

**BRAZILIAN DEEP WATER MARINE ALGAE
ADDITIONS TO THE BRAZILIAN FLORA IV**

**ALGAS MARINHAS BENTÔNICAS DE PROFUNDIDADE
ADIÇÕES À FLORA BRASILEIRA IV**

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SUMMARY

This paper refers to the finding of *Avrainvillea longicaulis* (Kützing) Murray et Boodle, *Caulerpa floridana* Taylor, *Siphonocladus rigidus* Howe e *Siphonocladus tropicus* (Crouan) J. Agardh, in deep water at several points along the north-eastern coast of Brazil. These species were previously known to occur only in Caribbean region in the North Atlantic.

RESUMO

Refere-se ao encontro das espécies *Avrainvillea longicaulis* (Kützing) Murray et Boodle, *Caulerpa floridana* Taylor, *Siphonocladus rigidus* Howe e *Siphonocladus tropicus* (Crouan) J. Agardh na costa nordeste do Brasil. Estas plantas foram obtidas por dragagens efetuadas pelos navios "Canopus" e "Almirante Saldanha". As espécies eram anteriormente conhecidas do litoral americano apenas da região carábica, no Atlântico Norte.

INTRODUCTION

The genus *Avrainvillea* is represented on the Brazilian coast by *A. nigricans* De-caigne, a common Caribbean plant and *A. atlantica* Joly et Yamaguishi, known only from Southern Brazil. The finding of *A. longicaulis* (Kützing) Murray et Boodle another frequent species in the Caribbean area is of interest.

The genus *Siphonocladus* was unknown on the Brazilian coast. The two species, previously found in the Caribbean area, are reported here for the first time.

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Caulerpa floridana Taylor, known only from the original description, is here reported from several collections along the Brazilian coast, thus enlarging very much its range of distribution.

DESCRIPTIONS

AVRAINVILLEA LONGICAULIS (KUTZING) MURRAY ET BOODLE

J. Bot., 27 (315), p. 70, 1889

Rhipilia longicaulis Kützing

Tab. Phyc., VIII, p. 13, 1858.

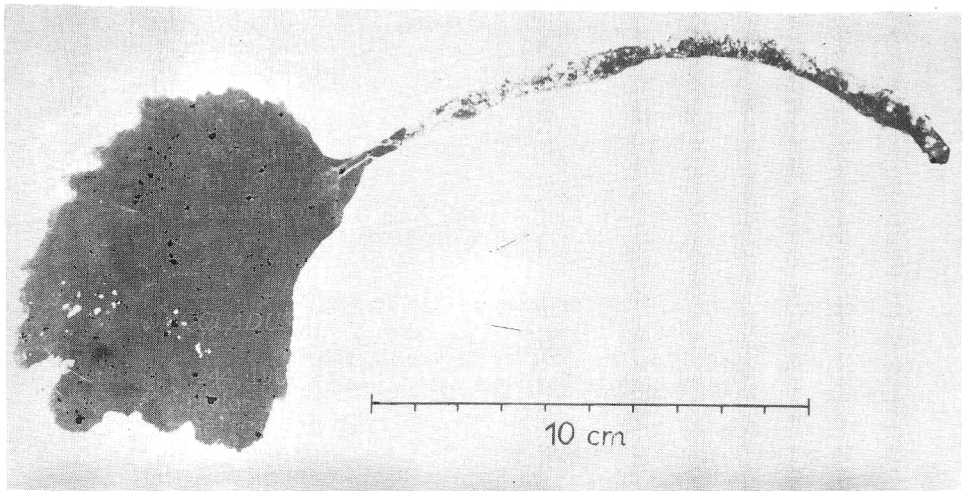
Vickers 1908, p. 23, pl. 31; Collins and Hervey 1917, p. 57;

Taylor 1960, p. 160, pl. 19, fig. 1.

Figs. 1 – 9

Text. fig. 1

Plants large velvety, black-greenish on drying, measuring up to 24,5 cm high with a flabellar portion on top of a long stipe which is cylindrical below and flattened above. Stipe measuring from 6 to 15 cm long, 0,5 to 0,8 cm wide. Flabellar portion roundish, spatulate to obovate measuring from 6,5 to 10,5 cm long, being from 5 to 8 cm wide, obscurely zonate, relatively thin with a roundish cuneate to cuneate-truncate base with entire, lacerate or lobate margins.



Text-Figure 1 *Avrainvillea longicaulis*. Photo of a typical plant. The characteristic "tuberous" base is missing.

Figura 1 Exemplar característico de *Avrainvillea longicaulis*. Falta a base "tuberosa".

Medullary filaments with infrequent dichotomies, thicker than the cortical ones, smooth or sometimes slightly torulose, a little constricted above dichotomies, with a diameter varying from 25 to 43 μm (usually 35 μm).

Cortical filaments frequently dichotomic, more torulose than the medullary ones, distinctly deeper yellow than the medullary ones, ending irregularly, measuring from 17 to 35 μm of diameter (usually 25 μm).

Several specimens were secured by dredging at station 17 of "Canopus" (01° 35' S 38° 07' W) at a depth of 53-54 m on July 14, 1965, off the coast of Ceará State (SPF 2642).

This species was formerly known from several places in the Caribbean region, where it was reported from just below high tide level up to a depth of only 30 m.

CAULERPA FLORIDANA TAYLOR

Mar. alg. east. trop., p. 143, 1960.

Taylor 1928 (*Caulerpa ashmeadii*), p. 95, pl. 12, fig. 11, pl. 13, fig. 1 (p.p.)

Figs. 10 - 12

Plants up to 15 cm high; erect blades arising from a rhizome - like portion; the blade is short (1,5 cm), stalked, has distichously placed pinules and is up to 2,5 cm wide. The pinules average 1,5 cm long and are about 850 μm wide, ending in a distinct apiculum.

The plants were secured by dredgings of the Navy Oceanographic ship "Almirante Saldanha" at the following stations: 1731A at 02° 22' 0" S, 41° 51' 5" W at a depth of 37 m (30 Oct. 1967); 1688 at 04° 33' 5" S, 36° 58' 0" W at a depth of 49 m at 02° 22' 0" S, 41° 28' 0" W (30 Oct. 1967) and D - 9 at 17° 00' 0" S, 39° 12' 0" W (26 Sept. 1967). The first station is located off the coast of Ceará State and the last one off the coast of Bahia State.

SIPHONOCLADUS RIGIDUS HOWE

Bull. Torrey Bot. Club, 32, p. 244, 1905.

Collins and Hervey 1917, p. 52; Taylor 1928, p. 73, pl. 6, fig. 5; 1960, p. 114, pl. 6, fig. 7; Chapman 1961, p. 91, fig. 104.

Figs. 13 - 15

Plants small, up to 4 cm high. Primary filament with 900 μm diameter, branches up to 550 μm long; branching from the primary filament mainly at its upper portions. Lateral branches, usually unilaterally placed, with different lengths. All branching starting

from the cells (segments) into which the upper portions of the primary vesicle are irregularly divided.

This beautiful plant was dredged at station 1751 by the Navy Oceanographic ship, "Almirante Saldanha", off the coast of Maranhão State at 00° 37' 00" N, 44° 40' 00" W at a depth of 44 m.

SIPHONOCLADUS TROPICUS (CROUAN) J. AGARDH

Till. Alg. Syst. 23 (2), p. 105, 1887

Apjohnia tropica Crouan in Mazé et Schramm

Alg. Guad., p. 105, 1870 - 1877.

Vickers 1908, p. 20, pl. 18; Boergesen 1913, p. 61; Collins and Hervey 1917, p. 52; Boergesen 1925, p. 73; Taylor 1928, p. 73; Boergesen 1946, p. 14; 1951, p. 5; Egerod 1952, p. 356, pl. 30, figs. 1g, 2b - q; Taylor 1960, p. 114, pl. 7, fig. 1; Chapman 1961, p. 90, fig. 103.

Figs. 16 - 20

Plants up to 4 cm high and about 2 mm in diameter, abundantly and repeatedly ramified from the primary vesicle, which measures up to 900 µm of diameter. Secondary filaments with a diameter of about 440 µm. Tertiary filaments very short. Primary vesicle large with many constrictions near its base; multiserial at maturity with abundant branching, starting all around the axis. Branches of all orders clavate or slightly tapered at the apex, usually, showing constrictions at the bases.

This species was obtained by dredging at stations: "Almirante Saldanha" 1751, 00° 37' 00" N, 44° 40' 00" W at a depth of 44m off the coast of Maranhão State; Recife Survey Station 109, 07° 58' 07" S, 34° 42' 04" W at a depth of 29 m off the coast of Pernambuco State, also obtained at station 41 of the Itamaracá Survey at a depth of 1,65 m along the coast of this island (Pernambuco State), near the shores of the eastern side.

ACKNOWLEDGMENTS

We are grateful to Mrs. M.M. Ferreira and Y. Yoneshigue-Braga for certain drawings used in this paper.

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Avrainvillea longicaulis

- Figs. 1 - 9 Types of frond filaments
 1 - 3 From the free border
 4 Dichotomy showing constriction
 5 - 6 Internal blade filaments; note torulation
 7 - 9 Stipe filaments

Figs. 10 - 12 *Caulerpa floridana*

- 10 Terminal portion of a lateral pinule; note apiculum
 11 Median portion of a frond
 12 Terminal portion of the frond

Figs. 13 - 15 *Siphonocladus rigidus*

- 13 Whole plant
 14 Basal portion of the primary vesicle
 15 A plant without the basal portion

Avrainvillea longicaulis

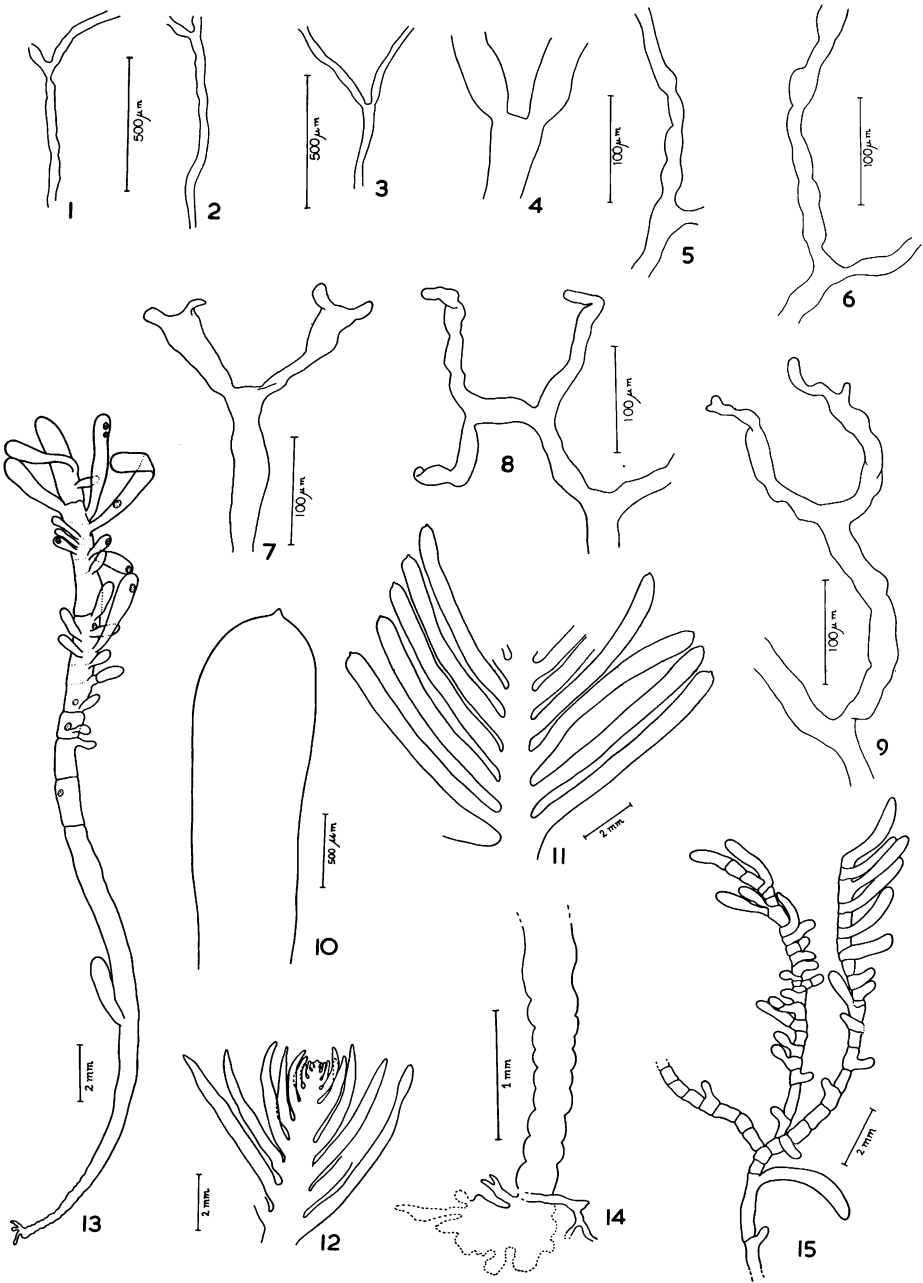
- Figs. 1 - 9 Diversos tipos de filamentos da fronde
 1 - 3 Filamentos marginais da fronde
 4 Filamento da fronde, mostrando a constricção na região da dicotomia
 5 - 6 Filamentos da porção interna da fronde; note torulações
 7 - 9 Filamentos do estipe

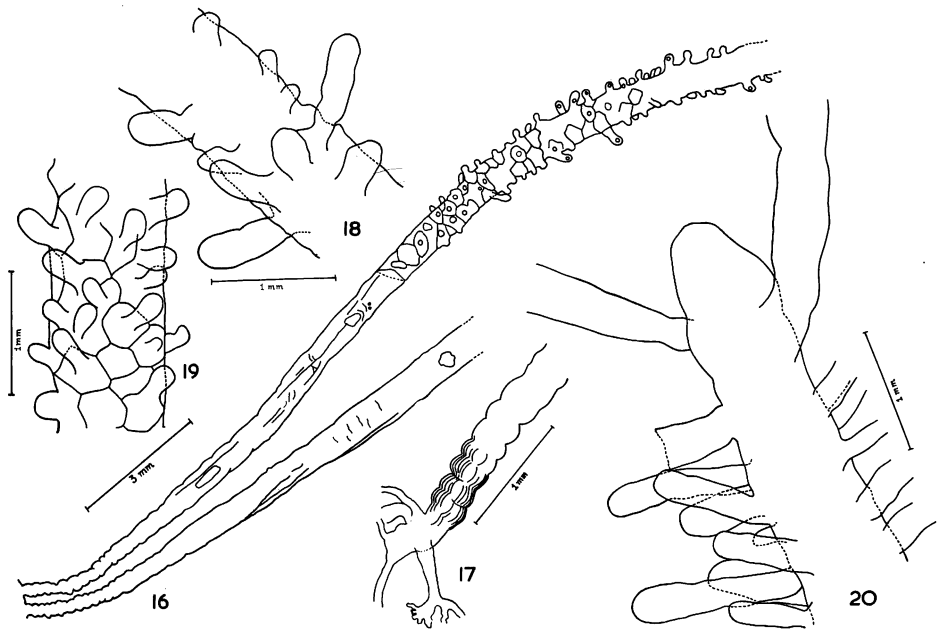
Figs. 10 - 12 *Caulerpa floridana*

- 10 Porção terminal de uma pinula lateral; note ápículo
 11 Porção mediana da fronde
 12 Porção terminal da fronde

Figs. 13 - 15 *Siphonocladus rigidus*

- 13 Planta inteira
 14 Porção basal da vesícula primária
 15 Planta sem a porção basal





Figs. 16 - 20 *Siphonocladus tropicus*

- 16 Part of an adult plant
- 17 Basal portion of the primary vesicle
- 18 - 19 Detail of the branching
- 20 Upper portion of the primary vesicle

Figs. 16 - 20 *Siphonocladus tropicus*

- 16 Parte de uma planta adulta
- 17 Parte basal de uma vesícula primária
- 18 - 19 Detalhe da ramificação
- 20 Porção superior de uma vesícula primária