

NOTES ON *CAULERPA* II

NOTAS SOBRE *CAULERPA* II

* A. B. Joly

** J. Semir

* Departament of Botany, University of São Paulo, SP, and State University of Campinas, SP.

** Departament of Botany, State University of Campinas, SP.

Bol. de Botânica **1**, 103-108 (1973)

ABSTRACT

This paper describes a new variety of *Caulerpa brachypus* Harvey var. *nordestina* Joly et Semir var. nova, besides giving new data on the distribution of the recently described var. *brasiliiana* of this same species.

1 — INTRODUCTION

During the study of the deep-water plants collected on various surveys along the north and northeastern coasts of Brazil, several interesting plants were found. Among those that attracted our attention was a small, peculiar *Caulerpa* that we could not place among the species known to occur in the area or even among the known Atlantic plants. Quite recently (Joly et col. in press) we described a new variety of *Caulerpa brachypus* Harvey, thus reporting this Indo-Pacific plant for the first time in the Atlantic area. After a thorough revision of the pertinent papers and a rechecking of this variety we came to the conclusion that the plant described below is best placed as another new variety of *Caulerpa brachypus* Harvey.

2 — DESCRIPTION

Caulerpa brachypus Harvey var. *nordestina* Joly et Semir, var. n.*
Plate I, figs. 1-5.

Plants decumbent with a strong rhizome-like portion with a diameter varying from 416 μ to 656 μ , bearing tufted rhizoids irregularly spaced and erect, entire, laminar portions. These are from 1.1 up to 5.4 cm high, non proliferous, with a very short stalk-like almost cylindrical portion up to 0.5 cm expanding gradually into the blade, which is up to 0.5 cm wide, com-

monly 0.4. Sometimes this stalk-like portion is branched once or a few times, each branch with its own lamina. The blade is conspicuously undulate at both margins giving an appearance of a marginal denticulate lamina, which is not the case. Proliferations from the blades are seldomly found and apparently they are related to damaged primary blades (fig. 3).

Caulerpa brachypus Harvey var. *nordestina* Joly et Semir var. n.*

A typo recedit lamina non denticulata sed eximie undulata. Rhizoma diâmetro usque 656 μ rhizoideis instructo. Folia erecta integra usque 5,4 cm alta, margine eleganter undulata non denticulata base attenuata, apicibus fere truncatis non apiculatis.

Typus: Dredged from a depth of 51 m off the coast of Recife, Pe on April 29, 1967, Station number 147 of the Recife Survey. SPF 2901.

The erect blades are entire, non proliferous sometimes once branched from the stalk (figs. 1, 2) and are irregularly spaced on the rhizome. The distance between neighbor blades varies from 1 up to 4,5 cm. The blades, have a distinct attenuate base (fig. 2, 4) and above this region have a uniform diameter, ending by a rounded, almost truncate tip devoid of teeth or apicula. Margins distinct, permanently ruffled, entire (figs. 3-5).

Plants collected by the Navy Oceanographic ship "Canopus" at station 85, off the coasts of Paraíba and Pernambuco State, LS 07°30'00" LW 34°29'00" at a depth of 63 m (12.20.1965) and station 93, off the coast of Rio Grande do Norte State, LS 06°04'30" LW 34°52'00" at a depth of 69 m (1.12.1966), besides station 147 of the Recife Survey, off the coast of Pernambuco State, LS 08°00'00" LW 34°32'09" at a depth of 51 m. (4.29.1967).

3 — DISCUSSION

This proposed new variety is a much stronger plant than *C. brachypus* Harvey var. *brasiliiana* Joly et Semir, recently described (Joly et col., in

CAULERPA BRACHYPUS VAR. *NORDESTINA* VAR. N.

FIG. 1 — A portion of a plant.

FIG. 2 — An entire blade, note infled margins and the short stalk-like stipe.

FIG. 3 — Detail of a new blade arising from the surface of a damaged primary blade.

FIG. 4 — Detail showing basal portion of the blade presented at fig. 2

FIG. 5 — Detail of the apex of the blade shown on fig. 2.

All figures are camera lucida drawings of formalin preserved material from the tipe and cotype collection.



press). This variety is a very delicate plant, collapsing when removed from the preserving liquid, whereas the proposed new variety maintain its shape fairly well when outside the preserving fluid. Other features are that the present plant is on the whole more robust than var. *brasiliiana* as can be seen from the data below.

	<i>Fronds</i>	<i>Rhizome diameter</i>	<i>Fronnd diameter</i>	<i>Margins</i>	<i>Base of the blade</i>	<i>Distance between fronds</i>
<i>C. brachypus</i> var <i>brasiliiana</i>	up to 2,5 cm	up to 347 μ	up to 0.5 cm	non undulate, with teeth	truncate	from 0.3 to 1.5 cm
<i>C. brachypus</i> var. <i>nordestina</i>	up to 5.4 cm	up to 656 μ	up to 0.5 cm	undulate, even	attenuate	from 1 to 4.5 cm

Regarding other varieties of this polymorphous species (See literature discussed in Joly et col. in press) our plant stands by itself, being fairly distinct from the ones found in the Indo-Pacific region. All these varieties were lumped together by Papenfuss and Egerod (1957). After a careful consideration of the reasons given by these authors when they placed all known varieties under synonymy we came to the conclusion that we could not possibly follow their views and simply describe this plant as *C. brachypus*. At one time we were inclined to give a new specific rank to our plants but at the end we came to the conclusion that what we are doing now is the most reasonable treatment.

At a certain point we were considering the species mentioned by Olliver (1928) and subsequently described by Dostal (1929) as *C. Olivieri*. This plant has some resemblances to our material but is quite distinct, lacking the permanent ruffling of the margins and the absence of marginal teeth, besides its branched blades. It is also very distinct from the varieties and forms presented by Boergesen (1940, 1946, 1948, 1951) all of them already discussed by Papenfuss and Egerod (1 c.). Nothing similar to our plants is found either in Weber van Bosse's Monographie des Caulerpes (Weber Van Bosse, 1898) or in her later work on the Siboga Expedition (Weber Van Bosse, 1913-1928). Yendo's plants are quite different from ours (Yendo 1903) as well as the plants described by Cribb (1958), by Taylor (1950 and 1967) and the ones referred by Valet (1958). The absence of proliferations, the branching only from the stalk, besides the ruffled margins are the more conspicuous feature of this proposed new variety.

We choose this opportunity to give new distribution records for *Caulerpa brachypus* var. *brasiliانا*, that was recently described.

The following stations provided additional material of this variety:

Canopus Station 61: LS 02°51'00", LW 38°54'00" at a depth of 60 m (Off Ceará State) 25.08.65.

Canopus Stations 64: LS 02°46'00", LW 39°00'00" at a depth of 58 m (Off Ceará State) 26.08.65.

Canopus Station 87: LS 07°08'00", LW 34°26'00" at a depth of 62 m (Off Paraíba State) 20.12.65.

Canopus Station 99: LS 05°05'00", LW 34°57'00" at a depth of 69 m (Off Rio Grande do Norte State) 13.1.66.

It is interesting to note the var. *brasiliانا* and var. *nordestina* are to be found in the same area and in the same general depths, suggesting that these two varieties are not ecological forms but real distinct entities, since they share similar biotopes.

4 — RESUMO

Em janeiro de 1970 foi apresentada à 2ª Reunião Brasileira de Ficologia, a descrição de uma variedade nova de *Caulerpa brachypus* Harvey, (Joly e col. no prelo).

Estudos ainda em prosseguimento revelaram a existência de outras plantas que acreditamos ser da mesma espécie de *Caulerpa* acima mencionada mas que não podem ser enquadradas dentro das variedades ou formas conhecidas e por esse motivo decidimos batizar estas plantas como nova variedade de *C. brachypus* Harvey var. *nordestina* Joly et Semir.

As principais características da nova variedade são sua robustez e a peculiar ondulação da fronde que é inteira, tornando-a muito diferente das demais *Caulerpas* conhecidas no litoral brasileiro e bem distinta das formas conhecidas de *C. brachypus* da região Indo-Pacífica.

Estas plantas foram coletadas através de dragagens feitas pelo Navio Oceanográfico "Canopus", estações 93 (12.1.1966) e 95 (20.12.65) respectivamente nas LS. 06°04'30" LW 34°52'00" a uma profundidade de 69 m (Rio Grande do Norte) e LS 07°30'00" LW 34°29'00" a uma profundidade de 63 m (entre Paraíba e Pernambuco) e na estação 147 do Levantamento do Recife, Pe. LS 08°00'00" LW 34°32'09" a uma profundidade de 51 m (29.IV.1967).

É de se observar que a variedade *brasiliانا* Joly et Semir recentemente descrita, foi também coletada nas seguintes estações, não referidas no trabalho

original: Canopus 61, 64, 87, e 99, respectivamente LS 02°51'00" LW 38°54'00" (Ceará, 25.VIII.1965) profundidade de 60 m; LS 02°46'00" LW 39°00'00" (Ceará, 26.VIII.1965), profundidade de 58 m; LS 07°08'00" LW 34°26'00" (Paraíba 20.XII.1965) profundidade de 62 m; LS 05°05'00" LW 34°57'00" (Rio Grande do Norte, 13.I.1966) profundidade de 69 m.

Estes achados vêm ampliar a área de dispersão até então conhecida desta variedade, bem como indicam que esta variedade e a nova descrita neste trabalho coexistem em profundidades semelhantes, não se tratando portanto de formas ecológicas de profundidade.

5 — LITERATURE

- BOERGESEN, F. — 1940 — Some marine algae from Mauritius. I Chlorophyceae. K. Danske Vidensk. Selsk. Biol. Medd. 15 (4): 1-81 + 3 pls.
 — 1946 — Idem. An additional list of species to Part I Chlorophyceae. Idem 20(66): 1 — 64.
 — 1948 — Ibidem. Additional lists to the Chlorophyceae and Phaeophyceae. Ibidem: 20 (12): 1-55 + Map + 2 pls.
 — 1951 — Ibidem. Additions to the parts previously published III. Ibidem 18 (16): 1-44 + 7 pls.
- CRIBB, A. B. — 1958 — Records of marine algae from South-Eastern Queensland. IV. *Caulerpa*. Univ. Queensland Papers Dept. of Botany. III (23): 209-220 (incl. pl. 1-5).
- DOSTAL, R. — 1929. — *Caulerpa Ollivieri* n. sp., la seconde espèce européenne des Caulerpacées. Bull. Inst. Oceanogr. Monaco n° 531: 1-12.
- JOLY, A. B., M. SAZIMA and J. SEMIR. Notes on *Caulerpa*. Rickia 6 (in press). Paper presented at the 2nd Brazilian Phycological Meeting 1970.
- OLLIVIER, G. — 1928 — Contribution à la connaissance de la flore marine des Alpes maritimes. Bull. Inst. Oceanogr. Monaco n° 522: 1-8.
- PAPENFUSS, G. F. and L. E. EGEROD. — 1957 — Notes on South African marine Chlorophyceae. Phytomorphology 7 (1): 82-93.
- TAYLOR, Wm. R. 1950 — Plants of Bikini and other northern Marshall Islands: XV + 227 pp. + 79 pls. Ann Arbor.
- TAYLOR, Wm. R. — 1967 — Species of *Caulerpa* (Chlorophyceae) collected on the International Indian Ocean Expedition. Blumea 15(1), 45-53.
- VALET, G. — 1968 — Algues marines de la Nouvelle-Calédonie I: Chlorophycées. Nova Hedwigia 15: 29-63 + Tab. 6-15.
- WEBER van BOSSE, A. — 1898 — Monographie des Caulerpes. Ann. Jard. Bot. Buitenzorg 15: 243-401, pls. XX-XXXIV.
 — 1913-1928 — Liste des algues du Siboga. Monogr. 59. Siboga Expeditie. Part I: 1-186, pls. 1-5. Leiden.
- YENDO, K. — 1903 — *Caulerpa anceps* Harvey. Bot. Mag. Tokyo. 17: 153-157.