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**Report of the rare green alga  
*Penicillus dumetosus* f. *expansus*  
Børgesen from Cuba and  
the Bahamas**

MICHAEL J. WYNNE<sup>1</sup>, RUBEN CABRERA<sup>2</sup>,  
AND YUSIMÍ ALFONSO<sup>3</sup> <sup>1</sup>*Department of Ecology and Evolutionary Biology and Herbarium, University of Michigan Ann Arbor, MI 48109, USA/E-mail: mwynne@umich.edu,* <sup>2</sup>*Gabinete de Arqueología, Oficina del Historiador de la Ciudad, Tacón No. 12, e/ O'Reilly y Empe- drado, Habana Vieja, Cuba,* <sup>3</sup>*Acuario Nacional de Cuba, Ave 1<sup>ra</sup> y calle 60, Miramar. Playa, Ciudad de La Habana, Cuba.*

**ABSTRACT.**—*Penicillus dumetosus* (J.V. Lamour.) Blainv. f. *expansus* Børgesen, a rarely recorded taxon

of benthic green algae originally described from the U.S. Virgin Islands, is reported for the first time from Cuba and the Bahamas. The species is depicted in the literature for the first time.

RESUMEN.—*Penicillus dumetosus* (J.V. Lamour.) Blainv. f. *expansus* Børgesen, es un taxa registrado en pocas ocasiones, y corresponde a las algas verdes bentónicas de las islas Vírgenes Americana. Es la primera vez que aparece un registro para Cuba y las Bahamas y también es la primera vez que aparece una representación suya.

KEYWORDS.—Bahamas, biogeography, Cuba, marine algae, *Penicillus dumetosus* f. *expansus*

*Penicillus dumetosus* (J. V. Lamour.) Blainv., a calcified siphonous macroscopic green alga (Udoteaceae, Chlorophyta), is widely known in the tropical western Atlantic (Taylor, 1960; Schnetter, 1978; De Boer, 1981; Littler and Littler, 1997, 2000; Ortega *et al.*, 2001; Ballantine and Aponte, 2002; Wysor and Kooistra, 2003; Suárez, 2005; Littler *et al.*, 2007; Dawes and Mathieson, 2008). But *P. dumetosus* forma *expansus* Børgesen is very poorly known. In describing his material of *P. dumetosus* from the "Danish West Indies" [U.S. Virgin Islands], Børgesen (1913) referred to material depicted by Gepp and Gepp (1911, fig. 156) as "forma *typica*", that is, the nominate forma, to differentiate that forma from his own specimens, which he referred to as being "very flabby, loose and large, surpassing many times the rather short stalk in length". He called his material forma *expansus* and characterized it as having a stalk only 2-3 cm long and a capitulum of 16-17 cm high and nearly the same in breadth. The capitulum was made up of proportionally few filaments that were very long and "spreading to all sides", the filaments, or siphons, with diameters of 500-600  $\mu\text{m}$ . This taxon was originally described by Børgesen (1913) from two sites in the Virgin Islands; St. Thomas and St. Jan [= St. John]. At both of these syntype localities, it was reported to occur at a depth of 30 m. Although Børgesen depicted the new formae of two other species of *Penicillus* (f. *explanatus* of *P. pyriformis* A. Gepp & E. Gepp and f. *laxus* of *P. caputatus* Lam.), he did not

depict his new forma *expansus* of *P. dumetosus*.

This forma has been recognized in the literature (Collins, 1918; Taylor, 1960; Wynne, 2005), but fresh reports of its re-discovery have been rare. In their recording it from Isla Cozumel, Caribbean Mexico, Mendoza-González *et al.* (2000) claimed to be making the first report of it since the original description by Børgesen (1913). There was one other report of it, however, that by Ballantine (in Williams *et al.*, 1983) from the south coast of the Dominican Republic. Dawes & Mathieson (2008) listed *Penicillus dumetosus* f. *expansus* in their recent flora, but they did not give any information about collections. These appear to have been the only reports of this forma *expansus*, and it has yet to be depicted in the literature. Mendoza-González *et al.* (2000) stated that their plants have stalks 2 cm long and capitula 11 cm long and that it occurred at 18-24 m depths.

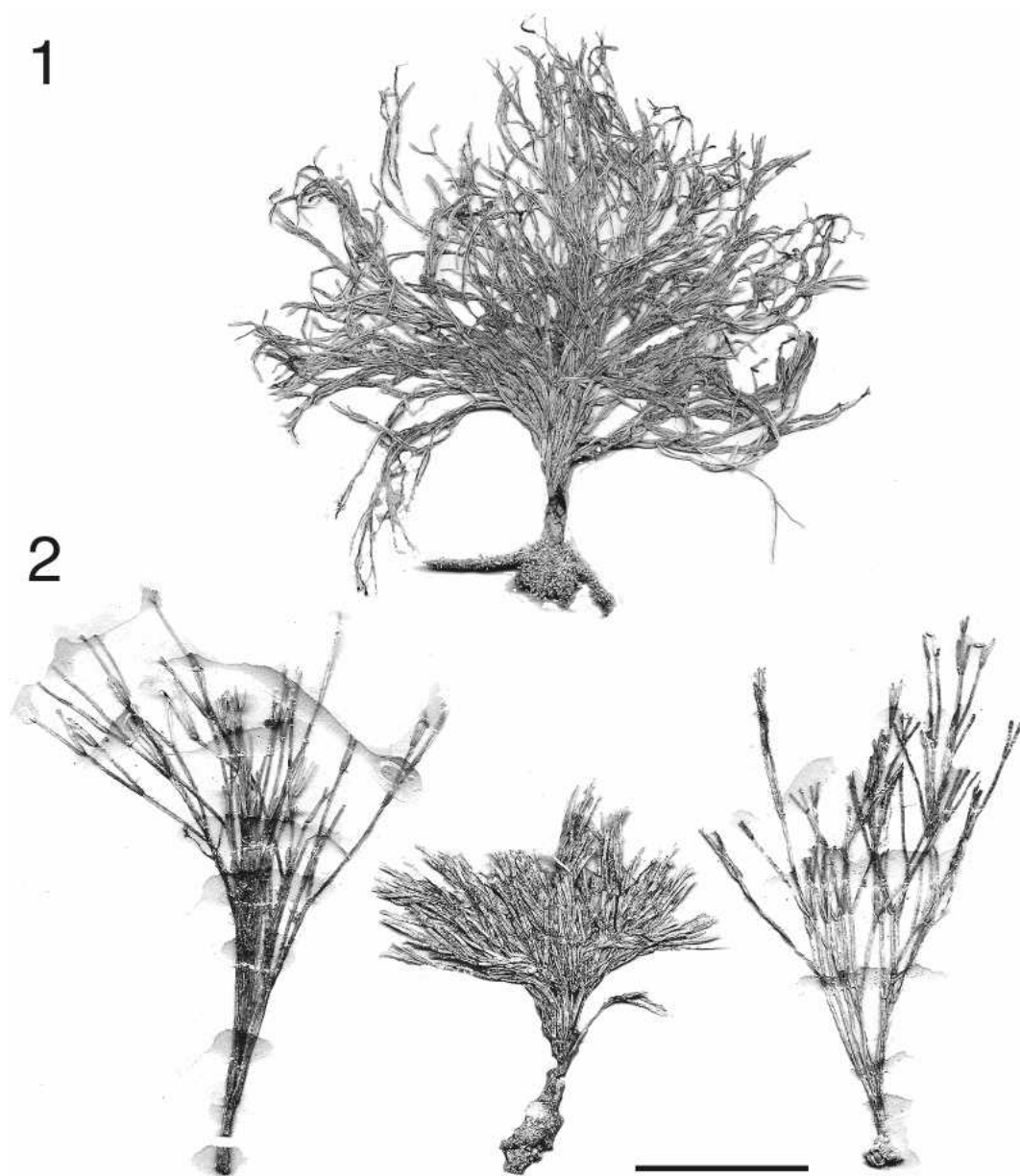
A few recent collections of *Penicillus dumetosus* f. *expansus* have been made from sublittoral habitats in Cuba. In the process of making this determination of the Cuban material, the first author discovered a collection of this forma in MICH that had been made from the Bahamas by Gordon McBride and determined by Wm. Randolph Taylor. This Note is to offer information on these collections from Cuba and the Bahamas, to reiterate the distinguishing features of this forma, and to provide for the first time a figure of its habit.

Collections<sup>1</sup> of *Penicillus dumetosus* f. *expansus*:

**CUBA.** Shore front at National Aquarium of Cuba, 23° 07' 48" N, 82° 25' 09" W. NW of Havana, 28 April 2008, *legit* Carlos Varela, on sand plain, 25 m depth. (ANC-AS 092; MICH). (Fig. 1).

Boca de Caldera, Jaruco. 23° 11' 16" N, 82° 00' 54" W. 15 May 2008, *legit* Carlos Varela, sandy substratum, 20 m. depth. (ANC-AS 125).

<sup>1</sup>ANC: Acuario Nacional de Cuba, Habana. MICH: University of Michigan Herbarium, Ann Arbor.



FIGS 1-2. *Penicillus dumetosus* f. *expansus*. Fig. 1. Cuban specimen (ANC-AS 092 [MICH]). Fig. 2. Bahaman specimens. (Legit G. McBride [MICH]). Scale bar: 3 cm.

Las Guasas, 23° 38' 14"N, 79° 05' 71"W, N or Las Villas, 15 June, 2008, legit Carlos Varela, sandy substratum, 20 m depth (ANC-AH 126).

**BAHAMAS.** Grand Bahama Island, Lucaya (26° 30' 38"N, 78° 38' 26"W, 13 May

1972, legit Gordon McBride (nos. 431, 470, 472, 473), 15 m depth. (MICH). (Fig. 2).

The most striking distinctions of *P. dumetosus* forma *expansus* are the very short nature of the stalk and the larger and looser organization of the capitulum (Fig. 1). In

some of the Bahaman specimens (Fig. 2), the stalk is barely evident, and the bases of the plants quickly give rise to the free, unconsolidated filaments (siphons) of the capitulum. In specimens of forma *dumetosus*, stipes are typically 5-9 cm tall before giving rise to the loose tufts of filaments that make up the capitulum. Stipes of f. *expansus* are 2-3 mm wide, in contrast to those of f. *dumetosus*, in which they are 5-7 mm in width at the base of the stipe and usually reach 15-18 mm in width distally. The siphons are lightly calcified and are 600-800  $\mu\text{m}$  in diameter, which is somewhat greater than the 500-600  $\mu\text{m}$  diameter reported by Børgesen (1913). The distances between consecutive dichotomies in the siphons ranges from 6-9 mm in distal regions to 20-21 mm in length in proximal portions of the capitulum.

Børgesen (1913) stated that his f. *expansus* of *Penicillus dumetosus* was restricted to deep water. There have also been reports of *Penicillus dumetosus* occurring at depths, for example, from 28 m in Florida by Hanisak and Blair (1988) and from 29 m in the Bahamas by Ballantine and Aponte (2003), but these authors did not refer to their material as belonging to forma *expansus*.

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