

## Notes on Rhodomelaceae (Rhodophyta) from the Canary Islands: Observations on Reproductive Morphology and New Records

B. Rojas-González and J. Afonso-Carrillo

Departamento de Biología Vegetal (Botánica), Universidad de La Laguna, 38271 La Laguna, Canary Islands, Spain

Sexual plants in the monotypic genus *Ctenosiphonia* Falkenberg and in two species of *Polysiphonia* Greville [*P. subulifera* (C. Agardh) Harvey and *P. flexella* (C. Agardh) J. Agardh] are described for the first time in material collected from the Canary Islands. In *Ctenosiphonia hypnoides* (J. Agardh) Falkenberg cylindrical spermatangial axes replace both branches at the second dichotomy of fertile trichoblasts. The procarps arise on the second basal segment of a fertile trichoblast and consist of a 4-celled carpogonial branch, and two sterile-cell groups are borne on the supporting cell. Up to ten cystocarps are arranged in a series on the dorsal side of erect branches. Both *Polysiphonia subulifera* and *P. flexella* show spermatangial axes formed at the first dichotomy of fertile trichoblasts, replacing one branch and ending in 1–2 sterile terminal cells. Cystocarps are globose to pyriform in *P. subulifera* and spherical and flattened in *P. flexella*. Two species of Rhodomelaceae: *Polysiphonia tepida* Hollenberg and *Womersleyella setacea* (Hollenberg) R. E. Norris, and *Aiolocolax pulchellus* Pocock, related to Rhodomelaceae but of uncertain systematic position, are reported from the Canary Islands for the first time. Data concerning ecological conditions, geographical distribution, morphology and phenology are presented.

### Introduction

In terms of number of species, the Rhodomelaceae is the largest family in the Rhodophyta (Scagel 1953, Hommersand 1963) and with at least 23 genera and 73 species reported (Rojas-González 1997), it is the largest family of seaweeds in the Canary Islands. The first reports of the Rhodomelaceae from the Canary Islands were by Montagne (1841), Kützing (1847), J. Agardh (1863), Vickers (1896) and Sauvageau (1912). Børgesen (1930) summarized all previous information for this family and also contributed with the description of a new genus as well as valuable data about the habitat of many species. Later, Audiffred and Weisscher (1984), Audiffred and Prud'homme van Reine (1985), Viera-Rodríguez *et al.* (1987), Gil-Rodríguez and Haroun (1989, 1992), Afonso-Carrillo *et al.* (1992), Kristiansen *et al.* (1993) and Rojas-González *et al.* (1994) have added new records. However, the family Rhodomelaceae as such has been little investigated in the Canary Islands. During recent studies on the Rhodomelaceae of the Canary Islands (Rojas-González *et al.* 1994, Rojas-González 1997) carried-out with the purpose of clarifying the taxonomy and morphology of its representatives, several species showing reproductive structures previously undescribed or representing new records from the Canary Islands were found. In the present account spermatangial and cystocarpic plants in the monotypic genus *Ctenosiphonia* Falkenberg and in two species of *Polysiphonia* Greville are described for the first time. Moreover, two species of the Rhodomelaceae and a putative parasitic red alga,

related to the Rhodomelaceae, but of uncertain systematic position, are added to the seaweed flora of the Canary Islands.

### Material and Methods

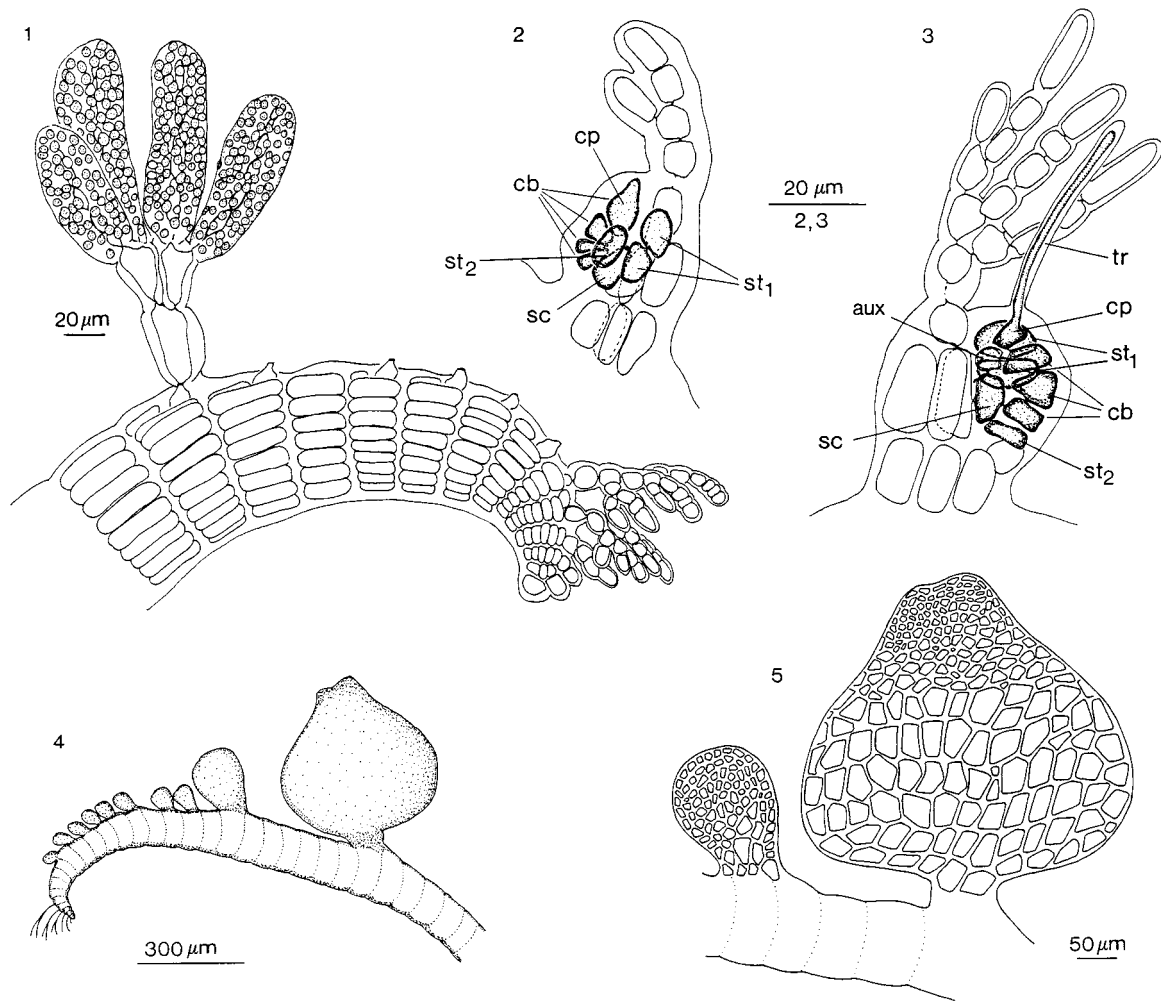
Plants have been collected since 1990 in the eulittoral and sublittoral at several localities in the Canary Islands. Material was studied while fresh and then preserved in 4% Formalin in seawater. When investigations were made on liquid-preserved specimens, fragments were stained in 1% aniline blue and sometimes mounted in 20% aqueous Karo® corn syrup for permanent slides. Voucher specimens are deposited at TFC (Departamento de Biología Vegetal, Universidad de La Laguna, Canary Islands). All drawings were made with the aid of a camera lucida on a Zeiss microscope.

### Results and Discussion

#### *Ctenosiphonia hypnoides* (J. Agardh) Falkenberg

(Figs 1–5)

The genus *Ctenosiphonia* was described by Falkenberg in Engler and Prantl (1897) to include a single species, *C. hypnoides* (Basionym: *Polysiphonia hypnoides* J. Agardh, type locality: Arrábida, Portugal). The genus is mainly characterized by its dorsiventral organization with the terminal portion of prostrate axes curved to the substratum. The endogenous erect branches are dorsally arranged in two rows on both sides of the prostrate axes. Trichoblasts are borne



Figs 1–5. *Ctenosiphonia hypnoides* (J. Agardh) Falkenberg.

Fig. 1. Spermatangial axes. Fig. 2. Young procarp showing the 4-celled carpogonial branch (cb) and two sterile-cell groups, the lateral 2-celled ( $st_1$ ) and the basal 1-celled ( $st_2$ ) borne on the supporting cell (sc). Fig. 3. Procarp after fertilization showing the carpogonium (cp) with a long trichogyne (tr), the supporting cell (sc), the sterile-cell groups ( $st_1$  and  $st_2$ ) and the auxiliary cell (aux). Fig. 4. Immature cystocarps arranged in a series on the dorsal side of erect axis. Fig. 5. Mature cystocarp.

dorsally along the mid-line of the erect branches and tetrasporangia are formed in pairs in successive segments on a fertile branch (Falkenberg 1901, Kylin 1956). In addition to the type locality, *Ctenosiphonia hypnoides* has been reported from several localities on the coasts of France (Feldmann 1930, Ardré *et al.* 1982), Portugal (Ardré 1970), Spain (Seoane 1965, Niell 1978), Morocco (Bornet and Thuret 1876, as *Polysiphonia*, Dangeard 1949), the islands of Madeira (Audiffred and Prud'homme van Reine 1985) and the Canaries (Børgesen 1930). The species may be considered as endemic of the warm temperate NE Atlantic Region (Hoek 1984). Detailed information on the vegetative and reproductive morphology of tetrasporangial plants has been given by Bornet and Thuret (1876, as *Polysiphonia*), Falkenberg (1901) and Ardré (1970). In *Ctenosiphonia hypnoides* only sterile and tetrasporangial plants were known until now when gametophytic plants have been found in the Canary Islands.

The specimens of *Ctenosiphonia hypnoides* were collected in the middle-eulittoral growing epilithically mixed with other caespitose algae such as *Lophosiphonia reptabunda* (Suhr) Kylin, *Polysiphonia scopulorum* Harvey, *Gelidiella pannosa* (J. Feldmann) J. Feldmann *et* G. Hamel and *Anadyomene saldanhae* A. B. Joly *et* E. C. Oliveira-Filho. Plants examined were largely sterile or tetrasporic. Only some specimens showed cystocarps and a single spermatangial specimen was observed. Sexual plants are not different in habit to tetrasporangial ones. Spermatangial axes replace both branches at the second dichotomy of fertile trichoblasts (Fig. 1). They are cylindrical, 60–90  $\mu$ m long and 23–30  $\mu$ m in diameter, with a blunt rounded apex, lacking sterile terminal cells when mature. The spermatangial axes are covered with a layer of spermatangial mother cells bearing spherical spermatangia 3–4  $\mu$ m in diameter. The procarps arise on the second basal segment of a fertile trichoblast and consist of a 4-celled carpogonial

branch and two sterile-cell groups borne on the supporting cell (Figs 2, 3). Prior to fertilization, the lateral sterile group (group-1) is 2-celled and the basal sterile group (group-2) is 1-celled (Fig. 2). Up to ten immature cystocarps arranged in a series on the dorsal side at the tips of erect branches were observed (Fig. 4). Mature cystocarps are urceolate, with a wide base, up to 465  $\mu\text{m}$  long and up to 490  $\mu\text{m}$  broad, with a narrow neck ending in an ostiole up to 110  $\mu\text{m}$  in diameter. Outer pericarp cells are polygonal decreasing in size towards the ostiole (Fig. 5). Carposporangia are pyriform, 135–165  $\mu\text{m}$  long and 45–60  $\mu\text{m}$  in diameter.

*Ctenosiphonia hypnoides* is probably perennial and mature plants have been found throughout the year in numerous localities of the Canary Islands. Specialized reproductive structures are rather rare, but plants spread vegetatively by extensive growth, followed by fragmentation, of prostrate axes. The scarce number of records of *C. hypnoides* in a region (from France to the Canaries), well known from the phyco-logical point of view, could be due to the fact that specimens are frequently fragmented and the absence of young portions prevents a reliable identification.

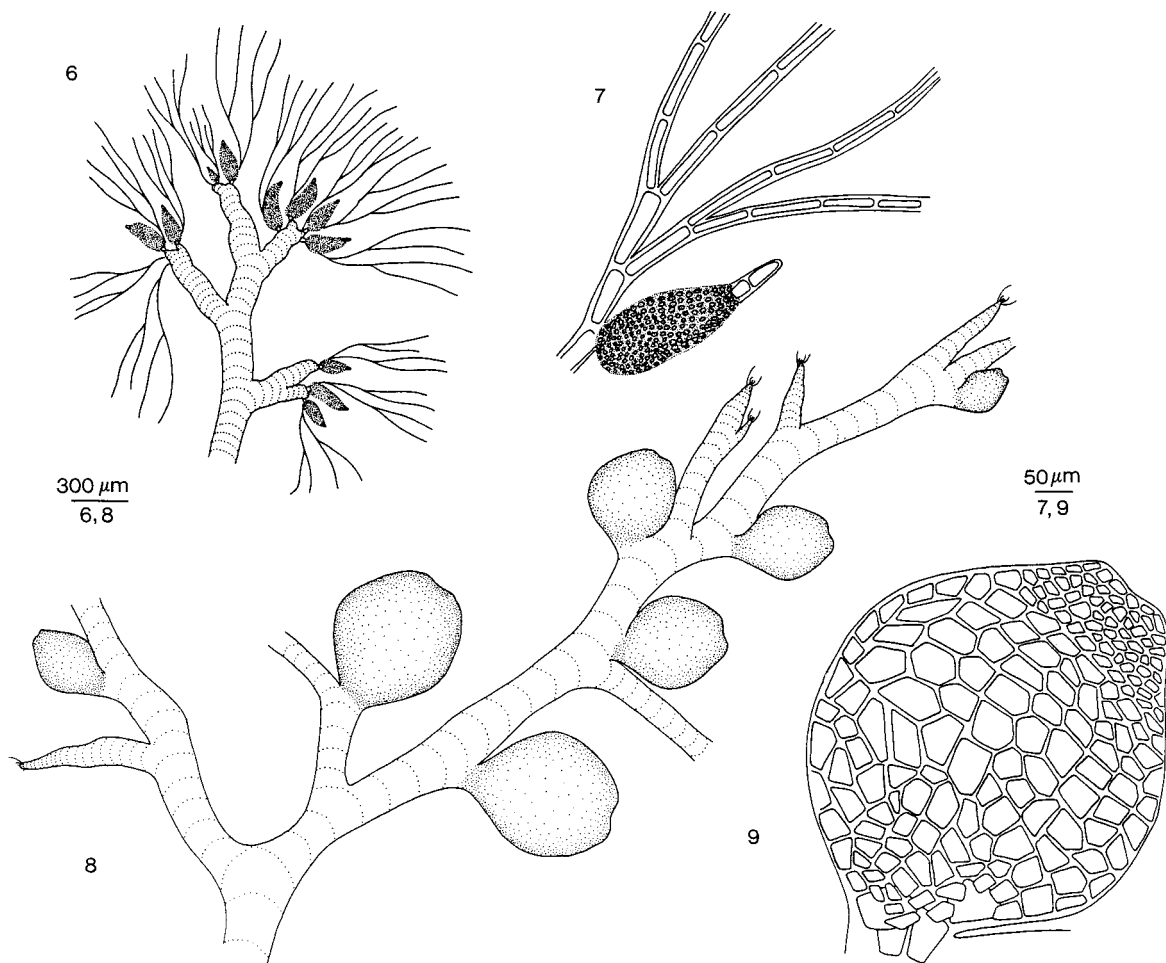
Material examined: TFC Phyc. 9305 (04. 08. 1993, Playa El Bollullo, Tenerife).

*Polysiphonia subulifera* (C. Agardh) Harvey

(Figs 6–9)

Widely reported in both the eastern and western Mediterranean (see Feldmann 1942, Giaccone and Rizzi Longo 1976, Furnari 1984, Boudouresque *et al.* 1984, Athanasiadis 1987, Ballesteros 1990), *Polysiphonia subulifera* has in the British Isles and NW France (South and Tittley 1986, Maggs and Hommersand 1993) and the Canary Islands (Børgesen 1930) the only known localities on the Atlantic coasts. According to Maggs and Hommersand (1993), *P. subulifera* in the British Isles reproduces only by fragmentation, lacking sexual or specialized vegetative reproductive structures. Most reports from the Mediterranean are based on vegetative specimens and only Børgesen (1930) and Feldmann (1942) reported tetrasporangia.

Recent collections carried out at several localities in the Canary Islands have provided numerous both spermatangial and cystocarpic plants. *Polysiphonia subulifera* is a very common species in the Canaries



Figs 6–9. *Polysiphonia subulifera* (C. Agardh) Harvey.

Fig. 6. Spermatangial axes on trichoblasts. Fig. 7. Spermatangial axis showing two sterile terminal cells. Fig. 8. Branches with cystocarps. Fig. 9. Mature cystocarp showing outer pericarp cells decreasing in size towards the ostiole.

and mature plants can be found throughout the year. Nevertheless, gametophytes have only been collected from March to November growing in tide pools. Plants are dioecious and densely tufted spermatangial branches occurred at the apex of young laterals (Fig. 6). Spermatangial axes are formed at the first dichotomy of fertile trichoblasts, replacing one branch. They are cylindrical to conical, slightly incurved, 175–300 µm long and 62–95 µm in diameter, with an acute apex ending in 1–2 sterile terminal cells (Fig. 7). Spermatangia are spherical and about 5 µm in diameter. Mature cystocarps are globose to pyriform, 600–750 µm long and 525–650 µm broad, opening by an ostiole up to 112 µm in diameter (Fig. 8). Outer pericarp cells are polygonal, arranged in irregular rows and decreasing in size towards the ostiole (Fig. 9). Carposporangia are pyriform, 112–125 µm long and 32–38 µm in diameter. A mixed phase, with tetrasporangia and cystocarps (TFC Phyc. 9072) was also observed.

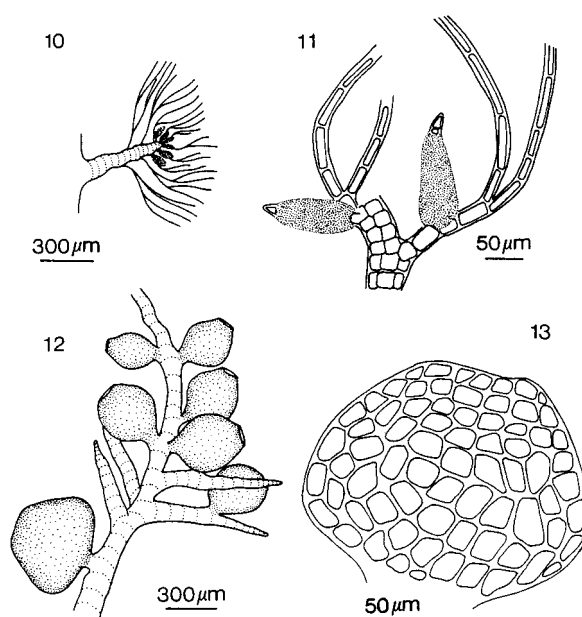
Material examined: TFC Phyc. 9074 (05. 08. 1993, La Fajana, La Palma), 9442 (20. 04. 1993, La Restinga, El Hierro), 9065 (27. 03. 1991, Punta del Hidalgo, Tenerife), 9439 (04. 04. 1993, Punta del Hidalgo, Tenerife), 9075 (14. 04. 1991, El Guincho, Tenerife), 9072 (01. 04. 1992, Garachico, Tenerife), 9073 (16. 08. 1992, El Pris, Tenerife), 9438 (10. 03. 1993, Mesa del Mar, Tenerife), 9436 (21. 11. 1992, Cotillo, Fuerteventura), 9493 (09. 05. 1993, Corralejo, Fuerteventura).

#### *Polysiphonia flexella* (C. Agardh) J. Agardh

(Figs 10–13)

Most reports of this species, which is known from the Mediterranean Sea (Lauret 1967, Ribera and Gómez-Garreta 1984, Furnari 1984, Gallardo *et al.* 1985, Ben-Maiz *et al.* 1987) and the Atlantic islands of Madeira (Audiffred and Prud'homme van Reine 1985), Salvage (Audiffred and Weisscher 1984) and Canaries (Kützing 1849, as *Polysiphonia acanthothricha* Kützing, Børgesen 1930), are based on vegetative or tetrasporangial plants. Kützing (1849) cited the cystocarps, Derbès and Solier (1856) figured spermatangial branches and Lauret (1967) collected spermatangial and cystocarpic plants, but no descriptions of these structures were given.

Populations of *Polysiphonia flexella* in the Canary Islands mainly consist of vegetative specimens, but gametophytic plants have been collected in March, April and November. Plants are dioecious and spermatangial axes replace one branch at the first dichotomy of fertile trichoblasts (Figs 10, 11). They are cylindrical to conical, 127–163 µm long and 47–60 µm in diameter, with a pointed apex of 1–2 sterile terminal cells (Fig. 11). Mature cystocarps are spherical and flattened, up to 450 µm in diameter, opening by a large ostiole up to 263 µm in diameter (Figs 12, 13). Outer pericarp cells are polygonal and slightly



Figs 10–13. *Polysiphonia flexella* (C. Agardh) J. Agardh. Figs 10–11. Spermatangial axes on trichoblasts showing 1–2 sterile terminal cells. Fig. 12. Branch with cystocarps. Fig. 13. Cystocarp showing outer pericarp polygonal cells.

decreasing in size towards the ostiole (Fig. 13). Carposporangia are clavate, 87–100 µm long and 22–33 µm in diameter.

Material examined: TFC Phyc. 9228 (01. 04. 1991, Arguineguín, Gran Canaria), 9225 (01. 03. 1992, Cotillo, Fuerteventura), 9227 (21. 11. 1992, Cotillo, Fuerteventura).

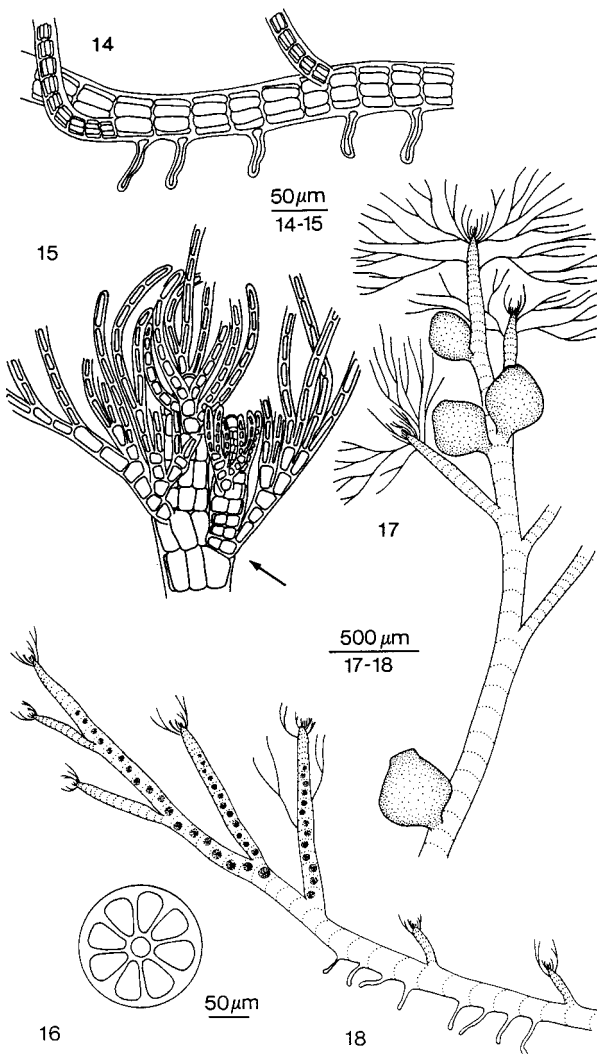
#### *Polysiphonia tepida* Hollenberg

(Figs 14–18)

*Polysiphonia tepida* has been widely reported from the western Atlantic from North Carolina to Brazil (Hollenberg 1958, Taylor 1960, Díaz-Piferrer 1969, Kapraun 1977, 1980, Cordeiro-Marino 1978, Searles and Schneider 1978, Wynne 1998), Hawaii (Hollenberg 1968 b), the Maldives (Hackett 1977) and Australia (Womersley 1979). In the eastern Atlantic the species has been reported from Madeira (Audiffred and Prud'homme van Reine 1985) and the Cape Verde Islands (Lawson *et al.* 1995). Its presence in the Canary Islands was not unexpected, because Audiffred and Prud'homme van Reine (1985), basing on specimens with only six periaxial cells, reported this taxon with a question mark from Gran Canaria.

*Polysiphonia tepida* was collected in relatively sheltered localities growing epilithically in tide pools with its base lightly covered with sand and occasionally mixed with other Ceramiales such as *Cottoniella filamentosa* (Howe) Børgesen, *Polysiphonia fibrillosa* (Dillwyn) Sprengel and *Polysiphonia flexella*.

Plants examined agreed with previous accounts of the species. Entangled plants are to 10 mm tall, attached to the substratum by rhizoids cut off from the periaxial cells (Fig. 14). Branches are formed at the



Figs 14–18. *Polysiphonia tepida* Hollenberg.

Fig. 14. Prostrate axis showing rhizoids cut off from periaxial cells. Fig. 15. Apex of an erect axis showing a branch formed in the axil of a trichoblast (arrow). Fig. 16. Transverse section of axis showing eight periaxial cells. Fig. 17. Branch with cystocarps. Fig. 18. Tetrasporangial branches.

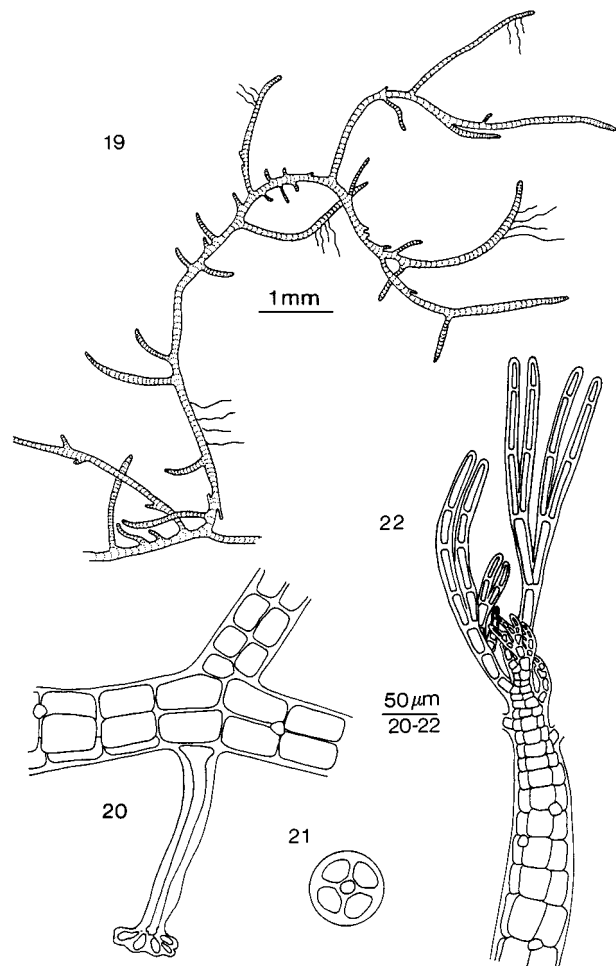
axils of trichoblasts (Fig. 15), with 7–8 periaxial cells and are ecorticate (Fig. 16). Cystocarpic and tetrasporic plants were observed in April and May. Cystocarps are ovate to urceolate, opening by a wide ostiole (Fig. 17). Tetrasporangia are arranged in a spiral series in upper branches (Fig. 18).

Material examined: TFC Phyc. 9342 (22. 11. 1991, La Restinga, El Hierro), 9339 (21. 04. 1993, Arenas Blancas, El Hierro), 9340 (04. 05. 1992, Arrecife, Lanzarote), 9341 (10. 05. 1993, Cotillo, Fuerteventura), 9343 (03. 08. 1993, Las Caletas, Fuerteventura).

***Womersleyella setacea* (Hollenberg) R. E. Norris**  
(Figs 19–22)

*Womersleyella setacea* is a widely distributed species in the tropical zones of the Pacific (Hollenberg

1968 a, Egerod 1971, Schnetter and Bula-Meyer 1982) and also occasionally reported in the Indian Ocean (Wynne 1993). In the western Atlantic the species has been identified from herbarium collections from Costa Rica, El Salvador and the Bermudas (Hollenberg 1968 a, Oliveira Filho and Cordeiro-Marino 1970). After the first record by Verlaque (1989) from the Mediterranean Sea, the species has been reported by Airoidi *et al.* (1994), Cormaci *et al.* (1995), Rindi and Cinelli (1995), all as *Polysiphonia setacea* Hollenberg, and Athanasiadis (1997) from several sites in both the eastern and western Mediterranean Sea. Mediterranean populations of *Womersleyella setacea* are frequently massive and form a dense carpet completely covering the epilithic vegetation at 10–40 m depth (Verlaque 1989, Rindi and Cinelli 1995, Athanasiadis 1997). According to Verlaque (1989), this species may constitute a recent introduction or a rare member of the Mediterranean marine flora with unknown life-cycle exhibiting unpredictable massive propagation in certain years, and Verlaque (1994)



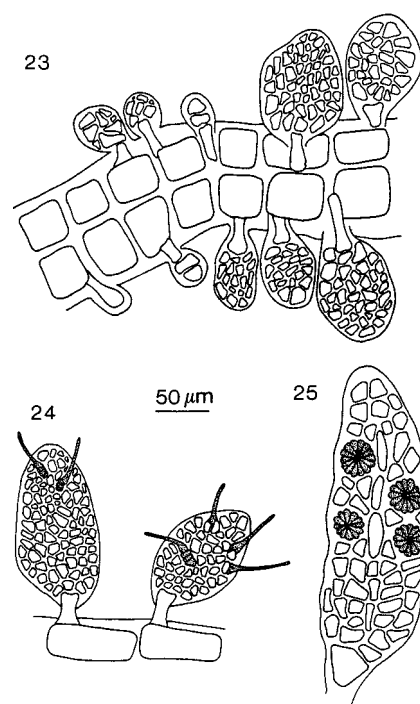
Figs 19–22. *Womersleyella setacea* (Hollenberg) R. E. Norris.

Fig. 19. Habit. Fig. 20. Prostrate axis with a rhizoid cut off from periaxial cell ended in a multicellular discoid holdfast. Fig. 21. Transverse section of axis showing four periaxial cells. Fig. 22. Apex of an erect axis.

and Ribera and Boudouresque (1995) included *W. setacea* in the list of probably introduced macrophytes into the Mediterranean Sea. For Athanasiadis (1997) the species represented a recent introduction, the Bermudas remaining the nearest extra-Mediterranean locality. The finding of *W. setacea* in the Canary Islands represents the first record in the eastern Atlantic Ocean.

Plants examined were reddish in colour and up to 10 mm tall and in good agreement with previous descriptions (Hollenberg 1968 a, Verlaque 1989, Norris 1992, Athanasiadis 1997). Entangled main and lateral axes (Fig. 19) are attached to the substratum by rhizoids cut off from the periaxial cells and end in a multicellular discoid holdfast (Fig. 20). Axes are ecoriicate with four periaxial cells (Fig. 21) and branches replace the trichoblasts (Fig. 22). As in Mediterranean collections, the Canary Islands specimens are vegetative. The only specimens with known reproductive structures (tetrasporangia) are from the Pacific Ocean (Hollenberg 1968 a). In the Canary Islands we have not observed a massive occurrence of *Womersleyella setacea* such as been reported in the Mediterranean. The species has been collected growing in tide pools both in sheltered and exposed localities mixed with other caespitose algae such as *Jania rubens* (Linnaeus) J. V. Lamouroux, *Dipterosiphonia rigens* (C. Agardh) Falkenberg, *Herposiphonia secunda* (C. Agardh) Ambronn, *Griffithsia opuntioides* J. Agardh, *Caulerpa webbiana* Montagne and *Anadyomene stellata* (Wulfen) C. Agardh, or as an epiphyte on *Valonia utricularis* (Roth) C. Agardh, *Lobophora variegata* (J. V. Lamouroux) E. C. Oliveira, *Galaxaura rugosa* (J. Ellis et Solander) J. V. Lamouroux and *Cystoseira humilis* Kützinger. The species has also been collected in harbours growing on anchor ropes of fishing ships.

Material examined: TFC Phyc. 9194 (03. 08. 1993, Las Caletas, La Palma), 9195 (05. 07. 1993, La Fajana, La Palma), 9211 (13. 06. 1992, Valle Gran Rey, La Gomera), 9206 (22. 11. 1991, La Restinga, El Hierro), 9201 (20. 03. 1992, La Restinga, El Hierro), 9191 (21. 03. 1992, La Restinga, El Hierro), 9208 (16. 06. 1992, Arenas Blancas, El Hierro), 9210 (13. 11. 1992, Arenas Blancas, El Hierro), 9192 (21. 04. 1993, Arenas Blancas, El Hierro), 7027 (06. 11. 1990, Punta del Hidalgo, Tenerife), 9201 (27. 03. 1991, Punta Hidalgo, Tenerife), 9190 (21. 02. 1992, Punta Hidalgo, Tenerife), 5856 (21. 06. 1991, Puerto de la Cruz, Tenerife), 9198 (19. 02. 1992, Puerto de la Cruz, Tenerife), 9199 (01. 11. 1991, La Tejita, Tenerife), 9200 (14. 02. 1992, Las Teresitas, Tenerife), 9197 (12. 08. 1992, Las Teresitas, Tenerife), 9202 (29. 11. 1992, Las Teresitas, Tenerife), 9196 (28. 07. 1993, Las Teresitas, Tenerife), 9204 (05. 05. 1992, Mesa del Mar, Tenerife), 9203 (10. 03. 1993, Mesa del Mar, Tenerife), 9209 (04. 09. 1993, Los Silos, Tenerife), 9213 (10. 07. 1993, Abades, Tenerife), 5376 (09. 02. 1983, Las Canteras, Gran Canaria), 9193 (08. 05. 1993, Orzola, Lanzarote).



Figs 23–25. *Aiolocolax pulchellus* Pocock.

Fig. 23. Immature reproductive branches formed in series in a branch of *Polysiphonia scopulorum*. Fig. 24. Emergent parts of female gametophyte, with carpogonia. Fig. 25. Emergent part of sporophyte, with polysporangia.

#### *Aiolocolax pulchellus* Pocock

(Figs 23–25)

The monotypic genus *Aiolocolax* was described by Pocock (1956) growing on the Rhodomelaceae *Falkenbergiella caespitosa* Pocock [= *Polysiphonia caespitosa* (Pocock) Hollenberg referred to *Polysiphonia scopulorum* Harvey by Stegenga *et al.* 1997], as a parasitic red algae of uncertain systematic position (Goff 1982, Stegenga *et al.* 1997). Only known from South Africa, this minute red alga was recently reported from NW Spain by Pérez-Cirera *et al.* (1989). Plants examined are in good agreement with the extensive description of Pocock (1956). Plants consist of endophytic filaments, growing parallel between axial and periaxial cells in *Polysiphonia scopulorum* axes, and fertile fusiform branches, up to 200 µm long and 100 µm broad, formed in series or in fairly dense tufts (Fig. 23). Only female and polysporangial plants were observed (Figs 24, 25). In the Canary Islands *Aiolocolax pulchellus* seems a rather rare species only present in a single collection and growing on a few specimens of a caespitose population of *Polysiphonia scopulorum*.

Material examined: TFC Phyc. 9243 (04. 08. 1993, Playa El Bollullo, Tenerife).

#### Conclusions

These reproductive observations and these newly reported species from the Canary Islands are the result

of investigations on a family partially known in this region.

The discovery of gametophytes of *Ctenosiphonia hypnoides* has allowed a more complete description of this species and, in addition, has provided a better understanding of the genus. Both spermatangial axes and procarps are formed in series at the tips of branches on the dorsal side. This arrangement characterizes the members of the tribe Amansieae into the Rhodomelaceae (Falkenberg 1901). Both the Amansieae and *Ctenosiphonia* have dorsally inserted trichoblasts and endogenous polysiphonous branches. Although Falkenberg (1901) suggested that *Ctenosiphonia* was most closely related to the Amansieae, Hommersand (1963) retained this genus in the Lophosiphoniae by its prostrate habit (erect habit in the Amansieae). Moreover, *Ctenosiphonia* is characteristically ecorticate and with up to 18 periaxial cells, while members of the Amansieae have an abundant cortication around 5(6) periaxial cells. Although the classification into the Rhodomelaceae is largely based on vegetative features (Falkenberg 1901, Kylin 1956), the morphology of spermatangial axes observed in *Ctenosiphonia* appears to show differences with previous reports in members of the Amansieae. In the Amansieae a single spermatangial axis, frequently subglobose, is borne on the suprabasal cell of a modified trichoblast (Falkenberg 1901, Kylin 1956, Norris 1987, 1991), while in *Ctenosiphonia* spermatangial axes are paired, replacing both branches, at the second dichotomy of a fertile trichoblast. The position of *Ctenosiphonia* at the tribe level is controversial and, as was suggested by Scagel (1953), this genus may represent a connecting link between the Lophosiphoniae and the Amansieae.

The finding of numerous gametophytic populations of *Polysiphonia subulifera* seems to indicate that the ecological conditions present in tide pools of the Canaries are adequate for the growth and reproduction of this species. Growth and reproductive limitations reported at the northern end of its geographical distribution (Maggs and Hommersand 1993) suggest that *Polysiphonia subulifera* is a mem-

ber of the warm temperate flora. However, in *Polysiphonia flexella*, prostrate axes and small erect axes occur in the Canary Islands throughout the year, but large plants have been recorded only from March to November. The low proportion of fertile specimens found in the populations examined may be due to perennation of prostrate axes.

The other species reported here for the first time from the Canaries (*Womersleyella setacea*, *Polysiphonia tepida* and *Aiolocolax pulchellus*) have a well-known wide distribution, or have been reported from other localities in the eastern Atlantic Ocean, so their occurrence in these islands was not unexpected. The presence of *Womersleyella setacea* in the same harbours where other presumably introduced species in the Canary Islands such as *Gymnophycus hapsiphorus* Huisman *et* Kraft, *Predaea huismanii* Kraft, *Codium fragile* (Suringar) Hariot ssp. *tomentosoides* (van Goor) P. C. Silva, *Polysiphonia harveyi* J. W. Bailey and *Polysiphonia denudata* (Dillwyn) Harvey were observed by Sansón and Reyes (1995), seems to support the hypothesis of a recent introduction, such as has been proposed for the Mediterranean Sea (Verlaque 1994, Ribera and Boudouresque 1995, Athanasiadis 1997). Nevertheless, *Womersleyella setacea* could also be a native element of the marine flora of the Canary Islands. The species seems a common but inconspicuous component of the littoral vegetation and the absence of previous records for the Canaries would be due to the great difficulties in the identification of these rhodomelaceous algae in absence of reproductive structures.

### Acknowledgements

This work was supported by grant from the Spanish DGICYT (PB 89-0601). This paper contains data from B.R.G.'s Doctoral Thesis. We would like to thank Dr M. Sansón for her critical reading of the manuscript.

Accepted 19 October 1999

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