

Transfer of *Pyropia acanthophora* var. *robusta* M.G.Kavale, Kazi & Sreenadhan and *Porphyra acanthophora* var. *brasiliensis* E.C.Oliveira & Coll to *Phycocalidia* Santiañez & M.J.Wynne (*Bangiales*, *Rhodophyta*)

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Based on morpho-anatomical and molecular phylogenetic criteria, Yang *et al.* (2020) proposed the new genus *Calidia* L.-E.Yang & J.Brodie. Santiañez & Wynne (2020), however, pointed out that this name was illegitimate, being a later homonym of a lichen (fungal) genus *Calidia* Stirton (Stirton 1876: 91). Consequently, they proposed a new name, *Phycocalidia* Santiañez & M.J.Wynne, for this warm-water genus of bladed Bangiales and subsequently transferred the known species (Santiañez & Wynne 2020). In transferring the warm-water species of bladed Bangiales, Santiañez & Wynne (2020) missed including some relevant taxa such as *Porphyra marcosii* Cordero, a putative endemic to the Philippines, as well as the infraspecific taxa *Pyropia acanthophora* var. *robusta* M.G.Kavale, Kazi & Sreenadhan, originally described from India based on morpho-anatomical and molecular genetic information (Kavale *et al.* 2015) and *Porphyra acanthophora* var. *brasiliensis* E.C.Oliveira & Coll from Paraná State, Brazil (Oliveira and Coll, 1975). Santiañez (2020) has since transferred *Porphyra marcosii* to the genus *Phycocalidia*, but considered it as a heterotypic synonym of the earlier described *Phycocalidia vietnamensis* (Tak.Tanaka & P.H.Hô) Santiañez & M.J.Wynne [as *Porphyra vietnamensis* Tak.Tanaka & P.H.Hô (Tanaka and Hô, 1962)]. However, both *Porphyra acanthophora* var. *brasiliensis* E.C.Oliveira & Coll and *Pyropia acanthophora* var. *robusta* M.G.Kavale, Kazi & Sreenadhan have not been formally transferred to the genus *Phycocalidia*.

Porphyra acanthophora var. *brasiliensis* E.C.Oliveira & Coll was described based on a specimen from Caiobá, Paraná State, Brazil. It is differentiated from the nominate variety by its strap-shaped thallus that occurs as isolated or in few tufts, and its relatively longer and thinner blades (Oliveira and Coll 1975). To distinguish the different species of *Porphyra sensu lato* in Brazil, Milstein *et al.* (2011) provided DNA barcodes of the nominate variety and var. *brasiliensis* based on *cox1*, *cox2–3* spacer, and *UPA* gene markers. They noted that based on *cox1* sequence data, these varieties only differ by a single nucleotide (Milstein *et al.*, 2011). The species *Porphyra acanthophora* E.C.Oliveira & Coll was transferred to *Pyropia* J. Agardh by Sutherland *et al.* (2011) as *Pyropia acanthophora* (E.C. Oliveira & Coll) M.C.Oliveira, D.Milstein & E.C.Oliveira based on its phylogenetic position. Similarly, Yang *et al.* (2020) transferred the species to *Calidia* L.-E.Yang & J.Brodie *nom. illeg.* as *Calidia acanthophora* (E.C.Oliveira & Coll) L.-E.Yang & J.Brodie, *nom. illeg.* This was later renamed and transferred to *Phycocalidia* as *Phycocalidia acanthophora* (E.C.Oliveira & Coll) Santiañez by Santiañez & Wynne (2020). However, on all those occasions, the var. *brasiliensis* has been overlooked. Meanwhile, *Pyropia acanthophora* var. *robusta* M.G.Kavale, Kazi & Sreenadhan was described based on a specimen from Cola, Goa, India (Kavale *et al.* 2015). At the time, it was among nine taxa of bladed Bangiales reported from India. *Pyropia acanthophora* var. *robusta* was morphologically distinguished from the nominate variety and *Porphyra acanthophora* var. *brasiliensis* E.C.Oliveira & Coll on the basis of its robust, longer, and wider thallus. Based on *cox1* sequence data, the var. *robusta* had 0.2% and 0.3% divergence from var. *brasiliensis* and var. *acanthophora*, respectively (Kavale *et al.* 2015). In their most recent study on the *Phycocalidia* in the Indian coast, Kavale *et al.* (2021) proposed the recognition of a new species *Phycocalidia sukshma* M.G.Kavale & Kazi and the new combination *Phycocalidia kanyakumariensis* (V.Krishnamurthy & Baluswami) M.G.Kavale & Kazi. Therein, they also considered var. *robusta* as a member of the genus *Phycocalidia* as “*Phycocalidia acanthophora* var.



robusta” citing, incorrectly, “MG Kavale, MA Kazi & N Sreenadhan” as the authority for the name and citing “Kavale *et al.* (2015a, 2017)” as its reference (Kavale *et al.* 2021: table 2). This latter name is not validly published. I therefore propose here the transfer of both varieties of foliose Bangiales to the genus *Phycocalidia*.

Phycocalidia acanthophora* var. *brasiliensis (E.C.Oliveira & Coll) Santiañez, *comb. nov.*

Basionym: *Porphyra acanthophora* var. *brasiliensis* E.C.Oliveira & Coll, *Botanica Marina* **18**: 192, figs 4, 5, 17, 18, 20, 1975.

Phycocalidia acanthophora* var. *robusta (M.G.Kavale, Kazi & Sreenadhan) Santiañez, *comb. nov.*

Basionym: *Pyropia acanthophora* var. *robusta* M.G.Kavale, Kazi & Sreenadhan, *Indian Journal of Geo-Marine Sciences* **44**(6): 868, fig. 1 a-j. 2015.

Note: The designation “*Phycocalidia acanthophora* var. *robusta*” was used several times in Kavale & al., (2021: 338, 345) but no validation was attempted.

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