

Trinity College

Trinity College Digital Repository

Faculty Scholarship

2024

Taxonomic addendum [includes eight new species descriptions]

Gary W. Saunders

University of New Brunswick

Craig W. Schneider

Trinity College, craig.schneider.1@trincoll.edu

Follow this and additional works at: <https://digitalrepository.trincoll.edu/facpub>



Part of the [Life Sciences Commons](#)

Trinity College
HARTFORD CONNECTICUT

**NEAS KEYS TO THE BENTHIC MARINE ALGAE
OF THE
NORTHWEST ATLANTIC AND CANADIAN ARCTIC
FROM
LONG ISLAND SOUND TO CAMBRIDGE BAY, 3rd EDITION,
WITH THE DESCRIPTION OF EIGHT NEW SPECIES**

Gary W. Saunders

Centre for Environmental & Molecular Algal Research
Department of Biology, University of New Brunswick



CONTRIBUTION NUMBER 3

**NEAS Keys to the Benthic Marine Algae of the
Northwest Atlantic and Canadian Arctic from
Long Island Sound to Cambridge Bay, 3rd
Edition, with the Description of Eight New
Species**

by
Gary W. Saunders

*Centre for Environmental & Molecular Algal Research, Department of Biology,
University of New Brunswick, Fredericton, New Brunswick E3B 5A3, Canada*

NEAS Contribution Number 3

Cover photo: *Pleonosporium novae-angliae* G.W.Saunders &
C.W.Schneid. from Fort Wetherill, Rhode Island, USA. Photo, C.W. Schneider.

Copyright © 2024 by the Northeast Algal Society
All rights reserved
Printed in the United States of America

ISBN 979-8-218-39175-1

Copies can be ordered from the Northeast Algal Society (<https://northeastalgae.org/>)

Taxonomic Addendum

by G.W. Saunders & C.W. Schneider

This section provides the necessary information for the valid publication of the eight new taxa and one new combination cited in this guide. For more detailed anatomical documentation and further insights, visit the online companion guide (Saunders 2023).

Ocrophyta, Phaeophyceae

Petalonia arctica G.W.Saunders & C.W.Schneider sp. nov.

Description: Presumptive gametophytes are light brown blades 0.3–2.5 mm wide by 15–200 mm tall, straight, in some specimens the axes twisted. Blades becoming terete near the base, with a small attachment disc. In long section, blades 70–120 μm thick, with 2–3 layers of axially elongate medullary cells, the largest centrally, 12–60 μm wide by 34–128 μm long, becoming progressively smaller to a 1 (–2) layered inner and 1 (–2) layered outer cortex, the cells of the latter 6.5–9.0 μm wide and 2.5–5.0 μm tall (possibly not fully rehydrated). Medullary cells loose leaving localized cavities into which rhizoidal cells develop. Phaeophycean hairs common and formed in pits. Presumptive sporophyte of the '*Ralfsia*' type forming orange- to blackish-brown crusts, 1–7 mm in diameter (commonly coalescing and appearing more extensive), on rock and cobble.

Diagnosis: In addition to genetic differences in COI-5P, ITS and *rbcl* sequences, this species differs from *Petalonia fascia* (O.F.Müller) Kuntze by typically having narrower (< 0.5 mm) blades. However, collections of *P. fascia* from the Northumberland Strait (and thus presumably other areas) can be quite narrow and sequence data are necessary for a positive identification. There is also a tendency for *P. fascia* to have more medullary layers (3+) and/or more rhizoidal development resulting in fewer central cavities when viewed in transverse section.

Etymology: Named for the distribution of this species, which as presently known is largely confined to the Canadian Arctic.

Type Collection: Coll. G.W. Saunders, B. Clarkston & D.C. McDevit, 20 Aug. 2006, Bluff A, Churchill Northern Studies Centre, Manitoba, Canada, 58.7703° N, 93.8474° W, subtidal, 1 m on rock.

Holotype (designated here): UNB; GWS005259, BOLD MACRO259-06 (Fig. 1).
Isotypes: UNB; GWS005258, GWS005260, GWS005262, GWS005268, GWS005276.

Holotype DNA barcode: JX572033 (COI-5P).

Remarks: This species was common in the intertidal and shallow subtidal among our collections from Churchill, Manitoba, and Labrador, Newfoundland. This species was assigned to *Petalonia filiformis* (Batters) Kuntze [= *Planosiphon filiformis* (Batters) Santiañez & Kogame] in McDevit & Saunders (2017), but this genetic group is inconsistent with that species as documented in Santiañez & Kogame (2017) which is correctly placed in the genus *Planosiphon*.

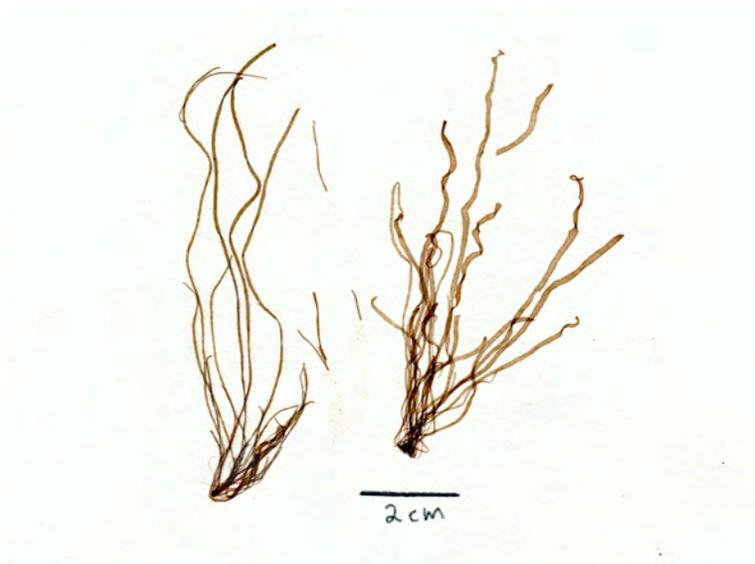


Figure 1. Holotype – *Petalonia arctica* sp. nov. (GWS005259; scale 2 cm).

***Polycerea cladosiphonoides* G.W.Saunders & C.W.Schneider sp. nov.**

Description: Thalli brown, to 20 cm tall, and sparsely branched to 3–4 orders. Medulla of loosely compacted rectangular cells, 35–80 μm wide by 60–145 μm tall, becoming progressively smaller toward the surface where darkly staining rhizoidal filaments are produced, and an outer covering of assimilatory filaments. Assimilatory filaments are found on the larger medullary cells directly but are more typically borne on the pigmented rhizoidal filaments, range from 4–14 cells in length, are typically only branched low on the filaments, and are curved and clavate. Their lower cells are rectangular oval, 9–11 μm wide by 14–22 μm long, while terminal cells are 16–18 μm wide by 21–24 μm long. Phaeophycean hairs are common and borne on lower cells of the assimilatory filaments. Unilocular sporangia are oval, 34–38 μm wide by 40–45 μm tall, and are produced either proximally on assimilatory filaments, or may replace them.

Diagnosis: In addition to differences in COI-5P and *rbcl* sequences, the terminal cells of the assimilatory filaments are considerably smaller in *Polycerea cladosiphonoides* relative to *Polycerea borealis* Vinogradova. The former has only been collected in Newfoundland to date while *P. borealis* may be confined to the Arctic. It differs from *Cladosiphon zosteræ* (J.Agardh) Kylin in the production of the assimilatory filaments predominantly from pigmented surface rhizoids.

Etymology: Named for superficially resembling species of the genus *Cladosiphon*.

Type Collection: Coll. D.C. McDevit, J. Utge & L. Le Gall, 17 Jul. 2006, Bottle Cove, Newfoundland, Canada, 49.1142° N, 58.4136° W, subtidal on rock.

Holotype (designated here): UNB; GWS007380, BOLD MACRO302-06, sporophyte with unilocular sporangia (Fig. 2).

Holotype DNA barcode: OQ968935 (COI-5P); OQ945612 (*rbcl*).

Remarks: We have a single collection of this species from the subtidal on rock, Bottle Cove, Newfoundland. It was originally identified as *Cladosiphon zosteræ*, but our data failed to match sequences in GenBank assigned to this species. Further investigation indicates that this species is superficially similar to *C. zosteræ* but differs in the transition from the medulla to the assimilatory filaments. Harvey (1851, as *Mesogloia zosteræ* Areschoug, p. 127, pl. 10A) appeared to have our new species in his early studies, assigning it with some hesitation to *C. zosteræ*. Farlow [1881, as *Castagnea zosteræ* (J.Agardh) Thuret, p. 86] noted that the plant depicted in Harvey (1851) was different from bona fide *Cladosiphon zosteræ* in that Harvey reported the assimilatory filaments arising from narrow pigmented outer filaments rather than directly on the large outer cortical cells. As noted in the protologue, both types of assimilatory filament origins can occur in the holotype specimen although the former appears more common. When subjected to a wider geographic molecular analysis, *P. borealis* and *P. cladosiphonoides* may not actually group with the type species *P. nigrescens* (Harvey ex. Kutzing) Kylin from Australia, but appear to ally with collections of *Cladosiphon vermicularis* (J.Agardh) Kylin from there. More detailed phylogenetic analyses are necessary to resolve these uncertainties but genus-level changes are inevitable.



Figure 2. Holotype – *Polycerea cladosiphonoides* sp. nov. (GWS007380; scale a centimeter ruler).

***Saundersella doloresiae* G.W.Saunders & C.W.Schneider sp. nov.**

Description: Unbranched olive brown terete axes, 2–6 cm tall by 0.4–0.7 mm wide, growing on *Chordaria chordaeformis* (Kjellman) H.Kawai & S.-H.Kim. In longitudinal section, axes hollow and surrounded by a medulla

composed of a loose investment of anastomosing, axially elongate filaments, the cells 12–32 μm wide, and forming at best a weak subcortex. Borne on this outer layer are assimilatory filaments of 2–4 cells, the terminal cells highly variable in width, 10–25 μm , with some quite large and having the appearance of the outermost assimilatory cells in *Sphaerotrichia divaricata* (C.Agardh) Kylin. Phaeophycean hairs are present and borne low on the assimilatory filaments and/or medullary cells. Unilocular sporangia are similarly borne on this outer medullary/subcortical layer being obovate in shape, 32–38 μm long.

Diagnosis: In addition to differences in COI-5P and *rbcL* sequences, this species differs from the type *Saundersella simplex* (D.A.Saunders) Kylin in biogeography, as well as its thinner thalli, host preference, thinner medullary filaments, shorter assimilatory filaments with more variable and broader terminal cells, and less elongate unilocular sporangia. It differs from congener *Saundersella crassa* H.Kawai, Y.Watanabe & Hanyuda again in distribution, but that is also a much more robust species to 50 (–90) cm tall and up to 5 mm wide. Additionally, *S. crassa* has 2–6 cells in its assimilatory filaments and its unilocular structures can reach 60 μm in length.

Etymology: GWS has named this species in honor of his life partner Dolores for many decades of unwavering support through thick and thin. A more beautiful species would have been preferred, but this binomial presented a unique opportunity.

Type Collection: Coll. G.W. Saunders, K. Dixon & C.E. Lane, 9 Sept. 2014, Turnagain I., outside village Black Harbour, Labrador Peninsula, Newfoundland, Canada, 56.76594° N, 61.31059° W, subtidal (2 m) on *Chordaria chordaeformis* (Kjellman) H.Kawai & S.-H.Kim.

Holotype (designated here): UNB; GWS040333, BOLD MACRO3768-14, sporophyte with unilocular sporangia (Fig. 3).

Holotype DNA barcode: MH309329 (COI-5P); MH277223 (*rbcL*).

Remarks: This species likely accounts for records of *Saundersella simplex* in Greenland (Pedersen 2011). Further study is needed to ascertain if collections from Spitsbergen also match *S. doloresiae* or if they are a better match to *S. crassa*, which we have collected from Nome, Alaska, USA on *Chordaria* sp.

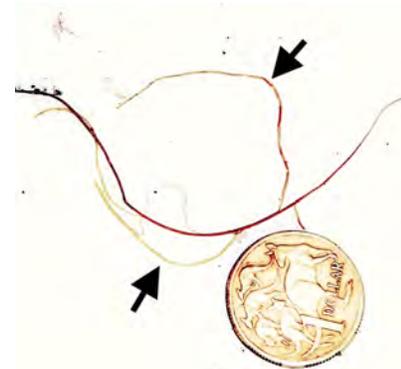


Figure 3. Holotype – *Saundersella doloresiae* sp. nov. (arrows) (GWS040333) on host *Chordaria chordaeformis* (scale 2.5 cm coin).

Stilophora fistulosa G.W.Saunders & C.W.Schneider sp. nov.

Description: Thalli light- to yellowish-brown, to 16 (–30) cm tall and dichotomously to irregularly branched at angles commonly approaching 90°, arising from discoidal holdfasts. Axes terete, 1.5–2.5 mm wide, with or without spinous proliferations and whorled to irregularly distributed clumps of assimilatory filaments. Axes are terete in transverse section, hollowing away from the tip with axially elongate medullary filaments lining the cavity and bearing a 2–3 celled parenchymatous cortex with cells reducing in size toward the thallus surface. Branched assimilatory filaments develop from the outermost cortical cells, 3–5 cells long, clavate with an enlarged apical cell. Hairs are typically produced among assimilatory filaments, as are plurilocular structures, which are uniseriate and of 4–7 chambers and borne laterally from the lowest cells of the assimilatory filaments.

Diagnosis: In addition to differences in COI-5P and *rbcL* sequence, this species appears to be confined to the NW Atlantic while *Stilophora tenella* (Esper) P.C.Silva may be confined to the NE Atlantic. *Stilophora fistulosa* is also considered to be coarser overall [Farlow 1881, p. 90; as *Stilophora rhizodes* (C.Agardh) J.Agardh].

Etymology: Named for the largely hollow thallus in mature axes.

Type Collection: Coll. G.W. Saunders, A. Savoie, C. Longtin, K. Dixon & M. Bruce, 16 Aug. 2012, Pomquet (early on Monks Head Road), Nova Scotia, Canada, 45.66191° N, 61.83081° W, drift.

Holotype (designated here): UNB; GWS032160, BOLD MACRO3503-12, plurilocular structures (Fig. 4). Isotype: UNB; GWS032161.

Holotype DNA barcode: OQ945540 (*rbcL*-3P).

Remarks: Our three collections of *Stilophora fistulosa* differ in COI-5P (only a 96% match) to a sequence from Brittany (LM994991), which is itself distant from the type locality of *S. tenella* in Italy, but closer than our collections in the Northumberland Strait. Specimens from New England and other regions of the NW, e.g., Bermuda 1912 collections, need to be studied. Farlow [1881, as *Stilophora rhizodes* (C.Agardh) J.Agardh] questioned the inclusion of NW Atlantic populations with the European *S. tenella*, an observation apparently overlooked by subsequent researchers (e.g., Taylor 1957, as *S. rhizodes*; Sears 2002).

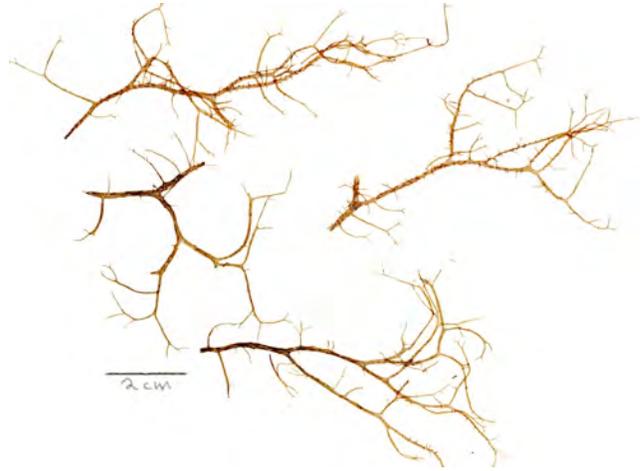


Figure 4. Holotype – *Stilophora fistulosa* sp. nov. (GWS032160; scale 2 cm).

Rhodophyta, Eurhodophytina, Florideophyceae

Ceramium facetum G.W.Saunders & C.W.Schneider sp. nov.

Description: Plants delicate, 1–8 cm in height, brownish-red to straw colored tufts growing on rock, mussels, other algae and *Zostera*. Branching subdichotomous with primary branches every 6–12 (–18) segments and with adventitious branches produced on most individuals, these tend to remain short and do not mask the primary branching pattern. Cells lower on main (partially prostrate?) axes produce multicellular rhizoids, which can terminate in multicellular digitate attachment pads. The tips of the erect axes can be slightly curved but are more typically strongly inrolled. Clear alternation of corticated nodes and ecorticate internodes, with anterior and posterior cortical development appearing roughly symmetrical resulting in even development over the periaxial cells. Near the apices, axes are 40–85 μm wide and the segments 0.5–1.5 diameters long with the internodes 0.4–1.0 x longer than the nodes. Middle thallus segments are 80–180 μm wide and ~1.4–3.2 diameters long with the internodes 1.5–3.0 x longer than the nodes. In proximal portions, the segments are 75–260 μm wide 6–8 diameters long with the internodes 3–7 x longer than the nodes. Gland cells and spines absent; hairs rare to abundant (notably at apices). Six periaxial cells are produced at each node, these considerably larger than the surrounding cortical cells. Gonimoblasts abaxial, 145–260 μm in diameter, appearing to have a single gonimolobe and 1–2 involucre filaments. Spermatangia form extensive sori across node cortical cells. Tetrasporangia 1–4 per node, decussate to irregular in division, 39–50 μm wide by 53–70 μm long, and partially exposed to more completely immersed in the cortex.

Diagnosis: In addition to differences in COI-5P and *rbcL* sequence, *Ceramium facetum* differs from *Ceramium deslongchampsii* Chauvin ex Duby, the only other congener in our flora with a regular alternation of corticated nodes and ecorticate internodes, by the branches being widely separated (at times 10 to 40+ nodes) and the tips being typically straight in the latter. It also differs from *C. facetum* in having 4 (–5) periaxial cells rather than six.

Etymology: Named for the elegance of this species.

Type Collection: Coll. G.W. Saunders, 27 Aug. 2007, Kouchibouguac Lagoon, New Brunswick, Canada, 46.8348° N, 64.9299° W, subtidal (1 m) on *Zostera* blades.

Holotype (designated here): UNB; GWS006224, BOLD ABMMC3851-09 (Fig. 5). Isotype: UNB; GWS006237, tetrasporophyte.

Holotype DNA barcode: OQ968934 (COI-5P).

Remarks: While it has been generally reported that there are six or seven species of *Ceramium* in Atlantic Canada, the delimitation of and names that should be assigned to these species have long been uncertain (Bird & McLachlan 1992, Sears 2002, Mathieson & Dawes 2017). Routine DNA barcoding surveys using COI-5P and *rbcL* have indeed uncovered six genetic groups assignable to *Ceramium sensu lato* (Bruce & Saunders 2012), with five of these found in Atlantic Canada (the exception is *C. secundatum* Lyngbye, an introduced species restricted to southern New England in the NW Atlantic; Bruce & Saunders 2015). Of these five groups, only two have names with morphological and molecular data consistent with species found in Europe (type locality), viz. *C. deslongchampsii* Chauvin ex Duby and *C. virgatum* Roth. Based on records in GenBank and our own data, one of the remaining three extends from North Carolina to the Gulf of St. Lawrence and is not assignable to *Ceramium sensu stricto*. This species is described below as *Ceramothonion translucidum* sp. nov. The final two species are assignable to the genus *Ceramium* and lack matching data in BOLD or GenBank for either COI-5P and *rbcL* and are also formally described here.



Figure 5. Holotype – *Ceramium facetum* sp. nov. (GWS006224; scale 2 cm).

Ceramium facetum has 38 genetically verified records largely confined to sheltered or estuarine sites along the Gulf of Saint Lawrence and coastal Newfoundland, the unusual habitat of Sam Orr's Pond in the lower Bay of Fundy, New Brunswick (Saunders *et al.* 2013), and the equally unique Bras d'Or Lakes in Cape Breton, Nova Scotia. Most recently a collection from New York field identified as *C. deslongchampsii* Chauvin ex Duby was a genetic match to this species greatly extending the range. The species occurs from the low intertidal to shallow (~2 m) subtidal growing on rock, mussels, other algae and *Zostera* and can be a common component of the drift in some areas and seasons. Complicating matters is the possibility of confusion with *Ceramothonion translucidum* sp. nov. It typically has slightly curved rather than strongly inrolled tips, 4–5 periaxial cells that differ only slightly in size from the surrounding cortical cells, and the tetrasporangia are only slightly covered by cortication. It is important to acknowledge that the gametophyte details for *C. facetum* were derived from a specimen for which sequence data could not be generated (GWS045988).

***Ceramium plenatunicum* G.W.Saunders & C.W.Schneider sp. nov.**

Description: Thalli 2–14 cm tall, yellow-brown to dark red, and subdichotomous to more alternately branched, the latter often associated with an abundance of well-developed adventitious branches. Individuals are attached by descending rhizoids at the base, the tips are strongly forcipate (less so on tetrasporophytes). Primary branches occur every 8–20 segments and adventitious branches can be infrequent to abundant. This species is fully corticated, near the tips the segments range from 0.8–0.9 diameters long, approaching ~1.2–1.6 diameters long in middle to lower portions of the thallus. Gland cells and spines absent; hairs rare to abundant (notably at the tips). Transverse section at the nodes reveals 6 (–7) periaxial cells. Carposporophytes are barely visible to the unaided eye, 265–396 µm wide by 222–326 µm tall, squat to rounded, and consist of a single dominant gonimolobe and 1–2 suppressed gonimolobes (sequential development) and either lack or produce only 1 (–2) involucre branches. Tetrasporangial production occurs in a single tier at the nodes and typically only 1–2 (–3) are visible at each node. Tetrasporangia are variously tetrahedral, cruciate or decussate in appearance, round to oval, 45–60 µm wide and 53–74 µm tall. They are either immersed or partly exposed.

Diagnosis: In addition to differences in COI-5P and *rbcL* sequence, *Ceramium plenatunicum* differs from another fully corticated species in our flora, *Ceramium virgatum* Roth, in having fewer involucre branches (1–2 versus 3–5) associated with its gonimolobes, fewer tetrasporangia per node [a single tier of 1–2 (–3) versus 2 tiers of many

tetrasporangia]. Confusion with *Ceramium secundatum* Lyngbye is also possible south of Cape Cod, but similar reproductive differences apply, as well as that species having 7–9 periaxial cells.

Etymology: Latin, “full dress”, for the full axial cortication of this species which differs from bona fide *C. virgatum* that can be incompletely corticated in distal portions of axes where these two species are commonly found together in the Northumberland Strait.

Type Collection: Coll. L. Le Gall, H. Kucera & J. Utge, 17 Aug. 2006, St. Thomas, Northumberland Strait, New Brunswick, Canada, 46.448006° N, 64.641794° W, intertidal on sandstone.

Holotype (designated here): UNB; GWS007991, BOLD ABMMC6551-10, gametophyte with gonimolobes (Fig. 6).

Holotype DNA barcode: HM916981 (COI-5P); OQ945600 (*rbcL*).

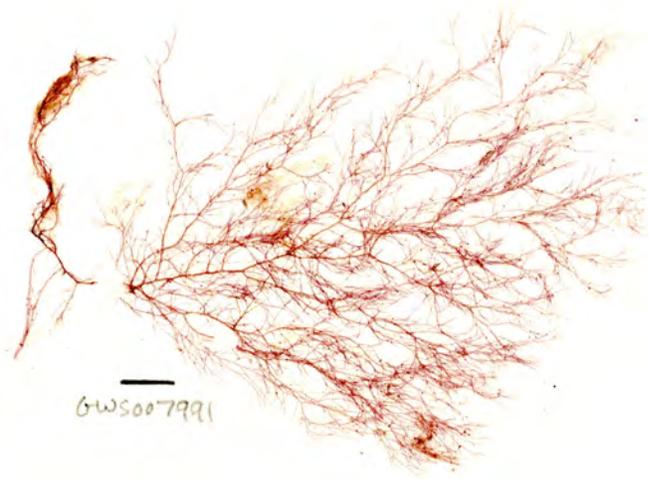


Figure 6. Holotype – *Ceramium plenatunicum* sp. nov. (GWS007991; scale 1 cm).

Remarks: We have 17 genetically verified records of *Ceramium plenatunicum*, one from the subtidal (2 m) on *Grateloupia turuturu* Yamada in Rhode Island, the remainder from the Northumberland Strait, New Brunswick, typically subtidal (1 m) on *Zostera*. The *rbcL* for *C. plenatunicum* is 18 bp divergent from data in GenBank for *C. derbesii* Solier ex Kützinger, while data for COI-5P are a distant sister to *C. secundatum*. The genetic data suggest that *C. plenatunicum* is a distinct species. This species may correspond to *C. circinatum* (Kützinger) J. Agardh in Taylor (1957), but the type locality for that species is Corsica and *rbcL* data currently in GenBank for *C. circinatum* are strongly divergent from those generated by us for *C. plenatunicum*. Furthermore, Taylor (1957) and subsequently Schneider *et al.* (1979) called into question the presence of *C. circinatum* in the NW Atlantic flora. *Ceramium plenatunicum* represents either a new species endemic to our flora, or something introduced from elsewhere for which data have yet to be added to GenBank. For the time being, it seems appropriate to provide a name to this entity pending further study. These latter thoughts apply equally to many of the species described in this guide.

***Ceramothonnion translucidum* G.W.Saunders & C.W.Schneider sp. nov.**

Description: Plants delicate, small yellowish to bright red tufts, 1–4 cm tall, typically on other red algae. Branching is subdichotomous with the primary branches produced every 4–14 segments. Adventitious branches present, remaining short and not masking the primary branching pattern. Attachment by multicellular rhizoids. The tips of the erect axes can be slightly curved, at most weakly inrolled with domed apical cells. Internodes strongly ecorticate except near the tips where the axes can appear fully corticated. Near the tips axes are 32–50 μm wide and the segments ~ 1 diameter long with the internodes 0.6–1 x the height of the nodes. Hairs are common and borne on unmodified cortical cells. Mid thallus segments are 50–85 μm wide and ~ 1.5 –2 diameters long with the internodes ~ 2 x longer than the nodes. Lower thallus the segments are 90–160 μm wide 4–6 diameters long with the internodes ~ 5 –7 x longer than the nodes. Gland cells absent. In section there are 4 (–5?) periaxial cells at each node, which are similar in size to adjacent cortical cells lending a relatively homogeneous appearance to the cortical development at the nodes in surface view. Only tetrasporangia were observed; 1–4 per node, variously cruciate to decussate, but more generally irregularly tetrahedral, round to oval, 34–44 μm wide by 42–53 μm long, with limited cortical covering.

Diagnosis: In addition to differences in COI-5P and *rbcL*-3P sequences, this species differs from others included in this genus by having only 4 (–5?) periaxial cells versus 6–7 (Barros-Barreto *et al.* 2023). A possible exception is *C. pacificum* (Collins) M.J.Wynne & C.W.Schneider, which is found in the Pacific.

Etymology: Latin, for the “translucent” appearance of the internodes of this beautiful species.

Type Collection: Coll. G.W. Saunders & T. Bringloe, 7 Oct. 2015, Beach to NE of Burnt Church Dock, Northumberland Strait, New Brunswick, Canada, 47.19389° N, 65.13615° W, subtidal (1.5 m) on algae.

Holotype (designated here): UNB; GWS039107, BOLD ABMMC21564-15 (Fig. 7).

Holotype DNA barcode: OQ945697 (*rbcL*-3P).

Remarks: We have five collections (all genetically verified) of *Ceramothamnion translucidum*, typically on algae or in the drift, from the low intertidal to shallow subtidal (1.5 m). Considerably more specimens are needed to better understand the morphological variation, phenology and distribution of this species in the NW Atlantic. There are matching sequence data for collections from North Carolina, USA (COI-5P and *rbcL*) indicating a range extending well south of that covered in this guide. Barros-Barreto *et al.* (2023) have *C. translucidum* as a close sister to *C. brasiliensis* (A.B.Joly) M.J.Wynne & C.W.Schneider (as *Stirkia brasiliensis* (A.B.Joly) Barros-Barreto & Maggs), however, *C. translucidum* has 4 (–5) periaxial cells rather than 6–7 in *C. brasiliensis* (Barros-Barreto *et al.* 2023).

Ceramothamnion translucidum is the only species of this genus in our flora but confusion with *Ceramium facetum* is possible. They differ at the tips with *C. facetum* having more forcipate development while in *C. translucidum* the tips are typically slightly curved, and in the former typically producing branches every 8–19 segments versus 4–14 in *C. translucidum*. The latter also has 4–5 periaxial cells that differ only slightly in size from the surrounding cortical cells, and the tetrasporangia are typically largely emergent. The only other strongly banded species in our flora (regular alternation of corticated nodes and ecorticate internodes), *Ceramium deslongchampsii* Chauvin ex Duby, differs from both of the previous by the branches being widely separated (up to 40 nodes), the tips typically straight and in having four periaxial cells that are markedly larger than the surrounding cortical cells. While *C. facetum* shares the relatively large periaxial cells, it has six. The tetrasporangial details for *C. translucidum* are based on a single specimen (GWS045990) from the Northumberland Strait.



Figure 7. Holotype – *Ceramothamnion translucidum* sp. nov. (GWS039107; scale 1 cm).

***Leptosiphonia olneyi* (Harvey) G.W.Saunders & C.W.Schneider comb. nov.**

Basionym: *Polysiphonia olneyi* W.H. Harvey (1853), Nereis Boreali-Americana; or, contributions towards a history of the marine algae of the Atlantic and Pacific coasts of North America. Part II. Rhodospermeae. *Smithsonian Contributions to Knowledge* 5(5), p. 40, pls. XVII. B, figs 1-7.

Lectotype (of *Polysiphonia olneyi* here designated): TCD 0012808.

Synonyms:

Polysiphonia harveyi var. *olneyi* (Harvey) Collins in Taylor 1937

Neosiphonia harveyi var. *olneyi* (Harvey) A.C.Mathieson & Dawes 2017

Remarks: This species partly accounts for records of the morphospecies *Leptosiphonia fibrillosa* (Dillwyn) A.M.Savoie & G.W.Saunders in the NW Atlantic. Previously synonymized with *Melanothamnus harveyi* (Bailey) Diaz-Tapia & Maggs [as *Neosiphonia harveyi* var. *olneyi* (Mathieson & Dawes, 2017)], Maggs & Hommersand (1993, p. 346) correctly posited an alliance with what is now *Leptosiphonia*. It is unclear that a formal Lectotype has been selected for this species, which we have thus designated here. This specimen TCD 0012808 was annotated by W.R. Taylor on April 5, 1961 – “Probably the type for *Polysiphonia olneyi* Harvey”. The specimen was growing on *Zostera* and collected by Olney in Rhode Island, collections specifically referenced in the protologue by Harvey (1853). The herbarium sheet contains a drawing of a transverse section that matches sections mid thallus for our

genetic group, while the long segments (drawn 7 x long as broad) depicted in Harvey (1853, pl. 17B, fig. 5) leave little doubt that this name is best applied to this genetic group in our flora. This species was listed in Savoie & Saunders (2018) as *Leptosiphonia* sp. 1fibrillosa.

***Vertebrata hommersandii* G.W.Saunders & C.W.Schneider sp. nov.**

Description: Thalli red to blackish-red, radially branched, up to 12 (–17) cm tall. Although radial branching occurs throughout the thalli, some individuals have a strongly percurrent main axis and can appear weakly distichous when spread out in a tray or pressed. Apical cells are round, and in some individuals abundant sparsely branched trichoblasts are present, as well as persistent scar cells. Upper mid thallus pericentral cells can be straight or slightly spiraled with the segments squat to rectangular and revealing 7–8 pericentral cells in surface view. In traverse section 1 cm from the base axes are typically solidly corticated (only rarely do pericentral cells reach thallus surface), 500–1400 µm wide, with 12–17 pericentral cells. Tetrasporangia are single or in spiral series of up to 6–7, tetrahedrally divided and 40–85 µm in diameter. Cystocarps are 230–430 µm, squat to globose with a thick stalk and often a slight beak.

Diagnosis: In addition to COI-5P and *rbcl* sequences, differing from its close sister *Vertebrata fucoides* (Hudson) Kuntze in having typically thicker and more heavily corticated lower axes (best observed 1 cm from the base), but some individuals can overlap in these features.

Etymology: Named in memory of our valued colleague Max H. Hommersand of the University of North Carolina, Chapel Hill, whose passing in 2022 left a huge void in our community.

Type Collection: Coll. G.W. Saunders, 22 Jun. 2022, Duck Pond Beach, New Brunswick, Canada, 45.28011° N, 65.6924° W, subtidal (2 m) on rock.

Holotype (designated here): UNB; GWS047869, BOLD ABMMC27046-22 (Fig. 8).

Holotype DNA barcode: OQ945610 (*rbcl*).

Remarks: Savoie & Saunders (2019) reported two genetic groups for the morphospecies *Vertebrata fucoides* (Hudson) Kuntze in the NW Atlantic flora. The first extends from Connecticut (in fact North Carolina based on matching data in GenBank) to Newfoundland and is common in the low (mid intertidal pools) intertidal to 20 m subtidal growing on a variety of hard substrata and fleshy algae and is here recognized as *V. hommersandii* G.W.Saunders & C.W.Schneider. It appears to be confined to the NW Atlantic but is a close sister to bona fide *V. fucoides*. The latter does not extend as far north, ranging from Long Island Sound to Cape Breton, Nova Scotia, and has genetically verified records from the NE Atlantic (based on data in GenBank it is widely distributed in that flora from Spain to Norway including the type locality in the United Kingdom). It grows from upper intertidal pools to 15 m subtidal, also on a variety of hard substrata and fleshy algae. Definitive identification requires sequence data for some collections.

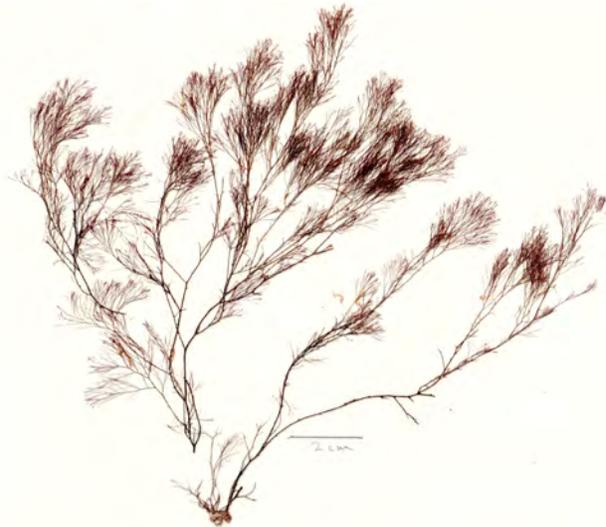


Figure 8. Holotype – *Vertebrata hommersandii* sp. nov. (GWS047869; scale 2m).