

# The Red Alga *Polysiphonia* Greville (Rhodomelaceae) from Carrie Bow Cay and Vicinity, Belize

Donald F. Kapraun  
and James N. Norris

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## ABSTRACT

Seven taxa of the red alga *Polysiphonia* Greville (Rhodomelaceae; Ceramiales) were found near Carrie Bow Cay and Twin Cays in the central region of the Belizean barrier reef. *Polysiphonia exilis* and *P. flaccidissima* are new records for the Caribbean marine flora, *P. atlantica*, *P. denudata*, *P. ferulacea*, *P. scopulorum* var. *villum*, and *P. sphaerocarpha* are new to Belize. *Polysiphonia atlantica* is given as a new name for the preoccupied name *P. macrocarpa* Harvey. Most species occur as epiphytes on other algae, commonly on *Sargassum* and *Dictyota*. *Polysiphonia ferulacea* and *P. sphaerocarpha* are also found entangled in algal turfs, and *P. scopulorum* var. *villum* also occurs on mangrove roots.

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## Introduction

Only two species of *Polysiphonia* Greville (1824) have been recorded previously from Belize (British Honduras): *P. havanensis* Montagne (Taylor, 1935; 1960) and *P. scopulorum* Harvey (Tsuda and Dawes, 1974). In our present study of *Polysiphonia* from Carrie Bow Cay and vicinity, we report six additional species and one variety new to the marine flora of Belize.

Several detailed studies of the taxonomy, distribution, and geographic variation of *Polysiphonia* have increased our knowledge of its members. In the Pacific Ocean, studies have covered the coasts of North America (Hollenberg, 1942, 1944), including Mexico (Hollenberg, 1961), and the northern Gulf of California (Hollenberg and Norris, 1977); Hawaii (Meñez, 1964); the central and western tropical Pacific (Hollenberg, 1968a, 1968b); southern Australia (Womersley, 1979); and Japan (Segi, 1951). In the Atlantic Ocean, work has focused on the coasts of North Carolina and Texas (Kapraun, 1977, 1979); Brazil (Oliveira Filho, 1969); Portugal (Ardré, 1970); and the western Mediterranean (Lauret, 1967, 1970).

We relied mainly on the following morphological features in distinguishing the taxa of *Polysiphonia*: number of pericentral cells; presence or absence of cortication; kind and position of origin of the attachment rhizoids; nature and position of trichoblasts; and nature of the spermatangial branchlets. Material for this study was collected from intertidal and subtidal habitats near Carrie Bow Cay and Twin Cays. These habitats are described and illustrated by Rützler and Macintyre (herein: 9), Rützler and Ferraris (herein: 77) and Norris and Bucher (herein: 167). Specimens, which were obtained by J. Norris (March-April, 1976), J. Norris and K. Bucher (April 1977), and D. Kapraun (March 1978), were mainly epiphytic on other algae. Collections are designated as follows: DK for D. F. Kapraun, JN

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Donald F. Kapraun, Department of Biology, University of North Carolina, Wilmington, N. C. 28401. James N. Norris, Department of Botany, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

for J. N. Norris, and KB for K. E. Bucher. The prefix initials of the numbers cited correspond to the collector's field notebooks. Reproductive condition is designated by  $\oplus$  for tetrasporangia,  $\ominus$  for cystocarps, and  $\sigma$  for spermatangia. Specimens studied are deposited in the Algal Collection, United States National Herbarium, Smithsonian Institution (US).

ACKNOWLEDGMENTS.—We wish to thank K. E. Bucher for assistance in collecting and processing Belizean epiphytes, including *Polysiphonia*. We are grateful to G. J. Hollenberg, C. Schneider, and E. Meñez for their reviews and comments on the manuscript. Finally, we thank D. Nicholson for discussion and review of the nomenclatural remarks, particularly on "*P. macrocarpa*."

### Key to the Species of *Polysiphonia* from Carrie Bow Cay and Vicinity

1. Pericentral cells 4 (subgenus *Oligosiphonia*) ..... 2  
    Pericentral cells 5 or more (subgenus *Polysiphonia*) ..... 6
2. Branches arising in the axils of trichoblasts ..... *P. flaccidissima*  
    Branches developmentally replacing trichoblasts ..... 3
3. Rhizoids in open connection with pericentral cells ..... 4  
    Rhizoids cut off from pericentral cells ..... 5
4. Scar cells common in decumbent axes; trichoblasts in erect filaments  
    branched 1–2 times ..... *P. atlantica*  
    Scar cells absent in decumbent axes; trichoblasts in erect filaments highly  
    branched to several orders ..... *P. scopulorum* var. *villum*
5. Plants small, to 1.5 cm tall, and delicate, main filaments less than 100  $\mu\text{m}$   
    in diameter; often epiphytic, erect filaments arising from a rhizoidal  
    disc ..... *P. sphaerocarpa*  
    Plants larger, to 4 cm tall, and coarse, decumbent axes to 250  $\mu\text{m}$  in  
    diameter; erect filaments from entangled decumbent branches .....  
    ..... *P. ferulacea*
6. Pericentral cells 5 (–6) ..... *P. denudata*  
    Pericentral cells 8 ..... *P. exilis*

### *Polysiphonia atlantica*, new name

FIGURES 107a–c

*Polysiphonia macrocarpa* Harvey in Mackay, 1836:206 [non *Polysiphonia macrocarpa* (C. Agardh) Sprengel 1827:350].—Collins and Hervey, 1917:123.—Børgesen, 1918:274, figs. 272–276.—Taylor, 1928:184; 1960:578.—Oliveira Filho, 1977:153.—Kaprana, 1977:317, figs. 14–21, 57; 1979:107, figs. 10–12.

DESCRIPTION.—Thalli minute, forming entangled mats to 1 cm tall; erect filaments sparsely subdichotomously branched; branches replacing trichoblasts in development; pericentral cells 4; erect filaments arising in unilateral fashion from prostrate axes; rhizoids remaining in open connection with pericentral cells. Tetrasporangia in long straight series in the branch tips.

TYPE-LOCALITY.—Portstewart; Miltown Malbay, Ireland.

DISTRIBUTION.—Tropical western Atlantic (Virgin Islands, Barbados, Curaçao, Costa Rica, Cuba, Jamaica); temperate eastern Atlantic; Indian Ocean.

SPECIMENS STUDIED.—Twin Cays: JN-6292 ( $\oplus$ ), epiphytic on *Ulva*, 1 m depth, among mangroves on E side of eastern half of Twin Cays, 31 Mar 1976.

REMARKS.—Reluctantly we abandon the name *Polysiphonia macrocarpa* Harvey, because it has been widely applied to this neotropical species. Recently, Womersley (1979:471) noted that *P. macrocarpa* Harvey in Mackay (1836) is a later hom-

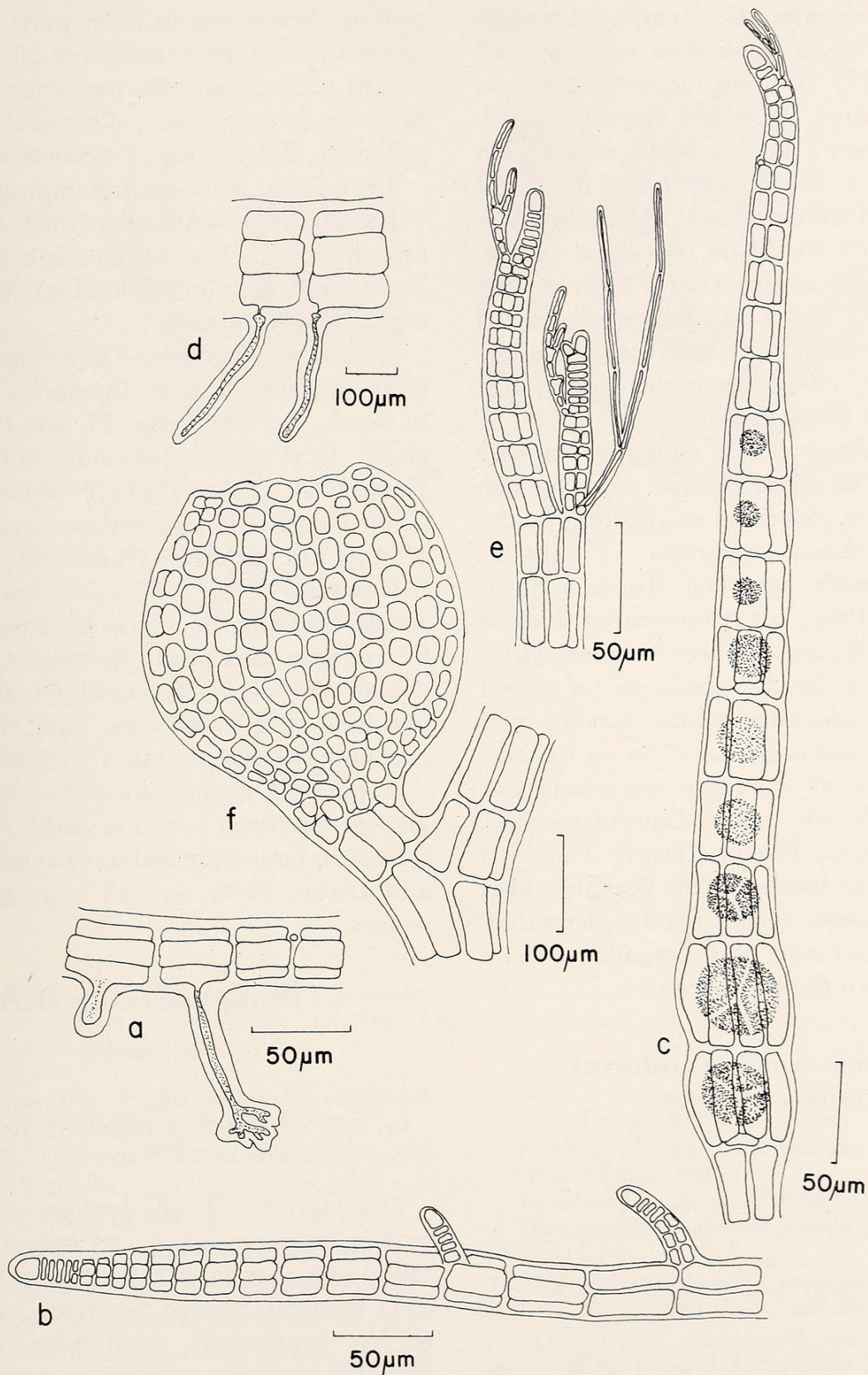


FIGURE 107.—*Polysiphonia atlantica*: a, rhizoids in open connection with pericentral cells (JN-6292); b, prostrate axis with unilateral development of erect filaments (JN-6292); c, tetrasporangia in long straight series (JN-6292). *Polysiphonia denudata*: d, rhizoids cut off at or near the end of pericentral cells (JN-6805); e, branch arising in axil of trichoblast (JN-6805); f, mature pericarp (JN-6805).

onym of *P. macrocarpa* (C. Agardh) Sprengel (1827:350) [basonym: *Hutchinsia macrocarpa* C. Agardh, 1824:157]. Pending further studies, we propose a new name, *P. atlantica* Kapraun and J. Norris, for Harvey's taxon. Parke and Dixon (1976:537) pointed out that this taxon is in need of taxonomic and nomenclatural re-investigation. In this treatment we follow Børgesen (1918), Ardré (1970), and Kapraun (1977, 1979) in their interpretation of *P. macrocarpa* Harvey. Reported elsewhere in the Caribbean as *P. macrocarpa* (for instance, Taylor, 1960), the occurrence of this taxon in Belize is not surprising.

*Polysiphonia macrocarpa* (C. Agardh) Sprengel (1827) may well be an overlooked name for one of the several taxa described or reported in the Caribbean. *Hutchinsia macrocarpa* C. Agardh (1824) was originally described "In mari Antillarum, 'Port au Pray'." It is interesting that for other taxa in his *Systema algarum*, C. Agardh latinized localities, yet for *H. macrocarpa* he placed Port au Pray in quotation marks, leaving it in French form. By not using Latin for its locality, he may have wished to suggest something was wrong with the locality name. Could it be Port de Paix or Port au Prince (Haiti)? The type specimen (probably located at the Botanical Museum Lund) should be re-examined to determine the identity of this taxon, and compared to those taxa recorded from the Caribbean.

***Polysiphonia denudata* (Dillwyn)  
Greville ex Harvey**

FIGURE 107d-f

*Conferva denudata* Dillwyn 1809:85.

*Polysiphonia denudata* (Dillwyn) Greville ex Harvey in W. J. Hooker, 1833:332.

*Polysiphonia denudata* (Dillwyn) Kützinger, 1849:824; 1863:28, pl. 90.—Taylor, 1960:580.—Joly, 1965:221, pl. 47: figs. 586–590.—Taylor and Bernatowicz, 1969:37.—Taylor, 1969:183.—Lauret, 1970:123, pl. 1: figs. 1–20, pl. 2: figs. 20–22.—Kapraun, 1977:321, figs. 38–42, 58; 1979:109, figs. 24–27.—Oliveira Filho, 1977:151.—Schnetter and Bula Meyer, 1977:89, fig. 17.

DESCRIPTION.—Thalli dark red, to 3 cm tall from a discoidal base; erect filaments dichotomously branched; branches widely divergent, be-

coming decumbent in older parts and attached to the substratum; rhizoids cut off at or near the end of pericentral cells; pericentral cells 5 (–6); branches arising in axils of trichoblasts. Pericarps spherical, 200–250  $\mu\text{m}$  in diameter.

TYPE-LOCALITY.—Southampton, England.

DISTRIBUTION.—Atlantic: North America, Caribbean (Virgin Islands, Guadeloupe, Barbados, Netherland Antilles, Colombia), England, Portugal. Mediterranean.

SPECIMENS STUDIED.—Carrie Bow Cay: JN-6686 ( $\oplus$ ), epiphytic on *Styopodium zonale*, 20–23 m depth, fore reef slope, 27 Apr 1977; JN-6805 ( $\ominus$ ,  $\oplus$ ), 18 m depth, outer ridge of fore reef, legit JN and KB, 27 Apr 1977; JN-6842a ( $\oplus$ ), epiphytic on *Dictyota*, 10 m depth, spur and groove zone of inner fore reef, legit JN and KB, 29 Apr 1977.

REMARKS.—The publication date of Dillwyn's *British Confervae*, in which *Conferva denudata* was first validly published, has been the subject of debate. We follow Dixon's (1960:309, 317) interpretation that publication date of the work is probably the late autumn (?) of 1809.

Apparently a physiologically tolerant species, *Polysiphonia denuda* occurs in North American and European temperate waters (Taylor, 1962; Parke and Dixon, 1976), as well as in the American tropics.

***Polysiphonia exilis* Harvey**

FIGURE 108

*Polysiphonia exilis* Harvey, 1853:47.—Howe, 1920:570.—Taylor, 1928:183; 1960:581—Hollenberg, 1968b:200, figs. 1c, 3c.—Oliveira Filho, 1977:151.

DESCRIPTION.—Thalli dark brown, with an extensive creeping system; trichoblasts formed in radial sequence in erect and prostrate axes, but erect filaments arising cicatrigenously and more or less unilaterally from adaxial scar cells; branches replacing trichoblasts developmentally; rhizoids cut off from pericentral cells; pericentral cells 8 (–10). Spermatangial branches oblong, 50  $\times$  150  $\mu\text{m}$ , and sometimes subtended by trichoblasts, which arise one per segment.

TYPE-LOCALITY.—Key West, Florida.

DISTRIBUTION.—Tropical Atlantic (except Car-

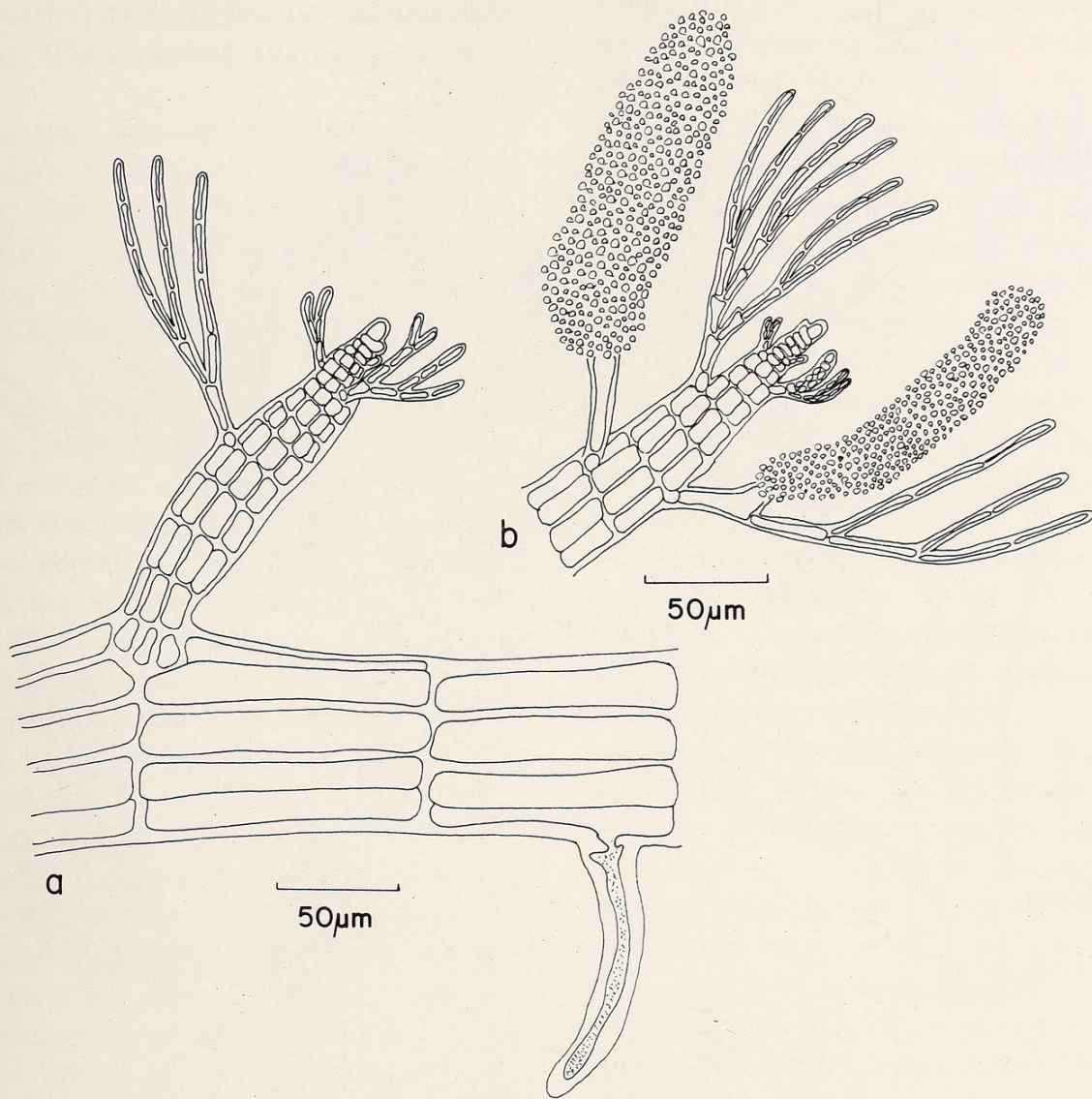


FIGURE 108.—*Polysiphonia exilis*: a, prostrate axis with adventitious branch development, rhizoids cut off from pericentral cells (JN-6342); b, spermatangial branches, note trichoblasts arising one per segment (JN-6342).

ibbean, up to now) and Pacific oceans.

**SPECIMENS STUDIED.**—Carrie Bow Cay: JN-6342a-c (♂), epiphytic on *Dictyota dichotoma*, ~20 m depth, outer ridge of fore reef, 5 Apr 1976.

**REMARKS.**—This is the first record of this species in the Caribbean Sea. The Carrie Bow Cay specimens apparently also represent the first spermatangial plants observed in this species (Taylor, 1960; Hollenberg, 1968b).

### *Polysiphonia ferulacea* Suhr

FIGURE 109

*Polysiphonia ferulacea* Suhr in J. Agardh, 1863:980.—Collins and Hervey, 1917:124.—Børgesen, 1918:277, figs. 277–

280.—Howe, 1920:570.—Taylor, 1928:183, pl. 24: figs. 16–18, pl. 25: fig. 15, pl. 26: figs. 11, 15; 1960:578.—Oliveira Filho, 1969:128, pl. 24: figs. 141–144; 1977:151.—Taylor and Bernatowicz, 1969:36.—Taylor, 1969:183.—Taylor and Rhyne, 1970:15.—Yoneshigue-Beraga, 1972:27, pl. 6: figs. 30–31.—Richardson, 1975:130, pl. 23: fig. 7.—Kapraun, 1977:320, figs. 32–37.

**DESCRIPTION.**—Thalli erect, to 4 cm tall, from a discoidal base; alternately branched from a distinct main axis; older plants with extensive decumbent branches secondarily attached by rhizoids cut off from pericentral cells; branches replacing trichoblasts in development; pericentral cells 4; branches characteristically basally constricted; spermatangial branches cylindrical, 50

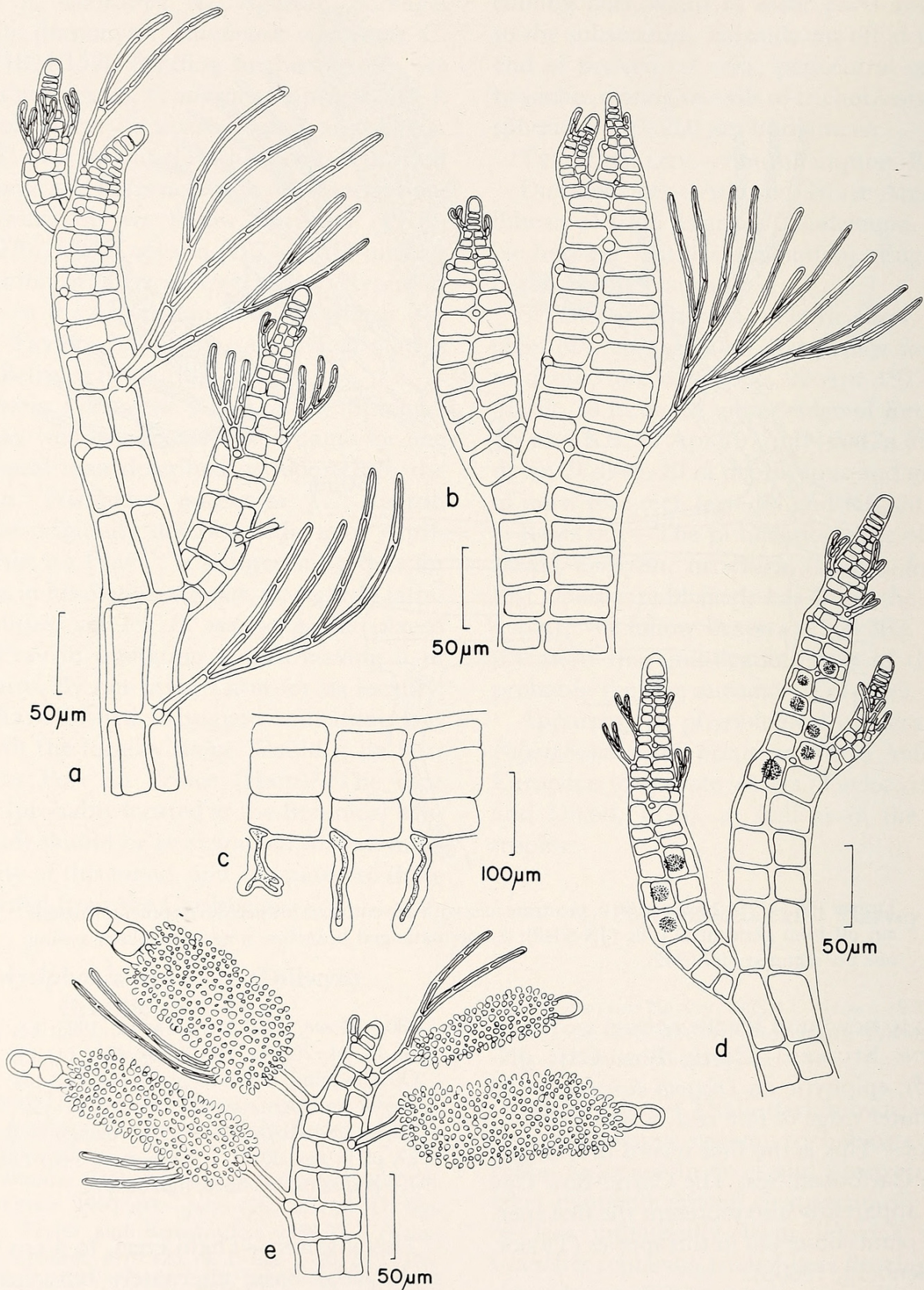


FIGURE 109—*Polysiphonia ferulacea*: a, b, variation in erect filaments on the same plant in respect to cell height-width ratios (DK-s.n., 21 Mar 1978); c, rhizoids cut off from pericentral cells (DK-s.n., 21 Mar 1978); d, tetrasporangia in spiral series (DK-s.n., 21 Mar 1978); e, spermatangial branches with characteristic enlarged sterile tip cells (JN-6938).

× 150 μm, with 1–2 conspicuous, thick-walled sterile tip cells. Tetrasporangia in spiral series in branch tips.

TYPE-LOCALITY.—Atlantic Coast of Mexico.

DISTRIBUTION.—Widespread in subtropical and tropical seas; Caribbean: Puerto Rico, Virgin Islands, St. Kitts, Antigua, Guadeloupe, Dominica, Barbados, Trinidad, Venezuela, Curaçao, Costa Rica, Cayman Islands, Jamaica, and Hispaniola.

SPECIMENS STUDIED.—Carrie Bow Cay: JN-6334 (♀) and JN-6335 (♀), epiphytic on *Dictyota cervicornis*, 20 m depth, outer ridge of fore reef, 5 Apr 1976; JN-6335 (♂), epiphytic on *Lobophora variegata*, 25 m depth, fore reef slope, 5 Apr 1976; JN-6410 (♂), epiphytic on *Valonia ventricosa*, and JN-6413, epiphytic on *Caulpera verticillata*, both from high-relief spur and groove zone (vicinity of IMSWE transect, between 300–400 m markers), 5–6 m depth, legit JN and KB, 27 Apr 1977; JN-6691b, 20 m depth, fore reef slope, 27 Apr 1977; JN-6938 (♂), epiphytic on *Udotea*, 10 m depth, low-relief spur and groove zone of inner fore reef (~10 m S of IMSWE transect line between the 400–500 m markers), legit JN and KB, 23 Apr 1977; JN-6987, 0.5 m depth, entangled with turf of *Jania*, *Centroceras*, and *Wrangelia*, reef crest in front of Carrie Bow Cay Laboratory, legit JN and KB, 22 Apr 1977; DK-s.n. (♂, ♂), eulittoral on cinderblock wall, 21 Mar 1978.

REMARKS.—The close resemblance and hence possible taxonomic confusion between *Polysiphonia ferulacea* Suhr in J. Agardh and *P. sparsa* (Setchell) Hollenberg has been previously noted (Hollenberg, 1968a; Kapraun, 1977). In the present study, specimens of *P. ferulacea* varied greatly in trichoblast development and cell length to width ratios of erect filaments. Although some individuals had short segments as in *P. sparsa*, the presence of characteristic spermatangial branches with sterile tip cells seems to confirm our identification as *P. ferulacea*.

### *Polysiphonia flaccidissima* Hollenberg

FIGURE 110

*Polysiphonia flaccidissima* Hollenberg, 1942:783, figs. 8, 19; 1961:351, pl. 2: fig. 2; 1968a:63, figs. 2a, 11.—Brauner,

1975:128, figs. 2–4.—Abbott and Hollenberg, 1976:688, fig. 634.—Hollenberg and Norris, 1977:4, fig. 2E.—Kapraun, 1979:107, figs. 8–9.

DESCRIPTION.—Thalli minute, extensive creeping system giving rise to erect filaments up to 1.5 cm tall; pericentral cells 4; erect and prostrate axes with radial development of branch primordia; branches arising in axils of trichoblasts; rhizoids cut off from the proximal end of pericentral cells. Tetrasporangia to 75 μm in diameter, in spiral series in branch tips; spermatangial branches oblong, 40 × 170 μm, lacking sterile tip cells and subtended by a trichoblast; mature pericarps oval, 150 × 175 μm.

TYPE-LOCALITY.—Laguna Beach, Orange County, California.

DISTRIBUTION.—Atlantic: North Carolina, Gulf of Mexico; Pacific: Southern California, Hawaii, Phoenix and Marshall Islands.

SPECIMENS STUDIED.—Carrie Bow Cay: JN-6351 (♂, ♀) and JN-6353 (♂), both epiphytic on *Sargassum hystrix*, 16–20 m depth, outer ridge and fore reef slope, 5 Apr 1976; JN-6842b (♂, ♀, ♂), epiphytic on *Dictyota*, 10 m depth, spur and groove zone of inner fore reef, legit JN and KB, 29 Apr 1977. Twin Cays: JN-6886 (♀, ♂), epiphytic on *Anadyomene stellata*, 1 m depth, among mangroves on E side of eastern half of Twin Cays, 26 Apr 1977.

REMARKS.—*Polysiphonia flaccidissima* is recorded for the first time in the Caribbean Sea. Superficially, it resembles *P. havanensis* sensu Børgesen (1918:266) (see Kapraun, 1977:316), which is widely distributed in the Caribbean; however, *P. flaccidissima* is clearly distinguished from this taxon by its rhizoids, which are cut off from the proximal end of the pericentral cells rather than occurring in open connection with pericentral cells as in *P. havanensis*. Taylor's (1935) specimens identified as *P. havanensis* could possibly belong here; they need to be re-examined to verify its presence in Belize.

Womersley (1979:479) compared descriptions of *Polysiphonia flaccidissima* (Hollenberg, 1942, 1968a; Abbott and Hollenberg, 1976) with southern Australian and Mediterranean specimens identified as *P. sertularioides* (Grateloup) J. Agardh

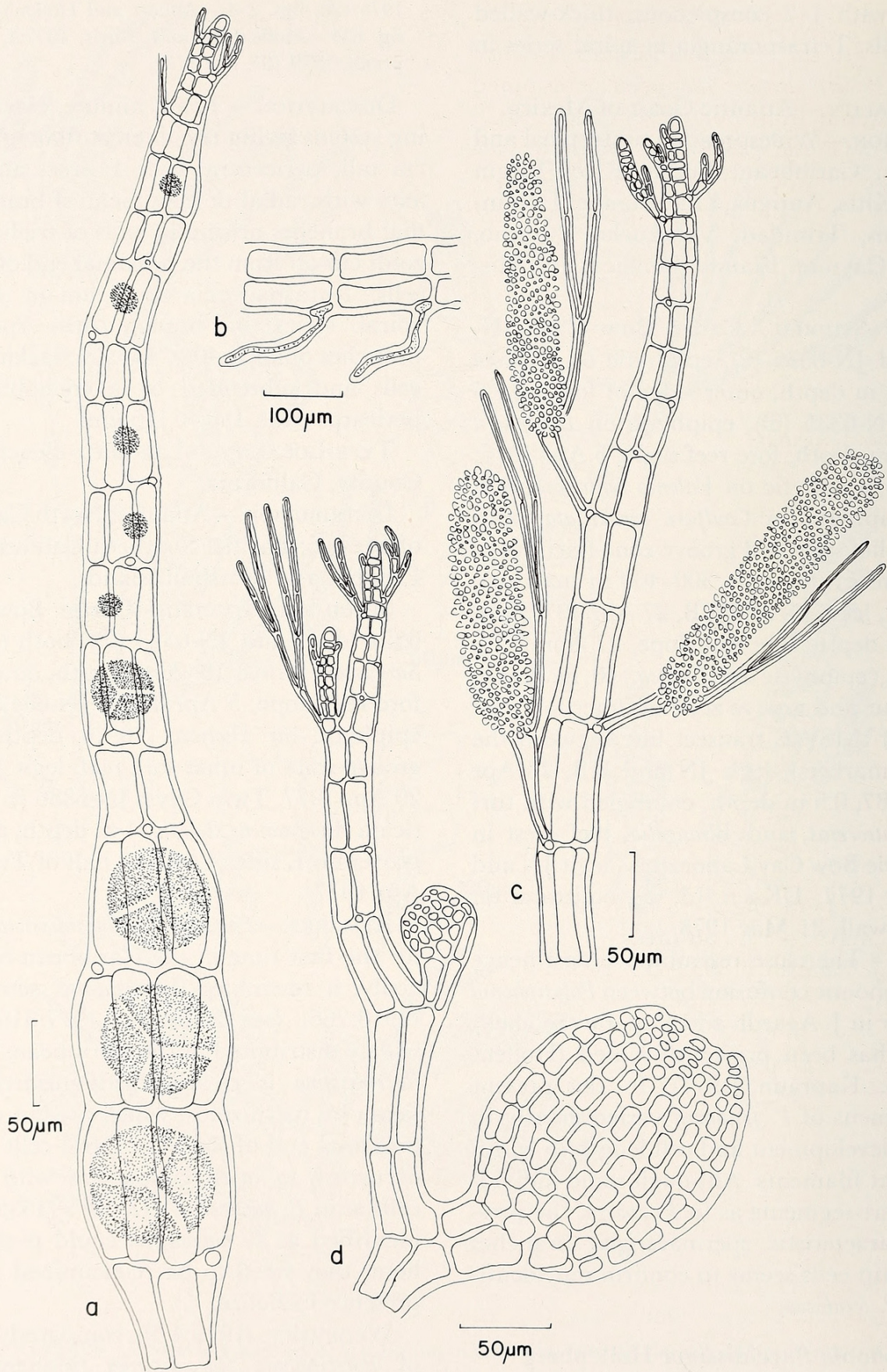


FIGURE 110.—*Polysiphonia flaccidissima*: a, tetrasporangia in spiral series (JN-6351); b, rhizoids cut off from pericentral cells (JN-6351); c, spermatangial branches (JN-6351); d, developing pericarps, note developing vegetative branch in axil of trichoblast (JN-6886).



and concluded that the two species may be synonymous. Until the exact relationship of *P. flaccidissima* to *P. sertularioides* has been determined, we refer material from our present study to *P. flaccidissima*, the name well established in the New World literature (see for instance, Hollenberg, 1942, 1961, 1968a; Hollenberg and Norris, 1977; Brauner, 1975; Kapraun, 1979).

***Polysiphonia scopulorum* var. *villum*  
(J. Agardh) Hollenberg**

FIGURE 111

*Polysiphonia villum* J. Agardh, 1863:941.

*Lophosiphonia villum* (J. Agardh) Setchell and Gardner 1903:329.

*Polysiphonia scopulorum* var. *villum* (J. Agardh) Hollenberg, 1968a:81, fig. 7A.—Hollenberg and Norris, 1977:14, fig. 8B., figs. 640–641.

**DESCRIPTION.**—Thalli minute, to 0.5 cm tall, extensive creeping system giving rise to erect filaments; pericentral cells 4; erect filaments arising endogenously in unilateral fashion, at regular intervals of 2–4 segments, from prostrate axes; erect filaments with conspicuous trichoblasts dichotomously branching up to the fourth order; erect branches replacing trichoblasts in development; rhizoids in open connection with pericentral cells. Tetrasporangia in long straight series.

**TYPE LOCALITY.**—“... ad littus [sic] americae tropicae” (J. Agardh, 1863:941); probably the Pacific Coast of Mexico (Hollenberg 1968a:81).

**DISTRIBUTION.**—Wildely distributed in northern Pacific and western Atlantic oceans.

**SPECIMENS STUDIED.**—Carrie Bow Cay: JN-6357 (♀), epiphytic on *Lobophora variegata*, 20–25 m depth, fore reef slope, 5 Apr 1976. Twin Cays: DK-s.n. (⊕), eulittoral, epiphytic on mangroves, 24 Mar 1978.

**REMARKS.**—Although this taxon is usually described as having few, slightly branched trichoblasts, our material closely resembles the illustrations in Hollenberg (1968a) showing highly branched, conspicuous trichoblasts in erect filaments. Tsuda and Dawes (1974) list *Polysiphonia scopulorum* in their report on Glover's Reef, Belize, but make no comments on infraspecific relation-

ships. The presence of var. *villum* in the Caribbean is now confirmed.

***Polysiphonia sphaerocarpa* Børgesen**

FIGURE 112

*Polysiphonia sphaerocarpa* Børgesen, 1918:271, figs. 267–271.—Taylor, 1960:576.—Hollenberg, 1968a:87, figs. 21, 26.—Taylor, 1969:183.—Taylor and Rhyne, 1970:15.—Kapraun, 1977:318, figs. 26–31, 56.

**DESCRIPTION.**—Thalli small epiphytes, to 1.5 cm tall from a discoidal base; branches dichotomous, becoming decumbent and attached to the substratum by rhizoids cut off from pericentral cells; branches replacing trichoblasts in development; pericentral cells 4. Spermatangial branches cylindrical, 50 × 250 μm, lacking sterile tip cells, with subtending trichoblasts; pericarps spherical, 250 μm diameter, with ostiole of large cells. Tetrasporangia in spiral series.

**TYPE-LOCALITY.**—Store Nordsidebugt, St. Thomas, U.S. Virgin Islands.

**DISTRIBUTION.**—Widespread in tropical Atlantic, including the Caribbean (Virgin Islands, Antigua, Dominica, Barbados, Hispaniola), and tropical Pacific oceans.

**SPECIMENS STUDIED.**—Carrie Bow Cay: JN-6746 (♀), JN-6747 (♂), JN-6748 (⊕), and JN-6755 (♀, ⊕), all epiphytic on *Dictyota*, 8 m depth, patch reef, SW of Carrie Bow Cay, legit JN and KB, 25 Apr 1977; JN-6847a (♀), epiphytic on *Sargassum*, 10 m depth, spur and groove zone of inner fore reef, legit JN and KB, 29 Apr 1977; JN-6911 (♀), epiphytic on *Dictyota*, 9–10 m depth, low-relief spur and groove of inner fore reef vicinity of IMSWE transect (Rützler and Macintyre, herein), legit JN and KB, 23 Apr 1977; DK-s.n. (♂, ⊕), eulittoral on reef, 21 Mar 1978.

**REMARKS.**—This species is apparently a member of the “pan-tropical flora” (Kapraun, 1977). Several Carrie Bow Cay specimens have bifurcate spermatangial branches (Figure 112b), which are atypical for this species. Hollenberg (1968a:80, fig. 6f) reported similar variation in male gametophytes of another species of *Polysiphonia*, *P. scopulorum* Harvey from Hawaii.

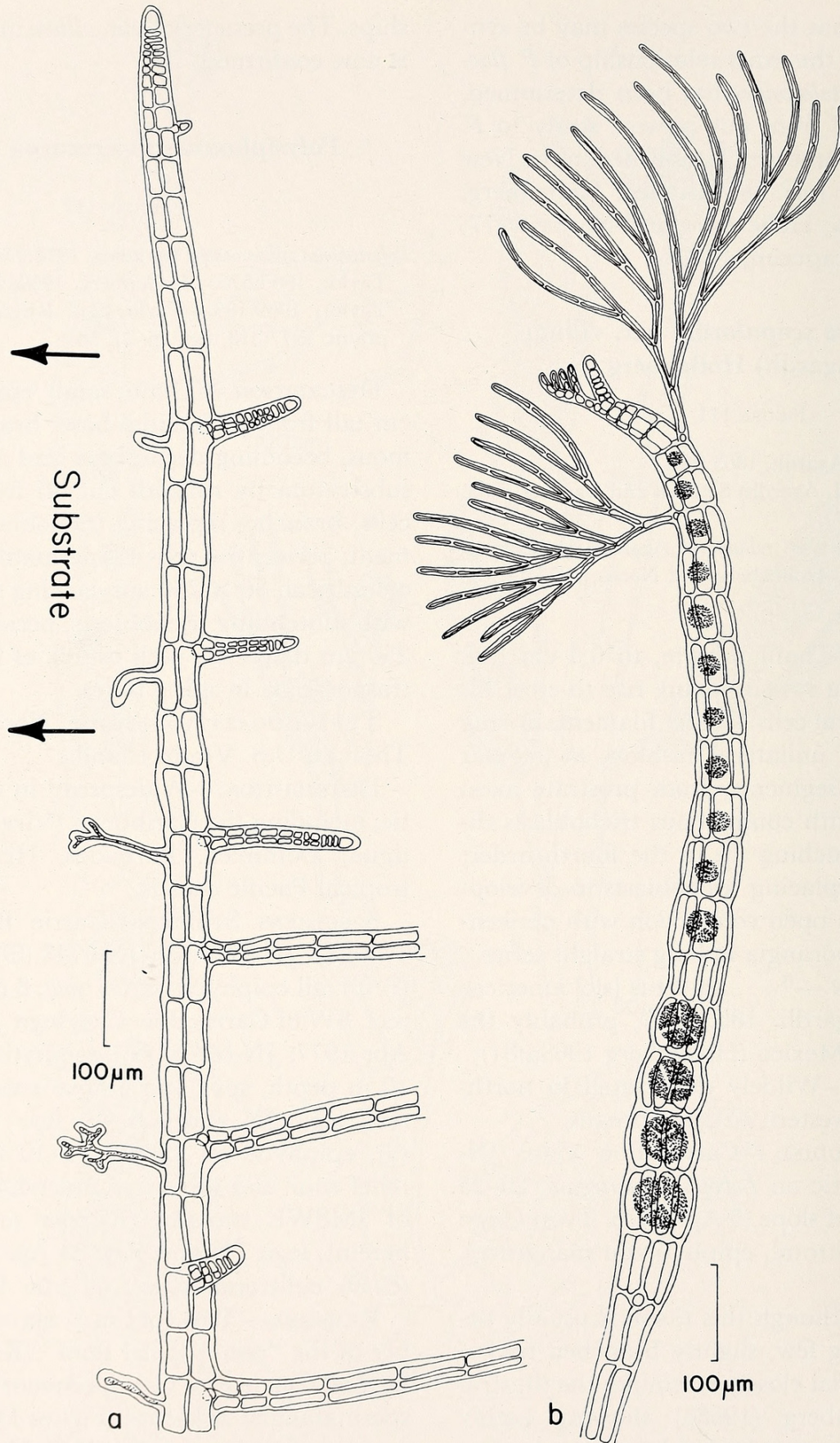


FIGURE 111.—*Polysiphonia scopularum* var. *villum*: *a*, prostrate axis with rhizoids in open connection with pericentral cells (DK-s.n., 24 Mar 1978); *b*, erect filament with conspicuous trichoblasts and tetrasporangia in straight series (DK-s.n., 24 Mar 1978).

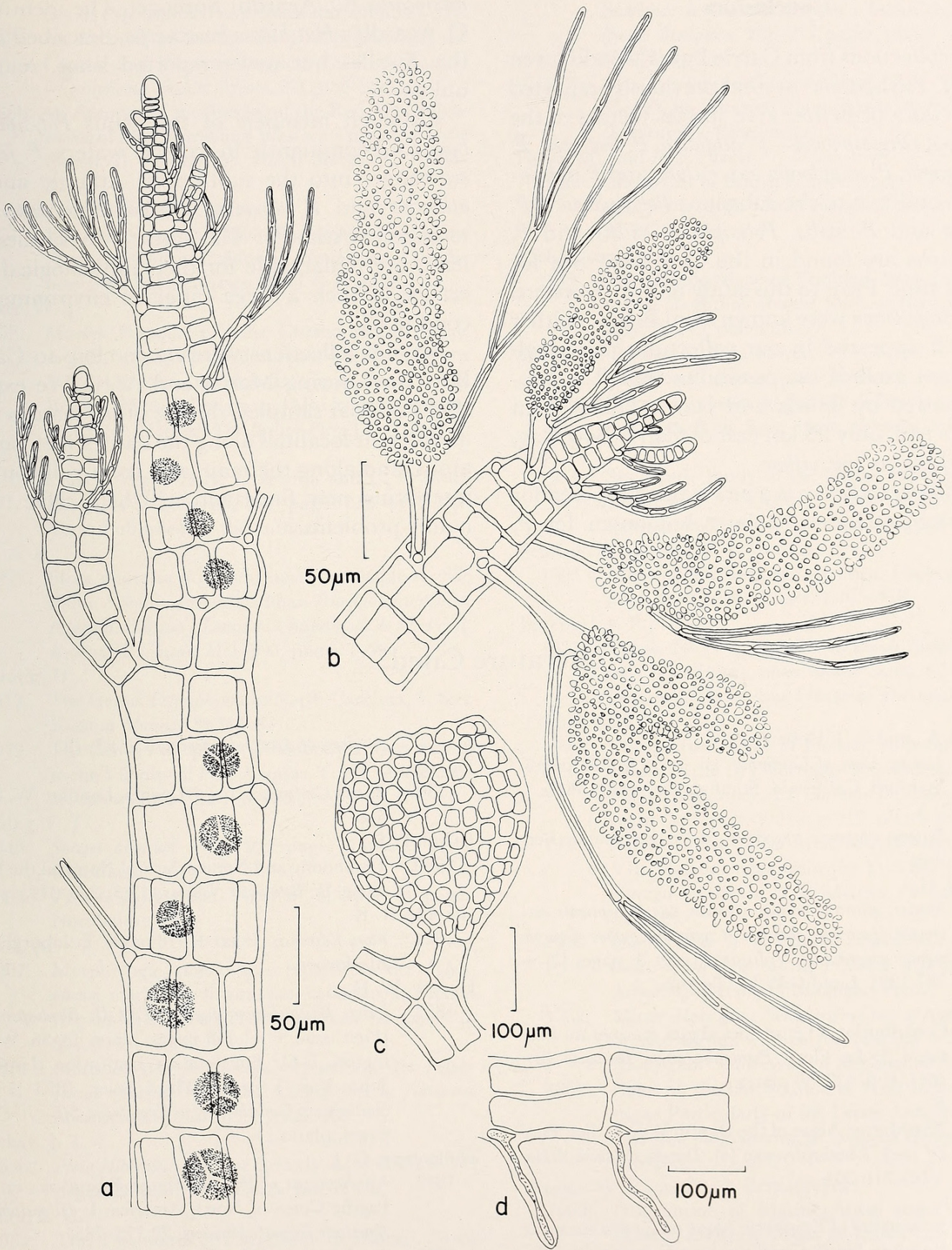


FIGURE 112.—*Polysiphonia sphaerocarpa*: a, tetrasporangia in spiral series (DK-s.n., 21 Mar 1978); b, spermatangial branches (DK-s.n., 21 Mar 1978); c, mature pericarp (JN-6911); d, rhizoids cut off from pericentral cells (DK-s.n., 21 Mar 1978).

## Conclusions

Our collections from Carrie Bow Cay add seven taxa of *Polysiphonia* to the previously reported marine flora of Belize. Five species belong to the subgenus *Oligosiphonia*—*P. atlantica*, *P. ferulacea*, *P. flaccidissima*, *P. scopulorum* var. *villum*, and *P. sphaerocarpa*—and two to the subgenus *Polysiphonia*—*P. denudata* and *P. exilis*. *Polysiphonia exillis* and *P. flaccidissima* are found in the Caribbean Sea for the first time. Prior to this study only *P. havanensis* and *P. scopulorum* were known from Belize, neither of which appeared in our collections. Although we cannot exclude the possibility that *P. scopulorum* reported by Tsuda and Dawes (1974) from Glover's reef, only 25 km east of Carrie Bow Cay, may belong to var. *villum*.

*Polysiphonia atlantica* is a new name proposed for *P. macrocarpa* Harvey, a later homonym for *P.*

*macrocarpa* (C. Agardh) Sprengel. The identity of C. Agardh's *Hutchinsia macrocarpa*, described from the Antilles but never reported since, remains unknown.

Although members of the genus *Polysiphonia* occur predominantly in tropical waters, *P. ferulacea* ranges into the subtropical Atlantic and *P. atlantica* and *P. denudata* extend even into the temperate Atlantic. The latter two species, at least, are remarkable for their physiological tolerance of such a large range of environmental conditions.

All our collections were made close to Carrie Bow Cay, during March and April. We expect that material sampled during other seasons and at different localities along the barrier reef, on the atolls, and along the mainland coast will contain interesting new finds and will help solve taxonomic problems.

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