



The Re-Instatement of *Hydropuntia Montagne* (Gracilariaceae, Rhodophyta)

Michael J. Wynne

Taxon, Vol. 38, No. 3. (Aug., 1989), pp. 476-479.

Stable URL:

<http://links.jstor.org/sici?sici=0040-0262%28198908%2938%3A3%3C476%3ATROHM%28%3E2.0.CO%3B2-V>

Taxon is currently published by International Association for Plant Taxonomy (IAPT).

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/iapt.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

The JSTOR Archive is a trusted digital repository providing for long-term preservation and access to leading academic journals and scholarly literature from around the world. The Archive is supported by libraries, scholarly societies, publishers, and foundations. It is an initiative of JSTOR, a not-for-profit organization with a mission to help the scholarly community take advantage of advances in technology. For more information regarding JSTOR, please contact support@jstor.org.

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

Michael J. Wynne¹

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.* 2(2): 598. 1852.

¹ Herbarium and Dept. of Biology, University of Michigan, Ann Arbor, MI 48109-1048, U.S.A.

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.

Steenstof (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*.

Acknowledgments

I thank Dr. John A. West for providing me with literature.

Literature Cited

- Abbott, I. A. 1988a. Some species of *Gracilaria* and *Polycavernosa* from Thailand. Pp. 137–150. In: I. A. Abbott (ed.), *Taxonomy of economic seaweeds with reference to some Pacific and Caribbean species*, vol. 2. Calif. Sea Grant College Prog., Univ. Calif., La Jolla, California.
- . 1988b. Some species of *Gracilaria* and *Polycavernosa* from the Siboga Expedition. Pp. 151–156. In: I. A. Abbott (ed.), *Taxonomy of economic seaweeds with reference to some Pacific and Caribbean species*, vol. 2. Calif. Sea Grant College Prog., Univ. Calif., La Jolla, California.
- Agardh, C. A. 1822. *Species algarum* . . . , vol. 1, pt. 2. Berling, Lund.
- Agardh, J. G. 1852. *Species genera et ordines algarum* . . . , vol. 2, pt. 2. C. W. K. Gleerup, Lund.
- Bird, C. J. and J. McLachlan. 1982. Some underutilized taxonomic criteria in *Gracilaria* (Rhodophyta, Gracilariaceae). *Bot. Marina* 25: 557–562.
- and ———. 1984. Taxonomy of *Gracilaria*: Evaluation of some aspects of reproductive structure. *Hydrobiologia* 116/117: 41–46.
- , E. C. de Oliveira and J. McLachlan. 1986. *Gracilaria cornea*, the correct name for the western Atlantic algae hitherto known as *G. debilis* (Rhodophyta, Gigartinales). *Can. J. Bot.* 64: 2045–2051.
- Børgesen, F. 1932. A revision of Forsskål's algae mentioned in Flora Aegyptiaco-Arabica and found in his Herbarium in the Botanical Museum of the University of Copenhagen. *Dansk Bot. Arkiv* 8(2): 1–15, pl. 1.
- . 1953. Some marine algae from Mauritius. Additions to the parts previously published, V. *Det. Kgl. Danske Vid. Selsk., Biol. Medd.* 21(9): 1–62, 3 pls.
- Chang, C. F. and B. M. Xia. 1963. *Polycavernosa*, a new genus of the Gracilariaceae. *Studia Marina Sinica* 3: 119–126, 2 pls.
- and ———. 1976. Studies on Chinese species of *Gracilaria*. *Studia Mar. Sinica* 12: 91–163.
- Dawson, E. Y. 1949. Studies on northeast Pacific Gracilariaceae. *Allan Hancock Foundation Publ., Occas. Pap.* 7.
- Forsskål, P. 1775. *Flora aegyptiaco-arabica*. . . . Post-mortem auctoris edidit Carsten Niebuhr. Möller, Kjøbenhavn.
- Fredericq, S. and M. Hommersand. 1988. The status of *Gracilariopsis* (Gracilariaceae, Rhodophyta). *J. Phycol.* 24(Suppl.): 10. [Abstr.]
- and ———. 1989a. Proposal of the Gracilariales, *ord. nov.* (Rhodophyta) based on an analysis of the reproductive development of *Gracilaria verrucosa* (Hudson) Papenfuss. *J. Phycol.* 25. (In press.)
- and ———. 1989b. The comparative morphology and taxonomic status of *Gracilariopsis* Dawson (Gracilariales, Rhodophyta). *J. Phycol.* 25. (In press.)
- and J. N. Norris. 1985. Morphological studies on some tropical species of *Gracilaria* Grev. (Gracilariaceae, Rhodophyta): Taxonomic concepts based on reproductive morphology. Pp. 137–155. In: I. A. Abbott and J. N. Norris (eds.), *Taxonomy of economic seaweeds with reference to some Pacific and Caribbean species*, Calif. Sea Grant College Prog., Univ. Calif., La Jolla, California.
- Greville, R. K. 1830. *Algae britannicae*. . . . MacLachlan & Stewart, Edinburgh.
- Hariot, P. 1908. Les algues de San Thome (côte occidentale d'Afrique). *J. Bot., Paris*, sér. 2, 1: 161–164.
- Kylin, H. 1956. *Die Gattungen der Rhodophyceen*. C. W. K. Gleerup, Lund.

- Lawson, G. W. and D. M. John. 1987. The marine algae and coastal environment of tropical West Africa, 2nd ed. *Beihefte z. Nova Hedw.* 93.
- Meneses, I. and I. A. Abbott. 1987. *Gracilaria* and *Polycavernosa* (Rhodophyta) from Micronesia. *Micronesica* 20: 187–200.
- Montagne, J. F. C. 1842. *Prodromus generum specierumque phycarum novarum, in itinere ad polum Antarcticum Regis Ludovici Philippi Jussu ab illustri Dumont d'Urville peracto collectarum.* . . . Gide, Paris.
- . 1845. Plantes cellulaires. In: J. S. C. Dumont d'Urville, *Voyage au Pôle Sud et dans l'Océanie sur les corvettes l'Astrolabe et la Zélée . . . pendant . . . 1837–1840.* Botanique, vol. 1. Gide & J. Baudry, Paris.
- Nägeli, C. 1847. *Die neuern Algensysteme.* Zürich. (In Kommission bei F. Schulthess.)
- Norris, J. N. 1985. *Gracilaria* and *Polycavernosa* from the Caribbean and Florida: Key and list of the species of economic potential. Pp. 101–113. In: I. A. Abbott and J. N. Norris (eds.), *Taxonomy of economic seaweeds with reference to some Pacific and Caribbean species.*, Calif. Sea Grant College Prog., Univ. Calif., La Jolla, California.
- Ohmi, H. 1968. A descriptive review of *Gracilaria* from Ghana, West Africa. *Bull. Fac. Fish., Hokkaido Univ.* 19: 83–86, 2 pls.
- Papenfuss, G. F. 1967. Notes on algal nomenclature—V. Various Chlorophyceae and Rhodophyceae. *Phykos* 5: 95–105.
- Rodríguez de Rios, N. 1986a. El genero *Polycavernosa* Chang y Xia (Gracilariaceae, Rhodophyta) en Venezuela, con descripción de una nueva especie. *Ernstia* 38: 12–31.
- . 1986b. Sobre la verdadera identidad de la llamada *Gracilaria verrucosa* (Hudson) Papenfuss en Venezuela. *Ernstia* 38: 32–39.
- . 1988. *Polycavernosa albornozii* sp. nov. (Rhodophyta, Gigartinales, Gracilariaceae), una nueva especie del sur del Caribe. *Ernstia* 46: 1–7.
- Schramm, A. and H. Mazé. 1865. *Essai de classification des algues de la Guadeloupe* (ed. 1). Imprimerie du Gouvernement, Basse-Terre, Guadeloupe.
- and ———. 1866. *Essai de classification des algues de la Guadeloupe* (ed. 1a). Imprimerie du Gouvernement, Cayenne, Guyane française.
- Silva, P. C., E. G. Meñez and R. L. Moe. 1987. Catalog of the benthic marine algae of the Philippines. *Smithsonian Contrib. Mar. Sci.* 27.
- Steenstof, M. 1967. A revision of the marine algae of São Thomé and Príncipe (Gulf of Guinea). *J. Linn. Soc. (Bot.)* 60: 99–146, 2 pls.
- Taylor, W. R. 1960. *Marine algae of the eastern tropical and subtropical coasts of North America.* Univ. Michigan Press, Ann Arbor.
- Tseng, C. K. (ed.). 1983. *Common seaweeds of China.* Science Press, Beijing.
- Xia, B. M. 1987 [“1986”]. On *Gracilaria salicornia* (C. Agardh) Dawson. *Chin. J. Oceanol. Limnol.* 4: 100–105.
- and I. A. Abbott. 1985. The genus *Polycavernosa* Chang et Xia (Gracilariaceae, Rhodophyta): A comparison with *Gracilaria* Grev. and a key to the species. Pp. 157–162. In: I. A. Abbott and J. N. Norris (eds.), *Taxonomy of economic seaweeds with reference to some Pacific and Caribbean species*, vol. 2. Calif. Sea Grant College Prog., La Jolla, California.
- and ———. 1987. New species of *Polycavernosa* Chang & Xia (Gracilariaceae, Rhodophyta) from the western Pacific. *Phycologia* 26: 405–418.
- Yamamoto, H. 1978. Systematic and anatomical study of the genus *Gracilaria* in Japan. *Mem. Fac. Fish., Hokkaido Univ.* 25: 97–152.
- Zhang, J. (olim Chang, C. F.) and B. Xia. 1984. Some problems in the taxonomy of Chinese species of *Gracilaria* (Rhodophyta). *Hydrobiologia* 116/117: 59–62.