The status of *Polyostea* Ruprecht (1850) and the proposal of *Savoiea* gen. nov. (*Rhodomelaceae*, Rhodophyta)

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In a publication employing molecular and morphological characteristics to recognize generic boundaries in the tribe Pterosiphonieae (*Rhodomelaceae*, Ceramiales, Rhodophyta), Savoie & Saunders (2016) re-circumscribed established genera, described the new genus *Xiphosiphonia*, and reinstated the existing generic name *Polyostea* (Ruprecht, 1850). This latter name goes back to Donati (1750, as "Poliosteo", 1753, as "Polyostea"), but those works by Donati were pre-Linnaean, and are thus invalid (Stafleu & Cowan, 1976). In the post-Linnaean French edition of Donati (1758: 23), the name appeared as "*Poliostée*", but according to Silva (1952: 268) typification of that name is not possible and it is also invalid. Ruprecht's (1850: 39) use of *Polyostea* is thus regarded as having validated the generic name (*Index Nominum Genericorum (Plantarum)* [ING]; Farr & Zijlstra, 2018; Silva was responsible for this entry).

Polyostea Ruprecht has long been regarded as congeneric with *Polysiphonia* (Schmitz, 1889; De Toni, 1903; Silva, 1952; Kylin, 1956; Schneider & Wynne, 2007). The on-line *Index Nominum Algarum* [INA] entry for *Polyostea* lists only three of Ruprecht's species: *P. bipinnata* (Postels & Ruprecht) Ruprecht; *P. gemmifera* Ruprecht; and *P. porphyroides* (Kützing) Ruprecht. The INA card for *Polyostea* also bears the notation "+ 6 n.c." [= additional six new combinations]. In the index of Ruprecht (1850, 1851), additional taxa of *Polyostea* are recognized [*P. brodiaei*, *P. nigrescens*, *P. parasitica*, *P. pennata*. *P. purpurea*, *P. spinulosa*, and *P. stricta*]. These additional names of *Polyostea* are included as other INA entries. Ruprecht's (1850: 234 [426]) Index also has: "*Polysiphonia = Polyostea*". Ruprecht clearly was proposing *Polyostea* as a replacement name for *Polysiphonia*.

In ING (Farr & Zijlstra, 2018) the entry appears as: "*Polyostea* Ruprecht ≡ *Polysiphonia* Greville 1823 (*nom. cons.*)." The triple bar symbol "≡" denotes that these two names are homotypic synonyms and accordingly have the same type.

Savoie & Saunders (2016) attempted to designate *Polyostea bipinnata* (Postels & Ruprecht) Savoie & G.W.Saunders as "lectotype". This treatment, however, needs to be re-evaluated. Silva (in Silva *et al.* 1996) discussed some nomenclatural issues in regard to the genus *Polysiphonia*. The issues originate with *Hutchinsia*, a generic name proposed by C. Agardh (1817). C. Agardh assigned 20 species to his *Hutchinsia* but without indicating a type species. But *Hutchincia* C.Agardh was a later homonym of *Hutchinsia* R.Brown 1812, a genus of *Brassicaceae*, and thus illegitimate. Various attempts were made to replace Agardh's name: *Grammita* was proposed by Bonnemaison (1822); *Polysiphonia* by Greville (1823); *Girodia* by Lestiboudois (1827); *Grammalia* by Dumortier (1829); *Carradoria* by Martius (1833); *Polyochetum* by Chevalier (1836); and *Polyostea* by Ruprecht (1850). According to Silva's nomenclatural notes on *Carradoriella* (in Silva, Basson & Moe 1996: 920-921), the type species of all of these names proposed to replace *Hutchinsia* C.Agardh *nom. illeg*. and some other name regarded as ineligible, automatically have the same type species as the generic name being replaced.

Polysiphonia Greville (1823-24, pl. 90) is a conserved name, and beginning with the Paris Code (1956), *Polysiphonia urceolata* (Dillwyn) Greville has been listed its generitype. Maggs & Hommersand (1993) treated *P. urceolata* as a taxonomic synonym of *P. stricta* (Dillwyn) Greville. Thus, *P. stricta* is the currently accepted name of the generitype of *Polysiphonia*. The result is that because *Polyostea* is a homotypic synonym of *Polysiphonia*, another generic name must be used for the four species found by Savoie & Saunders (2016) to represent a "morphologically and

genetically distinct group". The new genus *Savoiea* is here proposed to accommodate these four species, using essentially the same description that Savoie & Saunders (2016) applied to *Polyostea*, a name that cannot be used as it is a homotypic synonym of *Polysiphonia.*

Savoiea gen. nov.
Description [modified from Savoie & Saunders]: Thalli polysiphonous with 4–14 pericentral cells, ecorticate; trichoblasts absent; both prostrate and erect axes cylindrical, erect axes arising from a prostrate basal system; prostrate axes attached to the substrate by unicellular rhizoids, rhizoids cut off from pericentral cells; erect axes 150–350 µm in diameter, with generally alternate-distichous branching, despite radial development of laterals at the apices; branching to several orders; lateral branches arising at regular intervals from every second or third segment, proximal segments of laterals fused with the bearing axis over 0.5–1.5 segments; terminal ramuli usually incurved and overtopping the apices (giving the false appearance of sympodial growth). Tetrasporangia tetrahedral, with two cover cells, occurring singly per segment in straight series in ultimate and penultimate branches. Cystocarps are globular to ovoid, shortly pedicellate. Male thalli known only in *S. robusta*, spermatangial branches cylindrical, on short branchlets on ultimate laterals, with 3–4 celled sterile apices.

Etymology: named for Dr Amanda M. Savoie, who with her co-author and PhD supervisor Dr Gary W. Saunders, demonstrated the generic distinctiveness of this clade of species within the Tribe Pterosiphonieae.

Generitype: ***Savoiea bipinnata*** (Postels & Ruprecht) *comb. nov.*
Basionym: *Polysiphonia bipinnata* Postels & Ruprecht. *Illustrationes algarum*: 22, 1840.
Homotypic synonyms:
Polyostea bipinnata (Postels & Ruprecht) Ruprecht 1850: 37.
Pterosiphonia bipinnata (Postels & Ruprecht) Falkenberg 1901.
Heterotypic synonyms:
Polyostea gemmifera Ruprecht 1850: 34, pl. 3
Polysiphonia bipinnata var. *gemmifera* (Ruprecht) J.Agardh 1863: 1041.

Savoiea arctica (J.Agardh) *comb. nov.*
Basionym: *Polysiphonia arctica* J.Agardh, *Species genera et ordines algarum,* Part 2, Fasc. 3: 1034, 1863.
Homotypic synonym: *Polyostea arctica* (J.Agardh) Savoie & G.W.Saunders 2016: 928.

Savoiea hamata (E.S.Sinova) comb. nov.
Basionym: *Pterosiphonia hamata* E.S.Sinova *Trudy Tikhookeanskogo komiteta. Transactions of the Pacific Committee of the Academy of sciences of the USSR* 5: 222, fig. 9, 1940.
Homotypic synonym:
Polyostea hamata (E.S.Sinova) Savoie & G.W.Saunders 2016: 928.
Heterotypic synonyms (*fide* Savoie & Saunders 2016):
Pterosiphonia japonica Nagai 1941: 233
Pterosiphonia gardneri Hollenberg 1970: 168.
Tayloriella abyssalis M.J.Wynne 1985: 108.

Savoiea robusta (N.L.Gardner) *comb. nov.*
Basionym: *Pterosiphonia robusta* N.L.Gardner *Univ. Calif. Publs Bot.* 14: 102, pls 26-29, 1927.
Homotypic synonym: *Polyostea robusta* (N.L.Gardner) Savoie & G.W.Saunders 2016: 928.

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