

Mediterranean Marine Science

Vol 15, No 2 (2014)



Seaweeds of the Greek coasts. II. Ulvophyceae

K. TSIAMIS, P. PANAYOTIDIS, A. ECONOMOU-AMILLI, C. KATSAROS

doi: [10.12681/mms.574](https://doi.org/10.12681/mms.574)

To cite this article:

TSIAMIS, K., PANAYOTIDIS, P., ECONOMOU-AMILLI, A., & KATSAROS, C. (2014). Seaweeds of the Greek coasts. II. Ulvophyceae. *Mediterranean Marine Science*, 15(2), 449–461. <https://doi.org/10.12681/mms.574>

Seaweeds of the Greek coasts. II. Ulvophyceae

K. TSIAMIS¹, P. PANAYOTIDIS¹, A. ECONOMOU-AMILLI² and C. KATSAROS³

¹ Hellenic Centre for Marine Research (HCMR), Institute of Oceanography, Anavyssos 19013, Attica, Greece

² Faculty of Biology, Department of Ecology and Taxonomy, Athens University, Panepistimiopolis 15784, Athens, Greece

³ Faculty of Biology, Department of Botany, Athens University, Panepistimiopolis 15784, Athens, Greece

Corresponding author: kostas.tsiamis@gmail.com

Handling Editor: Sotiris Orfanidis

Received: 5 August 2013 ; Accepted: 5 February 2014; Published on line: 14 March 2014

Abstract

An updated checklist of the green seaweeds (Ulvophyceae) of the Greek coasts is provided, based on both literature records and new collections. The total number of species and infraspecific taxa currently accepted is 96. The occurrence of each taxon in the North Aegean, South Aegean and Ionian Seas is given. In addition, 11 *taxa* pending confirmation of their presence, 9 *excludenda* and 15 *inquirenda* are briefly discussed.

Keywords: Aegean Sea, green algae, checklist, Ionian Sea.

Introduction

Phycological studies on marine macroalgae have been carried out along the Greek coasts since the early 19th century (Greville, 1826), resulting in numerous records of green, brown and red seaweeds until today. However, the major part of these studies provided checklists from the areas surveyed as well as scattered records, without any morphological descriptions or illustrations of the reported taxa, frequently resulting in taxonomic confusion (Tsiamis *et al.*, 2013a).

A first attempt to produce a checklist of Greek marine seaweeds was made by Diannelidis (1950), followed by the work of Gerloff & Geissler (1974). Later on, Athanasiadis (1987) compiled a critically reviewed catalogue of marine seaweeds, but concerning only the Aegean Sea. In addition, the annotated checklists of the Mediterranean seaweed flora by Ribera *et al.* (1992), Gallardo *et al.* (1993) and Gómez Garreta *et al.* (2001) included seaweeds occurring in Greece.

Aiming to update the knowledge regarding the Greek seaweed marine flora, the present work focuses exclusively on green seaweeds (Ulvophyceae). This work corresponds to the second part of a checklist intended to be a seaweed catalogue of the Greek coasts. The brown seaweeds (Phaeophyceae) were treated in the first part of the series (Tsiamis *et al.*, 2013a) while separate works on the red seaweeds (Rhodophyceae, parts III and IV) will follow.

Materials and Methods

From the early 19th century until the present day 13 PhD theses and about 130 research papers have been published

on seaweeds from Greece. Master and Bachelor Degree dissertations as well as conference contributions have not been taken into account for this study. Green algal taxa reported in all other publications have been critically reviewed from present-day taxonomic and nomenclatural aspects, taking also into account the on-line data provided by Silva (2013) and Guiry & Guiry (2013).

The checklist has been compiled following the scheme used in the first part of this series (Tsiamis *et al.*, 2013a). Taxa have been grouped in four categories: accepted, pending confirmation of their presence, *excludenda* and *inquirenda*. Taxa are listed alphabetically, in order to make their detection easier, but when infraspecific taxa are listed, the autonym, if present, is cited first. The distribution of each accepted taxon is given for the three major biogeographic regions: North Aegean, South Aegean and Ionian Sea (Fig. 1). Due to space limitation, only one reference is given for each region, giving priority to publications that include descriptions and/or illustrations (if existing). Additional references are available from the authors on request. New records are based on the collections of one of the authors (K.T.). Material regarding the new records is deposited in the herbarium database of Athens University (Faculty of Biology, Department of Botany).

Results

The present checklist recognizes at least 96 green algal taxa (at species and infraspecies level) occurring in Greece (Table 1). New regional records include *Blastophysa rhizopus* Reinke (in the Ionian Sea), *Codium effusum* (Rafinesque)

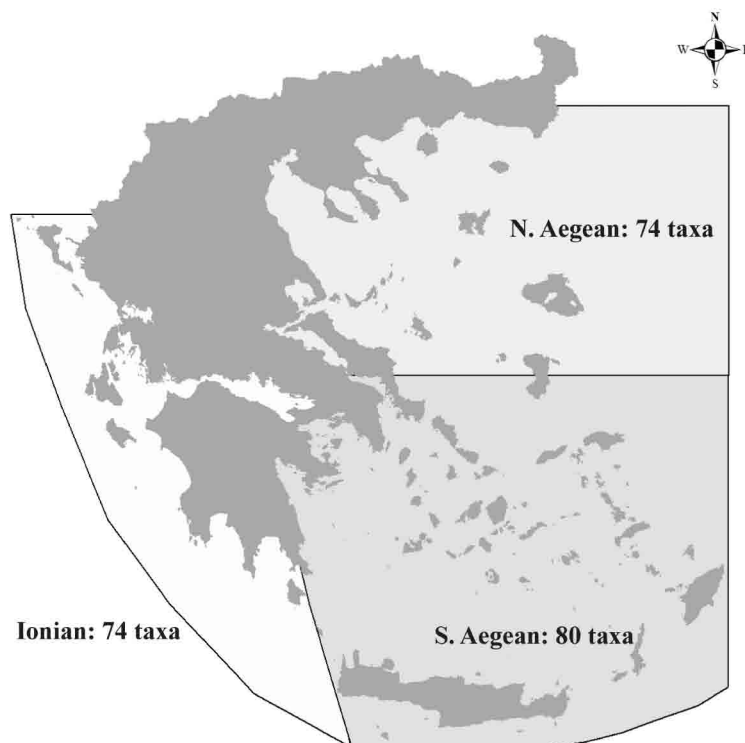


Fig. 1: Accepted green algal taxa within each biogeographic region.

Delle Chiaje (in the Ionian Sea) and *Microdictyon tenuius* J.E. Gray (in the N. Aegean Sea). Information of these three new records follows:

***Blastophysa rhizopus* Reinke (Bryopsidales, Chaetosiphoniaceae ?)**

= *Blastophysa polymorpha* Kjellman

DESCRIPTION: Microscopic endophytic alga, greenish, composed of rounded to irregular vesicular cells (Fig. 2A), 40-80 µm in diameter, with occasionally 1-2 colorless hairs arising from the upper part; chloroplasts divided into rounded to angular plate-like chloroplasts, with or without pyrenoids observed; vesicular cells scattered or joined through slender colorless interconnecting filaments, 5-10 µm in diameter; reproduction by vegetative division of cells through “constriction” observed.

HABITAT: Endophyte, growing in the tissue of the red seaweed *Schmitzia neapolitana* (Berthold) P.C. Silva, which was collected from rocky substratum at 0.3 m depth.

LOCALITY: Gerolimenas, Messiniakos Gulf, Ionian Sea, July 2008, collector K. Tsiamis.

DISTRIBUTION: Algeria, France, Corsica, Italy and Adriatic (Gallardo *et al.*, 1993). In Greece, it was previously reported from the N. Aegean (Chrysosvergis, 1995, as *Blastophysa polymorpha*) and S. Aegean Sea (Diapoulis, 1983, as *B. polymorpha*).

NOTE: Although it has been reported as an endophyte from various algae, this is the first time for the red seaweed *Schmitzia neapolitana*.

***Codium effusum* (Rafinesque) Delle Chiaje (Bryopsidales, Codiaceae)**

= *Codium difforme* Kützting

DESCRIPTION: Saxicolous thalli, dark green, crustose, compact, irregular in shape, with spongy texture, to 8 cm in extent and 1 cm high, closely adhering to the substratum (Fig. 2B); siphonous anatomy; utricles clavate to cylindrical, 700-1100 µm long and 80-200 µm broad, occasionally with scars below the apex; no reproductive structures observed. All measurements were taken from dried specimen.

HABITAT: A single thallus was found at 5 m depth, on rocky substratum of a semi-enclosed bay.

LOCALITY: Antikyra Bay, Korinthiakos Gulf, Ionian Sea, February 2007, coll. E. Voutsina.

DISTRIBUTION: Commonly encountered in the Mediterranean Sea (Gallardo *et al.*, 1993). Reported also from the N. Aegean (Anagnostidis, 1968, as *Codium difforme*; Athanasiadis, 1987) and S. Aegean Sea (Coppejans, 1974; Sartoni & De Biasi, 1999).

***Microdictyon tenuius* J.E. Gray (Cladophorales, Anadyomenaceae)**

= *Microdictyon tenuius* (C. Agardh) Decaisne *nom. illeg.*

DESCRIPTION: Thalli membranous, flat, greenish, reaching 12 cm in extent, without evident base, crisp in texture, composed of monosiphonous filaments 120-150 µm in diameter, with branching pattern in one plane; branches anastomosed, forming an irregular angular network, thin and delicate (Figs. 2C-D); no reproductive structures observed. All measurements were taken from dried specimens.

Table 1. Accepted green algal taxa in the North and South Aegean, and the Ionian Seas. For each taxon a basic reference is provided together with previously applied synonyms. Superscript numbers in brackets refer to the Notes.

Taxa	North Aegean	South Aegean	Ionian Sea
<i>Acetabularia acetabulum</i> (Linnaeus) P.C. Silva = <i>Acetabularia mediterranea</i> J.V. Lamouroux <i>nom. illeg.</i>	Athanasiadis, 1987	Lazaridou, 1994	Nicolaidou <i>et al.</i> , 2005
<i>Anadyomene stellata</i> (Wulfen) C. Agardh = <i>Anadyomene flabellata</i> J.V. Lamouroux	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Blastophysa rhizopus</i> Reinke = <i>Blastophysa polymorpha</i> Kjellman	Chryssovergis, 1995	Diapoulis, 1983	present study
<i>Blidingia marginata</i> (J. Agardh) P.J.L. Dangeard <i>ex</i> Bliding = <i>Enteromorpha marginata</i> J. Agardh	Diannelidis, 1950	-	Bitis, 1988
<i>Blidingia minima</i> (Nägeli <i>ex</i> Kützing) Kylin	Diapoulis <i>et al.</i> , 1998	-	-
<i>Bryopsidella neglecta</i> (Berthold) Rietema = <i>Derbesia neglecta</i> Berthold	-	-	Schnetter & Schnetter, 1981
<i>Bryopsis corymbosa</i> J. Agardh	Anagnostidis, 1968	Lazaridou, 1994	Bitis, 1988
<i>Bryopsis cupressina</i> J.V. Lamouroux var. <i>cupressina</i>	Chryssovergis, 1995	-	-
<i>Bryopsis cupressina</i> var. <i>adriatica</i> (J. Agardh) M.J. Wynne = <i>Bryopsis adriatica</i> (J. Agardh) Frauenfeld = <i>Bryopsis plumosa</i> var. <i>adriatica</i> (J. Agardh) Hauck	Anagnostidis, 1968 (with reservations)	Coppejans, 1974	Diapoulis & Haritonidis, 1987b
<i>Bryopsis duplex</i> De Notaris = <i>Bryopsis balbisiana</i> Lamouroux = <i>Bryopsis balbisiana</i> var. <i>disticha</i> J. Agardh = <i>Bryopsis disticha</i> (J. Agardh) Kützing	Nikolaidis, 1985	Athanasiadis, 1987	Bitis, 1988
<i>Bryopsis feldmannii</i> Gallardo & G. Furnari = <i>Bryopsis cupressoides</i> Kützing <i>sensu</i> J. Feldmann	Chryssovergis, 1995	Diapoulis, 1983	-
<i>Bryopsis hypnoides</i> J.V. Lamouroux = <i>Bryopsis monoica</i> Berthold	Athanasiadis, 1987	Diapoulis & Haritonidis, 1987a	Schnetter & Schnetter, 1981
<i>Bryopsis muscosa</i> J.V. Lamouroux	Athanasiadis, 1987	Anagnostidis, 1968	Schnetter & Schnetter, 1981
<i>Bryopsis pennata</i> J.V. Lamouroux	Chryssovergis, 1995	Tsiamis <i>et al.</i> , 2013b	-
<i>Bryopsis plumosa</i> (Hudson) C. Agardh = <i>Bryopsis arbuscula</i> J.V. Lamouroux	Anagnostidis, 1968	Diannelidis <i>et al.</i> , 1977	Bitis, 1988
<i>Caulerpa prolifera</i> (Forsskål) J.V. Lamouroux	Anagnostidis, 1968	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Caulerpa racemosa</i> var. <i>cylindracea</i> (Sonder) Verlaque, Huisman & Boudouresque	Tsiamis <i>et al.</i> , 2010a	Tsiamis <i>et al.</i> , 2010a	Tsiamis <i>et al.</i> , 2010a
<i>Caulerpa racemosa</i> var. <i>lamourouxii</i> f. <i>requienii</i> (Montagne) Weber-van Bosse	-	Tsiamis <i>et al.</i> , 2010a	Tsiamis <i>et al.</i> , 2010a
<i>Chaetomorpha aerea</i> (Dillwyn) Kützing ⁽¹⁾ = <i>Chaetomorpha vasta</i> (Kützing) Kützing	Athanasiadis, 1987	Lazaridou, 1994	Tsirika & Haritonidis, 2005
<i>Chaetomorpha crassa</i> (C. Agardh) Kützing	Haritonidis, 1978	Diannelidis <i>et al.</i> , 1977	Schnetter & Schnetter, 1981
<i>Chaetomorpha ligustica</i> (Kützing) Kützing ⁽²⁾ = <i>Chaetomorpha capillaris</i> (Kützing) Børgesen = <i>Chaetomorpha mediterranea</i> (Kützing) Kützing = <i>Chaetomorpha tortuosa</i> Kützing <i>nom. illeg.</i>	Orfanidis <i>et al.</i> , 2001	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Chaetomorpha linum</i> (O.F. Müller) Kützing ^(1,3) = <i>Chaetomorpha chlorotica</i> (Montagne) Kützing = <i>Chaetomorpha linum</i> var. <i>longiarticulata</i> (Ardissone & Strafforello) Ardissone = <i>Conferva linum</i> O.F. Müller	Nicolaidou <i>et al.</i> , 2005	Lazaridou, 1994	Bitis, 1988
<i>Cladophora albida</i> (Nees) Kützing = <i>Cladophora hamosa</i> (Kützing) Kützing = <i>Cladophora neesiorum</i> (C. Agardh) Kützing = <i>Cladophora pumila</i> Kützing	Anagnostidis, 1968	Coppejans, 1974	Schnetter & Schnetter, 1981
<i>Cladophora coelothrix</i> Kützing = <i>Cladophora repens</i> (J. Agardh) Harvey = <i>Aegagropila coelothrix</i> (Kützing) Kützing = <i>Aegagropila repens</i> (J. Agardh) Kützing = <i>Cladophoropsis modonensis</i> (Kützing) Reinbold ⁽⁴⁾ = <i>Siphonocladus concrescens</i> Reinbold ⁽⁴⁾	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Cladophora dalmatica</i> Kützing = <i>Cladophora arachnoidea</i> Schiffler = <i>Aegagropila conglobata</i> (Kützing) Kützing	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988

(continued)

Table 1 (continued)

Taxa	North Aegean	South Aegean	Ionian Sea
<i>Cladophora echinus</i> (Biasoletto) Kützing = <i>Cladophora cornea</i> (Kützing) Kützing = <i>Aegagropila cornea</i> Kützing	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Cladophora feredayi</i> Harvey = <i>Cladophora pellucida</i> f. <i>nana</i> Hauck	Diannelidis, 1950	Diannelidis, 1950	-
<i>Cladophora flexuosa</i> (O.F. Müller) Kützing ⁽⁵⁾ = <i>Cladophora gracilis</i> (Griffiths ex Harvey) Kützing	Diannelidis, 1950	-	-
<i>Cladophora fracta</i> (O.F. Müller ex Vahl) Kützing	Anagnostidis, 1968	Politis, 1932	Bitis, 1988
<i>Cladophora glomerata</i> (Linnaeus) Kützing = <i>Conferva capillaris</i> Linnaeus	Anagnostidis, 1968	Giaccone, 1968a	Bitis, 1988
<i>Cladophora hutchinsiae</i> (Dillwyn) Kützing = <i>Cladophora rissoana</i> Montagne ex Kützing	Chryssovergis, 1995	Schiffner & Schussnig, 1943	Schnetter & Schnetter, 1981
<i>Cladophora laetevirens</i> (Dillwyn) Kützing = <i>Cladophora affinis</i> Schiffner = <i>Cladophora falcata</i> Harvey = <i>Cladophora meneghiniana</i> (Kützing) Kützing = <i>Cladophora repens</i> f. <i>meneghiniana</i> (Kützing) Hauck = <i>Cladophora utriculosa</i> var. <i>laetevirens</i> Hauck = <i>Aegagropila meneghiniana</i> Kützing = <i>Siphonocladus rhodensis</i> Reinbold	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Cladophora lehmanniana</i> (Lindenberg) Kützing = <i>Cladophora ramulosa</i> Meneghini = <i>Cladophora utriculosa</i> Kützing = <i>Cladophora utriculosa</i> var. <i>longiarticulata</i> Kützing = <i>Cladophora utriculosa</i> var. <i>ramulosa</i> (Meneghini) Hauck	Anagnostidis, 1968	Diannelidis, 1950	Schnetter & Schnetter, 1981
<i>Cladophora liebetruthii</i> Grunow	-	-	van den Hoek, 1963
<i>Cladophora liniformis</i> Kützing	Orfanidis <i>et al.</i> , 2001	-	Schnetter & Schnetter, 1981
<i>Cladophora nigrescens</i> Zanardini ex Frauenfeld	-	Tsiamis <i>et al.</i> , 2010b	-
<i>Cladophora pellucida</i> (Hudson) Kützing = <i>Cladophora trichotoma</i> (C. Agardh) Kützing = <i>Conferva trichotoma</i> C. Agardh	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Cladophora prolifera</i> (Roth) Kützing = <i>Cladophora prolifera</i> var. <i>scoparia</i> (Kützing) Schiffner = <i>Cladophora scoparia</i> Kützing = <i>Conferva prolifera</i> Roth	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Cladophora retroflexa</i> (Bonnemaison ex P.L. Crouan & H.M. Crouan) G. Hamel	Haritonidis, 1978	Catra & Giardina, 2009	-
<i>Cladophora rupestris</i> (Linnaeus) Kützing = <i>Cladophora rupestris</i> f. <i>nuda</i> Hamel = <i>Cladophora rupestris</i> var. <i>mediterranea</i> Kützing = <i>Cladophora ramosissima</i> (Draparnaud ex Kützing) Kützing	Anagnostidis, 1968	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Cladophora sericea</i> (Hudson) Kützing = <i>Cladophora nitida</i> Kützing = <i>Cladophora pectinicornis</i> Kützing = <i>Cladophora rudolphiana</i> (C. Agardh) Kützing	Anagnostidis, 1968	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Cladophora socialis</i> Kützing	Chryssovergis, 1995	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Cladophora vadorum</i> (Areschoug) Kützing = <i>Cladophora corynarthra</i> Kützing	Anagnostidis, 1968	Anagnostidis, 1968	Bitis, 1988
<i>Cladophora vagabunda</i> (Linnaeus) van den Hoek = <i>Cladophora flavo-virens</i> Kützing = <i>Cladophora fracta</i> f. <i>marina</i> Hauck = <i>Cladophora penicillata</i> Kützing	Athanasiadis, 1987	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Cladophoropsis sundanensis</i> Reinbold	-	Leliart & Coppejans, 2006	-
<i>Codium bursa</i> (Olivi) C. Agardh ⁽⁶⁾	Athanasiadis, 1987	Diannelidis, 1950	Diapoulis & Haritonidis, 1987b
<i>Codium coralloides</i> (Kützing) P.C. Silva	Athanasiadis, 1987	Huvé, 1962	-
<i>Codium decorticatum</i> (Woodward) M. Howe = <i>Codium elongatum</i> (Turner) C. Agardh	Anagnostidis, 1968	-	Haritonidis & Tsekos, 1976

(continued)

Table 1 (continued)

Taxa	North Aegean	South Aegean	Ionian Sea
<i>Codium effusum</i> (Rafinesque) Delle Chiaje = <i>Codium difforme</i> Kützting	Athanasiadis, 1987	Coppejans, 1974	present study
<i>Codium fragile</i> (Suringar) Hariot subsp. <i>fragile</i> = <i>Codium fragile</i> subsp. <i>tomentosoides</i> (van Goor) P.C. Silva	Tsiamis & Panayotidis, 2007	Tsiamis & Panayotidis, 2007	-
<i>Codium vermilara</i> (Olivi) Delle Chiaje ⁽⁷⁾	Athanasiadis, 1987	Tsiamis <i>et al.</i> , 2013b	-
<i>Dasycladus vermicularis</i> (Scopoli) F. Krasser = <i>Dasycladus clavaeformis</i> (Roth) C. Agradh = <i>Myrsidrum bertolonii</i> Bory	Athanasiadis, 1987	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Derbesia tenuissima</i> (Moris & De Notaris) P.L. Crouan & H.M. Crouan = <i>Halicystis parvula</i> F. Schmitz <i>ex</i> Murray	Diapoulis & Haritonidis, 1984	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Didymosporangium repens</i> F.D. Lambert	-	Lazaridou, 1994	-
<i>Flabellia petiolata</i> (Turra) Nizamuddin = <i>Flabellia minima</i> (Ernst) Nizamuddin ⁽⁸⁾ = <i>Udotea desfontainii</i> (J.V. Lamouroux) Decaisne = <i>Udotea petiolata</i> (Turra) Børgesen	Athanasiadis, 1987	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Gomontia polyrhiza</i> (Lagerheim) Bornet & Flahault	Anagnostidis, 1968	-	-
<i>Halimeda tuna</i> (J. Ellis & Solander) J.V. Lamouroux = <i>Halimeda platydisca</i> Decaisne	Athanasiadis, 1987	Lazaridou, 1994	Bitis, 1988
<i>Microdictyon tenuius</i> Decaisne <i>ex</i> J.E. Gray = <i>Microdictyon tenuius</i> (C. Agardh) Decaisne <i>nom. illeg.</i>	present study	Diapoulis, 1983	Tsirika & Haritonidis, 2005
<i>Ostreobium quekettii</i> Bornet & Flahault ⁽⁹⁾	-	-	Schnetter & Schnetter, 1981
<i>Palmophyllum crassum</i> (Naccari) Rabenhorst	Athanasiadis, 1987	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Parvocaulis parvulus</i> (Solms-Laubach) S. Berger, U. Fettweiss, S. Gleissberg, L.B. Liddle, U. Richter, H. Sawitzky & G.C. Zuccarello = <i>Acetabularia parvula</i> Solms-Laubach	-	-	Schnetter & Schnetter, 1981
<i>Pedobesia simplex</i> (Meneghini <i>ex</i> Kützting) M.J. Wynne & F. Leliaert = <i>Pedobesia lamourouxii</i> (J. Agardh) Feldmann, Loreau, Codomier & Couté = <i>Bryopsis dalmatica</i> Kützting = <i>Derbesia lamourouxii</i> (J. Agardh) Solier	Athanasiadis, 1987	Diapoulis, 1983	Schnetter & Schnetter, 1981
<i>Penicillus capitatus</i> Lamarck = <i>Espera mediterranea</i> Decaisne	Athanasiadis, 1987	Lazaridou, 1994	Tsirika & Haritonidis, 2005
<i>Phaeophila dendroides</i> (P.L. Crouan. & H.M. Crouan) Batters	Athanasiadis, 1987	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Phaeophila hirsuta</i> (Ercegovič) R. Nielsen	-	Catra & Giardina, 2009	-
<i>Pseudobryopsis myura</i> (J. Agardh) Berthold = <i>Trichosolen myurus</i> (J. Agardh) W.R. Taylor	-	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Pseudochlorodesmis furcellata</i> (Zanardini) Børgesen var. <i>furcellata</i> = <i>Bryopsis furcellata</i> Zanardini	Athanasiadis, 1987	Panayotidis <i>et al.</i> , 2004	Bitis, 1988
<i>Pseudochlorodesmis furcellata</i> var. <i>canariensis</i> Børgesen	-	Catra & Giardina, 2009	-
<i>Rhizoclonium riparium</i> (Roth) Harvey ⁽¹⁰⁾ = <i>Rhizoclonium implexum</i> (Dillwyn) Kützting ⁽¹¹⁾ = <i>Rhizoclonium salinum</i> Kützting = <i>Lola implexa</i> (Dillwyn) G. Hamel	Anagnostidis, 1968	Diapoulis, 1983	Schnetter & Schnetter, 1981
<i>Rhizoclonium tortuosum</i> (Dillwyn) Kützting ⁽¹⁰⁾	Chryssovergis, 1995	Tsiamis <i>et al.</i> , 2013b	Christia <i>et al.</i> , 2011 ⁽¹²⁾
<i>Siphonocladus pusillus</i> (C. Agardh <i>ex</i> Kützting) Hauck = <i>Siphonocladus wilbergi</i> Schmitz	-	Diapoulis, 1983	Schnetter & Schnetter, 1981
<i>Ulothrix flacca</i> (Dillwyn) Thuret = <i>Ulothrix pseudoflacca</i> Wille	Anagnostidis, 1968	Diapoulis, 1983	Diapoulis & Haritonidis, 1987b
<i>Ulothrix implexa</i> (Kützting) Kützting	Diannelidis, 1950	Diapoulis, 1980	Schnetter & Schnetter, 1981
<i>Ulva clathrata</i> (Roth) C. Agardh = <i>Enteromorpha clathrata</i> (Roth) Greville = <i>Enteromorpha muscoides</i> (Clemente) J. Cremades = <i>Enteromorpha ramulosa</i> (J.E. Smith) Carmichael = <i>Enteromorpha ramulosa</i> var. <i>tenerrima</i> Schiffner = <i>Enteromorpha complanata</i> var. <i>crinita</i> (Nees) Kützting	Chryssovergis, 1995	Diapoulis, 1983	Bitis, 1988

(continued)

Table 1 (continued)

Taxa	North Aegean	South Aegean	Ionian Sea
<i>Ulva compressa</i> Linnaeus = <i>Enteromorpha compressa</i> (Linnaeus) Nees = <i>Enteromorpha compressa</i> var. <i>usneoides</i> (J. Agardh) Bliding = <i>Solenia compressa</i> (Linnaeus) C. Agardh	Athanasiadis, 1987	Nizamuddin & Lehnberg, 1970	Bitis, 1988
<i>Ulva fasciata</i> Delile ⁽¹³⁾ = <i>Ulva lactuca</i> var. <i>fasciata</i> (Delile) Schiffner	Haritonidis, 1978	Schiffner & Schussnig, 1943	Bitis, 1988
<i>Ulva flexuosa</i> Wulfen subsp. <i>flexuosa</i> = <i>Enteromorpha flexuosa</i> (Wulfen) J. Agardh = <i>Enteromorpha lingulata</i> J. Agardh = <i>Enteromorpha compressa</i> var. <i>lingulata</i> (J. Agardh) Hauck = <i>Enteromorpha juergensii</i> Kützing <i>nom. illeg.</i>	Anagnostidis, 1968	Lazaridou, 1994	Bitis, 1988
<i>Ulva flexuosa</i> subsp. <i>paradoxa</i> (C. Agardh) M.J. Wynne ⁽¹²⁾ = <i>Enteromorpha flexuosa</i> subsp. <i>paradoxa</i> (C. Agardh) Bliding	-	-	Schnetter & Schnetter, 1981
<i>Ulva flexuosa</i> subsp. <i>pilifera</i> (Kützing) M.J. Wynne ⁽¹²⁾ = <i>Enteromorpha flexuosa</i> subsp. <i>pilifera</i> (Kützing) Bliding	-	-	Schnetter & Schnetter, 1981
<i>Ulva intestinalis</i> Linnaeus var. <i>intestinalis</i> = <i>Enteromorpha intestinalis</i> (Linnaeus) Nees	Athanasiadis, 1987	Nizamuddin & Lehnberg, 1970	Bitis, 1988
<i>Ulva intestinalis</i> f. <i>cornucopiae</i> (Lyngbye) A. Sfriso & D. Curiel = <i>Enteromorpha intestinalis</i> f. <i>cornucopiae</i> (Lyngbye) Areschoug	-	Nizamuddin & Lehnberg, 1970	-
<i>Ulva laetevirens</i> Areschoug ⁽¹⁴⁾	-	Catra & Giardina, 2009	Christia <i>et al.</i> , 2011 ⁽¹²⁾
<i>Ulva linza</i> Linnaeus = <i>Enteromorpha linza</i> (Linnaeus) J. Agardh = <i>Enteromorpha ahneriana</i> Bliding <i>nom. illeg.</i> = <i>Phycoseris crispata</i> (Bertoloni) Kützing	Athanasiadis, 1987	Diannelidis <i>et al.</i> , 1977	Bitis, 1988
<i>Ulva multiramosa</i> E. Taskin = <i>Enteromorpha multiramosa</i> Bliding <i>nom. inval.</i>	Athanasiadis, 1987	Tsiamis <i>et al.</i> , 2013b	Schnetter & Schnetter, 1981
<i>Ulva prolifera</i> O.F. Müller = <i>Enteromorpha prolifera</i> (O.F. Müller) J. Agardh	Anagnostidis, 1968	Coppejans, 1974	Bitis, 1988
<i>Ulva rigida</i> C. Agardh ⁽¹⁴⁾ = <i>Ulva lactuca</i> var. <i>rigida</i> (C. Agardh) Le Jolis	Athanasiadis, 1987	Nizamuddin & Lehnberg, 1970	Schnetter & Schnetter, 1981
<i>Ulva rotundata</i> Bliding	-	Bliding, 1968	-
<i>Ulvella inflata</i> (Ercegovič) R. Nielsen, C.J.O 'Kelly & B. Wylor = <i>Acrochaete inflata</i> (Ercegovič) Gallardo, Gómez Garreta, M.A. Ribera, Cormaci, G. Furnari, Giaccone & Boudouresque	Chryssovergis, 1995	-	-
<i>Ulvella leptochaete</i> (Huber) R. Nielsen, C.J.O Kelly & B. Wylor = <i>Acrochaete leptochaete</i> (Huber) R. Nielsen	-	Nielsen, 1983	-
<i>Ulvella scutata</i> (Reinke) R. Nielsen, C.J. O' Kelly & B. Wylor = <i>Pringsheimia scutata</i> Reinke = <i>Pringsheimiella scutata</i> (Reinke) Marchewianka	Chryssovergis, 1995	Diapoulis, 1983	Tsirika & Haritonidis, 2005
<i>Ulvella setchellii</i> P. Dangeard	-	Catra & Giardina, 2009	-
<i>Ulvella viridis</i> (Reinke) R. Nielsen, C.J.O 'Kelly & B. Wylor = <i>Acrochaete viridis</i> (Reinke) R. Nielsen = <i>Endoderma viridis</i> (Reinke) Lagerheim = <i>Entocladia viridis</i> Reinke = <i>Phaeophila viridis</i> (Reinke) Burrows	Chryssovergis, 1995	Diapoulis, 1983	Diapoulis & Haritonidis, 1987b
<i>Valonia aegagropila</i> C. Agardh	-	-	Christia <i>et al.</i> , 2011 ⁽¹²⁾
<i>Valonia macrophysa</i> Kützing	Haritonidis, 1978	Lazaridou, 1994	Tsirika & Haritonidis, 2005
<i>Valonia utricularis</i> (Roth) C. Agardh	Athanasiadis, 1987	Lazaridou, 1994	Schnetter & Schnetter, 1981
<i>Valonia ventricosa</i> J. Agardh	-	Giaccone, 1968a	Giaccone, 1968b

HABITAT: Several plants were met in the sublittoral zone, at 12 m depth, on rocky substratum.

LOCALITY: Porto Coufo, Sithonia, N. Aegean Sea, May 2012, coll. K. Tsiamis.

DISTRIBUTION: Commonly encountered in both the Western and Eastern Mediterranean Sea (Gallardo *et al.*, 1993). In Greece, frequently reported from the S. Aegean (e.g. Diapoulis, 1983; Sartoni & De Biasi, 1999; Catra & Giardina, 2009) and Ionian Sea (Giaccone, 1968b; Tsirika & Haritonidis, 2005).

Notes

1. We follow the treatment of Sfriso (2010a) citing *Chaetomorpha aerea* and *C. linum* as distinct taxa. However, John *et al.* (2003) consider these two taxa as synonyms and we note that the genus requires taxonomic re-investigation.

2. We follow John *et al.* (2003) and Furnari *et al.* (2010) considering *Chaetomorpha capillaris* and *C. mediterranea* as synonyms of *C. ligustica*.

3. Gerloff & Geissler (1974) cite Grunow's (1861) records of *Chaetomorpha rigida* (C. Agardh) Kützing, *C. dalmatica* (Kützing) Kützing, *C. setacea* (C. Agardh) Kützing and *C. mazzariana* Grunow as synonyms of *C. linum*.

4. According to the study of Leliaert & Coppejans (2006) *Cladophora modonensis* and *Siphonocladus conrescens* are probably referable to *Cladophora coelothrix*.

5. We follow Gallardo *et al.* (1993) and Furnari *et al.*

(2010), citing *Cladophora flexuosa* as a distinct species, and not a synonym of *C. sericea* (Burrows, 1991).

6. Commonly cited as *Codium bursa* (Linnaeus) C. Agardh, based on *Alcyonium bursa* Linnaeus. However, according to Spencer *et al.* (2009), *A. bursa* is the basionym for the sponge *Weberella bursa* (Linnaeus).

7. Probably with a wider distribution in the Greek seas. The scarcity of Greek records is probably due to misidentifications of this species as *Codium tomentosum* Stackhouse (Athanasiadis, 1987).

8. We follow Gallardo *et al.* (1993) considering *Flabellia minima* as a synonym of *F. petiolata*, based on Meinesz (1980) study.

9. According to Mayhoub (1974), this species is a synonym of *Pseudobryopsis myura*.

10. Although Burrows (1991) considers *Rhizoclonium riparium* and *R. tortuosum* as conspecific, we follow Hardy & Guiry (2003) and John *et al.* (2004), considering them as distinct taxa. We note that the genus requires taxonomic re-investigation as in the case of the genus *Chaetomorpha*.

11. Sfriso (2010a) considers *Rhizoclonium riparium* and *R. implexum* as distinct taxa.

12. Found only in brackish water.

13. Although O'Kelly *et al.* (2010) note that *Ulva fasciata* could be considered as a synonym of *U. lactuca* Linnaeus, we follow Sfriso (2010a) who cites them as distinct taxa based on morphological and ecological evidence.

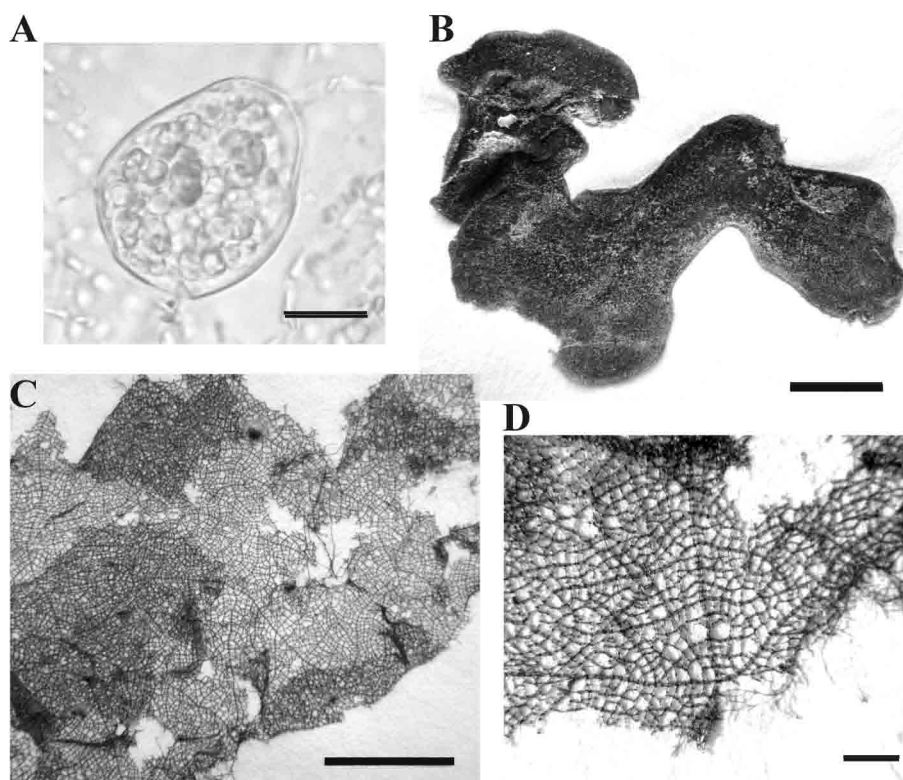


Fig. 2: Green algae new to the North Aegean and/or Ionian Seas. A. *Blastophysa rhizopus*, detail of vesicular cell including several chromatophores. B. *Codium effusum* (herbarium habit). C-D. *Microdictyon tenuius* (C. herbarium habit; D. detail of the angular network). Scale bars: Fig A = 20 μ m; Figs B, C = 1 cm; Fig D = 2 mm.

14. It remains unclear whether *Ulva laetevirens* and *U. rigida* are distinct or conspecific species, pending molecular examination of their type specimens (Wolf *et al.*, 2012).

Taxa pending confirmation of their presence

***Acrosiphonia arcta* (Dillwyn) Gain**

= *Cladophora arcta* (Dillwyn) Kützing

= *Cladophora lanosa* (Roth) Kützing

The N. Aegean Sea records by Haritonidis (1978, as *Cladophora arcta* and *C. lanosa*), Haritonidis & Tsekos (1974, as *C. arcta* and *C. lanosa*) and Panagiotopoulou-Karatagli *et al.* (1974, as *C. arcta*) lack documentation and should be confirmed since this taxon occurs mainly in northern Europe.

***Cladophora ruchingeri* (C. Agardh) Kützing**

The single record by Gerloff & Geissler (1974) from Aegina Island (Aegean Sea) was cited with reservations. Pending confirmation, *Cladophora ruchingeri* should be referred as debatable for the Greek flora.

***Codium adhaerens* C. Agardh**

Although numerous records of this species do exist for the Mediterranean Sea, including Greece (see Athanasiadis, 1987), we agree with Gallardo *et al.* (1993) that these records might refer to *Codium effusum*, a rather common alga of the Greek coasts. These two species share similar external morphology and their distinction requires detailed examination. Thus, the Greek records of *C. adhaerens*, which all lack sufficient documentation, should be treated as debatable, pending new documented records.

***Enteromorpha stipitata* P. Dangeard**

The single record by Schnetter & Schnetter (1981) from Kephallonia Island (Ionian Sea) should be confirmed, since this taxon does not occur in the Eastern Mediterranean Sea. It should be noted that Gallardo *et al.* (1993) cite the Greek record as *Enteromorpha stipitata* var. *linzoides* Bliding *nom. inval.*, which requires typification.

***Microdictyon umbilicatum* (Velley) Zanardini**

Gallardo *et al.* (1993) excluded this species from the Mediterranean flora in the light of the studies by Setchell (1929) and Hamel (1931). Since the Greek records from the N. Aegean (Tsekos *et al.*, 1982) and S. Aegean Sea (Politis, 1928; Huvé, 1962; Giaccone, 1968a) lack documentation they are debatable, pending new information.

***Prasiola crispa* (Lightfoot) Kützing**

This species has been reported from the Venice lagoon by Curiel *et al.* (2004) and Sfriso (2010a) and the single Greek record by Anagnostidis (1968) from the Macedonian coast (N. Greece) should be confirmed.

***Siphonocladus membranaceus* var. *caespitosa* (C. Agardh) De Toni**

This taxon was reported by Reinbold (1898) from Rhodos Island (Aegean Sea) lacking description or illustration. It is based on *Conferva membranacea* var. *caespitosa* C. Agardh, which was originally described by C. Agardh (1824: 121) for tropical plants collected from Antilles and Tenerife. C. Agardh (1824) also cited *C. caespitosa* Bory, which is probably a *nomen nudum*, as a synonym of his plant. C. Agardh's combination was later transferred by De Toni (1889: 359) to the genus *Siphonocladus*, reporting also a specimen collected from Corsica by Debeaux. In our opinion, the Greek record should be treated as debatable, pending confirmation.

***Spongomorpha aeruginosa* (Linnaeus) van den Hoek**

= *Cladophora lanosa* f. *uncialis* (O.F. Müller) Hauck

The single record by Diannelidis (1948, as *Cladophora lanosa* f. *uncialis*) from Pagasitikos Gulf (Aegean Sea) should be confirmed since this species occurs mainly in northern Europe. It should be noted that *C. lanosa* f. *uncialis* is based on *Conferva uncialis* O.F. Müller, which according to van den Hoek (1963) might refer to *Cladophora vagabunda* or *C. dalmatica*.

***Ulva bifrons* Ardré**

The single record by Schnetter & Schnetter (1981) from Kephallonia Island lacks description or illustrations and is pending confirmation, as there are no other reports of this species from the Eastern Mediterranean Sea (Gallardo *et al.*, 1993).

***Ulva lactuca* Linnaeus**

Despite the numerous Mediterranean records, including the Greek ones (see Athanasiadis, 1987), its occurrence in the Mediterranean Sea needs to be confirmed (Gallardo *et al.*, 1993). It should be noted that the molecular identity of the holotype does not match that of N. Europe specimens that have since been assigned to this binomial (Butler, 2007). Wolf *et al.* (2012) molecular analyses indicated that old specimens from the Adriatic Sea should be assigned to *Ulva rigida*. Sfriso (2010b) reports the presence of both *U. rigida* and *U. laetevirens* from the Northern Adriatic Sea whereas *U. lactuca* was found to be a misidentification.

***Ulva lactuca* var. *lacunculata* (Kützing) W.R. Taylor**

= *Ulva lactuca* f. *lacunculata* (Kützing) Hauck

This rather rare taxon has been reported in Greece only by Petkoff (1943, as *Ulva lactuca* f. *lacunculata*) from the Macedonian coast (N. Greece). Since neither a description nor illustrations were provided, the occurrence of this entity in Greece needs to be confirmed.

Taxa Excludenda

***Cladophora catenata* (Linnaeus) Kützing**

= *Cladophora catenata* Hauck nom. illeg.

= *Conferva catenata* Linnaeus

According to van den Hoek (1963) Mediterranean records of *Cladophora catenata* probably refer to *C. lehmanniana*, and the occurrence of *C. catenata* in the Mediterranean Sea has not been confirmed (Gallardo *et al.*, 1993; Furnari *et al.*, 1999). Therefore, in the absence of descriptions or illustrations the Greek records from the Aegean (Politis, 1932; Schiffner & Schussnig, 1943; Anagnostidis, 1968 – with reservations) and the Ionian Sea (Greville, 1826, as *Conferva catenata*; Grunow, 1861) should be excluded from the Greek flora.

***Cladophora glomerata* var. *crassior* (C. Agardh) van den Hoek**

= *Cladophora callicoma* Kützing

= *Cladophora crispata* (Roth) Kützing

The records of Anagnostidis (1968, as *Cladophora crispata*) and Grunow (1861, as *C. callicoma*) refer to freshwater specimens, and thus should be excluded from the seaweed flora of the Greek coasts.

***Codium tomentosum* Stackhouse**

This species does not seem to occur in the Eastern Mediterranean Sea (Furnari *et al.*, 1999) and we agree with Athanasiadis (1987: 154) that the numerous Greek records are probably misidentifications of *Codium vermilara*. In our opinion, the species should be excluded from the Greek flora.

***Halimeda opuntia* (Linnaeus) J.V. Lamouroux**

This tropical species does not occur in the Mediterranean Sea and the single record by Candargy (1899) from Lesbos Island (Aegean Sea) should be considered as a misidentification (Gerloff & Geissler, 1974).

***Prasiola stipitata* Suhr ex Jessen**

The records from Thermaikos Gulf (Anagnostidis 1968, with reservations) and Kephallonia Island (Schnetter & Schnetter, 1981) should be excluded from the Greek flora, since this species does not occur elsewhere in the Mediterranean Sea.

***Rhizoclonium hieroglyphicum* (C. Agardh) Kützing**

The single record by Anagnostidis (1968) from Methoni Bay (Aegean Sea) must be a misidentification since *Rhizoclonium hieroglyphicum* is mainly a freshwater species. According to Gallardo *et al.* (1993), the species should be listed among the *taxa inquirenda*.

***Ulva gigantea* (Kützing) Bliding**

= *Phycoseris gigantea* Kützing

The Greek records by Haritonidis & Tsekos (1975) from the Macedonian coast (N. Greece) and Grunow (1861, as *Phycoseris gigantea*) from the Ionian Islands must be misidentifications since this species is restricted to northern Europe (Gallardo *et al.*, 1993).

***Ulva latissima* Linnaeus sensu J. Agardh**

= *Ulva lactuca* var. *latissima* (Linnaeus) A.P. de Candolle

Although the holotype is a kelp [*Saccharina latissima* (Linnaeus) C.E. Lane, C. Mayes, L.D. Druehl & G.W. Saunders], the binomial *Ulva latissima* has been traditionally misapplied to representatives of the genus *Ulva* (Papenfuss, 1960: 303). More specifically, European records are apparently referable to *U. gigantea* (Bliding, 1968). In line with this concept, the Greek records by Candargy (1899) from Lesbos Island and Reinbold (1898, as *U. lactuca* var. *latissima*) from Rhodes Island should probably be associated with an *Ulva* species, but due to the lack of sufficient documentation they should be excluded from the Greek flora.

***Urospora wormskioldii* (Mertens ex Hornemann)**

Rosenvinge

= *Codiolum gregarium* A. Braun

Diannelidis (1950, 1953) reported *Codiolum gregarium* from the N. Sporades (Aegean Sea) with reservations, considering it as the diploid phase of *Urospora mirabilis* Areschoug [currently accepted name=*U. penicilliformis* (Roth) Areschoug]. However, according to Burrows (1991), *C. gregarium* probably represents the diploid phase of *U. wormskioldii*, which is not known to occur in the Mediterranean Sea. Hence, the species should be excluded from the Greek flora.

Taxa Inquirenda

***Chaetomorpha fibrosa* (Kützing) Kützing**

The taxonomic status of this species remains unknown and requires re-investigation (Athanasiadis, 1987; Furnari *et al.*, 1999). Reinbold (1898) reported this species from Rhodes Island, but in the absence of a description or illustration the identity of his material remains unclear.

***Cladophora crystallina* (Roth) Kützing**

Taxon of uncertain taxonomic position since, according to van den Hoek (1963), this species is referable either to *Cladophora glomerata* or to *C. vagabunda*. In Greece, *C. crystallina* has been recorded from the Aegean (Politis, 1936; Anagnostidis, 1968) and Ionian Sea (Grunow, 1861). Based on the same context, *Cladophora crystallina* var. *tenuissima* Ercegovič and *C. crystallina* var. *subdichotoma* Ercegovič, reported both by Nizamuddin & Lehnberg (1970) from Sikinos Island (Aegean Sea) should be treated as *taxa inquirenda*.

***Cladophora glomerata* var. *marina* Kützing**

The taxonomic status of this taxon has been questioned by van den Hoek (1963) and thus we maintain the Greek records from the N. Aegean (Petkoff, 1943) and S. Aegean Sea (Politis, 1928, 1932, 1936; Giaccone, 1968a) on the list of *taxa inquirenda*.

***Cladophora graeca* Schiffner**

This species was originally reported from N. Sporades and Mykonos Island (Aegean Sea) by Schiffner & Schussnig (1943), but in the absence of a diagnosis it is a *nomen nudum*. Besides, according to van den Hoek (1963), Schiffner's herbarium material is partly based on *Cladophora vagabunda*.

***Cladophora refracta* Kützing**

Van den Hoek (1963) cited *Cladophora refracta* (Roth) Kützing as a taxon with obscure status, based on *Conferva refracta* Roth, an illegitimate superfluous name for *Cladophora hirta* O.F. Müller, a taxon of uncertain application (Furnari *et al.*, 1999). In our opinion, the single Greek record by Anagnostidis (1968, as *Cladophora refracta* Kützing) from Thermaikos Gulf (Aegean Sea), which lacks description or illustration, should be listed among the *taxa inquirenda*.

***Cladophoropsis psyttaliensis* (Schmitz) Wille**

= *Siphonocladus psyttaliensis* Schmitz

Originally described from Psyttalia islet in the Saronikos Gulf (Schmitz, 1879, as *Siphonocladus psyttaliensis*; paratype from the Gulf of Naples), but the type material is untraceable and the original description is too vague to permit a taxonomic conclusion (Leliaert & Copejans, 2006: 671). Since Schmitz's material the species was never recorded again to our knowledge. Despite our personal samplings around Psyttalia islet from the year 1998 to 2013 we never detected the species.

***Conferva fracta* var. *elongata* (Roth) Roth**

Fauché *et al.* (1832-33) erected *Ceramium fractum* var. *elongatum* (Roth) Bory based on material collected at Tinos Island (Aegean Sea), which was apparently based on *Conferva fracta* var. *elongata* (Roth) Roth, the identity of which is obscure according to van den Hoek (1963: 223).

***Derbesia cervicornis* Schiffner**

This species was originally described by Schiffner & Schussnig (1943) based on plants collected at Naxos Island (Aegean Sea), but Athanasiadis (1987) questioned the taxonomic identity of this material since according to the protologue it could well belong to a form of *Pedobesia simplex*. It should be noted that the species was never reported again to our knowledge.

***Enteromorpha adriatica* Bliding**

Originally described from Croatia (Rovinj, Split, Dubrovnik) by Bliding (1960) but a type element was not designated. In Greece, the single record by Chryssovergis (1995) from Maliakos Gulf lacks description or illustrations and the identity of her material remains unknown.

***Enteromorpha flexuosa* subsp. *linziformis* (Bliding) Bliding**

This combination is based on *Enteromorpha linziformis* Bliding, originally reported from France (Concarneau, Finistère) and Croatia (Split) by Bliding (1960), but lacking the selection of a type specimen. The single record from the Ionian Sea by Christia *et al.* (2011) refers to a brackish-water specimen, while no description or illustrations were given.

***Microdictyon schmitzii* Miliarakis**

The species was originally described by Miliarakis (1887), with reservations, from Skiathos Island (Aegean Sea). However, it was never recorded since then, neither to the type locality nor from the Aegean Sea, and its taxonomic status remains obscure.

***Ulva lactuca* f. *genuina* Hauck**

= *Enteromorpha intestinalis* var. *genuina* Schiffner *nom. illeg.*

According to Wolf *et al.* (2012), old Adriatic specimens of this taxon collected by Hauck in 1885 in Trieste should refer to *Ulva rotundata*. Hence, the type specimen of this taxon needs re-examination. In Greece, it was reported by Petkoff (1943) from the Macedonian coast (N. Greece) and Schiffner & Schussnig (1943, as *E. intestinalis* var. *genuina*) from Mykonos Island.

***Ulva rigida* var. *laciniata* (Wulfen) J. Agardh**

= *Ulva lactuca* var. *laciniata* (J. Agardh) Schiffner

Taxon of uncertain taxonomic position possibly associated to *Ulva rigida* (Gallardo *et al.*, 1993). In Greece, it has been reported by Schiffner & Schussnig (1943, as *U. lactuca* var. *laciniata*) from Mykonos Island but the identity of their material is unknown.

***Ulva sporadica* Miliarakis**

Originally described by Miliarakis (1887) from Skiathos Island, but never found again neither to the type locality nor in the Aegean Sea. According to Athanasiadis (1987), it might be associated with *Ulva lactuca*.

***Valonia caespitula* Zanardini**

Originally described from Croatia (Šibenik) by Zanardini (1843) and later reported by Miliarakis (1887) from the Island of Skiathos. The taxonomic identity of the species was questioned by De Toni (1889), who cited it as a possible synonym of *Valonia utricularis*.

Discussion

In the first review of Greek seaweeds (Diannelidis, 1950) only 40 taxa (at species and infraspecies level) of currently accepted Ulvophyceae had been listed. Later on, Gerloff & Geissler (1974) listed 61, while Athanasiadis (1987) listed 68 taxa for the Aegean Sea only. Lastly, in a survey of 214 Mediterranean green algae, Gallardo *et al.* (1993) included 79 taxa from Greece. The 96 confirmed taxa reported in the present study reflect a further increase of our knowledge, and it should be attributed to the several new studies carried out during the last years (e.g. Sartoni & De Biasi, 2009; Catra & Giardina, 2009; Tsiamis *et al.*, 2010a, b, 2013b).

The distribution of these 96 green seaweeds along the coasts is as follows: 74 taxa have been found in the N. Aegean, 80 taxa in the S. Aegean and 74 taxa in the Ionian Sea (Fig. 1). This pattern may be related to the number (or extent of detail) of the studies conducted within each region.

The Greek marine flora seems to host by far less green algae compared with the neighbouring Italian coasts, where 150 taxa have been recorded (Furnari *et al.*, 2010). This difference definitely reflects the fewer phycological studies that have been conducted in Greece, and generally in the Eastern Mediterranean Sea, with several coastal regions and islands still remaining poorly surveyed particularly in the sublittoral and circalittoral zones.

Finally, some green algal taxa require further investigations, especially species of *Ulva*, *Cladophora*, *Chaetomorpha* and *Rhizoclonium*. In addition, many taxa are pending confirmation, whereas several others are treated as *taxa excludenda* or *inquirenda* (11, 9 and 15 taxa respectively). This is partly due to taxonomic difficulties but also to the scarcity of Greek specimens deposited in public herbaria.

In conclusion, the continuous increase in the number of green algae reported in Greece indicates that there are still major gaps in our knowledge of the marine flora of the Aegean and Ionian Seas, and that the number of species is expected to increase with additional surveys in unexplored areas and particularly in deeper habitats.

Acknowledgements

We wish to thank V. Gerakaris, E. Voutsina, A. Zulevic, G. Bardamaskos and S. Martin for sampling assistance. We are also indebted to the Total Foundation for their support to this study (project "Brown algal biodiversity and ecology in the Eastern Mediterranean sea").

References

Agardh, C.A., 1824. *Systema Algarum*. Lundae, Berlingianis. 37+312 pp.
Anagnostidis, K., 1968. Untersuchungen über die Salzund Süßwasser - Thiobiocönoson (Sulphuretum) Griechenlands. *Wissenschaftliche Jahrbuch Physiko-Mathematische; Fakultät Aristoteles Universität, Thessaloniki*, 10, 409-866.

Athanasiadis, A., 1987. *A survey of the seaweeds of the Aegean Sea with taxonomic studies on species of the tribe Antithamnieae (Rhodophyta)*. PhD Thesis. University of Göteborg, Sweden, 174 pp.
Bitis, I., 1988. *Investigations of the marine macroalgae (Chlorophyceae, Phaeophyceae, Rhodophyceae) of the Korinthiakos Gulf. Flora, Taxonomy, Phytogeography and Ecology*. PhD Thesis. Athens University, Greece, 195 pp.
Bliding, C., 1960. A preliminary report on some new Mediterranean green algae. *Botaniska Notiser*, 113, 172-184.
Bliding, C., 1968. A critical survey of European taxa in Ulvales, Part II. *Ulva, Ulvaria, Monostroma, Kornmannia*. *Botaniska Notiser*, 121, 535-629.
Burrows, E.M., 1991. *Seaweeds of the British Isles. Volume 2. Chlorophyta*. Natural History Museum Publications, London, 238 pp.
Butler, D., 2007. Ancient algal mixup sorted. *Nature News*, doi:10.1038/news.2007.396.
Candargy, P.C., 1899. *La végétation marine de l'île de Lesbos (Mytilène)*. PhD Thesis. University of Paris, France, 36 pp.
Catra, M., Giardina, S., 2009. A survey of the marine macroalgae of Karpathos Island (the Aegean Sea, Greece). *Plant Biosystems*, 143, 509-515.
Christia, C., Tziortzis, I., Fyttis, G., Kashta, L., Papastergiadou, E., 2011. A survey of the benthic aquatic flora in transitional water systems of Greece and Cyprus (Mediterranean Sea). *Botanica marina*, 54, 169-178.
Chrysosovergis, B., 1995. *L'impact de l'eutrophisation sur les algues benthiques (Chlorophyceae, Fucophyceae, Rhodophyceae) de l'infralittoral supérieur du golfe de Maliakos (Mer Egée, Grèce)*. PhD Thesis. Université d'Aix-Marseille II, France, 179 pp.
Coppéjans, E., 1974. A preliminary study of the marine algal communities on the Islands of Milos and Sikinos (Cyclades-Greece). *Bulletin de la Société Royale Botanique de Belgique*, 107, 387-406.
Curiel, D., Checchin, E., Dri, C., Miotti, C., Bellemo, G. *et al.*, 2004. Brevi note su alcuni ritrovamenti algali per la laguna di Venezia. *Lavori della Società Veneziana di Scienze Naturali*, 29, 59-61.
De Toni, G.B., 1889. *Sylloge algarum omnium hucusque cognitatarum. Vol. I. Chlorophyceae*. Patavii, Sumptibus auctoris. 12 + 1315 pp.
Diannelidis, Th., 1948. Sur la flore marine du Golfe de Pagassai. *Scientific Publications of the Hellenic Hydrobiological Institute*, 2, 89-101.
Diannelidis, T., 1950. Greek marine flora and its utilisation. *Scientific Publications of the Hellenic Hydrobiological Institute*, 3, 71-84.
Diannelidis, T., 1953. Contribution à la connaissance des algues marines des Sporades du Nord (Cyanophyceae, Chlorophyceae, Phaeophyceae, Rhodophyceae). *Scientific Publications of the Hellenic Hydrobiological Institute*, 6, 41-84.
Diannelidis, T., Haritonidis, S., Tsekos, I., 1977. Contribution à l'étude des peuplements des algues benthiques de quelques régions de l'île de Rhodos, Grèce. *Botanica Marina*, 20, 205-226.
Diapoulis, A., 1980. Preliminary study of the phytobenthos in the Saronikos Gulf. *Thalassographica*, 3, 53-62.
Diapoulis, A., 1983. *A Qualitative and Quantitative Study of the*

- Marine Algae in the Saronikos Gulf (Greece)*. PhD Thesis. University of Athens, Greece, 171 pp.
- Diapoulis, A., Haritonidis, S., 1984. Marine algae of the Lesvos Island, Greece. I. systematic identification and geographical distribution. *Thalassographica*, 7, 95-107.
- Diapoulis, A., Haritonidis, S., 1987a. A qualitative and quantitative study of the marine algae in the Saronikos Gulf (Greece). *Marine Ecology*, 8, 175-189.
- Diapoulis, A., Haritonidis, S., 1987b. Marine algae of the west Greek coasts. *Acta Adriatica*, 28, 85-101.
- Diapoulis, A., Bogdanos, K., Haritonidis, S., Konides, A., 1998. The impact of pollution on the synthesis of the coastal benthos in the Gulf of Kalloni (Lesvos Island, Greece). *Fresenius Environmental Bulletin*, 7, 146-152.
- Fauché, M., Brongniart, A., Chaubard, L.A., Bory de Saint-Vincent, J.B.J.M., 1832-1833. *Expédition scientifique de Morée. Section de sciences physiques. Vol. III, part 2. Botanique*. Paris, Estrasburgo. 336 pp.
- Furnari, G., Cormaci, M., Serio, D., 1999. Catalogue of the benthic marine macroalgae of the Italian coast of the Adriatic Sea. *Boccone*, 12, 1-214.
- Furnari, G., Giaccone, G., Cormaci, M., Alongi, G., Catra, M. et al., 2010. Macrophytobenthos. *Biologia Marina Mediterranea*, 17, 801-828.
- Gallardo, T., Gómez Garreta, A., Ribera, M.A., Cormaci, M., Furnari, G. et al., 1993. Check-list of Mediterranean Seaweeds, II. Chlorophyceae Wille s.l. *Botanica Marina*, 36, 399-421.
- Gerloff, J., Geissler, U., 1974. Eine revidierte Liste der Meeresalgen Griechenlands. *Nova Hedwigia*, 22, 721-793.
- Giaccone, G., 1968a. Raccolte di fitobenthos nel Mediterraneo orientale. *Giornale Botanico Italiano*, 102, 217-228.
- Giaccone, G., 1968b. Contributo allo studio fitosociologico dei popolamenti algali del Mediterraneo orientale. *Giornale Botanico Italiano*, 102, 485-506.
- Gómez Garreta, A., Gallardo, T., Ribera, M.A., Cormaci, M., Furnari, G. et al., 2001. Check-list of Mediterranean Seaweeds. III. Rhodophyceae Rabenh. 1. Ceramiales Oltm. *Botanica Marina*, 44, 425-460.
- Greville, R.K., 1826. Some account of a collection of cryptogamic plants from the Ionian Islands. *Transactions of the Linnean Society [London]*, 15, 335-348.
- Grunow, A., 1861. IV. Algas. In: Heuffer, Specimen florae cryptogamae septem insularum. *Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien*, 11, 416-430.
- Guiry, M.D., Guiry, G.M., 2013. AlgaeBase. World-wide electronic publication, National University of Ireland, Galway. <http://www.algaebase.org> (Accessed 21 June 2013).
- Hamel, G., 1931. Chlorophycées des côtes françaises (fin). *Revue Algologique*, 6, 9-73.
- Hardy, F.G., Guiry, M.D., 2003. *A check-list and atlas of the seaweeds of Britain and Ireland*. British Phycological Society, London, 435 pp.
- Haritonidis, S., 1978. *Studies of the macroalgae (Chlorophyta, Phaeophyta & Rhodophyta) populations in Thermaikos Gulf*. PhD Thesis, University of Thessaloniki, Greece, 173 pp.
- Haritonidis, S., Tsekos, I., 1974. A survey of the marine algae of Thassos and Mytilene Islands, Greece. *Botanica Marina*, 17, 30-39.
- Haritonidis, S., Tsekos, I., 1975. Marine algae of northern Greece. *Botanica Marina*, 18, 203-221.
- Haritonidis, S., Tsekos, I., 1976. Marine algae of the west Greek coasts. *Botanica Marina*, 19, 273-286.
- Hoek, C. van den, 1963. *Revision of the European species of Cladophora*. E. J. Brill. Proefschrift ... Rijksuniversiteit te Leiden, Leiden, 248 pp.
- Huvé, H., 1962. Une nouvelle Gelidiacée du genre *Beckerella* Kylin en Méditerranée orientale: *Beckerella mediterranea*, nov. sp. *Revue Générale Botanique*, 69, 32-52.
- John, D.M., Lawson, G.W., Ameka, G.K., 2003. The marine macroalgae of the Tropical West Africa Subregion. *Beihefte zur Nova Hedwigia*, 125, 1-217.
- John, D.M., Prud'homme van Reine, W.F., Lawson, G.W., Kostermans, T.B., Price, J.H., 2004. A taxonomic and geographical catalogue of the seaweeds of the western coast of Africa and adjacent islands. *Beihefte zur Nova Hedwigia*, 127, 1-339.
- Lazaridou, E., 1994. *Systematics, bionomy and ecological study of the marine phytobenthos of the Milos Island (Cyclades)*. PhD Thesis. University of Thessaloniki, Greece, 297 pp.
- Leliaert, F., Coppejans, E., 2006. A revision of *Cladophoropsis* Børgesen (Siphonocladales, Chlorophyta). *Phycologia*, 45, 657-679.
- Mayhoub, M.H., 1974. Reproduction sexuée et cycle du développement de *Pseudobryopsis myura* (Ag.) Berthold (Chlorophycée, Codiale). *Compte Rendu Hebdomadaire des Séances de l'Académie des Sciences. Paris. Série D*, 278, 867-870.
- Meinesz, A., 1980. *Contribution à l'étude des Caulerpales (Chlorophytes)*. Thèse de Doctorat, Univ. Nice, 262 pp.
- Miliarakis, S., 1887. *Beitrag zur Kenntniss der Algenvegetation von Griechenland: I. Die Meeresalgen der Insel Sciathos*. Nicolas Inglessis, Athens, 16 pp.
- Nicolaidou, A., Reizopoulou, D., Koutsoubas, D., Orfanidis, S., Kevrekidis, T., 2005. Biological components of Greek lagoonal ecosystems: an overview. *Mediterranean Marine Science*, 6, 31-50.
- Nielsen, R., 1983. Culture studies of *Acrochaete leptochaete* comb. nov. and *A. wittrockii* comb. nov. (Chaetophoraceae, Chlorophyceae). *Nordic Journal of Botany*, 3, 689-694.
- Nikolaidis, G., 1985. *Qualitative and quantitative investigation of the marine plant macrophyceae (Chlorophyceae, Phaeophyceae and Rhodophyceae) in different polluted (Thessaloniki Gulf) and no polluted areas (Chalkidiki)*. PhD thesis, Aristotle University, Greece, 152 pp.
- Nizamuddin, M., Lehnberg, W., 1970. Studies on the marine algae of Paros and Sikonos Islands, Greece. *Botanica Marina*, 13, 116-130.
- O' Kelly, C.J., Kurihara, A., Shipley, T.C., Sherwood, A.R., 2010. Molecular assessment of *Ulva* spp. (Ulvoephyceae, Chlorophyta) in the Hawaiian Islands. *Journal of Phycology*, 46 (4), 728-735.
- Orfanidis, S., Panayotidis, P., Stamatis, N., 2001. Ecological evaluation of transitional and coastal waters: a marine benthic macrophytes model. *Mediterranean Marine Science*, 2, 46-65.
- Panagiotopoulou-Karatagli, A., Tsekos I., Karataglis, S., 1974. Temperatur- und osmotische resistenz von Meeresalgen des Golfs von Thessaloniki, Griechenland. *Botanica Marina*, 17 (2), 118-123.
- Panayotidis, P., Montesanto, B., Orfanidis, S., 2004. Use of low-budget monitoring of macroalgae to implement the European Water Framework Directive. *Journal of Applied Phycology*, 16, 49-59.
- Papenfuss, G.F., 1960. On the genera of the Ulvales and the status of the order. *Journal of the Linnean Society of London, Botany*, 56, 303-318.

- Petkoff, S., 1943. Algues marines de côtes bulgares de la mer Égée. *Spisanie na Bulgarskata Akademiya na Naukite*, 68, 269-280.
- Politis, J., 1928. Étude sur la flore maritime de l'île de Syra (Cyclades). *Actes de l'Académie d'Athènes*, 1, 1-32.
- Politis, J., 1932. Sur la flore marine de l'île de la Crète. *Actes de l'Académie d'Athènes*, 2, 257-261.
- Politis, J., 1936. Sur la flore marine de l'Attique. *Actes de l'Académie d'Athènes*, 3, 1-44.
- Reinbold, T., 1898. Meeresalgen von der Insel Rhodos. Gesammelt von Lehrer J. Nemetz. *Hedwigia*, 37, 87-90.
- Ribera, M.A., Gómez Garreta, A., Gallardo, T., Cormaci, M., Furnari, G. *et al.*, 1992. Check-list of Mediterranean Seaweeds. I. Fucophyceae (Warming 1884). *Botanica Marina*, 35, 109-130.
- Sartoni, G., De Biasi, A.M., 1999. A survey of the marine algae of Milos Island, Greece. *Cryptogamie Algologie*, 20, 271-283.
- Schiffner, V., Schussnig, B., 1943. Algae. In: Flora Aegaea, Flora der Inseln und Halbinseln des agaischen Meers. Reisinger, K.H. (Ed). *Denkschriften Akademie der Wissenschaften in Wien (Mathematisch-Naturwissenschaftliche Klasse)*, 105, 1-855.
- Schmitz, F. 1879. Über grüne Algen im Golf von Athen. *Berichte Sitzungen Naturforscher Gesellschaft in Halle*, 1878, 17-23.
- Schnetter, R., Schnetter, M.L., 1981. Marine Benthosalgen von Kephalinia (Jonische Inseln). *Bibliotheca Phycologica*, 51, 111-152.
- Setchell, W.A., 1929. The genus *Microdictyon*. *University of California Publications in Botany*, 14, 453-588.
- Sfriso, A., 2010a. *Chlorophyta multicellulari e fanerogame acquatiche. Ambienti di transizione italiani e litorali adiacenti* Arpa Emilia-Romagna, Bologna, 320 pp.
- Sfriso, A., 2010b. Coexistence of *Ulva rigida* and *Ulva laetevirens* (Ulvales, Chlorophyta) in Venice Lagoon and other Italian transitional and marine environments. *Botanica Marina*, 53, 9-18.
- Silva, P.C., 2013. Index Nominum Algarum, University Herbarium, University of California, Berkeley. <http://ucjeps.berkeley.edu/INA.html> (Accessed 21 June 2013).
- Spencer, M.A., Irvine, L.M., Jarvis, C.E., 2009. Typification of Linnaean names relevant to algal nomenclature. *Taxon*, 58, 237-260.
- Tsekos, I., Haritonidis, S., Margaris, N.S., Tzavellas, K., 1982. Contribution to the study of populations of benthic macroalgae (Chlorophyceae, Phaeophyceae and Rhodophyceae) of the Greek Seas. *Thalassographica*, 5, 61-153.
- Tsiamis, K., Panayotidis, P., 2007. Occurrence of *Codium fragile* subsp. *tomentosoides* (van Goor) P.C. Silva (Chlorophyta: Bryopsidophyceae: Bryopsidales: Codiaceae) in Greece. *Aquatic Invasions*, 2, 74-76.
- Tsiamis, K., Montesanto, B., Panayotidis, P., Katsaros, C., Verlaque, M., 2010a. Updated records and range expansion of alien marine macrophytes in Greece (2009). *Mediterranean Marine Science*, 11, 61-79.
- Tsiamis, K., Verlaque, M., Panayotidis, P., Montesanto, B., 2010b. New macroalgal records for the Aegean Sea (Greece, Eastern Mediterranean). *Botanica Marina*, 53, 319-331.
- Tsiamis, K., Panayotidis, P., Economou-Amilli, A., Katsaros, C., 2013a. Seaweeds of the Greek coasts. I. Phaeophyceae. *Mediterranean Marine Science*, 14, 141-157.
- Tsiamis, K., Panayotidis, P., Salomidi, M., Pavlidou, A., Kleinteich, J. *et al.*, 2013b. Macroalgal community response to re-oligotrophication in Saronikos Gulf. *Marine Ecology Progress Series*, 472, 73-85.
- Tsirika, A., Haritonidis, S., 2005. A survey of the benthic flora in the National Marine Park of Zakynthos (Greece). *Botanica Marina*, 48, 38-45.
- Wolf, M.A., Sciuto, K., Andreoli, C., Moro, I., 2012. *Ulva* (Chlorophyta, Ulvales) biodiversity in the North Adriatic Sea (Mediterranean, Italy): cryptic species and new introductions. *Journal of Phycology*, 48, 1510-1521.
- Zanardini, G., 1843. *Saggio di classificazione naturale delle Ficee del dottore Giovanni Zanardini: aggiunti nuovi studii sopra l'Androsace degli antichi con tavola miniata ed enumerazione di tutte le specie scoperte e raccolte dall'autore in Dalmazia*. Dallo Stabilimento tipografico enciclopedico di Girolamo Tasso, Venezia, 64 pp.