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A NEW SPECIES OF HERPOSIPHONIA (RHODOMELACEAE, RHODOPHYTA) FROM SOUTH AFRICA¹)

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SUMMARY

Herposiphonia didymosporangia nov. spec. is described from material collected on the coast of the Cape Peninsula, South Africa. Within the genus *Herposiphonia* this species is unique in possessing two tetrasporangia per segment, as opposed to one sporangium in all other species.

1. INTRODUCTION

The genus *Herposiphonia* Nägeli as it occurs on the South African coast has recently received attention in the publication of WYNNE (1984). One new species, *H. clavata* Wynne, was described, thus bringing the total number of S. African species in this genus to eight. At the same time, however, the occurrence of *H. ceratoclada* (Montagne) Falkenberg in S. Africa, and indeed its very identity were questioned.

The present paper draws the attention to yet another species of this genus, apparently undescribed, and presenting a unique feature in the genus *Herposiphonia*, i.c. the occurrence of two tetrasporangia per segment of the determinate branchlets.

2. OBSERVATIONS AND DISCUSSION

***Herposiphonia didymosporangia* nov. spec.**

Plantae praecipue prostratae, apices axium principalium sursum curvati. Omne segmentum axis principalis cum uno laterali; lateralia semper in ordinatione e tribus ramis simplicibus determinatis et uno ramo indeterminato, ordinationem ramificationis axis principalis repetente. Disticha lateralia imperfecta; evolutio ramorum indeterminatorum saepe limitata. Axes principales 200–350 µm diametro, segmenta circiter longa quam lata, constantia ex cellula centrali et 15–17 cellulis pericentralibus. Axes per usque ad quinque rhizoidea per segmentum affixi, interdum in haptera digitata evolventia. Lateralalia determinata recta vel leviter curvata, ex c. 18 segmentis constantia; usque ad 1500 µm longa et

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200 μm lata, cum apice obtuso et modo leviter constricta basi. Ramuli vegetativi absque trichoblastis. Segmenta ramulorum determinatorum plus minusve 3plo latiora quam longiora. Segmentum basale 6 cellulis pericentralibus cetera segmenta usque ad 18 cellulis pericentralibus, cellulae centrales globosae vel rhombae in sectione. Tetrasporangia in ramulis determinatis portata, bina in secundo ad quindecimo segmento presentia, in seriebus orthostichis disposita. Tetrasporangia matura 70–80 μm diametro, tetraedrice divisa. Numerus siphonum pericentralium segmentorum tetrasporiferum ad c. 12 diminutus, cellulis tegentibus inclusis.

Holotypus in BOL, lamina vitrea Stegenga 764, loco dicto St. James, C.B.S. 24-X-1984 (tetrasporangialis).

Herposiphonia didymosporangia nov. spec. (figs 1–6)

Plants mainly prostrate, the apices of the main axes curved upward (fig. 1). Each segment of the main axis with one lateral (figs 2, 3); laterals in a strict sequence of three simple determinate branches and one indeterminate branch repeating the branching scheme of the main axis. Laterals imperfectly distichous; indeterminate branches often of limited development. Main axis 200–350 μm in diameter, the segments about as long as broad, consisting of a central cell and 15–17 pericentral cells. Axes attached by means of up to five rhizoids per segment, sometimes developing into digitate haptera. Determinate laterals (figs 2, 5) straight or slightly curved, consisting of c. 18 segments, up to 1500 μm long and 200 μm wide, with a blunt apex and only slightly constricted at the base. Vegetative branchlets without trichoblasts. Segments of determinate branchlets about 1/3 as long as broad, basal segment with 6 pericentral cells, the other segments with up to 18 pericentral cells; central cells globose or rhomboid in optical section.

Tetrasporangia (figs 4, 6) borne in the determinate branchlets, occurring in pairs in the 2nd to 15th segments, arranged in orthostichous series. Mature tetrasporangia 70–80 μm in diameter, tetrahedrally divided. Number of pericentral siphons of tetrasporiferous segments reduced to c. 12, including cover cells.

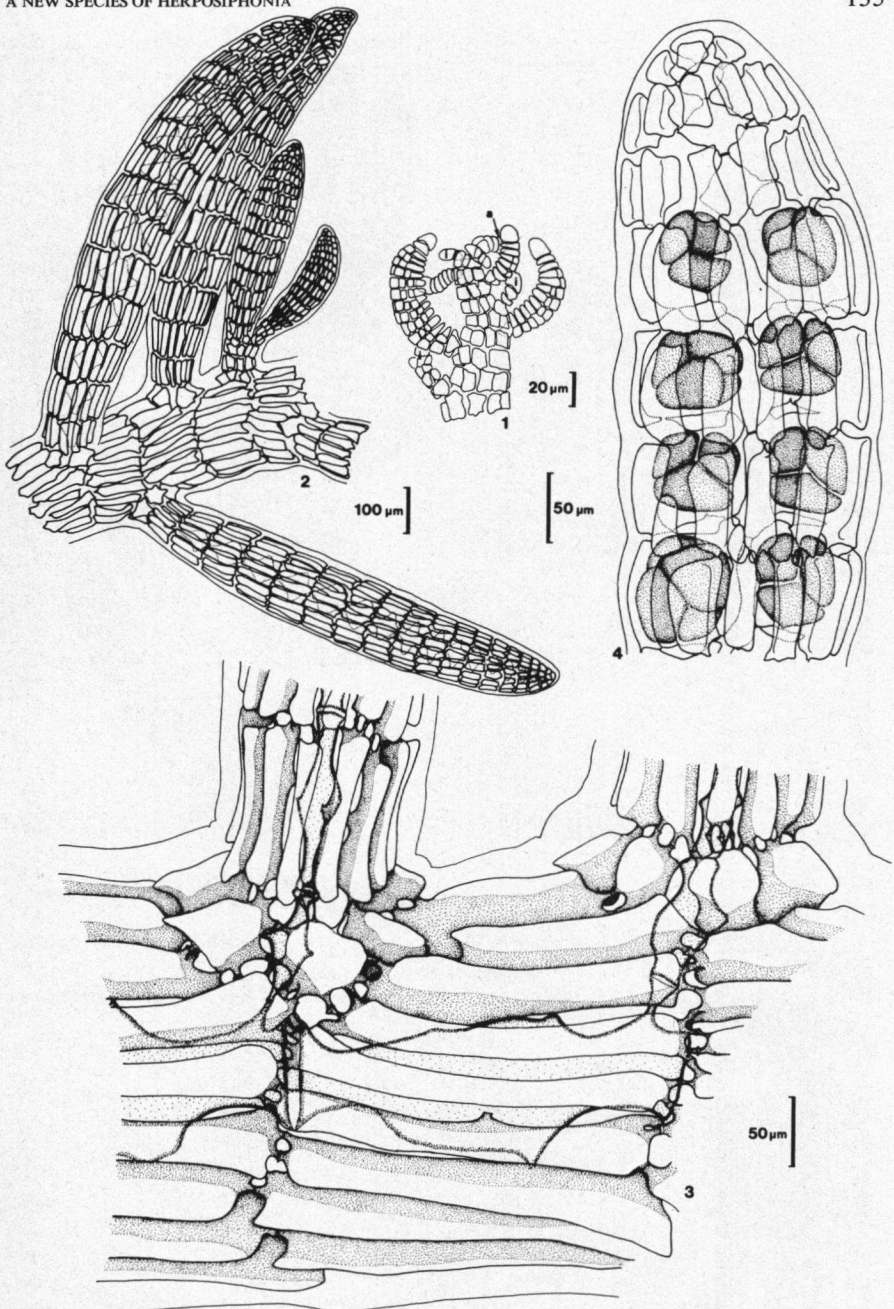
Sexual reproductive plants not observed.

HOLOTYPE in BOL, Stegenga slide no 764, St. James, Cape Peninsula, 24-X-1984 (tetrasporangial); ISOTYPE in the collection of the Association of European Phycologists (= Stegenga slide no 766).

Additional material examined: De Hoop Nature Reserve, Cape Province, March 1984. leg. J. J. Bolton (tetrasporangial).

Plants grew in the lower intertidal, epilithic and epiphytic on articulated coral-lines, mixed with another species of *Herposiphonia*, *H. heringii* (Harvey) Falkenberg.

H. didymosporangia is aberrant from all other species of *Herposiphonia* in the possession of two tetrasporangia per segment. Actually this feature would



Figs. 1-4. *Herposiphonia didymosporangia*. Fig. 1. Thallus apex seen from ventral side (a = apical cell, i = indeterminate lateral). Fig. 2. Detail of main axis with branchlets. Fig. 3. Detail of main axis, showing insertion of laterals (note numerous secondary pit connections). Fig. 4. Apex of determinate lateral with tetrasporangia.

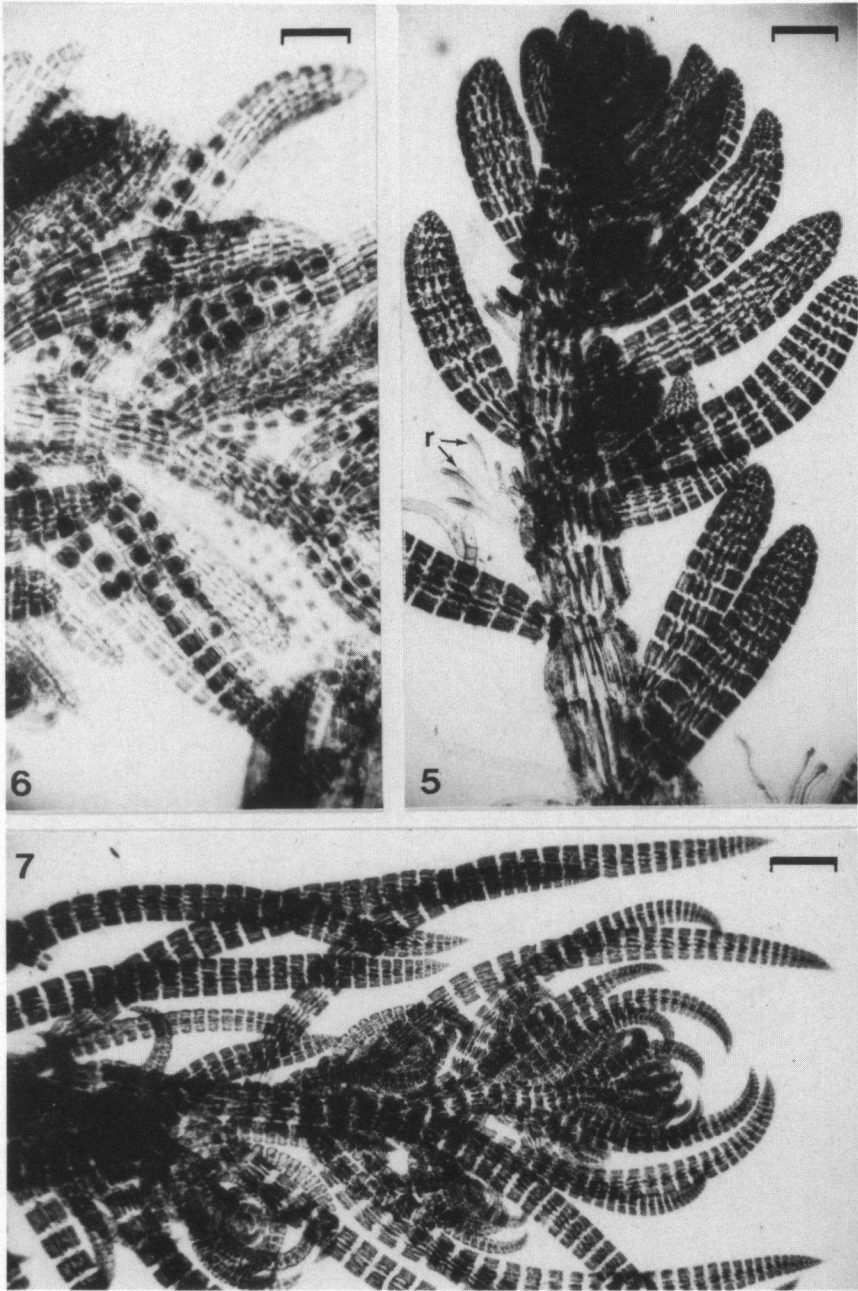


Fig. 5. *Herposiphonia didymosporangia*, Thallus apex (r = rhizoids on prostrate axis). Fig. 6. *H. didymosporangia*, tetrasporiferous branchlets. Fig. 7. *Herposiphonia heringii*, thallus apex. Scale bar in all figures 200 μ m.

appear to exclude it from the genus as defined by e.g. KYLIN (1956), but it certainly belongs there in terms of vegetative morphology, notably the branching characteristics.

Several species of *Herposiphonia* have been reported from South Africa (SEAGRIEF 1984, WYNNE 1984). To date, at least six of these have been found in the southwest Cape Province: *H. clavata* Wynne, *H. heringii* (Harv.) Falkenb., *H. insidiosa* (Grev.) Falkenb., *H. prorepens* (Harv.) Schmitz, *H. secunda* (C. Ag.) Ambrohn (incl. f. *tenella* (C. Ag.) Wynne), and *H. subdisticha* Okamura. In vegetative characters *H. didymosporangia* differs from each of these by its high number of pericentral cells: only *H. heringii* comes anywhere near with 16 pericentral cells in the determinate branchlets; it differs however by the often erect habit and the longer, awl-shaped branchlets (up to 30 segments) with acute apex (fig. 7).

With the exception of *H. heringii*, all SW Cape representatives of *Herposiphonia* appear to be south coast (and possibly east coast) species. *H. heringii* is found on both sides of the Cape Peninsula and north as far as Lamberts Bay at least, although it was originally described from Port Natal, Durban (HARVEY 1847).

Professor M. H. Hommersand (Univ. of North Carolina, Chapel Hill) has informed us that material apparently belonging to the here described *H. didymosporangia* is in the collections of G. F. Papenfuss, obtained in 1930 and 1938 at Muizenberg, very close to the here designated type locality. A small, but possibly important difference is the frequent occurrence of three tetrasporangia per segment, not seen in our material. It leaves some doubt on the stability of tetrasporangial number and its use as a taxonomic character at genus level in some Rhodomelaceae.

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