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MARINE ALGAE OF PAPUA NEW GUINEA (MADANG PROV.) 1. CAULERPACEAE (CHLOROPHYTA - CAULERPALES) [1]

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SUMMARY

In view of preparing a Flora of the Seaweeds of N. Papua New Guinea, material was collected by scuba-diving along the coast of Madang Province in June–August 1980 and July–August 1986. The Caulerpales are the first group to be studied. Thirteen taxa belonging to the genus *Caulerpa* are described and illustrated; ecological and biogeographical data are added. The list includes *C. brachypus*, *C. elongata*, *C. filicoides* var. *andamanensis*, *C. lentillifera* var. *kilneri*, *C. manorensis*, *C. microphysa*, *C. opposita* sp. nov., *C. racemosa* var. *clavifera*, *C. racemosa* var. *peltata*, *C. serrulata* var. *serrulata* *C. serrulata* var. *pectinata*, *C. sertularioides*, and *C. verticillata*.

INTRODUCTION

During two botanical expeditions to the Leopold III Biological Station on Laing Island (Hansa Bay, Madang Province, Northern Papua New Guinea), seaweeds were collected by E. Coppejans. The monogeneric family Caulerpaceae is the first taxonomic group that we have studied.

The genus *Caulerpa*, including more than 100 species, is widely distributed in all warm seas. Together with the genus *Halimeda* (Chlorophyta) and several crustose Corallinaceae (Rhodophyta) *Caulerpa* forms the main algal biomass of coral reefs and lagoons in the Madang area.

No published data about the seaweeds of Northern Papua New Guinea have appeared.

MATERIAL AND METHODS

The seaweeds were collected from June to August 1980 in Hansa Bay (figs. 1, 2), mainly around Laing Island, but also on the coast of the volcanic island of Manam and from submerged reefs in Hansa Bay. These reefs have the indigenous

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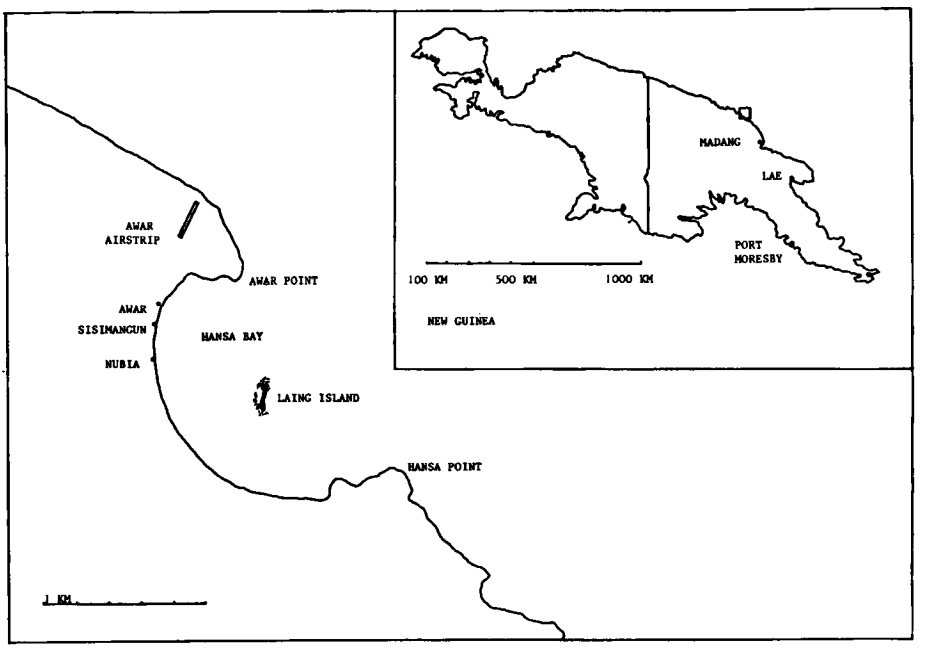


Fig. 1. General situation of the research area.

names shown in fig. 2. In July–August 1986 collections were also made along the coast between Madang and Bogia.

Material was first collected during general explorative snorkeling and scuba-diving trips spread all over the Bay. Later on transect dives were done, especially around Laing Island, to detect zonation patterns as well as differences in species composition between seaward and landward sides of islands and reefs. A total of 50 diving sessions were done from the water surface down to 50 m depth.

Approximately 652 herbarium specimens of seaweeds were collected, among which 75 *Caulerpa*.

Material was immediately dried as herbarium specimens; some part was preserved in 5% buffered formalin seawater. Specimens are deposited in the Herbarium of the State University of Gent (GENT), Belgium and the personal herbarium of E. Coppejans (reference used: HEC); duplicates are at Brussels (BR), Belgium, Leiden (L), the Netherlands, and the personal herbarium of A. Meinesz at Nice, France. Dr. V. Demoulin from the University of Liège, Belgium also collected seaweeds in the same area in 1980 (herbarium reference used: VD).

The following species list is not exhaustive for the region; collection period and investigated area are too restricted. Moreover, we mainly gathered larger biotope-characterizing algae, leaving the smaller ones for further research.

All drawings were made from collected material, microscopic details have been drawn by camera lucida.

A total of 13 species and varieties of *Caulerpa* were found. Description of the local aspects of the plants and distribution in the bay as well as some ecological data are given for each of them.

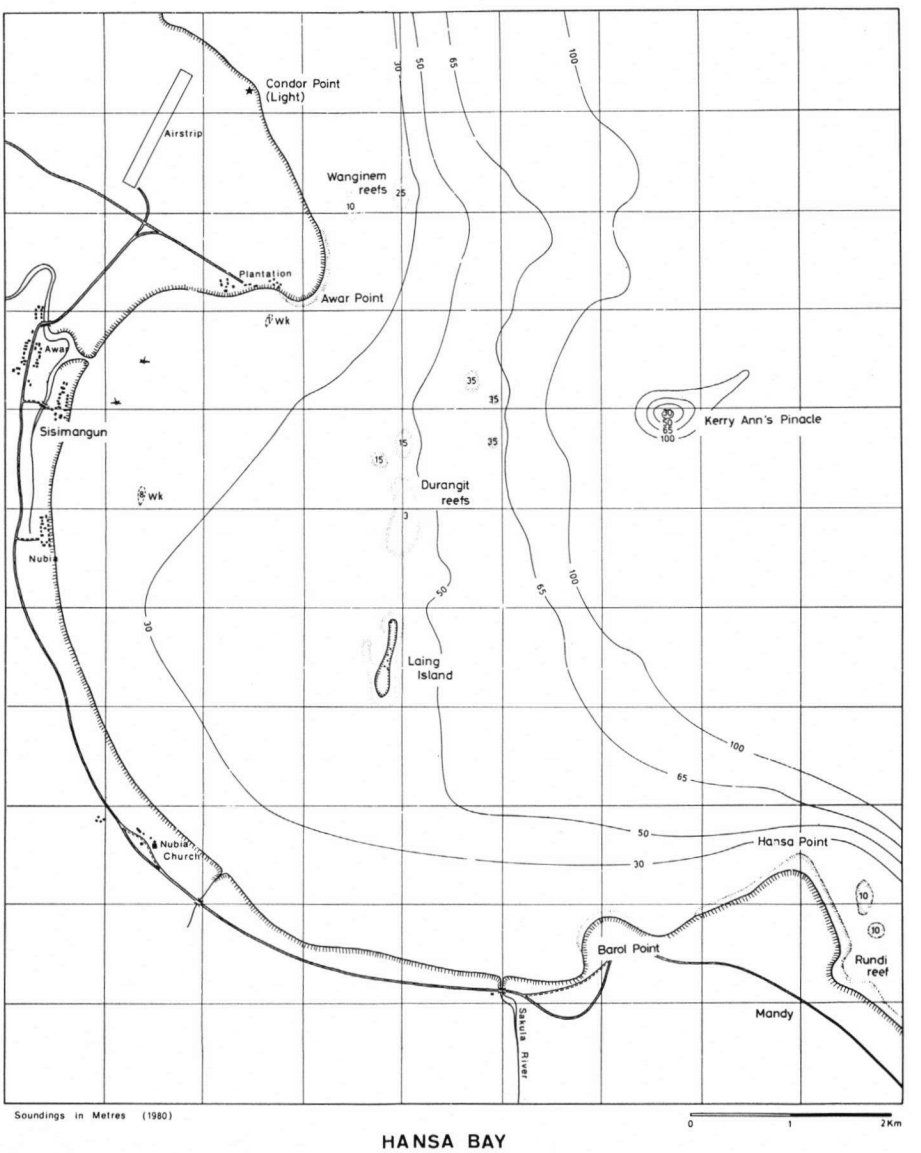


Fig. 2. Detailed map of Hansa Bay with Laing Island and the main surrounding reefs.

Caulerpa brachypus Harvey — Figs. 35–38.

Described from eastern India and western Pacific Oceans (Weber-van Bosse, 1898; Gilbert, 1942; Valet, 1968; Cordero, 1977).

Plants forming dense mats, stolons terete, branched, 0.5 mm in diameter; erect fronds shortly stipitate, simple, ligulate to oval, up to 2 cm long and 5 mm broad, with serrate margins, each tooth of which being composed of 2 or 3 double spines (figs. 37, 38).

Reference material: *HEC 6556:* 20-3-1986, Ulingan Bay (W. side), on dead coral surface covered with silt, –3 m, very turbid water.

Caulerpa elongata Weber-van Bosse — Figs. 3, 4.

Described from the Indian and the Pacific Oceans (Weber-van Bosse, 1898).

A rather frequent lycopod-like species, especially in shallow water (–0.5/–2 m), exceptionally deeper, on shady places: forming dense coverings on vertical and overhanging coral walls of the channels in the fringing reefs (Laing Island, Manam).

Reference material: *HEC 4224, 4226* (different forms: *4224* ramified in all directions, *4226* ramified in one plane): 26-5-1980, Laing Island (S.), shady overhanging coral surfaces at –1 m; *HEC 4318:* 9-6-1980, Laing Island (E.), shady coral surfaces (overhanging, vertical, horizontal) between –0.5 and –1.5 m; *HEC 4406:* 23-6-1980, Laing Island (W.), in the lagoon, vertical coral surface at –15 m.

Caulerpa filicoides Yamada var. **andamanensis** Taylor — Figs. 12–14.

This species was described from the North tropical Pacific Ocean by Yamada, first under the name of *C. verticillata* forma *acuta* (Yamada, 1934), and later under the new name of *C. filicoides* (Yamada, 1936, 1940, 1944). The var. *andamanensis* was more recently described by Taylor (1965) from the Andaman Archipelago (North Central Indian Ocean).

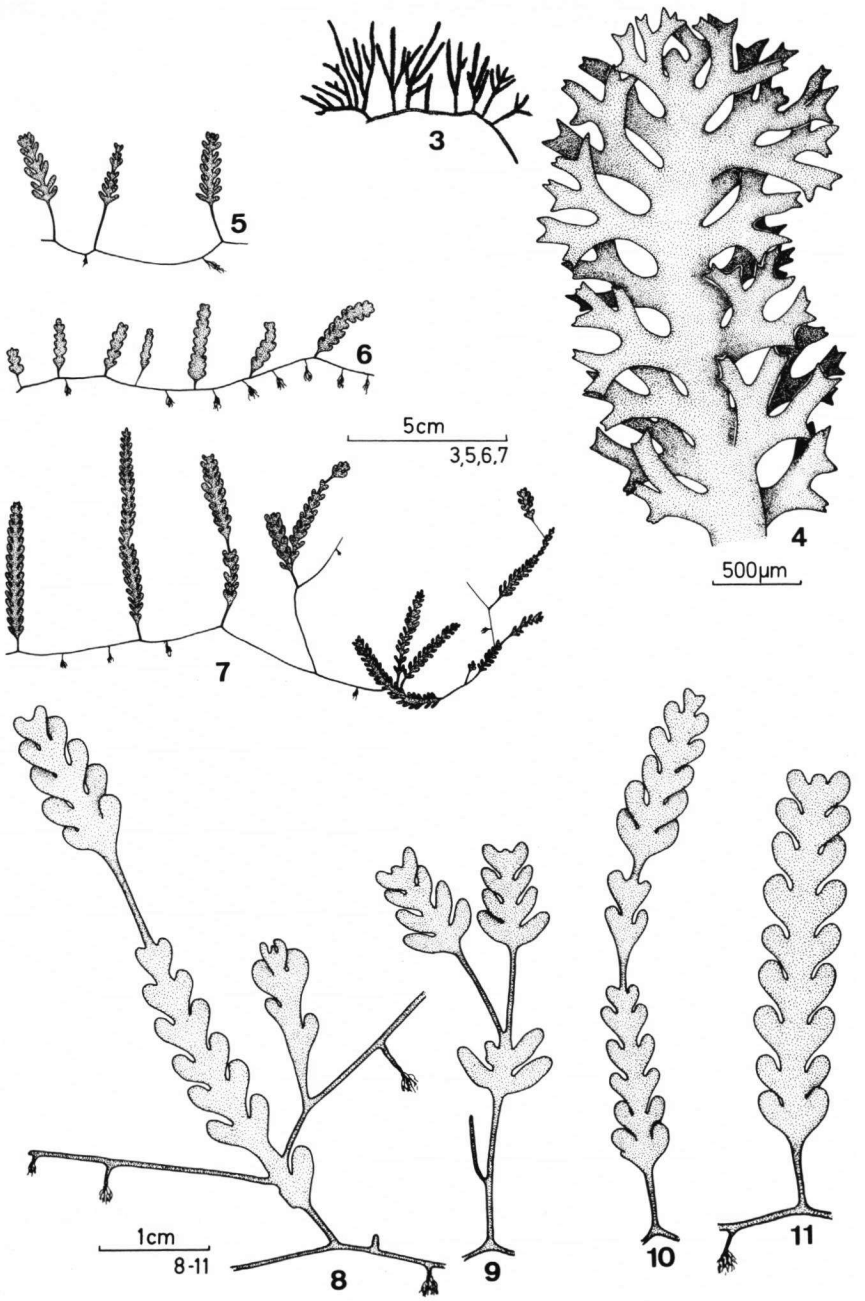
The specimens from Papua New Guinea completely correspond with Taylor's description of material from the Andaman Sea. This taxon was noticed on extremely shaded places of the vertical coral cliff, at –30 and –25 m where it occurred as restricted coverings, and on silt-covered dead coral, at –3 m in very turbid water.

Reference material: *HEC 4681:* 16-8-1980, Manam, Borda reef, –30 m; *HEC 4724:* 24-8-1980, Manam, Baliau, –25 m; *HEC 6555:* 20-8-1986, Ulingan Bay (W. side), –3 m.

Caulerpa lentillifera J. Agardh var. **kilneri** (J. Agardh) Weber-van Bosse. — Figs. 39–41.

Described from eastern Indian and western Pacific Oceans (Weber-van Bosse, 1898).

Stolons terete, sparsely branched, 1–1.5 mm in diameter; erect fronds generally simple, up to 6 cm high, composed of a terete rachis, bearing subspherical ramelli



Figs. 3–4. *Caulerpa elongata* Weber-van Bosse: 3. General morphology; 4. detail of an erect frond (*HEC 4224*). – Figs. 5–11. *C. manorensis* Nizamuddin: 5–7. General morphology; 8–10. specimens with intercalary cylindrical growth and ramification; 11. a 'normal' frond (5 & 10 *HEC 4624*, 6 *HEC 4645*, 7–9 & 11 *HEC 4355*).

placed on 5–8 longitudinal rows, 1(–2) mm in diameter, supported by short subconic pedicels.

Reference material: *HEC 6528:* 18-8-1986, Madang Province, Megiar Harbour, on silty sand, –0.5 to –1 m, in an extremely sheltered habitat, partly between seagrasses, partly on bare sand, forming an open vegetation.

Caulerpa manorensis Nizamuddin — Figs. 5–11.

This species of the Filicoideae section was described from Karachi (Pakistan) by Nizamuddin (1964) and has never been mentioned since.

Plant stoloniferous, the stolons terete (diameter of 1 mm), being completely submerged in the sand, branching irregularly. The erect fronds are 1–3 cm apart on the stolon; stipes cylindrical without swollen base, (2–)5–15(–20) mm long; blade flat and thin, linear and simple (a single specimen was forked: fig. 9), (2–)3–4(–7) cm tall and 6–8 mm wide. These fronds are pinnately divided with a compressed rachis of 1–2 mm width; ramuli compressed, always opposite, ascending, slightly narrowed at the base, almost contiguous, sometimes even slightly superposed at the widest part. Some blades are composed of separate groups of opposite ramuli as if growth stopped and started again, first forming a new stipe on the existing blade (figs. 7–10). Blades are frequently proliferating, forming new stolons (figs. 7, 8) and even new lateral blades (fig. 7).

Caulerpa manorensis is only growing on quiet places on sand or muddy sand: lagoons and sheltered bays (–6/–10 m). Along exposed coasts it has been observed from –20 m downward, with a good development between –30 and –40 m and an optimal growth at –35 m. It is generally associated with *Halophila decipiens* Ostenfeld (det. Den Hartog) with which it forms an open plant community over vast surfaces.

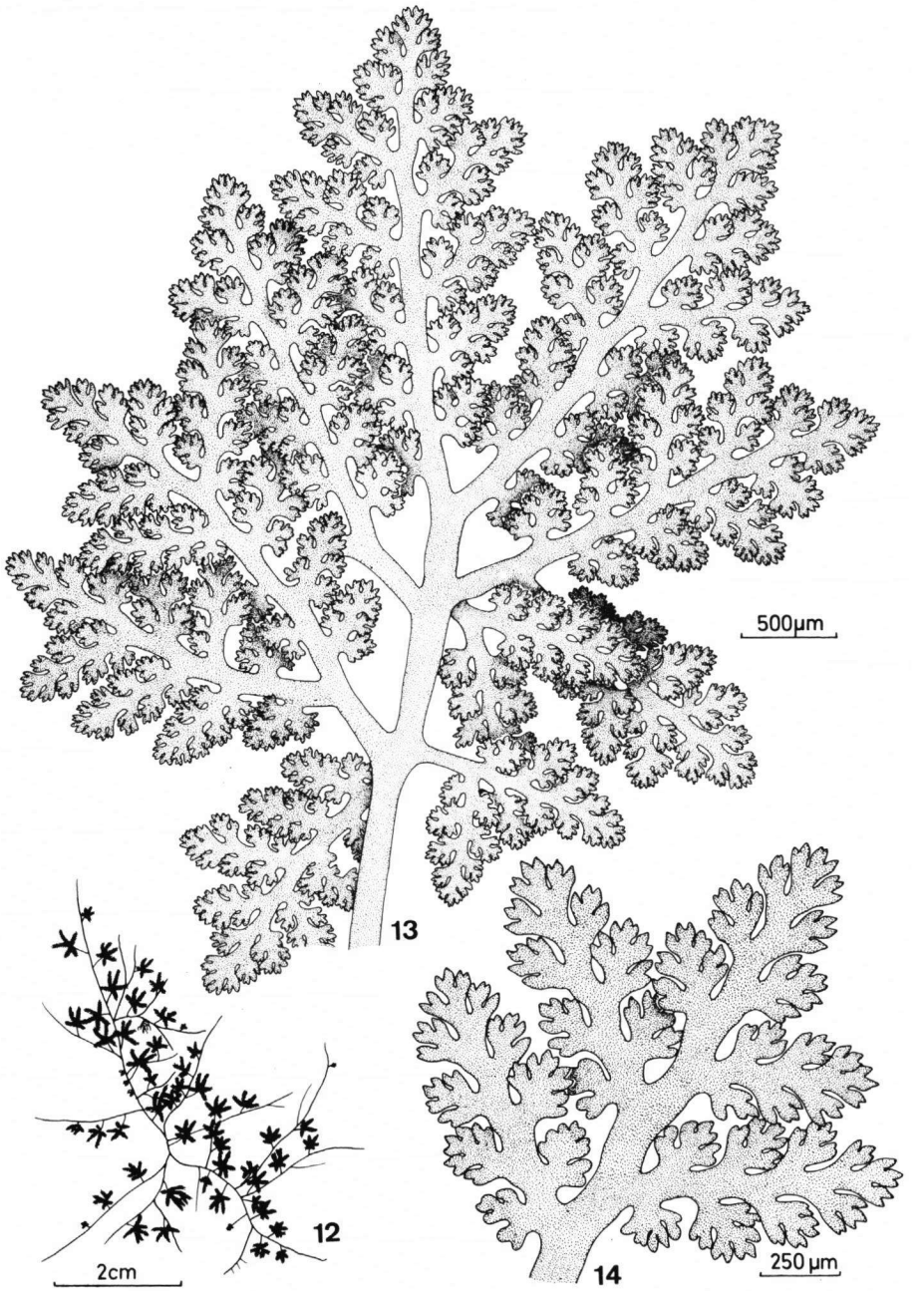
This species is close to *C. veravalensis* Thivy & Chauhan, described from the eastern coast of India (Thivy & Chauhan, 1963) and to *C. quereshii,* described from southern East Pakistan by Nizamuddin (1964), which should be considered as *C. veravalensis.*

Specimens of *C. manorensis* were collected in different habitats between –6 m and –40 m; they always show the same morphology without any tendency to *C. veravalensis.*

Caulerpa manorensis is more slender in all parts, fronds present a distinct stipe, without bulbous base, and its ecology is completely different. The differences between *C. manorensis* and *C. veravalensis* (= *C. quereshii*) are grouped in table 1.

Caulerpa manorensis differs from *C. ashmeadi* Harvey, only known from the Caribbean area of the Atlantic Ocean (Harvey, 1851; Boergesen, 1907; Taylor, 1960), and *C. faridii* Nizamuddin, only described from Karachi (Pakistan) (Nizzamuddin, 1964), by the flat and large pinnules (cylindrical for both other species).

It differs from *C. floridana* Taylor, *C. mexicana* (Sonder) J. Agardh and *C. taxifolia* (Vahl) C. Agardh by the round apex of the ramuli, apiculate ones occur in the other species.

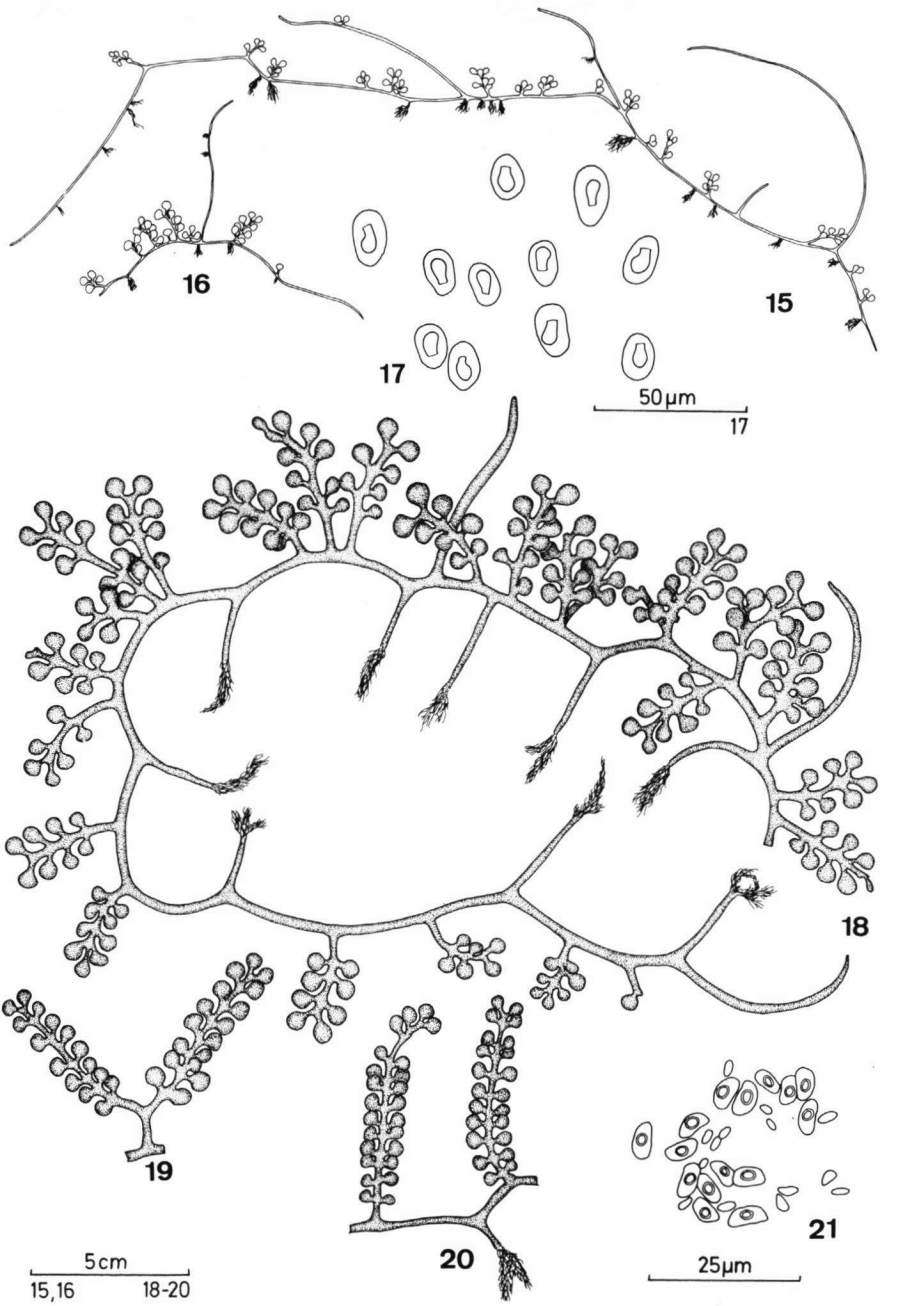


Figs. 12–13. *Caulerpa filicoides* Yamada var. *andamensis* Taylor: 12. General morphology; 13. an erect frond; 14. detail of the frond (*HEC 4724*).

Reference material: *HEC 4355:* 13-6-1980, N. Laing Island, muddy sand, –35 m; *HEC 4374:* 17-6-1980, Laing Island lagoon, muddy sand, –20 m; *HEC 4574:* 22-7-1980, Laing Island reef pass, muddy sand, –30 m; *HEC 4624:* 11-8-1980, Hansa Bay, between two wrecks, muddy sand, –6/–10 m; *HEC 4645:* 13-8-1980, Hansa Bay, Durangit reef, sand, –37 m; *VD 5821:* 26-1-1980, Hansa Bay in front of Sisimangun, muddy sand, –9 m.

Table 1

	Caulerpa veravalensis		*Caulerpa manorensis*	
	India Thivy & Chauhan 1963	Pakistan (*C. quereshii*) Nizamuddin 1964	Pakistan Nizamuddin 1964	Papua NewGuinea
Stolons	on rocky substratum	on rocks	sandy substratum	submerged in the soft substratum
diameter	1.5–2.0 mm	1 mm	1 mm	1 mm
Fronds				
Stipe	swollen base	–	–	no swollen base
length	1–2.5 mm	–	–	2 – 20 mm
Blade	flat	flat	flat	flat and thin
length	4.2–21.5 cm	14 cm	4 cm	3–5 cm
width	7–15 mm	–	4 mm	6–8 mm
midrib	1–2 mm	2 mm	2 mm	1–2 mm
Ramuli	opposite to alternate	subalternate to opposite	opposite, rarely alternate	opposite
apex	slightly curved, occasionally furcate	broadly rounded or dichotomously furcate	round	slightly curved, round
length	5–7 mm	3 mm	3 mm	3–4 mm
width	1–1.5 mm	2 mm	1 mm	(1–)1.5–2 mm
	sides parallel	stalked	constricted at the base	narrowed at the base
section	flat	–	–	flat
form	oblong	compressed	obovate	obovate
Ecology	at low tide-level, exposed to surf, rocky substratum	sublittoral pools near mangroves or 'rough' conditions	lower littoral	quiet places, sheltered bays –6/–10 m depth; open sea: (–30) –35(–40) m depth



Figs. 15–17. *Caulerpa microphysa* Feldmann: 15 & 16. General morphology; 17. detail of the plasts with pyriform pyrenoids. – Figs. 18–21. *C. opposita* Coppejans & Meinesz: 18. General morphology of the type specimen; 19. a branched erect frond; 20. well developed erect fronds; 21. plasts with circular pyrenoids and leucoplasts (18 *HEC 4245*, 19–21 *HEC 4688*).

Caulerpa microphysa Feldmann — Figs. 15, 17.

This species was first considered as a form of *C. racemosa* var. *clavifera* (Weber-van Bosse, 1898), then as a variety of *C. racemosa* var. *microphysa* (Weber-van Bosse) Taylor (Taylor, 1928). Feldmann (1955) distinguished this species by the presence of a single and large pyrenoid in each plastid.

Stolons 0.5–1 mm diameter, sparsely ramified, bearing shortly stalked upright fronds (max. 1 cm high), composed of (1–)2–6 grouped spherical ramuli with a diameter of 2 mm. Plasts with a single large pyriform pyrenoid (fig. 17).

Rather frequent but generally not in large quantities; mostly on sand and muddy sand but also on dead coral surfaces; from –5 to –38 m; sheltered biotopes.

Reference material: *HEC 5273:* 1-6-1980, Laing Island, interior slope of fringing reef, vertical coral surface, –12 m; *HEC 4342:* 11-6-1980, Purar reef, landward, slope, on vertical coral surface, –25 m; *HEC 4400:* 23-6-1980, Laing Island, island slope in the lagoon, muddy sand, –9 m, locally abundant; *HEC 4543:* 19-7-1980, Barol Point, on dead coral, horizontal muddy substrate, –6 m; *HEC 4572:* 19-7-1980, Laing Island lagoon, muddy sand, amongst the seagrass *Halophila sp.*, –15 m; *HEC 4682:* 16-8-1980, Manam, Borda reef, in coral crevice in cliff, –30 m; *HEC 4689:* 17-8-1980, Kerry Ann's Pinacle, on coraligenous sand, horizontal substrate, 38 m; *HEC 4723:* 24-8-1980, Manam, Baliau, on coral fragments on sand, –5 m.

Caulerpa opposita Coppejans & Meinesz, *spec. nov.* — Figs. 18–21.

Species of the Sedoideae J.Agardh section.

Plantae grossae, stoloniferae, stolones diametro ad 3 mm, nudi, rari furcati; rami foliares 4–7 cm altitudine, rachide 2 mm latitudine, cylindrici, ramellos oppositos ferente; ramelli obliquiter ascendentes, contiqui aut paulo distantes; pedicelli brevi (1–2 mm), sed perspicue, parte abrupte inflata sphaerici, usque ad 7 mm diametro, margine distali subtruncato. Chromotophora pyrenoide circulare unico instructa. Habitat in Oceani Pacifici ad litus Papua Nova Guineense, in locis tranquillioribus, inter 10 et 50 m infra superficiem maris.

Type specimen: *HEC 4245* in Herbarium Rijksuniversiteit Gent (GENT), Belgium collected at Laing Island, reef pass, –20 m, muddy sand, 28-5-1980 (iso BR, L, Meinesz pers. herb., Nice).

Stolons reaching 1 m (*HEC 4688*), cylindrical, sparingly ramified; diameter 2–3 mm, not completely lying down on the substrate but looking like an arch bridge. Rhizoids 3(–5) cm long, 2–3 mm diameter at the base. Fronds upright, usually 4–5 cm high, reaching 7 cm; 2 mm in diameter. Ramuli opposite in one plane, ascending, very close to each other, subspherical, somewhat flattened at the top but remaining convex with a diameter of 5(–7) mm, clearly stalked; (2–)4–5(–13) pairs of ramuli per adult frond; at least occasionally fronds ramified (fig. 19). Each chloroplast with one circular pyrenoid (fig. 21).

Caulerpa opposita was the most frequent *Caulerpa* species below 10 m in Hansa Bay. It was observed down to 50 m, locally (Kerry Ann's Pinacle) forming dense (80% cover), almost monospecific coverings over vast areas, on sand and muddy sand.

Reference material: *HEC 4245:* type specimen, see above; *HEC 4376:* 17-6-1980, Laing Island, interior slope (30°) of fringing reef, muddy sand, –13 m; *HEC 4521:* 17-7-1980, outer Legoarent Island (Bogia), S. side, on sand between coral pinacles, slope of 45°, from –10 to –40 m; *HEC 4680:* 16-8-1980, Manam, Borda reef, on coral debris and sand, basis of the cliff, –50 m; *HEC 4688:* 17-8-1980, Kerry Ann's Pinacle, coverage of 80% over large surfaces from –32 to –38 m; *HEC 4721:* 24-8-1980, Manam, Baliau, on coral at the basis of the coral cliff, –25 m; *VD 5715:* 11-1-1980, Laing Island, in the lagoon, sand, –12 m.

Discussion: This species resembles *C. bikinensis* Taylor but that species has no pyrenoids in the plasts (controlled in specimens from the atoll of Takapoto, French Polynesia, Meinesz et al., 1981). In *C. bikinensis* the ramuli are neither opposite (but alternate), nor subspherical, nor clearly stalked.

Caulerpa racemosa (Forsskål) J.Agardh var. **clavifera** (Turner) Weber-van Bosse — Figs. 22, 23.

Described from Indian, Pacific and Atlantic Ocean (Weber-van Bosse, 1898).

This *Caulerpa* is rather rare in the Hansa Bay region. The few specimens found are densely ramified, but like those from French Polynesia (Meinesz et al., 1981) they are small, the fronds reaching at most 2 cm height, the ramuli having a diameter of only 2–3 mm. Plasts without pyrenoids.

Reference material: *HEC 4609:* 9-8-1980, between Kanamur and Bagania (200 km W. of Madang), midlittoral rock-pool; *HEC 4722:* 24-8-1980, Manam, Baliau, on coral debris on sandy bottom, –5 m; *HEC 4736:* 28-8-1980, Laing Island, on coral debris in the lagoon, –1 m.

Caulerpa racemosa (Forsskål) J.Agardh var. **peltata** (Lamouroux) Eubank — Fig. 24.

Described from Indian, Pacific and Atlantic Ocean (Weber-van Bosse, 1898).

Very rare in the investigated area and only occurring in small numbers. The ramuli are disc-like and measure 3 to 7 mm in diameter. Specimen *HEC 4542* presents fronds corresponding to var. *peltata* and others to var. *clavifera* on the same stolon. According to the experiments of Peterson (1972) this seems to be due to light variation (low irradiance: var. *peltata*, strong irradiance: var. *clavifera*).

Reference material: *HEC 4402:* 23-6-1980, Laing island, on rusted anchor in lagoon, –12 m; *HEC 4473:* 14-7-1980, Laing Island, E. coast, seaward vertical coral surface, –3 m; *HEC 4542:* 19-7-1980, Hansa Bay, Barol point, on coral debris, muddy bottom, –4/–7 m.

Caulerpa serrulata (Forsskål) J.Agardh emend. Boergesen var. **serrulata** (Weber-van Bosse) Tseng — Figs. 25, 26.

Described from Indian, Pacific and Atlantic Ocean (Weber-van Bosse, 1898).

Stolons frequently submerged in the sand; fronds either strongly spirally twisted,

or flat. A very narrow form (1.5 mm wide) with tiny denticulation is represented by the specimen *HEC 4247*.

This is a very common *Caulerpa* in the Hansa Bay region, especially on sheltered, shallow, well lightened places with coarse sand. It does not seem to develop well when the substrate becomes too muddy.

Reference material: *HEC 4231:* 27-5-1980, Laing Island, extremely warm pools along the lagoon, –30 cm; *HEC 4247:* 28-5-1980, Laing Island, reef pass, extremely muddy, –18 m; *HEC 4272:* 1-6-1980, Laing Island, intern slope of the lagoon, coralligenous gravel, –10 m; *HEC 4286:* 2-6-1980, Hansa Bay, Bisalpap reef, on coralligenous gravel, –25 m; *HEC 4326:* 10-6-1980, Hansa Bay, Purar reef (seaward) on sandy platform on slope of 60°, –30 m; *HEC 4668:* 15-8-1980, Manam, Borda reef, coarse sand, reef platform, –10 m; *HEC 4669:* 24-8-1980, Manam, Baliau, coarse sand with coral fragments, –10 m.

Caulerpa serrulata (Forsskål) J. Agardh emend. Boergesen var. **pectinata** (Kützing) Taylor — Figs. 27, 28.

Described from the Atlantic Ocean (Weber-van Bosse, 1898, as *C. freycinetii* var. *pectinata* Kützing; Taylor, 1960) and reported recently from the Pacific Ocean (Meinesz et al., 1981).

This variety is characterized by the regularly dentate frond, the specimens from Papua New Guinea are less spirally twisted than var. *serrulata*. Some of the specimens of *HEC 4506* are three-winged, at least for some part of the frond. Observed only twice.

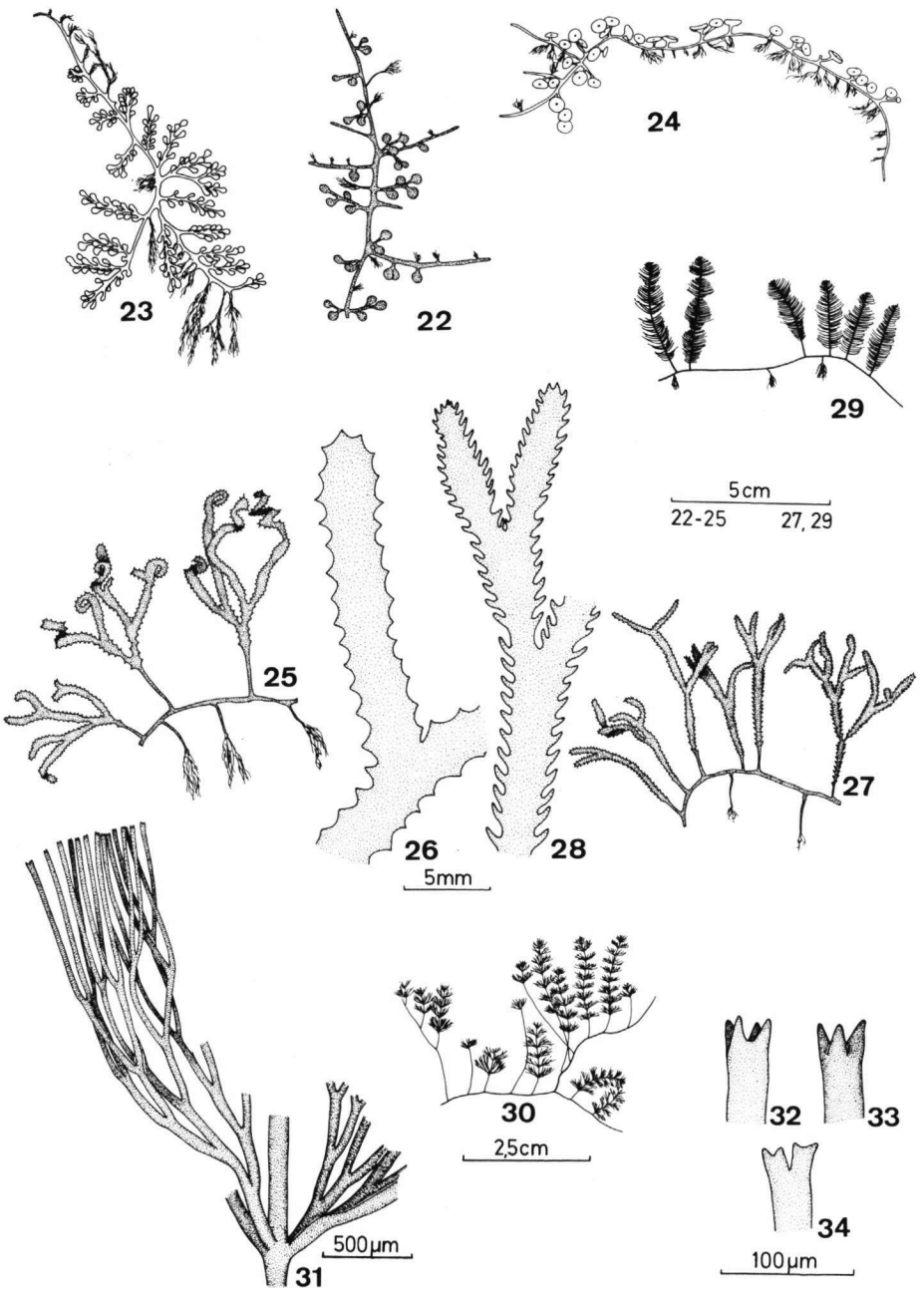
Reference material: *HEC 4506:* 17-7-1980, outer Legoarant Island, Bogia, landwards, coralligenous sand, –3 m; *HEC 4573:* 22-7-1980, Laing Island, reef pass, on sand between pinacles, –13 m.

Caulerpa sertularioides (Gmelin) Howe — Fig. 29.

Described in Indian, Pacific and Atlantic Ocean (Weber-van Bosse, 1898, as *C. plumaris* (Forsskål) J. Agardh). The upright fronds are 2 to 3.5 cm high. The pinnules are of unequal length, giving a Christmas-tree like aspect to the fronds.

Reference material: *HEC 4422:* 25-6-1980, Laing Island lagoon, on the basis of *Acropora sp.*, –6 m; *HEC 6458:* 15-8-1986, Laing Island lagoon (N), coarse sand between coral pebbles, –0.5 m; *HEC 6490:* 17-8-1986, Megiar harbour,

Figs. 22–24. *Caulerpa racemosa* (Forsskål) J. Agardh: 22 & 23. var. *clavifera* (Turner) Weber-van Bosse: General morphology (22 *HEC 4722*, 23 *HEC 4736*); 24. var. *peltata* (Lamouroux) Eubank: General morphology. – Figs. 25–28. *C. serrulata* (Forsskål) J. Agardh emend. Boergesen: 25 & 26. var. *serrulata:* 25. General morphology; 26. detail of the apex of an erect frond (*HEC 4272*); 27 & 28. var. *pectinata* (Kützing) Taylor: 27. General morphology; 28. detail of the apex of an erect frond (*HEC 4573*). – Fig. 29. *C. sertularioides* (Gmelin) Howe: General morphology. – Figs. 30–34. *C. verticillata* J. Agardh: 30. General morphology; 31. detail of a verticil of lateral branchlets; 32–34. details of apices of the lateral branchlets (*HEC 4697*).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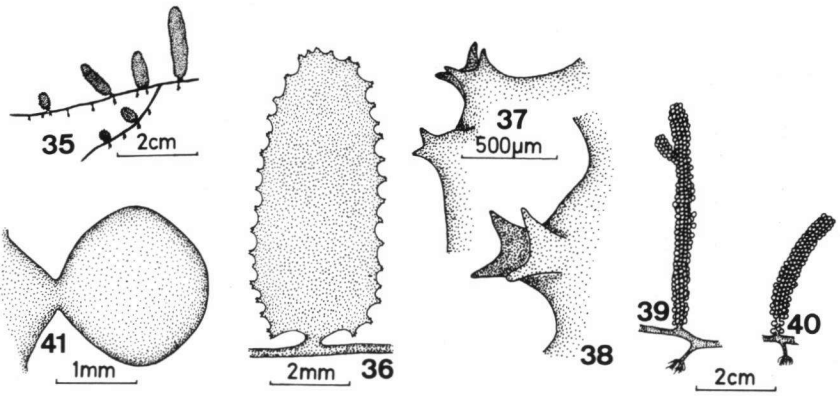

Figs. 35–38. *Caulerpa brachypus* Harvey: 35. General morphology; 36. morphology of the erect frond; 37 & 38. details of the spiny outgrowths on the serrate margin (*HEC 6556*). – Figs. 39–41. *C. lentillifera* J. Agardh var. *kilneri* (J. Agardh) Weber-van Bosse: 39 & 40. General morphology; 41. detail of a subspherical ramellus supported by a subconic pedicel (*HEC 6528*).

sand between seagrasses and coral boulders, sheltered, –1 m; *HEC 6527:* 18-8-1986, Bogia Bay, silty sand, between seagrasses, sheltered habitat, –0.5 to –1 m; *HEC 6668:* 10-7-1986, Laing Island lagoon (S), sand, –30 cm.

Caulerpa verticillata J. Agardh — Figs. 30–34.

Described from Indian, Pacific and Atlantic Ocean (Weber-van Bosse, 1898).

The specimens collected in the Hansa Bay area are very slender, compared to those from French Polynesia (Meinesz et al., 1981): ramified stolons having a diameter of 200 µm (French Polynesia: 225–375 µm); vertical axes 1.5–2.5(–3) cm high, diameter at the basis 150 µm (French Polynesia: 225 µm), at the top 80 µm (French Polynesia: 70–85 µm).

The Polynesian specimens carry superposed tufts of ramuli, most of the time composed of 2 or 3 series of verticils. On the Hansa Bay material the tufts of ramuli are always constituted by single verticils of 4 ramuli. These are dichotomously branched, 3 to 5 times, having a diameter of 27 µm at the top and presenting 2, 3 and frequently even 4 terminal mucrons.

Caulerpa verticillata has been collected once only in the area studied.

Reference material: *HEC 4697:* 18-8-1980, Laing Island, West, on the basis of coral pinacle and adjacent sand, –29 m.

CONCLUSION

This study is based on an abundant collection from a restricted area (75 herbarium numbers), including 13 taxa (11 species) of *Caulerpa,* and gives data about the biotope of each collected specimen. A new species is described (*C. opposita*). The re-

sults can be used to extend the biogeographical data on the distribution of the genus *Caulerpa* in a region where the algal flora remains poorly known. Papua New Guinea lays on the limit between the Indian and the Pacific Ocean and is close to Australia where numerous endemic species occur.

The geographic distribution of 7 less common species in the Indian and the Pacific Oceans have been noticeably enlarged (*C. brachypus, C. lentillifera* var. *kilneri, C. manorensis, C. microphysa, C. elongata, C. serrulata* var. *pectinata, C. filicoides*).

Twelve *Caulerpa* species and numerous varieties have been mentioned from the Philippines and Indonesia (Indian Ocean, NW. of Papua New Guinea) (Gilbert, 1942); 28 *Caulerpa* species occur in the Micronesian Archipelago (Pacific Ocean, NE. of Papua New Guinea) (Tsuda & Wray, 1977).

The 11 species mentioned in this study were collected in a rather restricted area; supplementary investigations along other shores of Papua New Guinea should complete this first list.

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