Nomenclatural re-assessments of the typification of *Cryptonemia* (*Halymeniaceae, Rhodophyta*) and the correct name of its type species

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The typification of *Cryptonemia* J.Agardh (*Halymeniaceae, Rhodophyta*) and the correct name of its nomenclatural type require reassessment to take account of an analysis (Woelkerling *et al*. 2019) of four 18th and early 19th century species names, viz, *Fucus palmetta* S.G.Gmelin, *Delesseria gmelinii*, *Fucus lomation* and *Sphaerococcus lactuca*, with links to *Cryptonemia*. Nomenclatural data on the above species names and subsequent combinations are summarized at the end of this account (Table 1). Our outcomes, and the terminology used, are in accord with the current ICN [International Code of Nomenclature for algae, fungi and plants (Shenzhen Code); Turland *et al*. 2018]. ICN Articles, Notes, and Examples cited are from the Shenzhen Code. Where necessary, original author citations and original name spellings have been updated in accordance with ICN Art. 46 and Art. 60, respectively. References to both the journal/book and the independently paginated preprint/offprint versions of several publications are included because of the citation of the latter by some subsequent authors.

J. Agardh (1842: 100) validly published the generic name *Cryptonemia* for '*Cr. lactuca* nob.' (see Table 1) with explicit mention of *Sphaerococcus lactuca* C.Agardh (1822: 231) as "*Sph. lactuca Ag. sp. p*. 231" and for '*Cr. dichotoma* nov. sp.' No type species was indicated or designated, but this was not a requirement for valid publication of a new generic name until 1 January 1958 (ICN Art. 40.1). To our knowledge, *Cryptonemia* is legitimate (Art. 6.5), is not nomenclaturally superfluous (Art. 52), and is not a later homonym (Art. 53). No other species names were mentioned in the generic protologue (Art. 6.13, footnote).

The type of a generic name (Art. 10.1) is the type of the name of a species (Art. 8.1), namely a specimen or illustration. Citation of the species name alone suffices—it is considered the full equivalent of its type (Art. 10.1). The type of a genus name must be chosen (Art. 10.2) from those previously or simultaneously validly published species names (legitimate or illegitimate—Art. 6.3) that are *definitely* included in the generic protologue, whether accepted or synonymized by the author (Art. 10.3). Except as indicated in Art. 10.5, the first author to designate a type of a name of a genus that is in accord with the ICN must be followed.

For *Cryptonemia*, the first author to designate a type species in accord with the ICN was Pfeiffer (1874: 933) who chose *Sphaerococcus lactuca* C.Agardh (1822: 231), a name explicitly included by J. Agardh (1842: 100) in the generic protologue. As explained in ICN Art. 7, *Ex 17*, Pfeiffer's choice is acceptable even though the term "type" does not appear on Pfeiffer's p. 933, but only in the Preface to the work. Chiang (1970: 52) incorrectly concluded that when Zanardini (1868: 201) removed *C. dichotoma* to the genus *Acrodiscus, C. lactuca* automatically came to serve as the nomenclatural type of *Cryptonemia.* Automatic typification through removal of all but one species name from a genus, however, is *not* in accord with ICN Art 7.11. Moreover, Zanardini (1868: 201-

202) did not directly cite *C. lactuca* or mention the word "type" or an equivalent as required by Art. 7.11. Were automatic typification through such removal allowed, *Cryptonemia* would have been automatically typified by *C. dichotoma* when Kützing (1843: 400) transferred *S. lactuca* into *Euhymenia*.

Subsequently, Schmitz (1889: 453), apparently unaware of Pfeiffer's designation, erroneously typified *Cryptonemia* with *C. lomation* (Bertoloni) J.Agardh (1851: 227). As noted by Chiang (1970: 52), however, this choice is untenable because *C. lomation* was not included in the protologue of *Cryptonemia*, as required by Art. 10.2.

Although validly published, *Sphaerococcus lactuca* is a superfluous and illegitimate name (Art. 52.1; Woelkerling *et al*. 2019), and thus '*lactuca*' cannot be used as the correct specific epithet (Art. 6.6; 11.4) for the type of *Cryptonemia*. The correct name for *S. lactuca*, when placed in *Cryptonemia*, is determined by ICN Art. 11.4. Two relevant epithets published in legitimate species names exist (Woelkerling *et al*. 2019): *'palmetta*' (in *Fucus palmetta* S.G.Gmelin, 1768: 183), and *'gmelinii*' (in the legitimate homotypic replacement name *Delesseria gmelinii* J.V.Lamouroux, 1813a: 124). The earlier (1768) name *Fucus palmetta* has priority (as defined in the ICN glossary) and its epithet must be adopted except when this would result in a later homonym (Art. 53) and thus contravene Art 11.4*(c)*. Within both *Delesseria* and *Sphaerococcus*, later homonymy would result due to the existence of the earlier species names *Delesseria palmetta* (Stackhouse) J.V.Lamouroux (1813a: 125, 1813b: 37) and *Sphaerococcus palmetta* (Stackhouse) C.Agardh (1817: XVI), respectively. Thus, within *Sphaerococcus*, and in accord with Art 11.4*(c)*, the next earliest legitimate epithet, *gmelinii*, should have been adopted by C. Agardh (1822) rather than proposing the new epithet *lactuca*. Woelkerling *et al*. (2019) provide further insights into these names.

Within *Cryptonemia*, however, the epithet *palmetta* (of S.G. Gmelin) was available and should have been adopted by J. Agardh (1842) rather than proposing *Cryptonemia lactuca* validated by reference to the illegitimate *Sphaerococcus lactuca*. Because the combination (Arts 6.7, 6.10) *Cryptonemia palmetta* has not been published to date, we here propose ***Cryptonemia palmetta* (S.G.Gmelin) Woelkerling *et al.*, *comb. nov.*** (basionym: *Fucus palmetta* S.G.Gmelin, *Hist. fuc.* 183, pl. 22: fig. 2; pl. 23, 1768) as a new combination that is the correct species name providing the type of *Cryptonemia*. The nomenclatural type of *C. palmetta* is the type of its basionym (Art. 7.3) and was designated by Woelkerling *et al.* (2019).

Our analysis together with that of Woelkerling *et al*. (2019) reaffirms that Pfeiffer's (1874: 933) choice of *Sphaerococcus lactuca* C.Agardh (1822: 231) as the nomenclatural type (Art. 7.2) of *Cryptonemia* J.Agardh (1842) is in accord with the current ICN, but because *S. lactuca* is superfluous and illegitimate (Art 52.1), the earliest legitimate correct name (Art. 6.6, 11.4) of the nomenclatural type species, when placed in *Cryptonemia*, is *C. palmetta* (S.G.Gmelin) Woelkerling *et al*. not "*C. gmelinii*" or *C. lactuca* or *C. lomation*. The priority of *C. palmetta* dates from 1768 (Art. 11.4), the year in which the specific epithet of the earliest legitimate name of the species (*Fucus palmetta* S.G.Gmelin) was validly published.

Since 1889, however, *Cryptonemia lomation* (Bertoloni) J.Agardh (1851: 227) has been incorrectly cited by some authors as the type of *Cryptonemia* (e.g. Schmitz 1889: 453; Schmitz & Hauptfleisch 1897: 514; Kylin 1956: 219), and by others as the earliest correct name of the type of *Cryptonemia* either based on the viewpoint that *Sphaerococcus lactuca* is a heterotypic synonym of *Cryptonemia lomation* (as indicated by use of an '=' sign; see Turland 2019: 167) (e.g. Chiang 1970: 52; Irvine & Farnham 1983: 17; Womersley & Lewis 1994: 179) and not recognising the priority of *Fucus palmetta*, or based on the viewpoint (Athanasiadis 2016: 630, footnote 9 & p. 631, "note" at end of

footnote 5) that *Sphaerococcus lactuca* is a superfluous illegitimate name for *Fucus lomation* Bertoloni (1818), the basionym of *Cryptonemia lomation*.

The viewpoint that *Sphaerococcus lactuca* C.Agardh (1822) is a heterotypic synonym of *Cryptonemia lomation* is nomenclaturally incorrect because, as shown by Woelkerling *et al*. (2019), *Sphaerococcus lactuca* C.Agardh (1822) is superfluous and illegitimate and ultimately is typified by the type of *Fucus palmetta* S.G.Gmelin (1768) whereas *Cryptonemia lomation* (Bertoloni) J.Agardh is typified by the type of its basionym, *Fucus lomation* Bertoloni (1818). When (see Woelkerling *et al*. 2019), within *Cryptonemia*, the type of *F. palmetta* S.G.Gmelin (≡ *S. lactuca* C.Agardh) and the type of *F. lomation* are considered conspecific, the correct name of the combined species based on priority (Art. 10.5) is *Cryptonemia palmetta*, and *C. lomation* becomes a heterotypic synonym.

The viewpoint that *Sphaerococcus lactuca* C.Agardh (1822) is a superfluous illegitimate name for *Fucus lomation* Bertoloni (1818) also is incorrect. Athanasiadis (2016: 631, "note" at end of footnote 5) correctly indicated that C. Agardh was transferring *Fucus palmetta* to *Sphaerococcus* and had to avoid creating a homonym for *S. palmetta* (Stackhouse) C.Agardh (1817), but incorrectly concluded that C. Agardh should have adopted the epithet of *Fucus lomation* Bertoloni and that *Sphaerococcus lactuca* C.Agardh had the same type as *Fucus lomation*. In fact, as noted above, C. Agardh should have adopted the earlier legitimate epithet '*gmelinii*' of *Delesseria gmelinii* J.V.Lamouroux (1813a, 1813b). Further data on the designated types of *Fucus palmetta* S.G.Gmelin (including the homotypic *Sphaerococcus lactuca* C.Agardh), and *Fucus lomation* Bertoloni, are provided by Woelkerling *et al*. (2019).

The homotypic *Fucus palmetta* S.G.Gmelin (1768: 183), *Delesseria gmelinii* J.V.Lamouroux (1813a: 124), and *Sphaerococcus lactuca* C.Agardh (1822: 231) have been transferred into various other genera since they were first described. Table 1 summarizes the resulting generic names and binomials with indications of their current nomenclatural status. Data on the heterotypic *Fucus lomation* (see Woelkerling *et* al. 2019) also are included. For information on names associated with the later homonym *Fucus palmetta* Stackhouse (1801: 102, pl. XVI), see Guiry (1977) and Woelkerling *et al*. (2019).

Table 1. Names based on *Fucus palmetta* S.G.Gmelin, *Delesseria gmelinii* J.V.Lamouroux, *Fucus lomation* Bertoloni, and *Sphaerococcus lactuca* C.Agardh with nomenclatural notes. Names listed chronologically within each epithet group.

Binomials involving the epithet *palmetta* S.G. Gmelin (1768) (*non* Stackhouse 1801)

Fucus palmetta S.G.Gmelin (1768: 183, pl. XXII, fig. 3, pl. XXIII). Legitimate new species name.

Cryptonemia palmetta (S.G.Gmelin) Woelkerling, G.Furnari, Cormaci & McNeill (this paper). New combination based on *Fucus palmetta* S.G.Gmelin.

Binomials involving the epithet *gmelinii*

Delesseria gmelinii J.V.Lamouroux 1813a: 124 (as '*gmelini'*). Legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). See ICN Art. 7.3, *Ex. 2* for details. Name typified by the type of *Fucus palmetta* S.G.Gmelin (*non* Stackhouse 1801: 102). Also see Woelkerling *et al*. (2019).

Dawsonia gmelinii (J.V.Lamouroux) J.V.Lamouroux (1824a: 367; 1824b: 387, as '*gmelini*'). New combination based on *Delesseria gmelinii* (see above), but the binomial *Dawsonia gmelinii* is superfluous (Art. 52.1) because the older epithet *palmetta* was available for use in *Dawsonia* J.V.Lamouroux in 1824 and should have been adopted. Although superfluous, *Dawsonia gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Nitophyllum gmelinii (J.V.Lamouroux) Greville (1830: xlviii, 82, as '*gmelini*'). New combination based on *Delesseria gmelinii* J.V.Lamouroux (1813a: 124), a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183) (see above), but the binomial *N. gmelinii* is superfluous (Art. 52.1) because the older epithet *palmetta* was available for use in *Nitophyllum* in 1830 and should have been adopted. Although superfluous, *N. gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Halymenia gmelinii Duby (1830: 945, as '*gmelini* (Dub. mss)'). Although apparently published as a combination based on *Delesseria gmelinii* J.V.Lamouroux (1813a: 124; see entry above), the name must be treated as that of a new species, because, by citing "Delesseria gmelini, Lamour. ess. excl. syn. Gmel..", Duby explicitly excluded the type of *D. gmelinii* (i.e., that of *F. palmetta* S.G.Gmelin) (Art. 48.1 second sentence). *Halymenia gmelinii* Duby is, however, a superfluous and illegitimate name because Duby also cited, in synonymy, *D. bonnemaisonii* C.Agardh (1822: 186), the epithet of which he ought to have adopted. Duby's name is, therefore, typified by the type of *D. bonnemaisonii*.

Aeglophyllum gmelinii (J.V.Lamouroux) Kützing (1843: 443, as '*gmelini*'). New combination derived from *Nitophyllum gmelinii* (J.V.Lamouroux) Greville (1830: xlviii, 82, as '*gmelini*'), whose basionym, *Delesseria gmelinii* J.V.Lamouroux (1813a: 124) (see above), is a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). *Aeglophyllum gmelinii*, *N. gmelinii*, and *D. gmelinii* have the same type as *F. palmetta* S.G.Gmelin (see Art. 7.3, *Ex. 2*), and within *Aeglophyllum* in 1843, the epithet *palmetta* was available for use, thereby rendering *Aeglophyllum gmelinii* superfluous (Art. 52.1). Although superfluous, *Aeglophyllum gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Aglaophyllum gmelinii (J.V.Lamouroux) Endlicher (1843: 52, as '*gmelini*'). New combination for *Delesseria gmelinii* J.V.Lamouroux (1813a: 124) (see entry above), a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). However, the binomial *Aglaophyllum gmelinii* is superfluous (Art. 52.1) because the older epithet *palmetta* was available for use in *Aglaophyllum* in 1843 and should have been adopted. Although superfluous, *Aglaophyllum gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Schizoglossum gmelinii (J.V.Lamouroux) Kützing (1849: 870, as '*gmelini*'). New combination derived from *Nitophyllum gmelinii* (J.V.Lamouroux) Greville (1830: xlviii, 82, as '*gmelini*'), whose basionym, *Delesseria gmelinii* J.V.Lamouroux (1813a: 124) (see above), is a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). Thus *S. gmelinii*, *N. gmelinii*, and *D. gmelinii* have the same type as *F. palmetta* S.G.Gmelin (see Art. 7.3, *Ex. 2*), and within *Schizoglossum* in 1849, the epithet *palmetta* was available for use, and should have been adopted. Although superfluous, *Schizoglossum gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Kallymenia gmelinii (J.V.Lamouroux) Grunow (1867: 72; 1870: 72, footnote, as "*Kallymenia gmelini* Grunow*"*). Treated here under Art. 41.4 as a new combination based on *Delesseria gmelinii* J.V.Lamouroux (1813a: 124), a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183) (see above). Grunow (1867: 72) did not refer to *D. gmelinii* but cited the illustration (Gmelin 1768: pl. 23, as "Gmelin *Hist. Fucor. t.* 23") that Woelkerling *et al.* (2019) subsequently designated as lectotype of *F. palmetta* (and the homotypic *Delesseria gmelinii*). Grunow (1867: 72) also stated that specimens he saw in the Berlin herbarium from the Kurile Islands exactly matched the cited Gmelin illustration. The name *Kallymenia gmelinii*, however, is superfluous (Art. 52.1) because the older epithet *palmetta* was available for use in *Kallymenia* in 1867 and should have been adopted. Although superfluous, *K. gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Scutarius gmelinii (J.V.Lamouroux) Kuntze (1891:920, as '*Scutarius gmelinii* (Grev.)'). New combination derived by Kuntze (1891) from *Nitophyllum gmelinii* (J.V.Lamouroux) Greville (1830: xlviii, 82, as '*gmelini*') (see above), whose basionym, *Delesseria gmelinii* J.V.Lamouroux (1813a: 124) (see above), is a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). *Scutarius gmelinii*, *N. gmelinii*, and *D. gmelinii* have the same type as *F. palmetta* S.G.Gmelin (see Art. 7.3, *Ex. 2*), and within *Scutarius* in 1891, the epithet *palmetta* was available for use and has priority against the epithet *gmelinii* (Art. 11.4), thereby rendering the binomial *S. gmelinii* superfluous (Art. 52.1). Although superfluous, *Scutarius gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Erythrophyllum gmelinii (J.V.Lamouroux) Yendo (1915: 235, as '*Erythrophyllum gmelini* (Grun)'). Treated here under Art. 41.3 as a new combination based on *Delesseria gmelinii* J.V.Lamouroux (1813a: 124), although derived by Yendo (1915) from *Kallymenia gmelinii* Grunow (1867: 72; 1870: 72) (see above), another combination based on *D. gmelinii*. *Delesseria gmelinii* is a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). Consequently, *Erythrophyllum gmelinii* is superfluous (Art. 52.1) because the older epithet *palmetta* was available for use in *Erythrophyllum* in 1915 and should have been adopted. Although superfluous, *E. gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Polyneura gmelinii (J.V.Lamouroux) Kylin (1924: 40, as '*gmelini*'). New combination derived from *Nitophyllum gmelinii* (J.V.Lamouroux) Greville (1830: xlviii, 82, as '*gmelini*'), whose basionym, *Delesseria gmelinii* J.V.Lamouroux (1813a: 124) (see above), is a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183). Thus *P. gmelinii*, *N. gmelinii*, and *D. gmelinii* have the same type as *F. palmetta* S.G.Gmelin (see Art. 7.3, *Ex. 2)*, and within *Polyneura* in 1924, the epithet *palmetta* was available for use and has priority against the epithet *gmelinii* (Art. 11.4), thereby rendering *Polyneura. gmelinii* superfluous (Art. 52.1). Although superfluous, *Polyneura gmelinii* is legitimate (Art. 52.4) because it has a basionym, which by definition (ICN glossary), is legitimate.

Cirrulicarpus gmelinii (J.V.Lamouroux) Tokida & Masaki (1956: 70, as '*Cirrulicarpus gmelini* (Grunow) Tokida et Masaki'). New combination derived from *Kallymenia gmelinii* Grunow (1867: 72; 1870: 72) (see entry above), in turn, based on *Delesseria gmelinii* J.V.Lamouroux (1813a: 124), a legitimate replacement name for *Fucus palmetta* S.G.Gmelin (1768: 183) (see above). Tokida & Masaki (1956) did not mention *Delesseria gmelinii*. Grunow (1867: 72) did not refer to *D. gmelinii* either, but cited the illustration (Gmelin 1768: pl. 23, as "Gmelin *Hist. Fucor. t.* 23") that Woelkerling *et al.* (2019) subsequently designated lectotype of *F. palmetta* (and the homotypic *Delesseria gmelinii*). Thus *Cirrulicarpus gmelinii* is superfluous (Art. 52.1) because the older epithet *palmetta* was available for use in *Cirrulicarpus* in 1956 and should have been adopted by Tokida & Masaki. Although superfluous, *C. gmelinii* is not illegitimate (Art. 52, *Note 2*). The generic name *Cirrulicarpus* Tokida & Masaki (1956) is typified by the type of *C. gmelinii* and thus has the same type as *F. palmetta* S.G.Gmelin (see Art. 7.3, *Ex. 2*) and of *Cryptonemia palmetta* (S.G.Gmelin) Woelkerling *et al*. (this paper), the correct name for the type species of *Cryptonemia* J.Agardh (1842). As a result, the name *Cirrulicarpus* Tokida & Masaki (1956) is a homotypic synonym of *Cryptonemia* J.Agardh (1842).

Binomials involving the epithet *lactuca*

Sphaerococcus lactuca C.Agardh (1822: 231). Superfluous, illegitimate name (Art. 52.1); protologue definitely includes the type of *Fucus palmetta* S.G.Gmelin (1768) through citation of that name (Art. 52.2*(e)*), and therefore the type of the homotypic *Delesseria gmelinii* J.V.Lamouroux (1813a), the epithet (*gmelinii*) of which should have been adopted. See Turland *et al*. (2018, Art. 7, *Ex. 2*) and Woelkerling *et al*. (2019) for further details.

Phyllophora ? *lactuca* Greville (1830: lvi). Intended as a new combination but superfluous and illegitimate (Art. 52.1). Greville (1830: lvi) cited the superfluous *Sphaerococcus lactuca* C.Agardh (1822: 231, as Ag. p. 211) (see entry above) and the legitimate *Fucus palmetta* S.G.Gmelin (1768: 183, pl. XXII, fig. 3, pl. XXIII) (as 'Gmel. t. 22, 23') (see entry above) as synonyms. The type of *P. lactuca* and of *S. lactuca* is the same as the type of *F. palmetta* (Woelkerling *et al*. 2019), and because the older epithet *palmetta* was available for use in *Phyllophora* in 1830, it should have been adopted.

Cryptonemia lactuca J.Agardh (1842: 100, as '*Cr. lactuca* nob.'). Illegitimate name. In using the abbreviation 'nob.'(see ICN Rec. 46D & Turland 2019: 167), J. Agardh was authoring a new name ascribed to himself but validated (Art. 38.13, 38.14) by reference to the description of "*Sph. lactuca Ag. sp. p. 231*" (C.Agardh 1822: 231). Because *Sphaerococcus lactuca* is illegitimate (see separate entry above), J. Agardh (1842) in effect re-used the specific epithet *lactuca* in a different name, thus creating a replacement name with the same type as *S. lactuca* (Art. 58.1). *Cryptonemia lactuca* J.Agardh, however, also is illegitimate (Art. 58, *Note 1*) because the type of *S. lactuca*, which is the same as the type of *Fucus palmetta* S.G.Gmelin (see Woelkerling *et al*. 2019), was not explicitly excluded by J. Agardh (1842).

Euhymenia lactuca Kützing (1843: 400). Illegitimate name validated (Art. 38.1) solely by reference to the effectively published description of "*Sphaerococcus lactuca* AG. Spec. p. 231." (C. Agardh 1822: 231). Because *Sphaerococcus lactuca* also is illegitimate (see separate entry above), Kützing (1843) in effect re-used the specific epithet *lactuca* in a different name, thus creating a replacement name with the same type as *S. lactuca* (Art. 58.1). *Euhymenia lactuca* Kützing, however, also is illegitimate (Art. 58, *Note 1*) because the type of *S. lactuca*, which is the same as the type of *Fucus palmetta* S.G.Gmelin (see Woelkerling *et al*. 2019), was not explicitly excluded by Kützing (1843).

Kallymenia lactuca Rabenhorst (1846: 149). Intended as a new combination but was superfluous and illegitimate (Art. 52.1). Rabenhorst (1846: 149) cited the superfluous *Sphaerococcus lactuca* C.Agardh (1822: 231, as 'Ag. spec. I. 231') (see entry above) as a synonym. The type of *K. lactuca* and of *S. lactuca* is the same as the type of *F. palmetta* S.G.Gmelin (1768: 183) (see above and Woelkerling *et al*. 2019), and because the older epithet *palmetta* was available for use in *Kallymenia* in 1846, it should have been adopted by Rabenhorst. Rabenhorst (1846) did not explicitly exclude the type of *S. lactuca*, or of *Fucus palmetta* S.G.Gmelin from his account of *K. lactuca*.

Names involving the epithet *lomation*

Fucus lomation Bertoloni (1818: 289). Legitimate new species name; treated as a heterotypic synonym of *F. palmetta* S.G.Gmelin by Woelkerling *et al*. (2019).

Halymenia membranifolia var. *lomation* (Bertoloni) Duby (1830: 943) (as γ. *lomation*). Validly published name (Art. 52.1) based on and homotypic with *Fucus lomation* Bertoloni (1818) (see above), which is cited in the protologue. Duby (1830: 943) cited *Fucus palmetta* S.G.Gmelin (1768), which is based on different type, as a synonym, but because names do not have priority outside the rank in which they are published (Art. 11.2), the 1768 specific epithet *palmetta* does not have priority over Duby's 1830 varietal epithet *lomation*.

Cryptonemia lomation (Bertoloni) J.Agardh (1851: 227). Validly published new combination (Art. 41.1) based on *Fucus lomation* Bertoloni.

Sincere thanks are due Dr W.-H. Kusber (Botanic Garden and Botanical Museum Berlin, Freie Universität Berlin), Dr M.J. Wynne (University of Michigan), and the Editor of *Notulae Algarum* (Dr M.D. Guiry) for detailed reviews that contributed to improvements in the final manuscript.

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