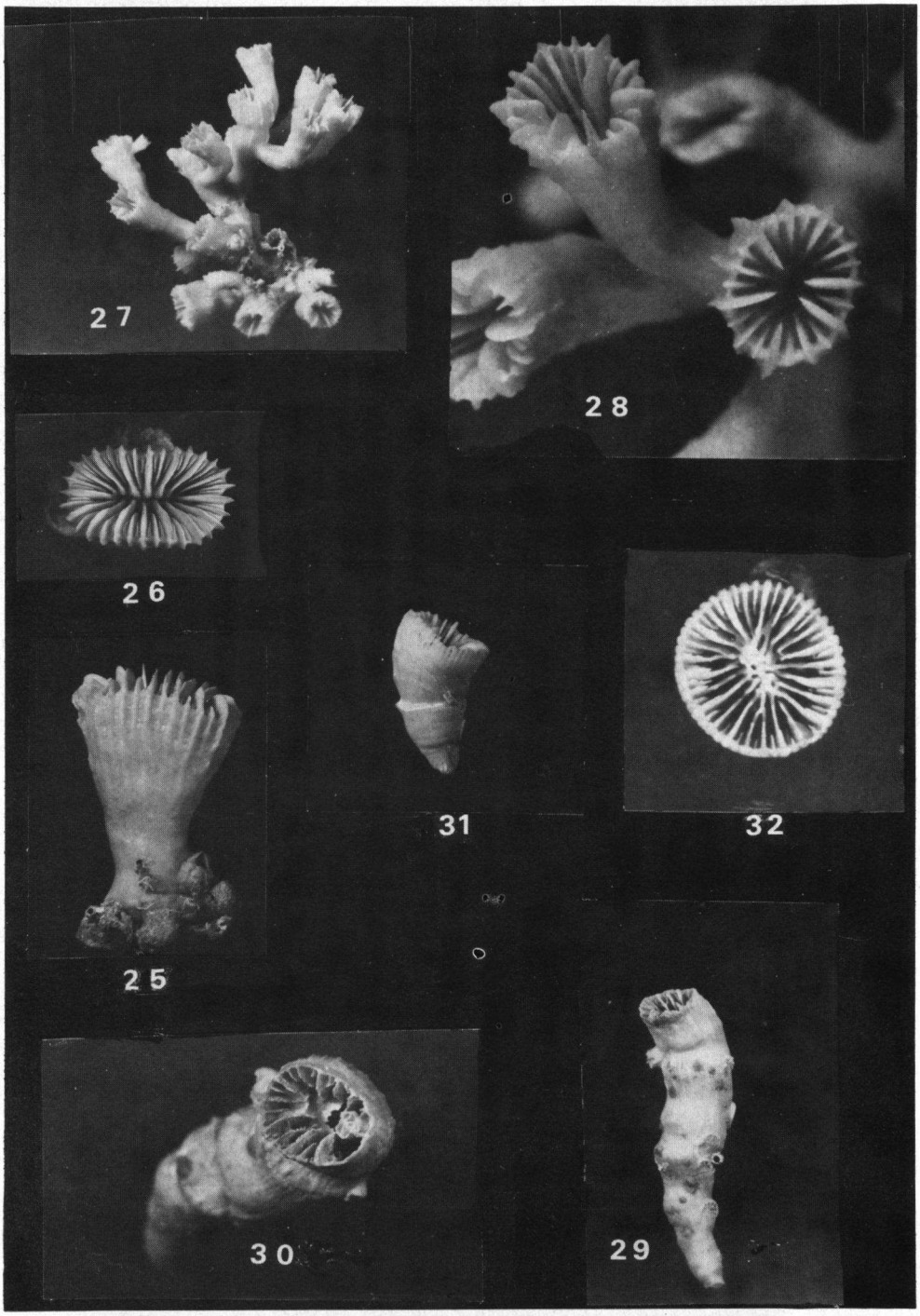
Thalamophyllia riisei, CAIRNS 1979, p. 121, pl. 23 figs 1, 4–6, 9, 10 (*cum syn.*).

Common on vertical rock faces at Gaspar Grande and under overhangs and in crevices elsewhere. Some individuals appear solitary but usually have intercorallite stolons.

Colour of polyps – colourless.

FIGURES 25–32

25, 26. *Desmophyllum cristagalli* M.E. & H. Between Trinidad and Tobago, × 1.
27, 28. *Thalamophyllia riisei* Duch. & Mich., USNM 68473. Gaspar Grande, × 1, × 4.
29, 30. *Anomocora fecunda* (Pourtalès). USNM 68474. Between Trinidad and Tobago, × 1, × 2.
31, 32. *Asterosmilia prolifera* (Pourtalès), USNM 68475. West coast of Tobago, × 1, × 2.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OCCURRENCE — Trinidad: between Venezuela and Trinidad, 35 m; Gaspar Grande, Huevos Is., Chacachacare.
Distribution: common in cryptic habitats in the Antilles, Bahamas to Suriname, 18–1,317 m.

Genus **Anomocora** Studer, 1877

Type species: *Coelosmilia fecunda* Pourtalès, 1871. Recent, Florida.

Anomocora fecunda (Pourtalès, 1871)

Figures 29, 30 (USNM 68474)

Coelosmilia fecunda POURTALÈS, 1871, p. 21, pl. 1 fig. 12, pl. 6 figs 14, 15.
Anomocora fecunda, KENNY et al. 1975, p. 116 fig. 13. — CAIRNS 1979, p. 127, pl. 24 figs 6–8 (*cum syn.*).
Coenosmilia fecunda, ZIBROWIUS 1980, p. 131, pl. 67 figs A–K, pl. 68 figs A–F.

Dredged occasionally in depths below 70 m.

OCCURRENCE — Trinidad: dredged in passage between Trinidad and Tobago.
Distribution: throughout the Caribbean and southeastern Gulf of Mexico; St. Paul's Rocks; Eastern Atlantic, 73–567 m.

Genus **Asterosmilia** Duncan, 1867

Type species: *Trochocyathus abnormalis* Duncan, 1864. Miocene, Dominican Republic.

Asterosmilia prolifera (Pourtalès, 1871)

Figures 31, 32 (USNM 68475)

Ceratocyathus prolifer POURTALÈS, 1871, p. 19, pl. 3 figs 8–10.
Asterosmilia prolifera, KENNY et al. 1975, p. 116, fig. 13. — CAIRNS 1979, pl. 26 figs 5, 6, 8 (*cum syn.*). — ZIBROWIUS 1980, p. 140, pl. 73 figs A–N, pl. 107 fig. J?

Also dredged, like *Anomocora,* in Trinidad in depths below 50 m in mud.

OCCURRENCE — Trinidad: west coast of Tobago, 50 m.
Distribution: Widespread in Straits of Florida, northeastern Gulf of Mexico, Bay of Campeche, Lesser Antilles and coast of South America from Colombia to French Guiana; Eastern Atlantic, 32–311 m.

Family DENDROPHYLLIIDAE Gray, 1847

Genus **Dendrophyllia** Blainville, 1830

Type species: *Madrepora ramea* Linnaeus, 1758. Recent, Mediterranean.

Dendrophyllia cornucopia (Pourtalès, 1871)

Figures 33–35 (USNM 68476)

Balanophyllia cornucopia POURTALÈS, 1871, p. 45, pl. 5 figs 7–8.
non Balanophyllia cornucopia, SIMONELLI 1896, p. 200, pl. 23 figs 26, 27.
Dendrophyllia cornucopia, KENNY et al. 1975, p. 110, fig. 32. — CAIRNS 1979, p. 179, pl. 30 figs 1–4 (*cum syn.*). — ZIBROWIUS 1980, p. 175, pl. 88 figs A–L.

Corallum, a slightly compressed, elongate cylinder (up to 8 cm), tapering to a small base fixed to other corals or pieces of rock. From the parent corallite buds project at acute or right angles, forming small bushy colonies. the secondary corallites are smaller and shorter (up to 5 cm) and rarely have tertiary buds. Corallite wall thin, porous, with low, flat, minutely spinulose, equal costae. Faint epithecal bands on most corallites extend to within a few millimetres of the calicular margin, indicating that organic continuity between parent and daughter polyps is lost at an early stage. Septa inserted following the Pourtalès plan in six systems and five incomplete cycles, the fifth cycle septa being incomplete in each system. The largest (14 × 18 mm) parent corallite has 72 septa. Calicular fossa deep (up to 8 mm in a large calice), with an elongate trabecular columella joined by the septa of the first three cycles.

Colour of the polyps – bright orange-pink.

Previous records of this species, including the types, have all been from depths considerably greater (139–630 m) than the Trinidad material. The deep-water examples are unattached, elongate, with thicker, corallite walls, laterally granulose septa, indicative of lack of attachment on soft substrates.

As CAIRNS pointed out (1979), *D. cornucopia* does not fall within the usual definition of *Dendrophyllia,* typified by *D. ramea* and other dendroid forms in which the polyps remain organically united. *D. cornucopia* is in effect a *Balanophyllia* bearing small lateral secondary buds the polyps of which generally lose connection, developing subphaceloid rather than dendroid colonies, a growth habit found in other dendrophylliids such as *D. gracilis* Milne Edwards & Haime of the Pacific and the Mediterranean *Cladopsammia* Lacaze-Duthiers. ZIBROWIUS (1980) hints that some of these bushy types might be transferred to the latter genus. *Cladopsammia,* however, with further study may prove to be the same as *Blastopsammia* Klunzinger 1879 and *Rhodopsammia* Semper 1872. EGUCHI (1968) informally suggested the taxon *Alcockia* (*non Alcockia* Goode & Beane 1895, a fish) for such distinctive dendrophylliid growth forms.

OCCURRENCE — Trinidad: Balata Bay, Huevos Is.; Monos Is.; Gaspar Grande, 20–33 m; Chacachacare, 30 m.
Distribution: Straits of Florida; off northern Cuba; Windward Group, Lesser Antilles; Eastern Atlantic, 132–632 m.

FIGURES 33–40

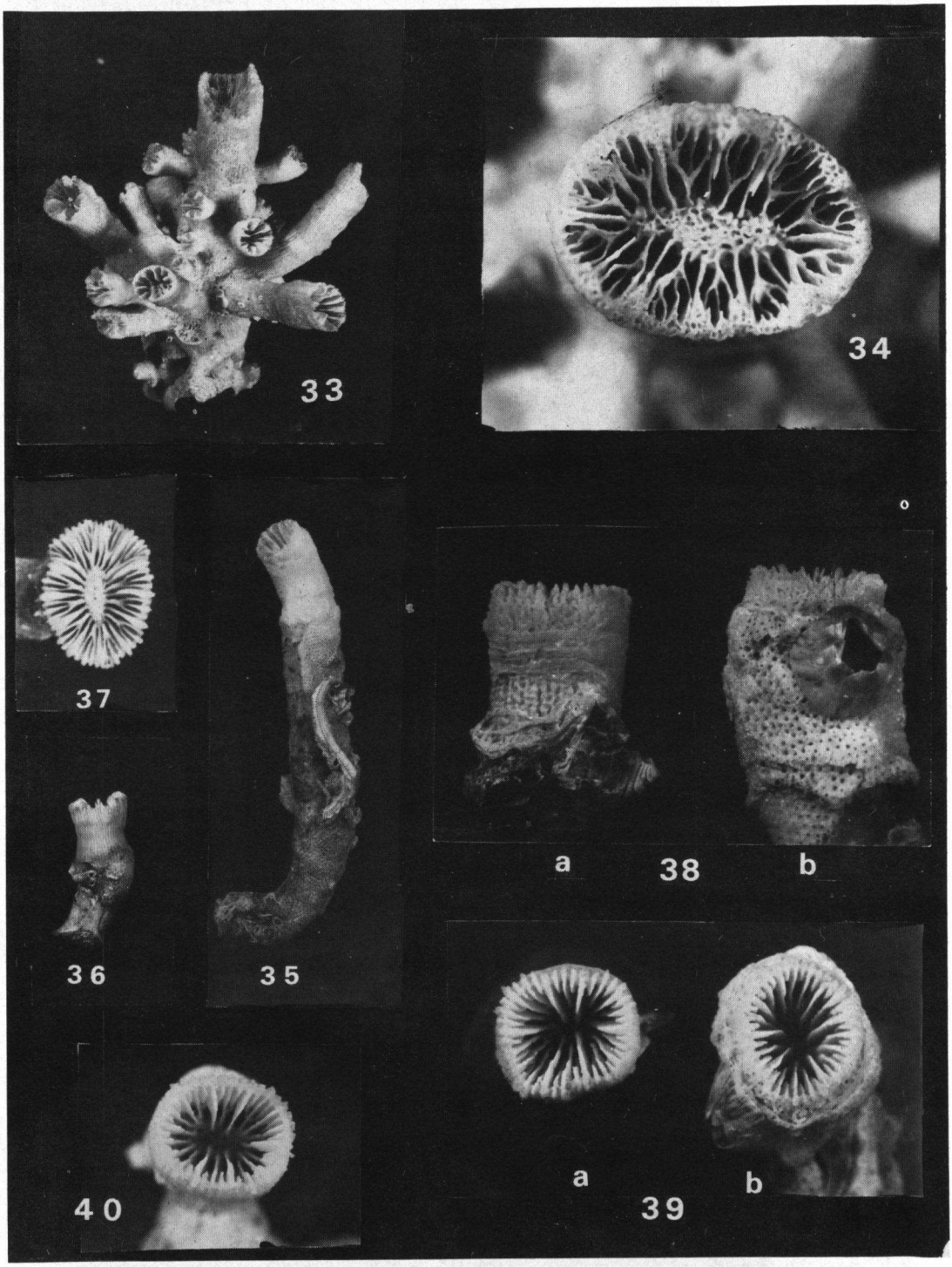
33, 34. 35. *Dendrophyllia cornucopia* Pourtalès, USNM 68476. Chacachacare, ×1, ×4, ×1.

36, 37. *Balanophyllia floridana* Pourtalès, USNM 68477. Chacachacare, ×1, ×2.

38a, 39a. *Leptopsammia trinitatis* n. sp. USNM 68480. Between Venezuela and Trinidad, ×4.

38b, 39b. *Leptopsammia trinitatis* n. sp. Holotype, USNM 68478. Near Winn's Bay, Gaspar Grande, ×4.

40. *Leptopsammia trinitatis* n. sp. Paratype, USNM 68479. Near Winn's Bay, Gaspar Grande, ×4.


33
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b

Genus **Balanophyllia** Wood, 1844

Type species: *Balanophyllia calyculus* Wood, 1844. Pliocene (Red Crag), Sutton, Norfolk.

Balanophyllia floridana Pourtalès, 1860

Figures 36, 37 (USNM 68477)

Balanophyllia floridana, KENNY et al. 1975, p. 115, fig. 13. — CAIRNS 1977a, p. 134, pl. 1 figs 1–3 (*cum syn.*); 1977b, p. 16, pl. 2 figs 7, 8; 1978, p. 11.

Found growing on stones and barnacles. Coralla with black polyps are stout, common on the north side of Chacachacare (south side of Boca de Navios) and on the north side of Monos Island.

Colour of polyps – white; black; vermillion with colourless tentacles (Dry Tortugas, Florida); brick red (POURTALÈS).

OCCURRENCE — Trinidad: Chacachacare; Huevos Is.; Monos Is., 20–45 m.

Distribution: common in Western Atlantic, Caribbean, Gulf of Mexico, and Eastern Atlantic (Gulf of Guinea), 37–183 m.

Genus **Leptopsammia** Milne Edwards & Haime, 1848

Type species: *Leptopsammia stokesiana* M.E. & H., 1848. Recent, Philippines.

For a discussion of this genus see WELLS (1964) and ZIBROWIUS (1980).

Leptopsammia trinitatis n. sp.

Figures 38–40 (USNM 68478 holotype, 68479 paratypes)

Corallites small, solitary, or grouped in small clusters often fused basally. Corallum cylindrical, fixed to substrate by a broad base or tapering proximally to a small point of attachment where substrate is limited, 8–15 mm in height. Mural costae equal, irregular but corresponding to all septa. Epitheca variable in development from quite lacking even on ex-

panded base to complete to within 1 or 2 mm of calicular margin. Calices rounded quadrangular to subovate, 4 × 5 × 5.5 mm in diameter, 3–4 mm deep. Septa laterally nearly smooth, margins nearly so, in three complete cycles and two-thirds of the fourth (6/6/12/16 = 40). First cycle septa extending nearly to the axis, the thickened axial marginal trabeculae merging to form a deep, weakly developed columella. Second cycle septa extending about halfway to the axis. Third cycle shorter than the second, extending less than halfway to the axis and joining the second cycle at the level of the columella. Fourth cycle septa short, developed in only 4 of the 6 systems on either side of the longer calicular axis, being absent in the two opposing systems athwart the shorter axis, commonly uniting with the third cycle.

Colour of the polyps: orange yellow.

Holotype and paratypes: USNM 68478 and 68479.

ZIBROWIUS recognizes 4 species of *Leptopsammia* in the Mediterranean-Eastern Atlantic. Two of these, *L. formosa* (Gravier) from the Azores, and *L. britannica* (Duncan) from the boreal Atlantic, are deep-water forms (460–900 m) with larger corallites and thickened mural structures. The other two, *L. pruvoti* Lacaze-Duthiers from the Mediterranean and England south to Portugal, and *L. chevalieri* Zibrowius from off West Africa, occur in shallower depths (sublittoral to 80–200 m). Both of these latter differ from *L. trinitatis* by their larger corallites and full complement of 4 cycles (40) of septa plus parts of the fifth.

OCCURRENCE — At present known only from Trinidadian shallow water, 20–35 m: passage between Trinidad and Venezuela; vertical sides of rocks or "drop-offs"; near Winn's Bay (types), south side of Gaspar Grande; Huevos Is.; Monos Is.; Chacachacare.

ZOOGEOGRAPHY

The distribution of the ahermatypic shallow water Scleractinia from Trinidad shows affinities or elements from the Caribbean, Brazilian and E. Atlantic faunal assemblages (see Table). The strongest relationships are with the Caribbean where sixteen of the nineteen species have been pre-

viously recorded, while ten have been recorded from the E. Atlantic. There are two cosmopolitan species *Cladocora debilis* and *Desmophyllum cristagalli* from the Mediterranean, E. Atlantic Caribbean and Brazil. Three species occur from the Guianas while eight are also known from Brazil. *Astrangia cf rathbuni* has been recorded from only Trinidad and Brazil. The Trinidad fauna is primarily a mixture of Caribbean and E. Atlantic fauna and most of the species are widely distributed.

Mediterranean-Atlantic-Caribbean Distribution of Trinidadian Shallow-water Ahermatypes

SPECIES	Mediterranean	E. Atlantic	Trinidad	Caribbean	Guianas	Brazil
Madracis decactis		×	×	×		×
Madracis myriaster			×	×	×	
Cladocora debilis	×	×	×	×		×
Astrangia solitaria			×	×		
Astrangia cf. *rathbuni*			×			×
Phyllangia americana			×	×		×
Colangia immersa			×	×		
Rhizosmilia gerdae			×	×		
Rhizosmilia maculata			×	×		×
Paracyathus pulchellus	×	×	×	×		
Polycyathus mulleri	×	×	×			
Polycyathus senegalensis		×	×	×	×	
Desmophyllum cristagalli	×	×	×	×		×
Thalamophyllia riisei			×	×	×	
Anomocora fecunda		×	×	×		×
Asterosmilia prolifera		×	×	×	×	
Dendrophyllia cornucopia		×	×	×		
Balanophyllia floridana		×	×	×		
Leptopsammia trinitatis			×			

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