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***Dictyota hamifera* Setchell  
 (Dictyotales, Phaeophyceae): New  
 Record for the Venezuelan  
 Caribbean Marine Flora**

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To increase our knowledge of the biological marine diversity present along the Venezuelan coast, the Margarita Marine Research Station of Fundación La Salle de Ciencias Naturales (EDIMAR) conducted an expedition to Las Aves Archipelago. Located 160 km off the central coast of Venezuela, Las Aves is formed by two atolls comprised of eight main islands, numerous cays, and coral reefs. During the phycofloristic field work, small populations of a rare prostrate *Dictyota* were observed growing in the upper part of midlittoral zone; these algae represent a new record for Venezuela reported herein.

According to Ganesan (1989), Solé et al. (1999), and Solé (2001), the following species of *Dictyota* are known from Venezuela: *D. bartayresiana* Lamouroux, *D. canaliculata* De Clerck & Copejans, *D. cervicornis* Kützing, *D. ciliolata* Sonder ex Kützing, *D. ciliolata* var. *bermudensis* Taylor, *D. crispata* Lamouroux, *D. guineensis* (Kützing) P. Crouan & H. Crouan, *D. jamaicensis* Taylor, *D. menstrualis* (Hoyt) Schnetter, Hörnig & Weber-Peukert, *D. mertensii* (Martius) Kützing, *D. pfaffii* Schnetter, *D. pinnatifida* Kützing, *D. pulchella* Hörnig & Schnetter, and *D. volubilis* Kützing.

Algae were collected at Isla del Tesoro in the west atoll Aves de Barlovento (12° 00'

Lat. N – 67° 25' Long. W) during October 2001. Methodology for the morphoanatomic study follows Solé et al. (1999). Specimens are deposited in the algal collection of EDIMAR, a duplicate specimen is in the National Herbarium of Venezuela (VEN), and another has been deposited in the Herbarium of the University of Gent (GENT) in Belgium.

*Dictyota hamifera* Setchell (Figs. 1-6)

Setchell (1926: 92, pl. 14, fig. 1-6), Hörnig et al. (1992a: 49, 59; 1992b: 399), Coppejans et al. (1995: 182, fig. 11,12), Littler and Littler (2000: 264, fig. 1,2,3), Mendoza-González et al. (2000: 121), Wysor and De Clerck (2003: 156, fig. 16).

Thalli repent to 1.8 cm long, forming a caespitose mass, attached to substratum by ventral and marginal rhizoidal clusters or individual rhizoids. Thalli width averages (0.8) 1.1 (1.6) (SD: 0.02) mm distally, broadening to (1.3) 2.1 (2.7) (SD: 0.04) mm in intermediate portions. Lateral, swollen, falcate branchlets present (Fig. 1), placed between third and fourth, fourth and fifth, and fifth and sixth dichotomies. Length of interdichotomies (2.1) 3.2 (5.2) (SD: 0.9) mm; breadth of interdichotomies (0.8) 1.1 (1.6) (SD: 0.2) mm; thalli broaden distally. Margins smooth. Apices of falcate branchlets acute, indeterminate axes obtuse. Principal branching is dichotomous forking at acute angles (38°-90°). Marginal green-black zone areas of cortical cell wall thickenings conspicuous in surface view and sections (Figs. 3-4). Tufts of filaments commonly distributed in central part of segment, not associated with sporangia. Cortex of main branches single, with cells in transverse view measuring (7.8) 25.1 (43.1) (SD: 8.1)  $\mu\text{m}$  wide and (4.39) 23.9 (36.9) (SD: 5.6)  $\mu\text{m}$  high. Medulla of main branches consists of a single layer, transversally measuring (3.1) 96.5 (184.5) (SD: 34.8)  $\mu\text{m}$  wide and (20.2) 99.7 (127.1) (SD: 24.07)  $\mu\text{m}$  high (means of over 50 measurements), medullary cell layer height (MH)/cortical cell layer height (CH) ratio 4.15 (SD: 1.2). Cortex of falcate branches single, cells transversally measuring (20.5) 40.7 (61.5) (SD: 12.1)  $\mu\text{m}$  wide and (24.6) 43.4

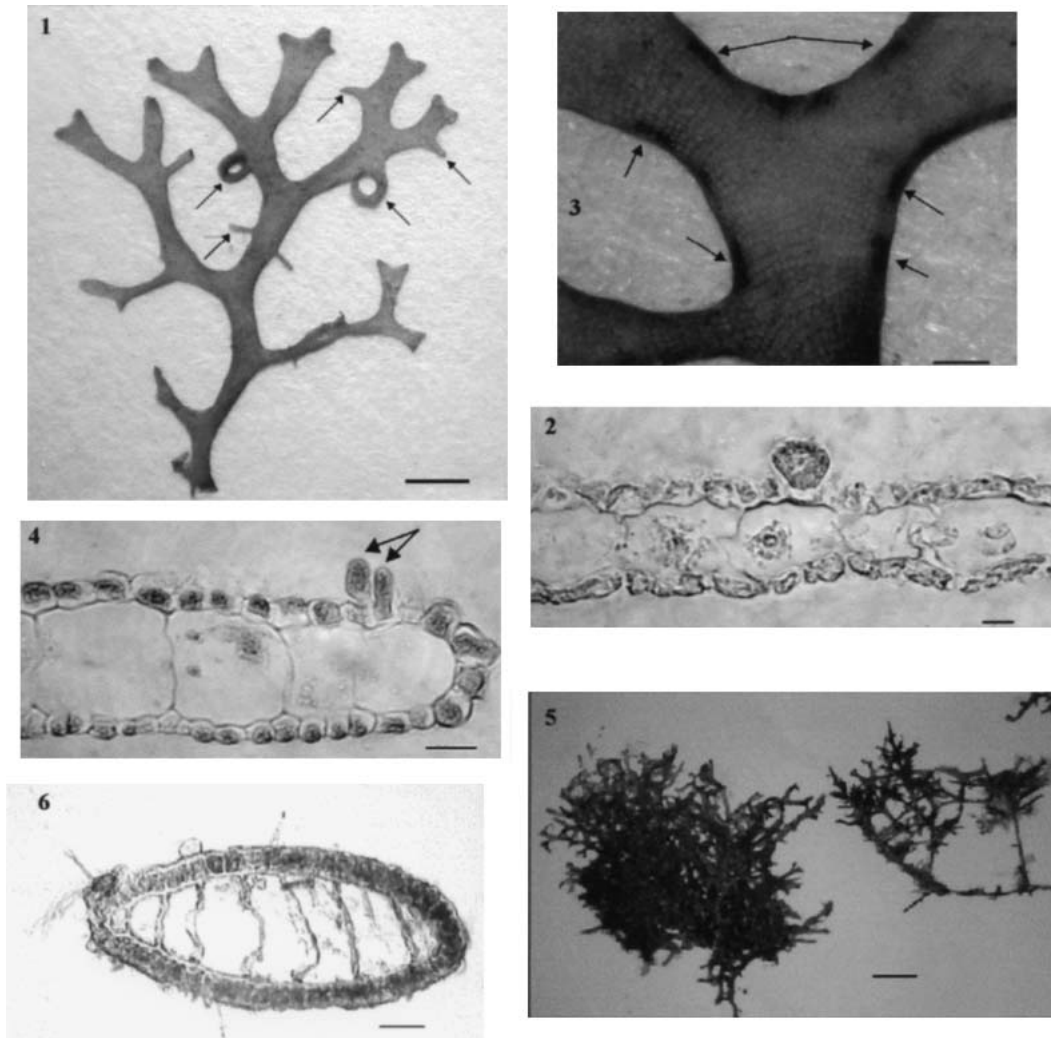


FIG. 1-6. *Dictyota hamifera* Setchell.

1. Habit of sporophyte showing falcate branches (arrows); scale: 2 mm. 2. Cross section of thallus with sporangium; scale: 50 $\mu$ m. 3. Surface view of blade showing marginal thickenings (arrows); scale: 0.5 mm. 4. Transverse section of the thallus showing marginal, cortical wall thickenings (arrows); scale: 50 $\mu$ m. 5. Habit of holotype (UC 261356); scale: 1 cm. 6. Cross section of a falcate branche (holotype material); scale: 50 $\mu$ m.

(57.4) (SD: 7.6)  $\mu$ m high. Medulla of falcate branches in transversally measuring (45.1) 84.8 (131.2) (SD: 20.45)  $\mu$ m wide and (110.7) 167.4 (233.7) (SD: 29.1)  $\mu$ m high. One sporangium observed (Fig. 2), it measured 69.7 $\mu$ m wide x 73.8  $\mu$ m long; involucre absent.

Material examined: Venezuela: Archipelago Las Aves, Aves de Barlovento, Isla del Tesoro, 8 oct. 2001, Solé No. 450 EDIMAR. Holotype: Tahiti, between Pap-

enu and Huau, 5 June 1922, Setchell & Parks No. col.: 5125, UC 261356.

Habitat: *Dictyota hamifera* is a caespitose-creeping species that grows epiphytically on *Laurencia papillosa* (C. Agardh) Greville, which in turn grows on conglomerates of coralline rock in the middle intertidal zone, close to high tide level and exposed to limited wave action. *Dictyota hamifera* grew intermingled with the red algae *Centroceras clavulatum* (C. Agardh) Montagne, *Corallina*

*officinalis* L., and *Polysiphonia ferulacea* Suhr ex J. Agardh.

*Dictyota hamifera* was described by Setchell (1926) from Tahiti and has been reported from Papua New Guinea (Coppejans et al., 1995), Mexico (Mendoza-Gonzalez et al., 2000), Panama (Wysor and De Clerck, 2003), Colombia (Hörnig and Schnetter, 1992a), and the Caribbean (Littler and Littler, 2000). The Venezuelan material shares with the type material its "repentibus" (creeping) habit, epiphytic growth, presence of falcate branches with acute apices along the thallus, main branches with obtuse apices, and its principal branching pattern being dichotomous forking at acute angles. The type material has a medulla of some falcate branches transversally measuring lower values than indicated in Setchell's original report: (82.0) 112.6 (143.5) (SD: 17.1)  $\mu\text{m}$  high (fig. 6).

Hörnig et al. 1992b provide an incomplete description for Colombian material of this species: upright thalli, acute apices, and subdichotomous branching. These characters are absent in Setchell's material, in which acute apices are only present in the falcate branchlets. Since no information about the morphoanatomy of the falcate branchlets is given by Hörnig et al., this previous report of *D. hamifera* is considered doubtful.

The diagnostic characters of *D. hamifera* are the conspicuous presence of lateral falcate branchlets along the thallus and sporangia without an involucre. *Dictyoya hamifera*, *D. cervicornis* Kützing, and *D. cervicornis* forma *pseudohamata* (Cribb) De Clerck and Coppejans possess curved branchlets, but the latter two species have an involucre in the sporangium and curved branchlets are present only in the apical part of the thallus. The cortical cell wall thickenings are very apparent in surface view and are noted for the first time for this species.

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