

**THE RE-INSTALEMENT OF *HYDROPUNTIA* MONTAGNE
(GRACILARIACEAE, RHODOPHYTA)**

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Summary

The red algal generic name *Hydropuntia* Montagne (1842: 7), typified by *H. urvillei* Mont., is re-instated and circumscribed to include *Polycavernosa* Chang & Xia (1963: 120) and a number of its species. Up to now *Hydropuntia* has been regarded as a heterotypic synonym of *Gracilaria* Greville (1830) *nom. cons.* but is shown to be the earliest validly published name for those species separated from *Gracilaria* on the basis of both spermatangial and cystocarpic criteria.

Generic delimitation within the red algal family Gracilariaceae Nägeli (1847) [Gracilariales Fredericq & Hommersand (1989a)] has been in a state of some flux in recent years. For example, *Gracilariopsis* Dawson (1949), based on *G. sjoestedtii* (Kyl.) Daws., was taxonomically segregated from *Gracilaria* Greville (1830: liv) *nom. cons.* based on the nature of the gonimoblast, which in *Gracilariopsis* does not form nutritive filaments and is composed of small cells with dense contents, in contrast to these character states in *Gracilaria*. Later Papenfuss (1967) presented arguments to merge *Gracilariopsis* within *Gracilaria*. More recently Fredericq and Hommersand (1988, 1989b) called for the separation of these two genera, based on differences in reproductive morphologies.

Polycavernosa is another related genus that was described by Chang and Xia (1963) with a new species, *P. fastigiata* as the type. Although some doubt has been expressed (e.g., Bird and McLachlan, 1982, 1984) whether this genus is sufficiently distinct from *Gracilaria*, later workers, such as Chang and Xia (1976), Zhang and Xia (1984), Fredericq and Norris (1985), and Xia and Abbott (1985, 1987), provided additional taxonomic data to maintain these genera as distinct. Xia and Abbott (1987) stated that the spermatangial conceptacles in *Polycavernosa* are not merely a modification of the Verrucosa-type (sensu Yamamoto, 1978), but they have a clustered rather than a continuous arrangement and they have a different ontogenetic origin. Most recent authors have supported the recognition of *Polycavernosa* (e.g., Tseng, 1983; Norris, 1985; Rodriguez, 1986b; Silva et al., 1987; Lawson and John, 1987). Some species of *Gracilaria* have been transferred into *Polycavernosa* and new species have been described (Fredericq and Norris, 1985; Rodriguez, 1986a, 1988; Xia and Abbott, 1987). Xia and Abbott (1987) have summarized the criteria employed to distinguish *Polycavernosa* from *Gracilaria*. These differences are based on the origin and location of spermatangia and the time of appearance and the origin of the cystocarp, with species compared in terms of their male and cystocarpic characteristics. Also, elaborate basal absorbing filaments are present in the cystocarp of *Polycavernosa*, but such filaments are absent in *Gracilaria*.

The circumscription of *Polycavernosa* now includes the species *P. urvillei* (Montagne) Xia & Abbott (1987), which is the type of *Hydropuntia* Montagne (1842), from Torres Strait, northeastern Australia. The type specimen is in PC. Recent collections from Malaysia by Doty and figured in Xia and Abbott (1987, fig. 7) closely resemble this species as depicted by Montagne (1845, pl. 1, fig. 1). Xia and Abbott (1987) reported the presence of compound spermatangial crypts ("caves") in their material, characteristic of *Polycavernosa*. *Hydropuntia* has been regarded as a heterotypic synonym of *Gracilaria* (Kylin, 1956), but the name is the earliest validly published one to encompass those species separated from *Gracilaria* and presently recognized in *Polycavernosa*. Hence, I wish to re-instate *Hydropuntia* and propose the following transfers:

***Hydropuntia albornozii* (Rodriguez) Wynne comb. nov.**

Basionym: *Polycavernosa albornozii* Rodríguez, *Ernstia* 46: 1, fig. 1. 1988.

***Hydropuntia changii* (Xia & Abbott) Wynne comb. nov.**

Basionym: *Polycavernosa changii* Xia & Abbott, *Phycologia* 26: 407, figs. 3, 11. 1987.

***Hydropuntia cornea* (J. Agardh) Wynne comb. nov.**

Basionym: *Gracilaria cornea* J. Agardh, *Sp. Gen. Ord. Alg.* 2(2): 598. 1852.

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This western Atlantic species, called *Gracilaria debilis* (Forsskål) Børgesen (1932) by Taylor (1960), was shown by Fredericq and Norris (1985) to conform to *Polycavernosa* and called *P. debilis* (Forsskål) Fredericq & J. Norris. Bird et al. (1986) examined the type (in C) of *Fucus debilis* Forsskål (1775) from Yemen and other material (in L) from the Red Sea. Although the material lacked spermatangial and cystocarpic features, they concluded that Forsskål's name did not apply to the western Atlantic species and that its correct name, using Taylor's generic concept, was *Gracilaria cornea* J. Agardh.

Hydropuntia corymbiata (Rodríguez) Wynne comb. nov.

Basionym: *Polycavernosa corymbiata* Rodríguez, Ernstia 38: 23, figs. 12–16. 1986a.

Hydropuntia crassissima (Crouan & Crouan) Wynne comb. nov.

Basionym: *Plocaria crassissima* P. & H. Crouan in Schramm & Mazé, Essai Alg. Guadeloupe. 20. 1865.

Gracilaria crassissima (P. & H. Crouan) P. & H. Crouan in Schramm & Mazé, 1866. *Polycavernosa crassissima* (P. & H. Crouan) Fredericq & J. Norris, 1985.

Hydropuntia dentata (J. Agardh) Wynne comb. nov.

Basionym: *Gracilaria dentata* J. Agardh, Gen. Sp. Ord. Alg. 2(2): 603. 1852.

Polycavernosa dentata (J. Agardh) Lawson & John, 1987.

Hydropuntia divergens (Xia & Abbott) Wynne comb. nov.

Basionym: *Polycavernosa divergens* Xia & Abbott, Phycologia 26: 409, figs. 4, 9, 12. 1987.

Hydropuntia fastigiata (Chang & Xia) Wynne comb. nov.

Basionym: *Polycavernosa fastigiata* Chang & Xia, Studia Marina Sinica 3: 120, pl. 1, figs. 1–11; pl. 2, figs. 1–6. 1963.

Hydropuntia fisheri (Xia & Abbott) Wynne comb. nov.

Basionym: *Polycavernosa fisheri* Xia & Abbott, Phycologia 26: 411, figs. 5, 13. 1987.

Hydropuntia henriquesiana (Hariot) Wynne comb. nov.

Basionym: *Gracilaria henriquesiana* Hariot, J. Bot., Paris, sér. 2, 1: 162, fig. s.n. 1908.

Polycavernosa henriquesiana (Hariot) Chang & Xia, 1963.

Steentoft (1967) and Lawson and John (1987) have regarded this species to be distinct from *Hydropuntia dentata*, with which it has been confused (e.g., Ohmi, 1968). Lawson and John (1987) indicated that spermatangial plants relate this species to *Polycavernosa* (= *Hydropuntia*).

Hydropuntia multifurcata (Børgesen) Wynne comb. nov.

Basionym: *Gracilaria multifurcata* Børgesen, Det. Kgl. Danske Vid. Selsk., Biol. Medd. 21(9): 42, figs. 15, 16. 1953.

Polycavernosa multifurcata (Børgesen) Chang & Xia, 1963.

Hydropuntia percurrans (Abbott) Wynne comb. nov.

Basionym: *Polycavernosa percurrans* Abbott, Taxonomy of economic seaweeds 2: 146, fig. 13. 1988a.

Hydropuntia ramulosa (Chang & Xia) Wynne comb. nov.

Basionym: *Polycavernosa ramulosa* Chang & Xia, Studia Marina Sinica 3: 122, pl. 1, fig. 13; pl. 11, fig. 7. 1963.

Hydropuntia subtilis (Xia & Abbott) Wynne comb. nov.

Basionym: *Polycavernosa subtilis* Xia & Abbott, Phycologia 26: 413, figs. 6, 14. 1987.

Hydropuntia tsudae (Abbott & Meneses) Wynne comb. nov.

Basionym: *Polycavernosa tsudae* Abbott & Meneses in Meneses & Abbott, Micronesica 20: 195, figs. 10–13. 1987.

Hydropuntia vanbosseae (Abbott) Wynne comb. nov.

Basionym: *Polycavernosa vanbosseae* Abbott, *Taxonomy of economic seaweeds* 2: 152, figs. 1, 2, 1988b.

The genus *Corallopsis* Greville (1830) is a heterotypic congener of *Gracilaria*. Its lectotype, *C. salicornia* (C. Ag.) Grev. [basionym: *Sphaerococcus salicornia* C. Agardh 1822: 232] = *G. salicornia* (C. Ag.) Dawson (1949), has been recently investigated (Xia, 1987; Meneses and Abbott, 1987), and the evidence supports its inclusion within *Gracilaria*.

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