Acta Bot. Neerl. 32(4), August 1983, p. 271–275

A NEW CAULERPA SPECIES (CAULERPACEAE, CHLOROPHYTA) FROM THE CARIBBEAN SIDE OF COSTA RICA, C.A.

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SUMMARY

Caulerpa biloba is described as a new species. It is characterized by having two-lobed ramuli, a formerly unknown feature in this genus. The relation with *C. vickersiae* Børgesen and *C. ambigua* Okamura is discussed.

1. INTRODUCTION

During a stay of the first author at Puerto Vargas, the administration building of the Parque Nacional Cahuita on the Atlantic coast of Costa Rica, C.A., some plants of an extremely small *Caulerpa* species were collected. The observed material turned out to be unidentifiable with any described species. The alga was found living on debris, mixed with *C. verticillata* Agardh, between the basal segments of *Halimeda opuntia* (L.) Lamouroux. This macroalga was picked up from c. 1.5 m depth where it was growing on coral rubble c. 30 m offshore in front of Puerto Vargas. The material was preserved in 4% formalin.

2. DIAGNOSIS

Caulerpa biloba species nova *(figs. 1–7)*
Planta inconspicua; stolines nudi, ramosi irregulariter, diametri 100–140 μm, cum appendicibus brevibus usque ad longis 500 μm et in diametro 40–70 μm, quae sunt simplices et maxime regulariter oppositae vel alternantes vel secundae; stolines longi pro ratione axuum erectorum; axis erecti breves usque ad longi 1–1.3 (–2) mm; ramuli polysticheres ad longi 400–500 μm, maximam partem bilobi, aliquando quadrilobi; lobi sphaerici diameter 260–320 μm.

Plantae inventae sunt Puerto Vargas, Parque Nacional Cahuita, Costa Rica; leg. Th. C. M. Kemperman; dat. die 12 octobris anno 1982; crescunt interpartes basales *Halimedae opuntiae* (L.) Lamouroux, mixtae cum *Caulerpa verticillata* J. Agardh; holotypus in AVU, paratypi in BM et CR.

Plant inconspicuous; stolon naked, irregularly branched, 100–140 μm in diameter, with short appendages up to 500 μm long and 40–70 μm in diameter, these simple and very regularly opposite, alternate or secund; stolons long with respect

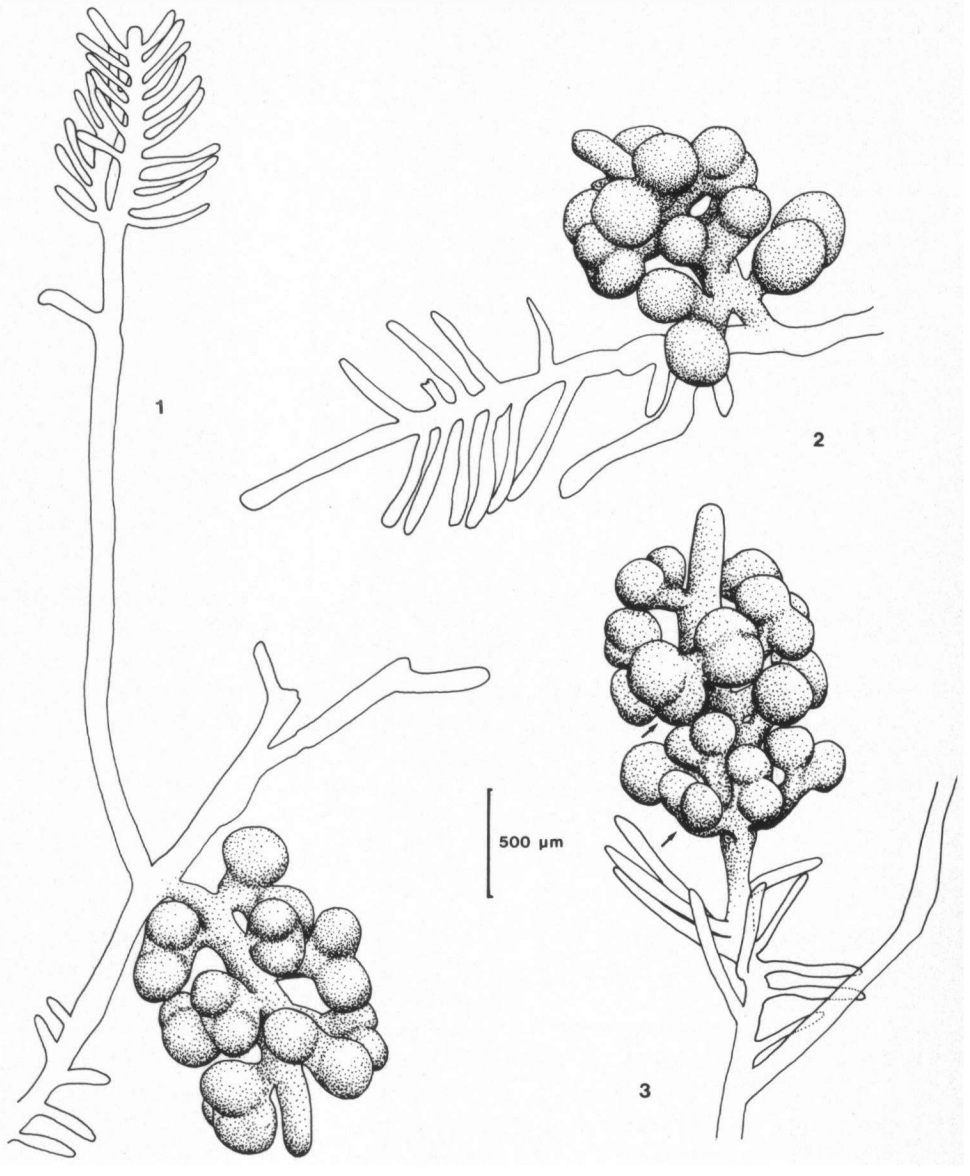

Fig. 1–3. *Caulerpa biloba*. Type specimens. Fig. 1. Holotype.

Fig. 3. Arrows indicate quadrilobe ramuli.

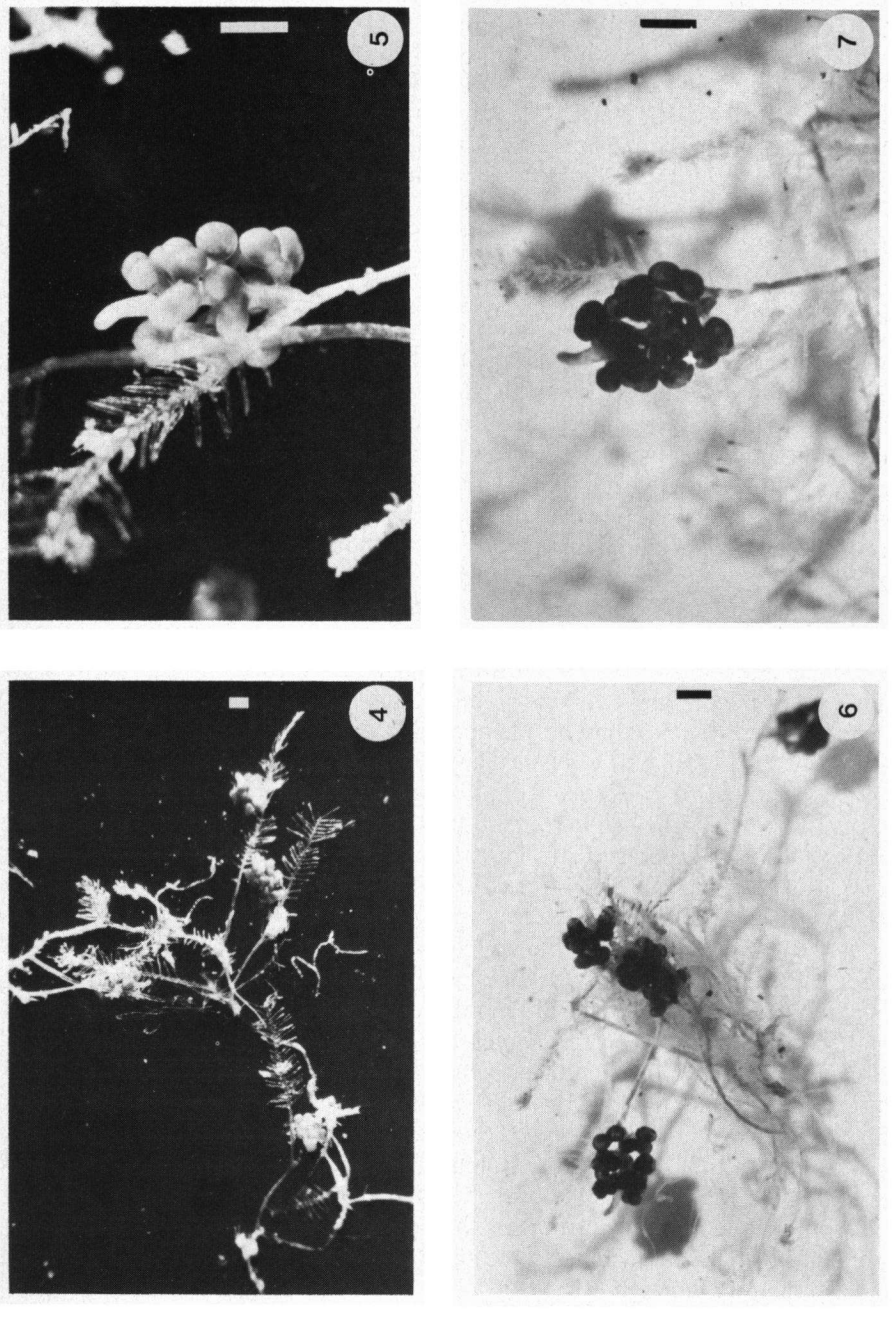

Fig. 4–7. *Caulerpa biloba*. Photographs of type specimens. Scale in all figures 500 μm.

to the erect axes; erect axes short, up to 1–1.3 (–2) mm; ramuli polystichous to 400–500 μm long, mostly bilobed, sometimes with four lobes; diameter of a spherical lobe 260–320 μm. *Type locality:* Puerto Vargas, Parque Nacional Cahuita, Costa Rica; leg. Th. C. M. Kemperman; dat. 12 october 1982; growing between basal parts of *Halimeda opuntia* (L.) Lamouroux, mixed with *Caulerpa verticillata* J. Agardh; holotype deposited in herbarium AVU, paratypes in herbaria BM and CR.

3. DISCUSSION

Systematics of the Caulerpaceae always have been rather confusing, particularly with respect to the limits between species. Numerous species have been described after Lamouroux founded the genus *Caulerpa* in 1809, and only in 1898 WEBER-VAN BOSSE (1898) reorganized the whole genus. She reduced the amount of species by degrading some specific status to subspecific ones but also created many new taxa at subspecific and some at specific level, thus providing us with a large variability. This variability was also stated by SVEDELIUS (1906) who recognized several kinds of variation among which dwarf forms. In spite of this variability we think we are dealing with a new species.

Caulerpa biloba is characterized by two-lobed ramuli, an unknown feature in species bearing spherical ramuli (cf. sedoid-group of WEBER-VAN BOSSE 1898). In some cases four-lobed ramuli were seen. These structures were formed by division of the original two lobes. The plants of our species are very small and with respect to their size are only comparable with *C. vickersiae* Børgesen (BØRGESEN 1911, 1913) and *C. ambigua* Okamura (OKAMURA 1897). BØRGESEN (1911, 1913) separated *C. vickersiae* from *C. ambigua*. Some reports (VICKERS 1908; COLLINS 1909; VROMAN 1968) mentioned *C. ambigua* from the Caribbean although other authors have included this morphological entity in *C. vickersiae* (see also TAYLOR 1960; SCHNETTER 1978). LAWSON & JOHN (1982) synonymized these species as *C. ambigua*.

After going through material of *C. ambigua* and *C. vickersiae* preserved at the British Museum (Natural History) (BM) and the Rijksherbarium (L) we have concluded that both are different from our material.

In contrast to *C. vickersiae*, which has a somewhat larger overall shape, *C. ambigua* does not differ significantly in size from *C. biloba*. Apart from the two/four lobed ramuli neither *C. vickersiae* nor *C. ambigua* do have structures like the distinct erect axes of *C. biloba*. Nevertheles their assimilatory organs have a striking resemblance with the stolon appendages of *C. biloba*. However, we noticed that these featherlike branched and pale organs of *C. biloba* seem to grow in debris, probably just below the surface, thus providing the plants with some assistance in attaching to the substrate and hence they can hardly have an assimilatory function.

TAYLOR (1967) reported some material collected in Ethiopia showing clustered structures which he interpreted as being distorted starch-storing organs of *C. ambigua*. After having examined this material (Herbarium of University

of California, Berkeley (UC)) we concluded this phenomenon as being identical with that in our material, showing the same typical pale feathered stolons with dark-green erect axes with lobed ramuli.

ACKNOWLEDGEMENTS

Thanks are due to Prof. Dr. M. Vroman for critically reading the manuscript and giving valuable comments, Dr. R. Soto S., Herbario Nacional de Costa Rica (CR), for his stimulating help in Costa Rica, and the herbaria of UC, BM and L.

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