

A revised check-list of the seaweeds of Britain

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A revision of the check-list of the red (Rhodophyta), green (Chlorophyta) and brown (Ochrophyta, Phaeophyceae) seaweeds of Britain has been compiled and revealed 644 taxa, mostly at species level but including infraspecific taxa: 348 reds, 110 greens and 186 browns. There were 30 additions to the list, notably five newly described species and five new non-native additions. In addition to the check-list, an updated list of non-native species was compiled based on a stringent review of the available evidence. We have listed 31 non-native species (~5% of the flora), although the numbers may be considerably higher and probably include species that are effectively naturalized and perceived to be part of the indigenous flora. The check-list is discussed in relation to the impact of molecular techniques on the identification, taxonomy and phylogeny of species, and points to the need for a comprehensive, in-depth study on the identity and relationships of the seaweeds of Britain.

Keywords: biodiversity, Britain, check-list, Chlorophyta, non-native seaweeds, Rhodophyta, Phaeophyceae

Submitted 5 December 2014; accepted 18 August 2015; first published online 29 October 2015

INTRODUCTION

The intertidal and shallow subtidal seas around Britain support an important component of UK biodiversity with about 7% of the world's red (Rhodophyta), green (Chlorophyta) and brown (Ochrophyta, Phaeophyceae) known seaweeds. There is increasing evidence of change in the seaweed flora of the region and nearby areas (e.g. Brodie *et al.*, 2014b, Yesson *et al.*, 2015) and an urgent need for quality data on the distribution and abundance of species, in order to provide information into, for example, environmental change, potential pressures from harvesting and foraging, loss of habitats, and increases in non-native species. In order to be able to assess change within species in the flora, it is essential to know what the species are. The need to know what species were present on British shores was recognized by the British Phycological Society from its foundation in 1952. Indeed, one of the first achievements of the initial aims of the Society was the production of a check-list of British marine algae (Parke, 1953). This was the start of a series of check-lists (summarized in Table 1) that included the seaweeds, the most recent of which (Hardy & Guiry, 2003, 2006) included the seaweeds of Britain and Ireland together with an atlas of 250,000 records of the distribution of the marine algae of the islands gathered by members of the Society over a 25-year period.

Since the most recent check-list of Hardy & Guiry (2003, reissued in 2006 with minor corrections), there have been considerable changes to the seaweed flora. These reflect the discovery of undescribed, often cryptic species (e.g. Robba

et al., 2006; Walker *et al.*, 2009), the impact of molecular taxonomy on understanding of species and other taxonomic concepts (e.g. Brodie *et al.*, 2013) and phylogenetic relationships (e.g. Draisma & Prud'homme van Reine, 2010), and the arrival of non-native species, the most recent of which is the red alga *Chrysymenia wrightii* (Harvey) Yamada (Bunker, 2014). Additionally, there have also been a number of initiatives that require up-to-date knowledge of the British flora. These include Important Plant Areas for the Algae (Brodie *et al.*, 2007a), new floras (Brodie *et al.*, 2007b; Bunker *et al.*, 2010), a provisional list of non-native species (Brodie *et al.*, 2012) and a provisional Red Data list (Brodie & Wilbraham, 2014). There has also been an upsurge in interest in the seaweeds and recording and it is now possible to put field records online (British Phycological Society recording site, <http://www.bpsalgalrecords.com/>), and a set of verification rules for the seaweeds has been set up for the National Biodiversity Network (NBN Record Cleaner, <http://www.nbn.org.uk/Tools-Resources/Recording-Resources/NBN-Record-Cleaner.aspx>; Brodie *et al.*, 2014a) in an attempt to provide quality assurance to the records submitted and consequently make them more reliable for use in biodiversity and environmental assessment.

Here, we have compiled a revised check-list of the British seaweeds and provided a newly revised list of species which are considered to be non-native.

MATERIALS AND METHODS

To compile the revised check-list of the Rhodophyta, Chlorophyta and Ochrophyta (only the class Phaeophyceae includes seaweeds) of Britain, the check-list for the seaweeds of Britain and Ireland (Hardy & Guiry, 2003) was used as a starting point. Species were added to the list if, since that

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Table 1. Check-lists which include British seaweeds.

Reference	Title	Publication
Parke (1953)	A preliminary check-list of British marine algae	<i>Journal of the Marine Biological Association of the United Kingdom</i> 32, 497–520.
Parke (1956)	A preliminary check-list of the British marine algae. Corrections and additions 1953–1955	<i>British Phycological Bulletin</i> 1(4), 26–31.
Parke (1957)	A preliminary check-list of the British marine algae. Corrections and additions II	<i>British Phycological Bulletin</i> 1(5), 36–37.
Parke (1959)	A preliminary check-list of the British marine algae. Corrections and additions III	<i>British Phycological Bulletin</i> 1(7), 74–78.
Parke & Dixon (1964)	A revised check-list of British marine algae	<i>Journal of the Marine Biological Association of the United Kingdom</i> 44, 499–452.
Parke & Dixon (1976)	Check-list of British marine algae – third revision	<i>Journal of the Marine Biological Association of the United Kingdom</i> 56, 527–594.
Hardy & Guiry (2003)	A check-list and atlas of the seaweeds of Britain and Ireland	The British Phycological Society.
Guiry (2012)	A catalogue of Irish seaweeds	A.R.G. Gantner Verlag K.G.

date, they were (i) newly described, (ii) new additions either not previously recognized or range expansion or introduced (non-natives) or (iii) species whose names are still current but were omitted from the 2003 check-list and the identity of which remains uncertain. Species were excluded from the list (Table 2) if they (i) were known only from Ireland (Guiry, 2012), (ii) had not been recorded and considered not to be present in Britain, (iii) were based on a misidentification or (iv) were regarded as a synonym of another species already on the list. For the species that remained, name changes were incorporated based on recent literature and following the style of authorities given in Guiry & Guiry (2015), which generally complies with the standards of IPNI (The International Plant Names Index; <http://www.ipni.org/index.html>). To compile a revised, annotated list of non-native species (Table 3), a review was undertaken of the provisional list compiled by Brodie *et al.* (2012), and species retained where there was convincing evidence from phylogenetic evidence, literature records and herbarium records. In contrast to the check-lists of Parke and Parke & Dixon (Table 1), the full binomials and trinomials are used to facilitate electronic indexing, important today for information retrieval.

RESULTS

Revised check-list of British Seaweeds

*=Additions to the list, including new species and those not listed in Hardy & Guiry (2003).

PLANTAE Haeckel 1866

RHODOPHYTA Wettstein 1901

Class Porphyridiophyceae Shameel 2001

Order Porphyridiales Kylin 1937

Family Porphyridiaceae Kylin 1937

PORPHYRIDIDIUM Nägeli 1849 *nom. cons.*

Porphyridium purpureum (Bory de Saint-Vincent) K.M.Drew & R.Ross

Class Rhodellophyceae Cavalier-Smith 1998

Order Rhodellales H.S.Yoon, K.M.Müller, Sheath, F.D.Ott & D.Bhattacharya 2006

Family Rhodellaceae H.S.Yoon, K.M.Müller, Sheath, F.D.Ott & D.Bhattacharya 2006

RHODELLA L.V.Evans 1970

Rhodella violacea (Kornmann) Wehrmeyer

[*Rhodella maculata* L.V.Evans in Hardy & Guiry (2003)]

Class Stylonematophyceae H.S.Yoon, K.M.Müller, Sheath, F.D.Ott & D.Bhattacharya 2006

Order Stylonematales K.M.Drew 1956

Family Stylonemataceae K.M.Drew 1956

CHROODACTYLON A.Hansgirg 1885

Chroodactylon ornatum (C.Agardh) Basson

COLACODICTYON Feldmann 1955

Colacodictyon reticulatum (Batters) Feldmann

NEEVEA Batters 1900

Neevea repens Batters

STYLONEMA Reinsch 1875

Stylonema alsidii (Zanardini) K.M.Drew

Stylonema cornu-cervi Reinsch

Class Compsopogonophyceae G.W.Saunders & Hommersand 2004

Order Erythropeltidales Garbary, G.I.Hansen & Scagel 1980

Family Erythrotrichiaceae G.M.Smith 1933

ERYTHROCLADIA Rosenvinge 1909

Erythrocladia irregularis Rosenvinge

ERYTHROPELTIS F.Schmitz 1896

**Erythropeltis discigera* var. *flustrae* Batters

[The nominal *Erythropeltis discigera* was incorrectly listed in Hardy & Guiry (2003); see Brodie & Irvine (2003)]

ERYTHROTRICHIA J.E.Areschoug 1850, *nom. cons.*

Erythrotrichia bertholdii Batters

Erythrotrichia carnea (Dillwyn) J.Agardh
Erythrotrichia investiens (Zanardini) Bornet
Erythrotrichia reflexa (P.L.Crouan & H.M.Crouan) Thuret ex
 De Toni
Erythrotrichia welwitschii (Ruprecht) Batters

PORPHYROPSIS Rosenvinge 1909
Porphyropsis coccinea (J.Agardh ex Areschoug) Rosenvinge

PORPHYROSTROMIUM Trevisan 1848
Porphyrostromium boryanum (Montagne) P.C.Silva
Porphyrostromium ciliare (Carmichael) M.J.Wynne

SAHLINGIA P.Kornmann 1989
Sahlingia subintegra (Rosenvinge) Kornmann

Class Bangiophyceae Wettstein 1901
Order Bangiales F.Schmitz 1847
Family Bangiaceae Engler 1892, *nom. cons.*

BANGIA Lyngbye 1819
Bangia fuscopurpurea (Dillwyn) Lyngbye
 [As *Bangia atropurpurea* (Roth) C.Agardh in Hardy & Guiry (2003). *Bangia fuscopurpurea* (Dillwyn) Lyngbye is the name used for marine species of *Bangia sensu lato*, although *Bangia sensu stricto* is confined to fresh water; see Sutherland *et al.* (2011).]

PORPHYRA C.Agardh 1824, *nom. cons.*
Porphyra dioica J.Brodie & L.M.Irvine
Porphyra linearis Greville
Porphyra purpurea (Roth) C.Agardh
Porphyra umbilicalis Kützing
Porphyra yezoensis sensu Kornmann
 [Non-native; Table 3. Molecular evidence indicates that this species belongs in the genus *Pyropia* (Brodie & Irvine, 2003; Brodie *et al.*, 2008) but until the identity of the species is confirmed, it is retained here in *Porphyra*.]

PYROPIA J.Agardh 1899
Pyropia drachii (Feldmann) J.Brodie, *comb. nov.*
 [For details of the new combination, see Appendix 1. Probably non-native; Table 3.]
 **Pyropia elongata* (Kylín) Neefus & J.Brodie
 [New record for Britain; see Brodie *et al.* (2007b) and Neefus & Brodie, 2009.]
Pyropia leucosticta (Thuret) Neefus & J.Brodie
 [Non-native; Table 3.]

WILDEMANIA De Toni 1890
Wildemaniana amplissima Foslie
 [As *Porphyra amplissima* (Kjellman) Setchell & Hus ex Hus in Hardy & Guiry (2003); see Sutherland *et al.* (2011). The cited basionym given by Foslie (1891, 49), *Diploderma amplissimum* Kjellman 1883, is nomenclaturally illegitimate as *Diploderma* Kjellman is a later homonym of *Diploderma* Link 1816 (Fungi). Foslie's name is here treated as new.]

Class Florideophyceae Cronquist 1960
Subclass Ahnfeltiophycidae G.W.Saunders & Hommersand 2004

Order Ahnfeltiales Maggs & Poeschel 1989
Family Ahnfeltiaceae Maggs & Poeschel 1989

AHNFELTIA Fries 1836, *typ. cons.*
Ahnfeltia plicata (Hudson) Fries

Subclass Nemaliophycidae T.A.Christensen 1978
Order Acrochaetiales Feldmann 1953
Family Acrochaetiaceae F.E.Fritsch ex W.R.Taylor 1957, *nom. cons.*

ACROCHAETIUM Nägeli 1858
 [Allocation of species with single stellate chloroplasts to this genus is provisional.]
Acrochaetium alariae (Jónsson) Bornet
Acrochaetium battersianum G.Hamel
Acrochaetium brebneri (Batters) G.Hamel
Acrochaetium endozoicum (Darbishire) Batters
Acrochaetium lorrain-smithiae (Lyle) L.Newton
Acrochaetium microscopicum (Nägeli ex Kützing) Nägeli
Acrochaetium mirabile (Suhr) Nägeli
 [Included as a synonym of *Acrochaetium minimum* F.S.Collins, in Hardy & Guiry (2003).]
Acrochaetium parvulum (Kylín) Hoyt
Acrochaetium rosulatum (Rosenvinge) Papenfuss
Acrochaetium sanctae-mariae (Darbishire) G.Hamel
Acrochaetium savianum (Meneghini) Nägeli
Acrochaetium scapae (Lyle) Papenfuss
Acrochaetium secundatum (Lyngbye) Nägeli
 [Includes *A. virgatulum* (Harvey) Batters; see Clayden & Saunders (2014).]
Acrochaetium seiriolanum (R.J.H.Gibson) G.Hamel
Acrochaetium sparsum (Harvey) Nägeli

GRANIA (Rosenvinge) Kylín 1944
Grania efflorescens (J.Agardh) Kylín
 [As *Acrochaetium efflorescens* (J.Agardh) Nägeli in Hardy & Guiry (2003).]

RHODOCHORTON Nägeli 1862, *nom. cons.*
Rhodochorton purpureum (Lightfoot) Rosenvinge

Order Palmariales Guiry & D.E.G.Irvine 1978
Family Palmariaceae Guiry 1974

PALMARIA Stackhouse 1801
Palmaria palmata (Linnaeus) F.Weber & D.Mohr

Family Rhodophysemataceae G.W.Saunders & McLachlan 1990

RHODOPHYSEMA Batters 1900
Rhodophysema elegans (P.L.Crouan & H.M.Crouan ex J.Agardh) P.S.Dixon
Rhodophysema georgei Batters
Rhodophysema kjellmanii G.W.Saunders & Clayden
 [As *Halosaccicolax kjellmanii* S.Lund, *nom. inval.* in Hardy & Guiry (2003).]

Family Meiodiscaceae Clayden & G.W.Saunders 2010

MEIODISCUS G.W.Saunders & McLachlan 1991

Meiodiscus concrescens (K.M.Drew) P.W.Gabrielson

[As *Rhodochorton concrescens* K.M.Drew in Hardy & Guiry (2003).]

Meiodiscus spetsbergensis (Kjellman) G.W.Saunders & McLachlan

RUBROINTRUSA Clayden & G.W.Saunders 2010

Rubrointrusa membranacea (Magnus) Clayden & G.W.Saunders

[As *Rhodochorton membranaceum* (Magnus) Hauck in Hardy & Guiry (2003).]

Family Rhodothamniellaceae G.W.Saunders 1995

RHODOTHAMNIELLA Feldmann 1978

Rhodothamniella floridula (Dillwyn) Feldmann

Order Colaconematales J.T.Harper & G.W.Saunders 2002

Family Colaconemataceae J.T.Harper & G.W.Saunders 2002

COLACONEMA Batters 1896

Colaconema asparagopsidis Chemin

[The orthography 'asparagopsis' (Chemin, 1926) was later corrected to 'asparagopsidis' by Chemin (1927)]

Colaconema bonnemaisoniae Batters

Colaconema caespitosum (J.Agardh) Jackelman, Stegenga & J.J.Bolton

Colaconema chylocladiae Batters

[As *Acrochaetium chylocladiae* (Batters) Batters in Hardy & Guiry (2003).]

Colaconema daviesii (Dillwyn) Stegenga

Colaconema endophyticum (Batters) J.T.Harper & G.W.Saunders

Colaconema infestans (M.Howe & Hoyt) Woelkerling

[As *Acrochaetium infestans* M.Howe & Hoyt in Hardy & Guiry (2003).]

Colaconema nemalione (De Notaris ex L.Dufour) Stegenga

[As 'nemalionis' and 'nemalii' by various authors. As *Acrochaetium nemalii* (De Notaris ex L.Dufour) Bornet in Hardy & Guiry (2003).]

Order Nemaliales F.Schmitz 1892

Family Scinaiceae Huisman, J.T.Harper & G.W.Saunders 2004

SCINAIA Bivona-Bernardi 1822

Scinaia furcellata (Turner) J.Agardh

Scinaia interrupta (A.P.de Candolle) M.J.Wynne

Family Liagoraceae Kützing 1843

HELMINTHOCLADIA J.Agardh, 1851, *nom. cons.*

Helminthocladia calvadosii (J.V.Lamouroux ex Duby) Setchell

HELMINTHORA J.Agardh, 1851, *nom. cons.*

Helminthora divaricata (C.Agardh) J.Agardh

[As *Helminthora stackhousei* (Clemente) J.Cremades by some authors; this entity was later shown to represent a *Helminthocladia* rather than a *Helminthora*; see Cremades (1993)]

NEMALION J.É.Duby 1830

Nemalion elminthoides (Velley) Batters

[As *Nemalion helminthoides* [sic] (Velley) Batters in Hardy & Guiry (2003). Type locality: Portland, Dorset.]

**Nemalion multifidum* (Lyngbye) Chauvin¹

[Type locality: Varberg, Sweden. Reported from Britain in Newton (1931) and others. Further studies are required (cf. Le Gall & Saunders, 2010) to establish if two species are present in Britain.]

Class Rhodymeniophycidae G.W.Saunders & Hommersand 2004

Order Gelidiales Kylin 1923

Family Gelidiaceae Kützing 1843

GELIDIUM J.V.Lamouroux, 1813, *nom. cons.*

Gelidium attenuatum (Turner) Thuret

[Treated as a synonym of *Gelidium spinosum* (S.G.Gmelin) P.C.Silva in Hardy & Guiry (2003). Reinstated in Guiry (2012).]

Gelidium corneum (Hudson) J.V.Lamouroux

Gelidium crinale (Hare ex Turner) Gaillon

Gelidium maggsiae Rico & Guiry

Gelidium pulchellum (Turner) Kützing

Gelidium pusillum (Stackhouse) Le Jolis

Gelidium spinosum (S.G.Gmelin) P.C.Silva

Family Pterocladaceae G.P.Felicini & C.Perrone 2006

PTEROCLADIELLA Santelices & Hommersand 1997

Pterocladia capillacea (S.G.Gmelin) Santelices & Hommersand

Family Gelidiellaceae K.C.Fan 1961

GELIDIELLA Feldmann & G.Hamel, 1934

Gelidiella calcicola Maggs & Guiry

Order Gracilariales Fredericq & Hommersand 1989

Family Gracilariaceae Nägeli 1847

GRACILARIA Greville 1830, *nom. et typ. cons.*

Gracilaria bursa-pastoris (S.G.Gmelin) P.C.Silva

**Gracilaria dura* (C.Agardh) J.Agardh

[Brodie (unpublished) considers *Gracilaria gracilis* from Cornwall as reported by Robba *et al.* (2006) to be this species.]

Gracilaria gracilis (Stackhouse) Steentoft, L.M.Irvine & Farnham

Gracilaria multipartita (Clemente) Harvey

GRACILARIOPSIS E.Y.Dawson 1949

Gracilariopsis longissima (S.G.Gmelin) Steentoft, L.M. Irvine & Farnham

Family Pterocladophilaceae K.C.Fan & Papenfuss 1959

HOLMSELLA Sturch 1926

Holmsella pachyderma (Reinsch) Sturch

¹The supposed basionym, *Rivularia multifida* F.Weber & D.Mohr, 1804, is an invalid pre-starting-point name; *Chordaria multifida* Lyngbye, 1819, is the earliest valid name applicable that is suitable as a basionym (Wynne, personal communication). The type locality remains the type locality of the former.

Order Bonnemaisoniales Feldmann & G.Feldmann 1952

Family Bonnemaisoniaceae F.Schmitz 1892

ASPARAGOPSIS Montagne 1841

Asparagopsis armata Harvey

[Non-native; Table 3.]

BONNEMAISONIA C.Agardh 1822

Bonnemaisonia asparagoidea (Woodward) C.Agardh

Bonnemaisonia clavata G.Hamel

[May be part of a species complex; see Guiry (2012).]

Bonnemaisonia hamifera Hariot

[Non-native; Table 3.]

Family Naccariaceae Kylin 1928

ATRACTOPHORA P.L.Crouan & H.M.Crouan 1848

Atractophora hypnoides P.L.Crouan & H.M.Crouan

NACCARIA Endlicher 1836

Naccaria wiggii (Turner) Endlicher

Order Halymeniales G.W.Saunders & Kraft 1996

Family Halymeniaceae Bory de Saint-Vincent 1828

CRYPTONEMIA J.Agardh 1842

Cryptonemia hibernica Guiry & L.M.Irvine

[Probably non-native; Table 3.]

**Cryptonemia lomation* (Bertoloni) J.Agardh

[There is uncertainty over the status of this species and whether it may be non-native; requires further taxonomic investigation; see Guiry (2012).]

Cryptonemia seminervis (C.Agardh) J.Agardh

[British populations require further investigation; elsewhere in Europe it is considered synonymous with *C. lomation* (e.g. Bárbara *et al.*, 2005; see also Yang & Kim, 2014)]

DERMOCORYNUS P.L.Crouan & H.M.Crouan 1858

Dermocorynus dichotomus (J.Agardh) Gargiulo, Morabito & Manghisi

[As *Grateloupia dichotoma* J.Agardh; see Gargiulo *et al.* (2013).]

Dermocorynus montagnei P.L.Crouan & H.M.Crouan

[*Grateloupia montagnei* (P.L.Crouan & H.M.Crouan) R.J.Wilkes, L.M.McIvor & Guiry]

GRATELOUPIA C.Agardh 1822, *nom. cons.*

Grateloupia filicina (J.V.Lamouroux) C.Agardh

**Grateloupia minima* P.L.Crouan & H.M.Crouan

[Included as a synonym of *Grateloupia filicina* (J.V. Lamouroux) C.Agardh in Hardy & Guiry (2003). Reinstated independently by Wilkes *et al.* (2005) and De Clerck *et al.* (2005).]

Grateloupia subpectinata Holmes

[Included as *Grateloupia filicina* var. *luxurians* A.Gepp & E.S.Gepp in Hardy & Guiry (2003). Non-native; Table 3.]

Grateloupia turuturu Yamada

[Non-native; Table 3.]

HALYMENIA C.Agardh 1817, *nom. et typ. cons.*

Halymenia latifolia P.L.Crouan & H.M.Crouan ex Kützing

POLYOPES J.Agardh 1849

Polyopes lancifolius (Harvey) Kawaguchi & H.W.Wang

[Non-native; Table 3.]

Family Tsengiaceae G.W.Saunders & Kraft 2002

TSENGIA K.C.Fan & Y.P.Fan 1962

Tsengia bairdii (Farlow) K.C.Fan & Y.P.Fan

Subclass Hildenbrandiophycidae G.W.Saunders & Hommersand 2004

Order Hildenbrandiales Pueschel & K.M.Cole 1982

Family Hildenbrandiaceae Rabenhorst 1868

HILDENBRANDIA Nardo 1834, *nom. et orth. cons.*

Hildenbrandia crouaniorum J.Agardh

[as *Hildenbrandia 'crouanii'* in most previous publications.]

Hildenbrandia rubra (Sommerfelt) Meneghini

Subclass Corallinophycidae LeGall & G.W.Saunders 2007

Order Corallinales P.C.Silva & H.W.Johansen 1986

Family Hapalidiaceae J.E.Gray 1865

Subfamily Austrolithoideae A.S.Harvey & Woelkerling 1995

BOREOLITHON A.S.Harvey & W.J.Woelkerling 1995

Boreolithon van-heurckii (Heydrich) A.S.Harvey &

Woelkerling

Subfamily Choreonematoideae Woelkerling 1987

CHOREONEMA F.Schmitz 1889

Choreonema thuretii (Bornet) F.Schmitz

Subfamily Melobesioideae Bizzozero 1885

EXILICRUSTA Y.M.Chamberlain 1992

Exilicrusta parva Y.M.Chamberlain

LEPTOPHYTUM W.H.Adey 1966, *nom. illeg.*ⁱⁱ

[As *Leptophytum* is illegitimate (see footnote), the two species included here are illegitimate and are in need of reassignment.]

Leptophytum bornetii (Foslie) Adey, *nom. illeg.*

Leptophytum elatum Y.M.Chamberlain, *nom. illeg.*

LITHOTHAMNION Heydrich 1897, *nom. et typ. cons.*

Lithothamnion corallioides (P.L.Crouan & H.M.Crouan)

P.L.Crouan & H.M.Crouan

Lithothamnion glaciale Kjellman

Lithothamnion lemoineae Adey

Lithothamnion sonderi Hauck

ⁱⁱDüwel & Wegeberg (1996) showed that *Leptophytum* Adey is a heterotypic synonym of *Phymatolithon* Foslie. This was confirmed by Woelkerling *et al.* (2002). In order to use the name *Leptophytum* as distinct from *Phymatolithon*, Athanasiadis & Adey proposed to conserve the name *Leptophytum laeve* Strömfelt against *Lithophyllum laeve* Kützing with a conserved type (Proposal 1577, published in *Taxon* 52, 342–350, 2003). This proposal was rejected by the Nomenclatural Committee for Algae (*Taxon* 53, 1065–1067, 2004), and this recommendation of rejection was approved by the General Committee on Botanical Nomenclature and ratified by the International Botanical Congress in Vienna in 2005 (*Taxon* 55, 795–800, 2006). The use of the name *Leptophytum* as a distinct genus, is thus illegitimate, but no solution has been proposed to date.

MELOBESIA J.V.Lamouroux 1812
Melobesia membranacea (Esper) J.V.Lamouroux

MESOPHYLLUM Me.Lemoine 1928
Mesophyllum lichenoides (J.Ellis) Me.Lemoine

PHYMATOLITHON Foslie 1898 *nom. cons.*
Phymatolithon brunneum Y.M.Chamberlain
Phymatolithon calcareum (Pallas) W.H.Adey & McKibbin
Phymatolithon laevigatum (Foslie) Foslie
Phymatolithon lamii (Me.Lemoine) Y.M.Chamberlain
Phymatolithon lenormandii (J.E.Areschoug) Adey
Phymatolithon purpureum (P.L.Crouan & H.M.Crouan)
Woelkerling & L.M.Irvine

Family Corallinaceae J.V.Lamouroux 1812
Subfamily Corallinoideae (J.E.Areschoug) Foslie 1908
Tribe Corallineae J.E.Areschoug 1852

CORALLINA Linnaeus 1758
**Corallina caespitosa* R.H.Walker, J.Brodie & L.M.Irvine
[Newly described species since Hardy & Guiry (2003); see
Walker *et al.* (2009).]
Corallina officinalis Linnaeus

ELLISOLANDIA Hind & G.W.Saunders 2013
Ellisolandia elongata (J.Ellis & Solander) Hind &
G.W.Saunders
[As *Corallina elongata* J.Ellis & Solander in Hardy & Guiry
(2003).]

Tribe Janieae H.W.Johansen & P.C.Silva 1978

JANIA J.V.Lamouroux 1812
Jania rubens (Linnaeus) J.V.Lamouroux
Jania squamata (Linnaeus) J.H.Kim, Guiry & H.-G.Choi
[As *Haliptilon squamatum* H.W.Johansen, L.M.Irvine &
A.M.Webster in Hardy & Guiry (2003); see Kim *et al.*
(2007), but also Walker *et al.* (2009).]

Subfamily Lithophylloideae Setchell 1943

LITHOPHYLLUM Philippi 1837
Lithophyllum corallinae (P.L.Crouan & H.M.Crouan)
Heydrich
[As *Titanoderma corallinae* (P.L.Crouan & H.M.Crouan)
Woelkerling, Y.M.Chamberlain & P.C.Silva in Hardy &
Guiry (2003).]
Lithophyllum crouaniorum Foslie
Lithophyllum duckerae Woelkerling
[Requires further investigation; may be synonymous with *L.*
racemeus.]
Lithophyllum fasciculatum (Lamarck) Foslie
[Requires further investigation.]
Lithophyllum incrustans Philippi
Lithophyllum nitorum W.H.Adey & P.J.Adey
Lithophyllum orbiculatum (Foslie) Foslie

TITANODERMA Nägeli 1858
Titanoderma laminariae (P.L.Crouan & H.M.Crouan)
Y.M.Chamberlain
Titanoderma pustulatum (J.V.Lamouroux) Nägeli

Subfamily Hydrolithoideae A.Kato & M.Baba 2011

HYDROLITHON (Foslie) Foslie 1909
Hydrolithon boreale (Foslie) Y.M.Chamberlain
Hydrolithon cruciatum (Bressan) Y.M.Chamberlain
Hydrolithon farinosum (J.V.Lamouroux) Penrose &
Y.M.Chamberlain
Hydrolithon samoëense (Foslie) Keats & Y.M.Chamberlain
Hydrolithon sargassi (Foslie) Y.M.Chamberlain

Subfamily Mastophoroideae Setchell 1943

PNEOPHYLLUM Kützing 1843
Pneophyllum confervicola (Kützing) Y.M.Chamberlain
Pneophyllum coronatum (Rosanoff) Penrose
Pneophyllum fragile Kützing
Pneophyllum limitatum (Foslie) Y.M.Chamberlain
Pneophyllum lobescens Y.M.Chamberlain
Pneophyllum myriocarpum (P.L.Crouan & H.M.Crouan)
Y.M.Chamberlain

Order Gigartinales F.Schmitz 1892
Family Calosiphoniaceae Kylin 1932

CALOSIPHONIA P.L.Crouan & H.M.Crouan 1852
Calosiphonia vermicularis (J.Agardh) F.Schmitz

SCHMITZIA P.C.Silva 1950
Schmitzia hiscockiana Maggs & Guiry
Schmitzia neapolitana (Berthold) P.C.Silva

Family Caulacanthaceae Kützing 1843

CATENELLA Greville 1839, *nom. cons.*
Catenella caespitosa (Withering) L.M.Irvine

CAULACANTHUS Kützing, 1843
**Caulacanthus okamurae* Yamada
[Non-native; referred to in Britain as *Caulacanthus*
ustulatus (Mertens ex Turner) Kützing but the correct
name is *Caulacanthus okamurae* Yamada (F. Minéur,
pers. comm.; Table 3. Frequently, but incorrectly, spelled
'okamura']

Family Cruoriaceae (J.Agardh) Kylin 1928

CRUORIA Fries 1835
Cruoria cruoriiiformis (P.L.Crouan & H.M.Crouan) Denizot
[As 'cruoriaeformis' in Hardy & Guiry (2003, 2006) and
earlier authors.]
Cruoria pellita (Lyngbye) Fries

Family Cystocloniaceae Kützing 1843

CALLIBLEPHARIS Kützing 1843, *nom. cons.*
Calliblepharis ciliata (Hudson) Kützing
Calliblepharis jubata (Goodenough & Woodward) Kützing

CYSTOCLONIUM Kützing 1843
Cystoclonium purpureum (Hudson) Batters

RHODOPHYLLIS Kützing 1847, *nom. cons.*
Rhodophyllis divaricata (Stackhouse) Papenfuss
 **Rhodophyllis irvineorum* Guiry, Maggs & Bunker
 [Newly described species since Hardy & Guiry (2003); see
 Guiry (2012).]

Family Dumontiaceae Bory de Saint-Vincent 1828

DILSEA Stackhouse 1809
Dilsea carnosa (Schmidel) Kuntze

DUDRESNAYA P.L.Crouan & H.M.Crouan 1835, *nom. cons.*
Dudresnaya verticillata (Withering) Le Jolis

DUMONTIA J.V.Lamouroux 1813
Dumontia contorta (S.G.Gmelin) Ruprecht

PIKEA Harvey 1853
Pikea californica Harvey
 [Non-native; Table 3.]

Family Furcellariaceae Greville 1830

FURCELLARIA J.V.Lamouroux 1813, *nom. cons.*
Furcellaria lumbricalis (Hudson) J.V.Lamouroux

HALARACHNION Kützing 1843
Halarachnion ligulatum (Woodward) Kützing

Family Gigartinaceae Bory de Saint-Vincent 1828

CHONDRACANTHUS Kützing 1843
Chondracanthus acicularis (Roth) Fredericq
Chondracanthus teedei (Mertens ex Roth) Kützing
 [As 'teedii' in earlier works.]

CHONDRUS Stackhouse 1797
Chondrus crispus Stackhouse

GIGARTINA Stackhouse 1809
Gigartina pistillata (S.G.Gmelin) Stackhouse

Family Gloiosiphoniaceae F.Schmitz 1892

GLOIOSIPHONIA Carmichael 1833
Gloiosiphonia capillaris (Hudson) Carmichael

PLAGIOSPORA Kuckuck 1897
Plagiospora gracilis Kuckuck
 [Requires further investigation.]

Family Haemeschariaceae R.T.Wilce & Maggs 1989

HAEMESCHARIA Kjellman 1883
Haemescharia henedyi (Harvey) K.L.Vinogradova &
 T.Yacovleva

Family Kallymeniaceae (J.Agardh) Kylin 1928

CALLOCOLAX F.Schmitz ex Batters 1895
Callocolax neglectus F.Schmitz ex Batters

CALLOPHYLLIS Kützing 1843
Callophyllis laciniata (Hudson) Kützing

EUTHORA J.Agardh 1847
Euthora cristata (C.Agardh) J.Agardh
 [As *Callophyllis cristata* (C.Agardh) Kützing in Hardy &
 Guiry (2006)]

KALLYMENIA J.Agardh 1842
Kallymenia reniformis (Turner) J.Agardh

MEREDITHIA J.Agardh 1892
Meredithia microphylla (J.Agardh) J.Agardh

Family Nemastomataceae F.Schmitz 1892, *nom. cons.*

ITONOA Masuda & Guiry 1995
Itonoa marginifera (J.Agardh) Masuda & Guiry

Family Peyssonneliaceae Denizot 1968

PEYSSONNELIA J.Decaisne 1841 ['PEYSSONNELIA']
Peyssonnelia armorica (P.L.Crouan & H.M.Crouan)
 Weber-van Bosse
Peyssonnelia atropurpurea P.L.Crouan & H.M.Crouan
Peyssonnelia dubyi P.L.Crouan & H.M.Crouan
Peyssonnelia harveyana P.L.Crouan & H.M.Crouan ex
 J.Agardh
Peyssonnelia immersa Maggs & L.M.Irvine

Family Schmitziellaceae Guiry, Garbary & G.W.Saunders 2012

SCHMITZIELLA Bornet & Batters 1892
Schmitziella endophloea Bornet & Batters
 [Included in the Acrochaetiales by Hardy & Guiry (2003)
 and other authors; transferred to a new family
 provisionally referred to the Gigartinales in Guiry (2012).]

Family Solieriaceae J.Agardh 1876

SARCODIOTHECA Kylin 1932
Sarcodiotheca gaudichaudii (Montagne) P.W.Gabrielson
 [Non-native; Table 3.]

SOLIERIA J.Agardh 1842
Solieria chordalis (C.Agardh) J.Agardh
 [Non-native; Table 3.]

Family Phylloporaceae Rabenhorst 1863

AHNFELTIOPSIS P.C.Silva & DeCew 1992
Ahnfeltiopsis devoniensis (Greville) P.C.Silva & DeCew

COCCOTYLUS Kützing 1843
Coccotylus brodiei (Turner) Kützing
Coccotylus hartzii (Rosenvinge) L.Le Gall & G.W.Saunders
 [As *Ceratocolax hartzii* Rosenvinge in Hardy & Guiry
 (2003).]

ERYTHRODERMIS Batters 1900
Erythrodermis traillii (Holmes ex Batters) Guiry & Garbary

GYMNOGONGRUS C.Martius 1833
Gymnogongrus crenulatus (Turner) J.Agardh
Gymnogongrus griffithsiae (Turner) C.Martius

MASTOCARPUS Kützing 1843
Mastocarpus stellatus (Stackhouse) Guiry

PHYLLOPHORA Greville 1830, *nom. cons.*
Phyllophora crispa (Hudson) P.S.Dixon
Phyllophora pseudoceranooides (S.G.Gmelin) Newroth &
 A.R.A.Taylor
Phyllophora sicula (Kützing) Guiry & L.M.Irvine

SCHOTTERA Guiry & Hollenberg 1975
Schottera nicaeënsis (J.V.Lamouroux ex Duby) Guiry &
 Hollenberg

STENOGRAMMA Harvey 1840
Stenogramma interruptum (C.Agardh) Montagne ex Harvey
 [Non-native; [Table 3.](#)]

Family Polyidaceae Kylin 1956, *nom. cons.*

POLYIDES C.Agardh 1822
Polyides rotunda (Hudson) Gaillon
 ['rotundus' in earlier works]

Family Schizymeniaceae (F.Schmitz & Hauptfleisch) Masuda
 & Guiry 1995

SCHIZYMENIA J.Agardh 1851, *nom. et typ. cons.*
Schizymenia dubyi (Chauvin ex Duby) J.Agardh

Family Sphaerococcaceae Dumortier 1822

SPHAEROCOCCUS Stackhouse 1797
Sphaerococcus coronopifolius Stackhouse

Order Plocamiales G.W.Saunders & Kraft 1994

Family Plocamiaceae Kützing 1843 *nom. cons.*

PLOCAMIUM J.V.Lamouroux 1813, *nom. cons.*
Plocamium cartilagineum (Linnaeus) P.S.Dixon
 **Plocamium lyngbyanum* Kützing
 [Partly included in *P. cartilagineum* in Hardy & Guiry
 (2003) and earlier authors; see Saunders & Lehmkuhl
 (2005) and Cremades *et al.* (2011).]
 **Plocamium maggsiae* G.W.Saunders & Lehmkuhl
 [New species described since Hardy & Guiry (2003); see
 Saunders & Lehmkuhl (2005).]

Order Rhodymeniales F.Schmitz 1892

Family Champiaceae Kützing 1843

CHAMPIA Desvaux 1809
Champia parvula (C.Agardh) Harvey

CHYLOCLADIA Greville 1833, *nom. cons.*
Chylocladia verticillata (Lightfoot) Bliding

GASTROCLONIUM Kützing 1843, *nom. cons.*
Gastroclonium ovatum (Hudson) Papenfuss
Gastroclonium reflexum (Chauvin) Kützing

Family Lomentariaceae J.Agardh, 1876 *nom. cons.*

LOMENTARIA Lyngbye 1819
Lomentaria articulata (Hudson) Lyngbye
Lomentaria clavellosa (Turner) Gaillon
Lomentaria orcadensis (Harvey) F.S.Collins

Family Rhodymeniaceae Harvey 1849

CHRYSYMENIA J.Agardh 1842
 **Chrysymenia wrightii* (Harvey) Yamada
 [Non-native; [Table 3.](#)]

CORDYLECLADIA J.Agardh 1852
Cordylecladia erecta (Greville) J.Agardh

RHODYMENIA Greville 1830, *nom. et orth. cons.*

Rhodymenia ardissoni (Kuntze) Feldmann
Rhodymenia delicatula P.J.L.Dangeard
Rhodymenia holmesii Ardisson
Rhodymenia pseudopalmata (J.V.Lamouroux) P.C.Silva

Order Ceramiales Oltmanns 1904

Family Callithamniaceae Kützing 1843

Tribe Callithamnieae F.Schmitz & Hauptfleisch 1897

AGLAOTHAMNION Feldmann-Mazoyer 1941
Aglaothamnion bipinnatum (P.L.Crouan & H.M.Crouan)
 Feldmann & G.Feldmann
Aglaothamnion diaphanum L'Hardy-Halos & Maggs
Aglaothamnion feldmanniae Halos
 [Non-native; see [Table 3.](#)]
Aglaothamnion gallicum (Nägeli) Halos ex Ardré
Aglaothamnion hookeri (Dillwyn) Maggs & Hommersand
Aglaothamnion priceanum Maggs, Guiry & Rueness
Aglaothamnion pseudobyssoides (P.L.Crouan & H.M. Crouan)
 Halos
Aglaothamnion roseum (Roth) Maggs & L'Hardy-Halos
Aglaothamnion sepositum (Gunnerus) Maggs & Hommersand
Aglaothamnion tenuissimum (Bonnemaison) Feldmann-
 Mazoyer
Aglaothamnion tripinnatum (C.Agardh) Feldmann-Mazoyer

CALLITHAMNION Lyngbye 1819

Callithamnion corymbosum (Smith) Lyngbye
Callithamnion granulatum (Ducluzeau) C.Agardh
Callithamnion tetragonum (Withering) S.F.Gray
Callithamnion tetricum (Dillwyn) S.F.Gray

SEIROSPORA Harvey 1846

Seirospora interrupta (Smith) F.Schmitz

Tribe Crouanieae F.Schmitz & Hauptfleisch 1897

CROUANIA J.Agardh 1942

Crouania attenuata (C.Agardh) J.Agardh

Family Wrangeliaceae J.Agardh 1851**Tribe Bornetieae** Baldock & Womersley 1998

BORNETIA Thuret 1855

Bornetia secundiflora (J.Agardh) Thuret**Tribe Griffithsieae** F.Schmitz & Hauptfleisch 1897

ANOTRICHIMUM Nägeli 1862

Anotrichium barbatum (C.Agardh) Nägeli*Anotrichium furcellatum* (J.Agardh) Baldock[Non-native; [Table 3](#).]GRIFFITHSIA C.Agardh 1817, *nom. et orth. cons.**Griffithsia corallinoides* (Linnaeus) Trevisan*Griffithsia devoniensis* Harvey

HALURUS Kützing 1843

Halurus equisetifolius (Lightfoot) Kützing*Halurus flosculosus* (J.Ellis) Maggs & Hommersand**Tribe Monosporeae** F.Schmitz & Hauptfleisch 1897

MONOSPORUS Solier 1845

Monosporus pedicellatus (Smith) Solier**Tribe Ptiloteae** F.Schmitz & Hauptfleisch 1897PLUMARIA F.Schmitz 1896, *nom. cons.**Plumaria plumosa* (Hudson) KuntzePTILOTA C.Agardh 1817, *nom. cons.**Ptilota gunneri* P.C.Silva, Maggs & L.M.Irvine**Tribe Sphondylothamnieae** Feldmann-Mazoyer 1941

SPHONDYLOTHAMNION Nägeli 1862

Sphondylothamnion multifidum (Hudson) Nägeli**Tribe Spermiothamnieae** F.Schmitz 1889

PTILOTHAMNION Thuret 1863

Ptilothamnion pluma (Dillwyn) Thuret*Ptilothamnion sphaericum* (P.L.Crouan & H.M.Crouan ex J.Agardh) Maggs & Hommersand

SPERMOTHAMNION J.E.Areschoug 1847

Spermiothamnion repens (Dillwyn) Rosenvinge*Spermiothamnion strictum* (C.Agardh) Ardissonne**Tribe Spongoclonieae** F.Schmitz 1889PLEONOSPORIUM Nägeli 1862, *nom. cons.**Pleonosporium borneri* (Smith) Nägeli**Family Ceramiaceae** Dumortier 1822**Subfamily Ceramioideae** De Toni 1903**Tribe Antithamnieae** Hommersand 1963

ANTITHAMNION Nägeli 1847

Antithamnion cruciatum (C.Agardh) Nägeli*Antithamnion villosum* (Kützing) Athanasiadis**Tribe Ceramiaceae** F.Schmitz & Hauptfleisch 1897CERAMIUM Roth 1797, *nom et typ. cons.**Ceramium botryocarpum* A.W.Griffiths ex Harvey*Ceramium ciliatum* (J.Ellis) Ducluzeau*Ceramium cimbricum* H.E.Petersen*Ceramium circinatum* (Kützing) J.Agardh[Non-native; [Table 3](#).]*Ceramium deslongchampsii* Chauvin ex Duby*Ceramium diaphanum* (Lightfoot) Roth*Ceramium echionotum* J.Agardh*Ceramium gaditanum* (Clemente) Cremades*Ceramium pallidum* (Nägeli ex Kützing) Maggs &

Hommersand

Ceramium secundatum Lyngbye*Ceramium shuttleworthianum* (Kützing) Rabenhorst*Ceramium siliquosum* (Kützing) Maggs & Hommersand*Ceramium virgatum* Roth

GAYLIELLA T.O.Cho, L.J.McIvor & S.M.Boo 2008

Gayliella flaccida (Harvey ex Kützing) T.O.Cho & L.J.McIvor[As *Ceramium flaccidum* (Harvey ex Kützing) Ardissonne in Hardy & Guiry (2003); see Cho *et al.* (2008).]

MICROCLADIA Greville 1830

Microcladia glandulosa (Solander ex Turner) Greville**Tribe Dohrnilleae** Feldmann-Mazoyer 1941

ANTITHAMNIONELLA Lyle 1922

Antithamnionella floccosa (O.F.Müller) Whittick*Antithamnionella spirographidis* (Schiffner) E.M. Wollaston[Non-native; [Table 3](#).]*Antithamnionella ternifolia* (J.D.Hooker & Harvey) Lyle[Non-native; [Table 3](#).]**Tribe Pterothamnieae** Athanasiadis 1996

PTEROTHAMNION Nägeli 1855

Pterothamnion crispum (Ducluzeau) Nägeli*Pterothamnion plumula* (J.Ellis) Nägeli*Pterothamnion polyacanthum* (Kützing) Nägeli**Tribe Scagelieae** Athanasiadis 1996

SCAGELIA E.M.Wollaston 1972

Scagelia pylaisaei (Montagne) M.J.Wynne**Tribe Scagelothamnieae** Athanasiadis 1996

SCAGELOTHAMNION Athanasiadis 1996

Scagelothamnion pusillum (Ruprecht) Athanasiadis**Subfamily Compsiothamnioideae** De Toni 1903

COMPSIOTHAMNION (Nägeli) F.Schmitz 1889

Compsiothamnion decompositum (J.Agardh) Maggs &

L'Hardy-Halos

Compsiothamnion gracillimum De Toni*Compsiothamnion thuyoides* (Smith) Nägeli

Family Spyridiaceae J.Agardh 1851

Tribe Spyrideae F.Schmitz & P.Hauptfleisch 1897

SPYRIDIA Harvey 1833

Spyridia filamentosa (Wulfen) Harvey

**Spyridia griffithsiana* (J.E.Smith) Zuccarello, Prud'homme van Reine & Stegenga

[Included in *Spyridia filamentosa* in Hardy & Guiry (2003, 2006); since reinstated, see Zuccarello *et al.* (2004).]

Family Dasyaceae Kützing 1843

Subfamily Dasyoideae F.Schmitz & Falkenberg 1897

DASYA C.Agardh 1824, *nom. cons.*

Dasya corymbifera J.Agardh

Dasya hutchinsiae Harvey

Dasya ocellata (Grateloup) Harvey

Dasya punicea (Zanardini) Meneghini ex Zanardini

DASYSIPHONIA (Yendo) H.-S.Kim

**Dasyasiphonia japonica* (Yendo) H.-S.Kim

[Previously known as *Heterosiphonia japonica* Yendo. Non-native; Table 3.]

Subfamily Heterosiphonioideae H.-G.Choi, Kraft, I.K.Lee & G.W.Saunders 2002

HETEROSIPHONIA Montagne 1842, *nom. cons.*

Heterosiphonia plumosa (J.Ellis) Batters

Family Delesseriaceae Bory de Saint-Vincent 1828

Subfamily Delesserioideae Stizenberger 1860

Tribe Apoglosseae S.-M.Lin, Fredericq & Hommersand 2012

APOGLOSSOCOLAX Maggs & Hommersand, 1993

Apoglossocolax pusilla Maggs & Hommersand

APOGLOSSUM J.Agardh 1898

Apoglossum ruscifolium (Turner) J.Agardh

Tribe Delesserieae J.Agardh 1841

DELESSERIA J.V.Lamouroux 1813, *nom. cons.*

Delesseria sanguinea (Hudson) J.V.Lamouroux

MEMBRANOPTERA Stackhouse 1809

Membranoptera alata (Hudson) Stackhouse

[*Pantoneura angustissima* (Turner) Kylin was included by Athanasiadis (1996) in the synonymy of *M. alata*. Maggs & Hommersand (1993, p. 199) had previously suggested that the species may be a growth form of *M. alata* but considered that further studies were required.]

Tribe Hypoglosseae M.J.Wynne 2001

HYPOGLOSSUM Kützing 1843

Hypoglossum hypoglossoides (Stackhouse) F.S.Collins & Hervey

Subfamily Nitophylloideae De Toni 1903

Tribe Nitophylleae J.Agardh 1897

NITOPHYLLUM Greville 1830, *nom. cons.*

Nitophyllum punctatum (Stackhouse) Greville

RADICILINGUA Papenfuss 1956

Radicilingua thysanorhizans (Holmes) Papenfuss

Subfamily Phycodryoideae S.-M.Lin, Fredericq & Hommersand 2001

Tribe Cryptopleureae M.J.Wynne 2001

ACROSORIUM Zanardini ex Kützing 1869

Acrosorium ciliolatum (Harvey) Kylin

[Described from Western Australia; included in Hardy & Guiry (2003) and Guiry (2012) as *Acrosorium venulosum* (Zanardini) Kylin, from the Adriatic; the whole species complex requires further investigation.]

CRYPTOPLEURA Kützing 1843 *nom. cons.*

Cryptopleura ramosa (Hudson) Lily Newton

GONIMOPHYLLUM Batters 1892

Gonimophyllum buffhamii Batters

Tribe Myriogrammeae Hommersand & Fredericq 1997

HARALDIOPHYLLUM Zinova 1981

Haraldiophyllum bonnemaisonii (Kylin) Zinova

MYRIOGRAMME Kylin 1924

Myriogramme minuta Kylin

[As *Drachiella minuta* (Kylin) Maggs & Hommersand in Hardy & Guiry (2003).]

Tribe Phycodryae M.J.Wynne 2001

ASTEROCOLAX Feldmann & G.Feldmann 1951

Asterocolax erythroglossi Feldmann & G.Feldmann

ERYTHROGLOSSUM J.Agardh 1898

Erythroglossum laciniatum (Lightfoot) Maggs & Hommersand

PHYCODRYS Kützing 1843

Phycodrys rubens (Linnaeus) Batters

POLYNEURA Kützing 1843

Polyneura bonnemaisonii (C.Agardh) Maggs & Hommersand

Tribe Schizoserideae Hommersand & Fredericq 1997

DRACHIELLA J.Ernst & Feldmann 1957

Drachiella heterocarpa (Chauvin ex Duby) Maggs & Hommersand

Drachiella spectabilis J.Ernst & Feldmann

Family Rhodomelaceae J.E.Areschoug 1847, *nom. cons.*

Subfamily Bostrychioideae Hommersand 1963

Tribe Bostrychieae Falkenberg 1901

BOSTRYCHIA Montagne 1942, *nom. cons.*

Bostrychia scorpioides (Hudson) Montagne

Subfamily Rhodomeloideae Hommersand 1963

Tribe Rhodomeleae Schmitz & Falkenberg 1897

HARVEYELLA F.Schmitz & Reinke 1889

Harveyella mirabilis (Reinsch) F.Schmitz & Reinke

[Listed with the Gigartinales in Hardy & Guiry (2003).]

ODONTHALIA Lyngbye 1819 *nom. cons.*
Odonthalia dentata (Linnaeus) Lyngbye

RHODOMELA C.Agardh 1822, *nom. cons.*
Rhodomela confervoides (Hudson) P.C.Silva
Rhodomela lycopodioides (Linnaeus) C.Agardh

Tribe Brongniartelleae M.J.Parsons 1975

BRONGNIARTELLA Bory de Saint-Vincent 1822
Brongniartella byssoides (Goodenough & Woodward)
F.Schmitz

Tribe Amansieae F.Schmitz 1889

HALOPITHYS Kützing 1843
Halopithys incurva (Hudson) Batters
[Reported as '*Halopitys incurvus*' by previous authors. The genus name, however, is feminine in gender as *πίτυς* (*pithys*, a pine, also a goddess who turned into a pine) is feminine.]

Tribe Polysiphonieae F.Schmitz 1889

BOERGESENIELLA Kylin 1956
Boergeseniella fruticulosa (Wulfen) Kylin
Boergeseniella thuyoides (Harvey) Kylin

CHOREOCOLAX Reinsch 1875
Choreocolax polysiphoniae Reinsch
[Listed with the Gigartinales in Hardy & Guiry (2003).]

LOPHOSIPHONIA Falkenberg 1897
Lophosiphonia reptabunda (Suhr) Kylin

NEOSIPHONIA M.-S.Kim & I.K.Lee 1999
Neosiphonia harveyi (J.W.Bailey) M.-S.Kim, H.-G.Choi, Guiry & G.W.Saunders
[As *Polysiphonia harveyi* J.W.Bailey in Hardy & Guiry (2003). Non-native; Table 3.]
Neosiphonia elongella (Harvey) M.-S.Kim & I.K.Lee
[As *Polysiphonia elongella* Harvey in Hardy & Guiry (2003).]

POLYSIPHONIA Greville 1823, *nom. et typ. cons.*
Polysiphonia atlantica Kapraun & J.N.Norris
Polysiphonia brodiei (Dillwyn) Sprengel [*'brodiaei'*]
Polysiphonia ceramiiformis P.L.Crouan & H.M.Crouan [*'ceramiaeformis'*]
Polysiphonia denudata (Dillwyn) Greville ex Harvey
Polysiphonia devoniensis Maggs & Hommersand
Polysiphonia elongata (Hudson) Sprengel
Polysiphonia fibrata (Dillwyn) Harvey
Polysiphonia fibrillosa (Dillwyn) Sprengel
Polysiphonia foetidissima Cocks ex Bornet
Polysiphonia fucoides (Hudson) Greville
Polysiphonia furcellata (C.Agardh) Harvey
Polysiphonia nigra (Hudson) Batters
Polysiphonia opaca (C.Agardh) Moris & De Notaris
Polysiphonia simulans Harvey
Polysiphonia stricta (Dillwyn) Greville
Polysiphonia subtilissima Montagne
[Non-native; Table 3.]
Polysiphonia subulifera (C.Agardh) Harvey

VERTEBRATA S.F.Gray 1821
Vertebrata lanosa (Linnaeus) T.A.Christensen
[As *Polysiphonia lanosa* (Linnaeus) Tandy in Hardy & Guiry (2003).]

Tribe Pterosiphonieae Falkenberg 1901

PTEROSIPHONIA Falkenberg 1897
Pterosiphonia ardreana Maggs & Hommersand
Pterosiphonia complanata (Clemente) Falkenberg
Pterosiphonia parasitica (Hudson) Falkenberg
Pterosiphonia pennata (C.Agardh) Sauvageau
Pterosiphonia pinnulata (Kützing) Maggs & Hommersand

Tribe Chondrieae F.Schmitz & Falkenberg 1897

CHONDRIA C.Agardh 1817, *nom. cons.*
Chondria capillaris (Hudson) M.J.Wynne
Chondria coerulescens (J.Agardh) Falkenberg
Chondria dasyphylla (Woodward) C.Agardh

Tribe Laurencieae F.Schmitz 1889

LAURENCIA J.V.Lamouroux 1813, *nom. cons.*
Laurencia obtusa (Hudson) J.V.Lamouroux
Laurencia pyramidalis Bory de Saint-Vincent ex Kützing

OSMUNDEA Stackhouse 1809
Osmundea hybrida (A.P.de Candolle) K.W.Nam
Osmundea oederi (Gunnerus) G.Furnari
[Included as '*Osmundea ramosissima* (Oeder) Athanasiadis' in Hardy & Guiry (2003).]
Osmundea osmunda (S.G.Gmelin) K.W.Nam & Maggs
Osmundea pinnatifida (Hudson) Stackhouse
Osmundea truncata (Kützing) K.W.Nam & Maggs

CHLOROPHYTA Pascher 1914

Class Trebouxiophyceae Friedl 1995
Order Prasiolales J.H.Schaffner 1922
Family Prasiolaceae F.F.Blackman & Tansley 1902

PRASIOLA (C.Agardh) Meneghini 1838
Prasiola calophylla (Carmichael ex Greville) Kützing
Prasiola crispa (Lightfoot) Kützing
Prasiola furfuracea (Mertens ex Hornemann) Trevisan
Prasiola stipitata Suhr ex Jessen

ROSENVINGIELLA P.C.Silva 1957
Rosenvingiella polyrhiza (Rosenvinge) P.C.Silva
**Rosenvingiella radicans* (Kützing) Rindi, McIvor & Guiry
[Not listed by Hardy & Guiry (2003) but noted in text for *R. polyrhiza* map; later confirmed from Britain by Rindi et al. (2004).]

STICHOCOCCUS Nägeli 1849
Stichococcus bacillaris Nägeli
[Included in the Klebsormidiales in Hardy & Guiry (2003).]

Class Ulvophyceae Mattox & K.D.Stewart 1984
Order Cladophorales Haeckel 1894
Family Cladophoraceae Wille 1884, *nom. cons.*

AEGAGROPILA Kützing 1843*Aegagropila linnaei* Kützing[As *Cladophora aegagropila* (Linnaeus) Trevisan in Hardy & Guiry (2003).]**CHAETOMORPHA** Kützing 1845, *nom. cons.**Chaetomorpha aerea* (Dillwyn) Kützing**Chaetomorpha ligustica* (Kützing) Kützing

[Requires further investigation; see Guiry (2012).]

Chaetomorpha linum (O.F.Müller) Kützing[*Chaetomorpha crassa* (C.Agardh) Kützing included as a synonym in Leliaert & Boedeker (2007); see Guiry (2012).]*Chaetomorpha litorea* Harvey*Chaetomorpha melagonium* (F.Weber & D.Mohr) Kützing**CLADOPHORA** Kützing 1845, *nom. cons.**Cladophora albida* (Nees) Kützing*Cladophora battersii* Hoek*Cladophora coelothrix* Kützing*Cladophora dalmatica* Kützing*Cladophora flexuosa* (O.F.Müller) Kützing**Cladophora fracta* (O.F.Müller ex Vahl) Kützing

[Freshwater species penetrating into brackish waters; see Leliaert & Boedeker (2007).]

Cladophora globulina (Kützing) Kützing**Cladophora glomerata* (Linnaeus) Kützing

[Freshwater species penetrating into brackish waters; see Leliaert & Boedeker (2007).]

Cladophora hutchinsiae (Dillwyn) Kützing*Cladophora laetevirens* (Dillwyn) Kützing*Cladophora lehmanniana* (Lindenberg) Kützing*Cladophora liniformis* Kützing*Cladophora pellucida* (Hudson) Kützing*Cladophora prolifera* (Roth) Kützing*Cladophora pygmaea* Reinke*Cladophora retroflexa* (Bonnemaison ex P.L.Crouan & H.M.Crouan) Hamel**Cladophora rhodolithicola* Leliaert[Recently described species; see Leliaert *et al.* (2009).]*Cladophora rupestris* (Linnaeus) Kützing*Cladophora sericea* (Hudson) Kützing*Cladophora vagabunda* (Linnaeus) Hoek**RHIZOCLONIUM** F.T. Kützing 1843*Rhizoclonium riparium* (Roth) Harvey**WITTROCKIELLA** Wille 1909*Wittrockiella amphibia* (Collins) C.Boedeker & G.I.Hansen[As *Wittrockiella paradoxa* Wille in Hardy & Guiry (2003).]**Class Bryopsidophyceae** Bessey 1907**Order Bryopsidales** J.H.Schaffner 1922**Family Chaetosiphonaceae** F.F.Blackman & Tansley 1902**BLASTOPHYSA** Reinke 1889

[Taxonomic placement uncertain.]

Blastophysa rhizopus Reinke**Family Bryopsidaceae** Bory de Saint-Vincent 1829**BRYOPSIS** J.V.Lamouroux 1809*Bryopsis hypnoides* J.V.Lamouroux*Bryopsis plumosa* (Hudson) C.Agardh**Family Codiaceae** Kützing 1843**CODIUM** Stackhouse 1797*Codium adhaerens* C.Agardh*Codium bursa* (Olivi) C.Agardh*Codium fragile* subsp. *atlanticum* (Cotton) P.C.Silva

[Previously considered to be non-native, but recently shown to be native.]

Codium fragile (Suringar) Hariot subsp. *fragile* (Maggs & Kelly, 2007)

[Non-native; Table 3.]

Codium tomentosum Stackhouse*Codium vermilara* (Olivi) Delle Chiaje**Family Derbesiaceae** Hauck 1884**DERBESIA** Solier 1846*Derbesia marina* (Lyngbye) Solier*Derbesia tenuissima* (Moris & De Notaris) P.L.Crouan & H.M.Crouan**Family Ostreobiaceae** P.C.Silva ex Maggs & J.Brodie 2007**OSTREOBIUM** Bornet & Flahault 1889*Ostreobium quekettii* Bornet & Flahault**CHARACIUM** A.Braun 1849*Characium marinum* Kjellman**CHLOROCHYTRIUM** Cohn 1872*Chlorochytrium cohnii* E.P.Wright

[Listed with the Chlorococcales in Hardy & Guiry (2003).]

Chlorochytrium dermatocolax Reinke

[Listed with the Chlorococcales in Hardy & Guiry (2003).]

CHLOROCOCCUM Meneghini 1842*Chlorococcum submarinum* Älvik**SYKIDION** E.P.Wright 1881*Sykidion dyeri* E.P.Wright**Order Ulotrichales** Borzi 1895**Family Chlorocystidaceae** Kornmann & Sahling 1983**HALOCHLOROCOCCUM** P.J.L.Dangeard 1965, *nom. inval.**Halochlorococcum moorei* (N.L.Gardner) Kornmann & Sahling, *nom. inval.*

[Included in the Chlorocistidales in Hardy & Guiry (2003).]

Family Ulotrichaceae Kützing 1843**ACROSIPHONIA** J.Agardh 1846*Acrosiphonia arcta* (Dillwyn) Gain

[Included in the Acrosiphoniales in Hardy & Guiry (2003); see Brodie & Bunker (2007).]

SPONGOMORPHA Kützing 1843*Spongomorpha aeruginosa* (Linnaeus) Hoek

[Included in the Acrosiphoniales in Hardy & Guiry (2003); see Brodie & Bunker (2007).]

ULOTHRIX Kützing 1833

Ulothrix flacca (Dillwyn) Thuret

Ulothrix implexa (Kützing) Kützing

Ulothrix speciosa (Carmichael) Kützing

Ulothrix subflaccida Wille

UROSPORA J.E.Areschoug 1866, *nom. cons.*

Urospora penicilliformis (Roth) J.E.Areschoug

Urospora wormskioldii (Mertens ex Hornemann)

Rosenvinge

Order Scotinosphaerales Škaloud, Kalina, Nemjová, De Clerck & Leliaert 2013

Family Scotinophaeaceae Škaloud, Kalina, Nemjová, De Clerck & Leliaert 2013

SCOTINOSPHAERA Klebs 1881

Scotinosphaera paradoxa Klebs

[Included in the Chlorococcales as *Chlorochytrium facciolae* (Borzi) Bristol in Hardy & Guiry (2003).]

Order Ulvales F.F.Blackman & Tansley 1902

Family Bolbocoleaceae ['**Bolbocoleonaceae**'] O'Kelly & Rinkel 2007

BOLBOCOLEON N.Pringsheim 1863

Bolbocoleon piliferum N.Pringsheim

[Included in the Chaetophorales in Hardy & Guiry (2003); see O'Kelly *et al.* (2007).]

Family Capsosiphonaceae V.J.Chapman 1952

CAPSOSIPHON Gobi 1879

Capsosiphon fulvescens (C.Agardh) Setchell & N.L.Gardner

Family Gayraliaceae K.L.Vinogradova 1969

GAYRALIA K.L.Vinogradova 1969

Gayralia oxysperma (Kützing) K.L.Vinogradova ex Scagel *et al.*

[As *Monostroma oxyspermum* (Kützing) Doty in Hardy & Guiry (2003).]

PROTOMONOSTROMA K.L.Vinogradova 1969

Protomonostroma undulatum (Wittrock) K.L. Vinogradova

Family Gomontiaceae De Toni 1889

EUGOMONTIA Kornmann 1960

Eugomontia sacculata Kornmann

[Included in the Ulotrichales in Hardy & Guiry (2003); see John (2007).]

GOMONTIA Bornet & Flahault 1888

Gomontia polyrhiza (Lagerheim) Bornet & Flahault

[Included in the Chlorococcales in Hardy & Guiry (2003); see John (2007).]

MONOSTROMA Thuret 1854

Monostroma grevillei (Thuret) Wittrock

Family Kornmanniaceae Golden & K.M.Cole 1986

BLIDINGIA Kylin 1947

Blidingia marginata (J.Agardh) P.J.L.Dangeard ex Bliding

Blidingia minima (Nägeli ex Kützing) Kylin

PSEUDENDOCOLONIUM Wille 1901

**Pseudendoclonium dynamenae* R.Nielsen

[Now confirmed for Britain; see Nielsen (2007).]

Pseudendoclonium fucicola (Rosenvinge) R.Nielsen

[Included in the Chaetophorales in Hardy & Guiry (2003); see Maggs (2007).]

Pseudendoclonium submarinum Wille

[Included in the Chaetophorales in Hardy & Guiry (2003); see Maggs (2007).]

TELLAMIA Batters 1895

Tellamia contorta Batters

[Included in the Chaetophorales in Hardy & Guiry (2003); see Maggs (2007).]

Family Phaeophilaceae Chappell, O'Kelly, L.W.Wilcox & G.L.Floyd 1990

PHAEOPHILA Hauck 1876

Phaeophila dendroides (P.L.Crouan & H.M.Crouan) Batters

[Included in the Phaeophilales in Hardy & Guiry (2003); see Maggs (2007).]

Family Ulvaceae J.V.Lamouroux ex Dumortier 1822

OCHLOCHAETE Thwaites 1849

Ochlochaete hystrix Thwaites

PERCURSARIA Bory de Saint-Vincent 1823

Percursaria percursa (C.Agardh) Rosenvinge

RUTHNIELSENIA O'Kelly, Wysor & Bellows 2004

**Ruthnielsenia tenuis* (Kylin) O'Kelly, Wysor & Bellows

[Not listed by Hardy & Guiry (2003); see also Nielsen (2007).]

ULVA Linnaeus 1753, *nom. et typ. cons.*

**Ulva californica* Wille

[Not listed in Hardy & Guiry (2003); reported from Scotland by Hayden & Waaland (2004); potentially non-native; Table 3.]

Ulva clathrata (Roth) C.Agardh

[Included as a synonym of *Enteromorpha muscoides* (Clemente) Cremades in Hardy & Guiry (2003); see Maggs *et al.* (2007).]

Ulva compressa Linnaeus

[As *Enteromorpha compressa* (Linnaeus) Nees in Hardy & Guiry (2003).]

Ulva flexuosa Wulfen

[As *Enteromorpha flexuosa* (Wulfen) J.Agardh in Hardy & Guiry (2003).]

Ulva intestinalis Linnaeus

[As *Enteromorpha intestinalis* (Linnaeus) Nees in Hardy & Guiry (2003).]

**Ulva intestinaloides* (Koeman & Hoek) Hayden, Blomster, Maggs, P.C.Silva, M.J.Stanhope & J.R.Waaland

[Previously confused with other species of the genus; see Maggs *et al.* (2007).]

Ulva lactuca Linnaeusⁱⁱⁱ

[This name has been erroneously applied to other species of the genus.]

Ulva linza Linnaeus

[As *Enteromorpha linza* (Linnaeus) J.Agardh in Hardy & Guiry (2003).]

Ulva prolifera O.F.Müller

[As *Enteromorpha prolifera* (O.F.Müller) J.Agardh in Hardy & Guiry (2003).]

**Ulva pseudocurvata* Koeman & Hoek

[Previous confusion based on a misidentification of original material; see Maggs *et al.* (2007).]

Ulva ralfsii (Harvey) Le Jolis

[As *Enteromorpha ralfsii* Harvey in Hardy & Guiry (2006).]

Ulva rigida C.Agardh

[This name has been erroneously applied to other species of the genus.]

Ulva torta (Mertens) Trevisan

[As a synonym of *Enteromorpha prolifera* (O.F.Müller) J.Agardh in Hardy & Guiry (2006).]

ULVARIA Ruprecht 1850

Ulvaria obscura (Kützing) Gayral ex Bliding

[As *Monostroma obscurum* (Kützing) J.Agardh in Hardy & Guiry (2003).]

Ulvaria splendens (Ruprecht) K.L.Vinogradova

[As *Ulvaria fusca* Postels & Ruprecht in Hardy & Guiry (2003).]

UMBRAULVA E.H.Bae & I.K.Lee 2002

Umbraulva dangeardii M.J.Wynne & G.Furnari

[As *Umbraulva olivascens* (P.J.L.Dangeard) E.H.Bae & I.K.Lee, *nom. inval.*, in Hardy & Guiry (2003). Non-native; Table 3.]

Family Ulvellaceae Schmidle 1899

EPICLADIA Reinke 1889

Epicladia flustrae Reinke

Epicladia perforans (Huber) R.Nielsen

**Epicladia phillipsii* R.Nielsen.

[See Nielsen (2007).]

PSEUDOPRINGSHEIMIA Wille 1909

Pseudopringheimia confluens (Rosenvinge) Wille.

[Listed in the Chaetophorales in Hardy & Guiry (2003); see Nielsen (2007).]

ⁱⁱⁱThe type of *Ulva lactuca* Linnaeus (Linnaeus 1753) has been reported to be identical molecularly to the species currently known as *Ulva fasciata* Delile (see O'Kelly *et al.* 2010, and included references), a species originally described from Alexandria in Egypt (Delile 1813) that is not known in Britain. However, the species routinely determined as *U. lactuca* in the north-eastern Atlantic is clearly not the same as what is known as *U. fasciata* in the Mediterranean (Cormaci *et al.* 2014). While O'Kelly *et al.* (2010) have treated *U. fasciata* as a 'junior synonym' [heterotypic later synonym] of *U. lactuca*, this is only in terms of the molecular identity of the type of *U. lactuca*. The taxonomic issue may be best resolved by nomenclatural conservation of *Ulva lactuca* Linnaeus with a neotype consistent with its long-term morphotaxonomic identity in the north-eastern Atlantic.

SYNCORYNE R.Nielsen & P.M.Pedersen 1977

**Syncoryne reinkei* R.Nielsen & P.M.Pedersen

[Previously confused with *Ulvella scutata* (Reinke) R.Nielsen; see Nielsen (2007).]

ULVELLA P.L.Crouan & H.M.Crouan 1859

[See Nielsen *et al.* (2013).]

Ulvella heteroclada (J.A.Correa & R.Nielsen) R.Nielsen,

C.J.O'Kelly & B.Wysor

[As *Acrochaete heteroclada* J.A.Correa & R.Nielsen in Hardy & Guiry (2003).]

**Ulvella inflata* (Ercegovic) R.Nielsen, C.J.O'Kelly & B.Wysor

[Not included in Hardy & Guiry (2003); recorded from Britain; see Nielsen *et al.* (2007).]

Ulvella lens P.L.Crouan & H.M.Crouan

Ulvella leptochaete (Huber) R.Nielsen, O'Kelly & B.Wysor

[As *Entocladia leptochaete* (Huber) Burrows in Hardy & Guiry (2003).]

Ulvella operculata (J.A.Correa & R.Nielsen) R.Nielsen, O'Kelly

& B.Wysor

[As *Acrochaete operculata* J.A.Correa & R.Nielsen in Hardy & Guiry (2003).] *Ulvella repens* (Pringsheim) R.Nielsen,

O'Kelly & B.Wysor

[As *Acrochaete repens* Pringsheim in Hardy & Guiry

(2003).]

Ulvella scutata (Reinke) R.Nielsen, O'Kelly & B.Wysor

[As *Pringsheimiella scutata* (Reinke) Marchewianka in Hardy & Guiry (2003).]

**Ulvella setchellii* P.J.L.Dangeard

[Confirmed in Britain by Nielsen (2007).]

Ulvella viridis (Reinke) R.Nielsen, O'Kelly & B.Wysor

[As *Acrochaete viridis* (Reinke) R.Nielsen in Hardy & Guiry (2003).]

Ulvella wittrockii (Wille) R.Nielsen, O'Kelly & B.Wysor

[As *Acrochaete wittrockii* (Wille) R.Nielsen in Hardy & Guiry (2003).]

Order Sphaeropleales Luerssen 1877

Family Microsporaceae Bohlin 1901

MICROSPORA Thuret

Microspora ficulinae P.J.L.Dangeard

[Listed with the Microsporales in Hardy & Guiry (2003).]

PHAEOPHYCEAE Kjellman 1891

Order Sphacelariales Migula 1908

Family Cladostephaceae Oltmanns 1922

CLADOSTEPHUS C.Agardh 1817

[The genus *Cladostephus* was apparently formed from *κλάδος* (*clados*, a branch) and *στεππος* (*stephos*, a wreath or crown) (Newton, 1931); as *stephos* is neuter (Stearn, 1973), the genus should be treated as neuter since C. Agardh originally treated some of the species as neuter.]

Cladostephus spongiosum (Hudson) C.Agardh

Cladostephus spongiosum f. *verticillatum* (Lightfoot)

Prud'homme

[Now considered to be a distinct species provisionally called *C. hirsutum* (Linnaeus) C.-F.Boudouresque & M.Perret-Boudouresque (Heesch, pers. comm.).]

BATTERSIA Reinke ex Batters 1890

Battersia mirabilis Reinke ex Batters

[As *Sphacelaria mirabilis* (Reinke ex Batters) Prud'homme van Reine in Hardy & Guiry (2003).]

Battersia plumigera (Holmes ex Hauck) Draisma, Prud'homme & H. Kawai

[As *Sphacelaria plumigera* Holmes in Hardy & Guiry (2003).]

Battersia racemosa (Greville) Draisma, Prud'homme & H.Kawai

[As *Sphacelaria racemosa* Greville in Hardy & Guiry (2003).]

CHAETOPTERIS Kützing 1843

Chaetopteris plumosa (Lyngbye) Kützing

[As *Sphacelaria plumosa* Lyngbye in Hardy & Guiry (2003).]

SPHACELARIA Lyngbye 1819

Sphacelaria cirrosa (Roth) C.Agardh

Sphacelaria fusca (Hudson) S.F.Gray

Sphacelaria plumula Zanardini

Sphacelaria rigidula Kützing

Sphacelaria tribuloides Meneghini

SPHACELORBUS Draisma, Prud'homme van Reine & H.Kawai 2010

Sphacelorbis nanus (Nägeli ex Kützing) Draisma, Prud'homme & H.Kawai

[As *Sphacelaria nana* Nägeli ex Kützing in Hardy & Guiry (2003).]

Family Sphacelodermaceae Draisma, Prud'homme van Reine & H.Kawai 2010

SPHACELODERMA Kuckuck 1894

Sphaceloderma caespitulum (Lyngbye) Draisma, Prud'homme & H.Kawai

[As *Sphacelaria caespitula* Lyngbye in Hardy & Guiry (2003).]

Family Stypocaulaceae Oltmanns 1922

HALOPTERIS Kützing 1843

Halopteris filicina (Grateloup) Kützing

Halopteris scoparia (Linnaeus) Sauvageau

[As *Stypocaulon scoparium* (Linnaeus) Kützing in Hardy & Guiry (2003).]

PROTOHALOPTERIS Draisma, Prud'homme & H.Kawai 2010

Protohalopteris radicans (Dillwyn) Draisma, Prud'homme & H.Kawai

[As *Sphacelaria radicans* (Dillwyn) C.Agardh in Hardy & Guiry (2003).]

Order Dictyotales Bory de Saint-Vincent 1828

Family Dictyotaceae J.V.Lamouroux ex Dumortier 1822

Tribe Dictyoteae Greville 1833

DICTYOTA J.V.Lamouroux 1809 *nom. cons.*

Dictyota dichotoma (Hudson) J.V.Lamouroux

Dictyota spiralis Montagne

Tribe Zonarieae O.C.Schmidt 1938

DICTYOPTERIS J.V.Lamouroux 1809 *nom. cons.*

Dictyopteris polyodioides (A.P.De Candolle) J.V. Lamouroux

PADINA Adanson 1763 *nom. cons.*

Padina pavonica (Linnaeus) Thivy

TAONIA J.Agardh 1848

Taonia atomaria (Woodward) J.Agardh

Order Ectocarpales Bessey 1907

Family Acinetosporaceae G.Hamel ex Feldmann 1937

ACINETOSPORIA Bornet 1892

Acinetospora crinita (Carmichael) Sauvageau

FELDMANNIA G.Hamel 1939

Feldmannia irregularis (Kützing) G.Hamel

Feldmannia lebelii (J.E.Areschoug ex P.L.Crouan & H.M.Crouan) G.Hamel

Feldmannia mitchelliae (Harvey) H.-S.Kim

[As *Hincksia mitchelliae* (Harvey) P.C.Silva in Hardy & Guiry (2003).]

Feldmannia padinae (Buffham) G.Hamel

Feldmannia paradoxa (Montagne) G.Hamel

[Including *Feldmannia simplex* (P.L.Crouan & H.M.Crouan) G.Hamel.]

HERPONEMA J.Agardh 1882

Herponema solitarium (Sauvageau) G.Hamel

Herponema valiantei (Bornet ex Sauvageau) G.Hamel

Herponema velutinum (Greville) J.Agardh

HINCKSIA J.E.Gray 1864

Hincksia fenestrata (Berkeley ex Harvey) P.C.Silva

Hincksia granulosa (Smith) P.C.Silva

Hincksia hincksiae (Harvey) P.C.Silva

Hincksia ovata (Kjellman) P.C.Silva

Hincksia sandriana (Zanardini) P.C.Silva

Hincksia secunda (Kützing) P.C.Silva

KUETZINGIELLA Kornmann 1956

Kuetzingiella battersii (Bornet ex Sauvageau) Kornmann

Kuetzingiella holmesii (Batters) Kornmann

POGOTRICHUM Reinke 1892

Pogotrichum filiforme Reinke

PYLAIELLA Bory de Saint-Vincent 1823, *nom. cons.* [also as 'PILAYELLA']

Pylaiella littoralis (Linnaeus) Kjellman

Family Petrospongiaceae Racault, Fletcher, De Reviere, G.Y.Cho, S.M.Boo, Parente & F.Rousseau 2009

PETROSPONGIUM Nägeli ex Kützing 1858

Petrospongium berkeleyi (Greville) Nägeli ex Kützing

[Included with the Chordariaceae in Hardy & Guiry (2003).]

Family Chordariaceae Greville 1830

ACROTHRIX Kylin 1907

Acrothrix gracilis Kylin

- ASPEROCOCCUS J.V.Lamouroux 1813
Asperococcus bullosus J.V.Lamouroux
Asperococcus ensiformis (Delle Chiaje) M.J.Wynne
 [Asperococcus compressus A.W.Griffiths ex W.J.Hooker, included in Hardy & Guiry (2003) is now regarded as a synonym of this entity.]
Asperococcus fistulosus (Hudson) W.J.Hooker
Asperococcus scaber Kuckuck
- BOTRYTELLA Bory de Saint-Vincent 1822
Botrytella micromora Bory de Saint-Vincent
- CHILIONEMA Sauvageau 1898
Chilionema hispanicum (Sauvageau) R.L.Fletcher
Chilionema ocellatum (Kützing) Sauvageau
- CHORDARIA C.Agardh 1817 *nom. cons.*
Chordaria flagelliformis (O.F.Müller) C.Agardh
- CLADOSIPHON Kützing 1843
Cladosiphon contortus (Thuret) Kylin
Cladosiphon zosterae (J.Agardh) Kylin
- CORYNOPHLAEA Kützing 1843
Corynophlaea crispa (Harvey) Kuckuck
 **Corynophlaea umbellata* (C.Agardh) Kützing
 [Non native; see Table 3.]
- CYLINDROCARPUS P.L.Crouan & H.M.Crouan
Cylindrocarpus microscopicus P.L.Crouan & H.M.Crouan
- DICTYOSIPHON Greville 1830
Dictyosiphon chordaria J.E.Areschoug
 [As *Dictyosiphon chordarius* in Hardy & Guiry (2003).]
Dictyosiphon foeniculaceus (Hudson) Greville
- ELACHISTA Duby 1830 *nom. cons.*
Elachista flaccida (Dillwyn) Fries
Elachista fucicola (Volley) J.E.Areschoug
Elachista scutulata (Smith) Areschoug
Elachista stellaris J.E.Areschoug
- ENDODICTYON Gran 1897
Endodictyon infestans Gran
 [As *Streblonema infestans* (H.Gran) Batters in Hardy & Guiry (2003).]
- EUDESME J.Agardh 1882
Eudesme virescens (Carmichael ex Berkeley) J.Agardh
- GIRAUDYA Derbès & Solier 1851 [‘GIRAUDIA’]
Giraudya sphaclarioides Derbès & Solier
- HALOTHRIX Reinke 1888
Halothrix lumbricalis (Kützing) Reinke
- HECATONEMA Sauvageau 1898
Hecatonema terminale (Kützing) Kylin
 [As reported, this entity probably represents an aggregate of genotypes; see Fletcher (1987).]
- ISTHMOPLEA Kjellman 1877
Isthmoplea sphaerophora (Carmichael) Goby
- LAMINARIOCOLAX Kylin 1947
Laminariocolax aecidioides (Rosenvinge) A.F.Peters
Laminariocolax tomentosoides (Farlow) Kylin
- LEATHESIA S.F.Gray 1821
Leathesia marina (Lyngbye) Decaisne
 [As *Leathesia difformis* (Linnaeus) J.E.Areschoug in Hardy & Guiry (2003).]
- LEBLONDIELLA G.Hamel 1939
Leblondiella densa (Batters) G.Hamel
- LEPTONEMATELLA P.C.Silva 1959 *nom. cons.*
Leptonematella fasciculata (Reinke) P.C.Silva
- LITOSIPHON Harvey 1849
Litosiphon laminariae (Lyngbye) Harvey
- MESOGLOIA C.Agardh 1817
Mesogloia lanosa P.L.Crouan & H.M.Crouan
Mesogloia leveillei (J.Agardh) Meneghini
 [As *Liebmannia leveillei* J.Agardh in Hardy & Guiry (2003); see Cormaci *et al.* 2014.]
Mesogloia vermiculata (Smith) S.F.Gray
- MICROCORYNE Strömfelt 1888
Microcoryne ocellata Strömfelt
- MICROSPONGIUM Reinke 1888
Microspongium gelatinosum Reinke
 [Probably a life-history phase of *Scytosiphon lomentaria* (Fletcher in Hardy & Guiry, 2006).]
Microspongium globosum Reinke 1841
Microspongium immersum (Levring) P.M.Pedersen
Microspongium stilophorae (P.L.Crouan & H.M.Crouan) Cormaci & G.Furnari
 [As *Streblonema tenuissimum* Hauck in Hardy & Guiry (2003).]
- MIKROSYPHAR Kuckuck 1897
Mikrosyphar polysiphoniae Kuckuck
Mikrosyphar porphyrae Kuckuck
- MYRIACTULA Kuntze 1898
Myriactula areschougii (P.L.Crouan & H.M.Crouan) G.Hamel
Myriactula chordae (J.E.Areschoug) Levring
Myriactula clandestina (P.L.Crouan & H.M.Crouan) Feldmann
Myriactula haydenii (Gatty) Levring
Myriactula rivulariae (Suhr) Feldmann
Myriactula stellulata (Harvey) Levring
- MYRIOCLADIA J.Agardh
Myriocladia lovenii J.Agardh
Myriocladia tomentosa P.L.Crouan & H.M.Crouan
- MYRIONEMA Greville 1827
Myrionema corunnae Sauvageau
Myrionema foecundum (Strömfelt) Sauvageau
 [As *Phycocelis foecunda* Strömfelt in Hardy & Guiry (2003); see Cormaci *et al.*, 2014).]
Myrionema liechtensternii Hauck

Myrionema magnusii (Sauvageau) Loiseaux
Myrionema orbiculare J.Agardh
Myrionema papillosum Sauvageau
Myrionema strangulans Greville

MYRIOTRICHIA Harvey 1834
Myriotrichia claviformis Harvey
 [As '*clavaeformis*' in Hardy & Guiry (2003).]

PROTECTOCARPUS Kornmann 1955
Protectocarpus speciosus (Børgesen) Kornmann

PUNCTARIA Greville 1827
Punctaria crispata (Kützing) Trevisan
Punctaria latifolia Greville
 [Parente *et al.* (2010) consider that *P. latifolia* and *P. tenuissima* are conspecific, but further studies of *P. latifolia* from syntype localities in Britain and Ireland are required.]
Punctaria plantaginea (Roth) Greville
Punctaria tenuissima (C.Agardh) Greville

SAUVAGEAUGLOIA G.Hamel ex Kylin 1940
Sauvageaugloia divaricata (Clemente) Cremades
 [Included as *Sauvageaugloia griffithsiana* (A.W.Griffiths ex Harvey) G.Hamel ex Kylin in Hardy & Guiry (2003) but now regarded as a synonym of this species.]

SPERMATOCHNUS Kützing 1843 *typ. cons.*
Spermatochnus paradoxus (Roth) Kützing

SPHAEROTRICHIA Kylin 1940
Sphaerotrichia divaricata (C.Agardh) Kylin

STICTYOSIPHON Kützing 1843
Stictyosiphon griffithsianus (Le Jolis) Holmes & Batters
Stictyosiphon soriferus (Reinke) Rosenvinge
Stictyosiphon tortilis (Gobi) Reinke

STILOPHORA J.Agardh 1841 *nom. et typ. cons.*
Stilophora tenella (Esper) P.C.Silva

STILOPSIS Kuckuck 1929
Stilopsis lejolisii (Thuret) Kuckuck & Nienburg ex G.Hamel

STREBLONEMA Derbès & Solier 1851
Streblonema breve (Sauvageau) De Toni
Streblonema fasciculatum Thuret
Streblonema helophorum (Rosenvinge) Batters
Streblonema intestinum (Reinsch) Batters
Streblonema parasiticum (Sauvageau) De Toni
Streblonema zanardinii (P.L.Crouan & H.M.Crouan) De Toni

STRIARIA Greville 1828
Striaria attenuata (Greville) Greville

ULONEMA Foslie 1894
Ulonema rhizophorum Foslie

Family Ectocarpaceae C.Agardh 1828

ECTOCARPUS Lyngbye 1819 *nom. cons.*
Ectocarpus fasciculatus Harvey

Ectocarpus siliculosus (Dillwyn) Lyngbye

PHAEOSTROMA Kuckuck 1893
Phaeostroma pustulosum Kuckuck
 [Listed with the Chordariaceae in Hardy & Guiry (2003).]

PILINIA Kützing 1843
Pilinia rimosa Kützing
 [Listed as *incertae sedis* in Hardy & Guiry (2003).]

SPONGONEMA Kützing 1849
Spongonema tomentosum (Hudson) Kützing
 [Listed with the Chordariaceae in Hardy & Guiry (2003).]

Family Scytosiphonaceae Farlow 1881

COLPOMENIA (Endlicher) Derbès & Solier 1851
Colpomenia peregrina Sauvageau
 [Non-native; Table 3.]

COMPSONEMA Kuckuck 1899
Compsomena microspongiium (Batters) Kuckuck
Compsomena minutum (C.Agardh) Kuckuck
Compsomena saxicola (Kuckuck) Kuckuck

PETALONIA Derbès & Solier 1850, *nom. cons.*
Petalonia fascia (O.F.Müller) Kuntze
Petalonia filiformis (Batters) Kuntze
Petalonia zosterifolia (Reinke) Kuntze

SCYTOSIPHON C.Agardh 1820
Scytosiphon dotyi M.J.Wynne
 [The entity reported from Britain as *Scytosiphon dotyi* has a limited distribution in England and its identity remains uncertain. It was first described from California (Wynne, 1969), and British populations require further study.]
Scytosiphon lomentaria (Lyngbye) Link

SORAPION Kuckuck 1894
Sorapion kjellmanii (Wille) Rosenvinge
Sorapion simulans Kuckuck

STRAGULARIA Strömfelt 1886
 [While species of *Stragularia* are crustose stages of members of the Scytosiphonaceae (*Petalonia* and *Scytosiphon*), the species reported from Britain are not identifiable with any particular entity.]
Stragularia clavata (Harvey) G.Hamel
Stragularia spongiocarpa (Batters) G.Hamel

SYMPHYOCARPUS Rosenvinge 1893
Symphycarpus strangulans Rosenvinge

Order Discosporangiales O.C.Schmidt 1937
Family Choristocarpaceae Kjellman 1891

CHORISTOCARPUS Zanardini 1860
Choristocarpus tenellus Zanardini
 [Listed as *incertae sedis* in Hardy & Guiry (2003).]

Order Ralfsiales Nakamura ex P.-E.Lim & H.Kawai 2007
Family Ralfsiaceae Farlow 1881

PETRODERMA Kuckuck 1897
Petroderma maculiforme (Wollny) Kuckuck

PSEUDOLITHODERMA Svedelius 1910
Pseudolithoderma extensum (P.L.Crouan & H.M.Crouan)
S.Lund
Pseudolithoderma roscoffense Loiseaux

RALFSIA M.J.Berkeley 1843
Ralfsia verrucosa (Areschoug) Areschoug

Order Cutleriales Bessey 1907
Family Cutleriaceae J.W.Griffith & Henfrey 1856

CUTLERIA Greville 1830
Cutleria multifida (Turner) Greville

ZANARDINIA Nardo ex Zanardini 1841
Zanardinia typus (Nardo) P.C.Silva
[The first report of this species from England was by Jephson *et al.* (1975). It has been suggested to be a possible non-native (Fletcher, 1987), but its occurrence in restricted habitats in the shallow subtidal in Britain and Ireland indicates that it was more likely to have been overlooked.]

Order Sporochneales Sauvageau 1926
Family Sporochneaceae Greville 1830

CARPOMITRA Kützing 1843 *nom. cons.*
Carpomitra costata (Stackhouse) Batters

SPOROCHNUS C.Agardh 1817
Sporochnus pedunculatus (Hudson) C.Agardh

Order Tilopteridales Bessey 1907
Family Halosiphonaceae T.Christensen 1962

HALOSIPHON Jaasund 1957
Halosiphon tomentosus (Lyngbye) Jaasund
[Listed under the Tilopteridaceae in Hardy & Guiry (2003).]

Family Phyllariaceae Tilden 1935

SACCORHIZA Bachelot de la Pylaie 1829
Saccorhiza polyschides (Lightfoot) Batters

Family Tilopteridaceae Kjellman 1890

HAPLOSPORA Kjellman 1872
Haplospora globosa Kjellman

TILOPTERIS Kützing 1849
Tilopteris mertensii (Turner) Kützing

Order Desmarestiales Setchell & N.L.Gardner 1925
Family Arthrocladiaceae Chauvin 1842

ARTHROCLADIA Duby 1830
Arthrocladia villosa (Hudson) Duby

Family Desmarestiaceae (Thuret) Kjellman 1880

DESMARESTIA J.V.Lamouroux 1813 *nom. cons.*
Desmarestia aculeata (Linnaeus) J.V.Lamouroux

Desmarestia dudresnayi J.V.Lamouroux ex Leman [*'dresnayi'*]
Desmarestia ligulata (Stackhouse) J.V.Lamouroux
Desmarestia viridis (O.F.Müller) J.V.Lamouroux

Order Laminariales Migula 1909
Family Alariaceae Setchell & N.L.Gardner 1925

ALARIA Greville
Alaria esculenta (Linnaeus) Greville

UNDARIA Suringar, 1873
Undaria pinnatifida (Harvey) Suringar
[Non-native; Table 3.]

Family Chordariaceae Greville 1830

BUFFHAMIA Batters 1895
Buffhamia speciosa Batters
[Listed with the Ectocarpales in Hardy & Guiry (2003).]

CHORDA Stackhouse 1797
Chorda filum (Linnaeus) Stackhouse

STREPSITHALIA Bornet ex Sauvageau 1896
Strepsithalia buffhamiana (Batters) Batters
[No recent records; requires further study.]

Family Laminariaceae Bory de Saint-Vincent 1820

LAMINARIA J.V.Lamouroux 1813 *nom. cons.*
Laminaria digitata (Hudson) J.V.Lamouroux
Laminaria hyperborea (Gunnerus) Foslie
Laminaria ochroleuca Bachelot de la Pylaie

SACCHARINA Stackhouse 1809
Saccharina latissima (Linnaeus) C.E.Lane, C.Mayes, Druehl & G.W.Saunders

Order Fucales Bory de Saint-Vincent 1827
Family Sargassaceae Kützing 1843

BIFURCARIA Stackhouse 1809
Bifurcaria bifurcata R.Ross

CYTOSEIRA C.Agardh 1820 *nom. cons.*
Cystoseira baccata (S.G.Gmelin) P.C.Silva
Cystoseira foeniculacea (Linnaeus) Greville
Cystoseira humilis var. *myriophylloides* (Sauvageau) J.H.Price & D.M.John
Cystoseira nodicaulis (Withering) M.Roberts
Cystoseira tamariscifolia (Hudson) Papenfuss

HALIDRYS Lyngbye 1819 *nom. cons.*
Halidrys siliquosa (Linnaeus) Lyngbye

SARGASSUM C.Agardh 1820 *nom. et type cons.*
Sargassum muticum (Yendo) Fensholt
[Non-native; Table 3.]

Family Fucaeae Adanson 1763

ASCOPHYLLUM Stackhouse 1809 *nom. cons.*
Ascophyllum nodosum (Linnaeus) Le Jolis

Ascophyllum nodosum ecad *mackayi* (Turner) Cotton

FUCUS Linnaeus 1753

Fucus ceranoides Linnaeus

Fucus cottonii M.J.Wynne & Magne

Fucus distichus Linnaeus

Fucus evanescens C.Agardh

[Non-native; Table 3.]

**Fucus guiryi* Zardi, Nicastrò, Serrão & G.A.Pearson

[New segregate species from *Fucus spiralis*; see Zardi *et al.* (2011).]

Fucus serratus Linnaeus

Fucus spiralis Linnaeus

Fucus vesiculosus Linnaeus

PELVETIA Descaisne & Thuret 1845

Pelvetia canaliculata (Linnaeus) Decaisne & Thuret

Family Himanthaliaceae (Kjellman) De Toni

HIMANTHALIA Lyngbye 1819 *nom. cons.*

Himantalia elongata (Linnaeus) S.F.Gray

DISCUSSION

Revising the check-list of the seaweeds of Britain has given new insights into the flora which will be of value in future floristic studies and will inform marine biologists and conservation initiatives. A summary of the seaweed flora (Table 4) shows a total of 644 species (including infraspecific taxa) for Britain compared with 642 for Britain and Ireland in Hardy & Guiry (2003). There have been 30 additions to the list since Hardy & Guiry (2003): 14 reds, 14 greens and two browns. These include the discovery and description of five species new to science.

A stringent review of the presence of non-native species has produced a list of 31 species, of which five are new to the British flora. One of the difficulties of determining which species are genuinely non-native is that some of them have been in the flora for a long time and are now perceived to be part of the indigenous flora. Phylogenetic analyses have

enabled discovery of the origins of species from different parts of the world. For example, *Pyropia leucosticta* has proved to be of Pacific origin (Sutherland *et al.*, 2011), but specimens well over a century old are in the BM herbarium. In another example, Provan *et al.* (2005) were able to track the history of *Codium fragile* subsp. *fragile* (as subsp. *tomentosoides*) using molecular techniques. The number of non-native species recorded here may well be an underestimate and it has been speculated that as much as 25% of the British flora may be non-native in origin (H. Kawai, pers. comm.). Whilst some species, such as *Sargassum muticum*, are clearly invasive, the majority of the non-natives do not appear to affect the indigenous flora and for those that are considered to be part of the flora such as *P. leucosticta*, it would be better to think of them as naturalized. Nevertheless, the arrival of new non-native species continues to increase (Brodie *et al.*, 2014b and references therein).

Our data do not include Ireland. Therefore numbers cannot be compared directly (see Guiry, 2012 for a comparison of Britain and Ireland), but the increase in numbers and the changes reported reflect both the work that has been undertaken since Hardy & Guiry (2003) and evidence of a changing flora, and provides the basis for future work.

The use of molecular techniques for identification, taxonomy and phylogenies has radically altered our understanding of diversity and species relationships and is responsible for many of the additions to the list. The results of the molecular work have enabled us to re-evaluate species in order to find characters which could be used for identification in the field and have led to the development of more accessible identification tools (e.g. Bunker *et al.*, 2010). Nevertheless, the molecular work is patchy and there are still many groups of species in the flora that require further taxonomic investment. This check-list is a foundation for such work.

ACKNOWLEDGEMENTS

We are grateful to Dr Michael J. Wynne and Dr F. Minéur for their helpful comments on the list of non-native species, and to Dr Wynne and Professor Giovanni Furnari for their scholarly and helpful reviews.

Table 2. Species excluded from British check-list since Hardy & Guiry (2003).

Species	Notes
<i>Erythropeltis discigera</i> (Berthold) F.Schmitz	According to Brodie & Irvine (2003), the nominal variety has not been recorded for the British Isles.
<i>Bangia atropurpurea</i> (Roth) C.Agardh	<i>Bangia sensu stricto</i> ; this entity is confined to fresh water; see Sutherland <i>et al.</i> (2011).
<i>Porphyra miniata</i> (C.Agardh) C.Agardh	Records based on misidentifications of <i>Wildemaniania amplissima</i> ; see Brodie & Irvine (2003).
<i>Scinaia complanata</i> (F.S.Collins) A.D.Cotton	Only known from the Aran Islands in Ireland (Hardy & Guiry 2006; Guiry, 2012).
<i>Nemastoma canariense</i> (Kützing) Montagne	Only known from Ireland (Hardy & Guiry 2006; Guiry, 2012).
<i>Antithamnion densum</i> (Suhr) M.A.Howe	Appears to be confined to Ireland and unknown in Britain (Guiry, 2012); considered to be introduced to Europe (Guiry & Maggs, 1991).
<i>Acrosiphonia sonderi</i> (Kützing) Kornmann	Recorded in Newton (1931) as very rare, from Dorset and Orkney Islands, but specimens referred to this species in the algal herbarium at the Natural History Museum, London (BM) are not referable to this species (J. Brodie, pers. obs.).
<i>Blidingia chadefaudii</i> (Feldmann) Bliding	Not present in Britain; see Maggs (2007).
<i>Pseudendoclonium marinum</i> (Reinke) Aleem & E.Schulz	Included as a synonym of <i>P. submarinum</i> in Nielsen (2007); but see Guiry (2012).
<i>Phycocelis crouaniorum</i> Athanasiadis <i>nom. illeg.</i>	Included as a separate entry in Hardy & Guiry (2006, as ' <i>crouanii</i> ') but now considered a synonym of <i>Asperococcus fistulosus</i> (Hudson) W.J.Hooker; see Guiry (2012).

Table 3. Non-native species in Britain.

Species	Notes
Red algae^{iv}	
<i>Aglaothamnion feldmanniae</i> Halos	Thought to be an alien species (Brodie <i>et al.</i> , 2012). South & Tittley (1986) recorded it from their Station 3 (France, including the Channel Islands). Maggs & Hommersand (1993) recorded it from the south coast of England and Pembrokeshire. Hardy & Guiry (2003) listed it as a species for which no records have been obtained by the British Phycological Society Mapping Scheme.
<i>Anotrichium furcellatum</i> (J.Agardh) Baldock	The earliest known collections for Britain are from 1976; see Maggs & Hommersand (1993), pp. 182–183.
<i>Antithamnionella spirographidis</i> (Shiffner) E.M.Wollaston	First reported from Plymouth docks by Westbrook (1934). It was introduced to Europe prior to 1911 (C.A. Maggs pers. comm.) and probably arrived in Britain from the Mediterranean. It is thought to have originated in the North Pacific (Lindstrom & Gabrielson, 1989).
<i>Antithamnionella ternifolia</i> (J.D.Hooker & Harvey) Lyle	The earliest collections in Europe were made at Plymouth (see Maggs & Hommersand, 1993).
<i>Asparagopsis armata</i> Harvey	The ‘Falkenbergia-phase’ was first recorded in 1949 on Lundy (Harvey & Drew, 1949); the gametophyte phase was first reported from Cornwall in 1950 (Drew, 1950).
<i>Bonnemaisonia hamifera</i> Hariot	First report in Britain was of drift plants at Falmouth, Cornwall in August 1893 (Buffham, 1896).
<i>Caulacanthus okamurae</i> Yamada	First observations of this species in Britain were from the south coast between 2000 and 2005 (Brodie, pers. obs.).
<i>Ceramium circinatum</i> (Kützting) J.Agardh	Maggs & Hommersand (1993) reported that they had found this species at a few sites in S. England.
<i>Chrysiomenia wrightii</i> (Harvey) Yamada	Non-native discovered recently; see Bunker (2014).
<i>Cryptonemia hibernica</i> Guiry & L.M. Irvine	Probable non-native status discussed by Guiry & Irvine (1974) and Guiry (2012). In Britain known only from Plymouth.
<i>Grateloupia subpectinata</i> Holmes	Reported largely from the Solent area, southern England by Farnham & Irvine (1968, as <i>Grateloupia filicina</i> var. <i>luxurians</i> A.Gepp & E.S.Gepp). Reports from elsewhere require confirmation by DNA sequencing.
<i>Grateloupia turuturu</i> Yamada	Reported as an introduced species in the Portsmouth area, southern England, by Farnham & Irvine [1973, as <i>Grateloupia doryophora</i> (Montagne) M.A.Howe]. First observations of this species in 1969.
<i>Dasysiphonia japonica</i> (Yendo) H.-S.Kim	First observations of this species in Britain from 1989–1990 (Sjötun <i>et al.</i> , 2008, as <i>Heterosiphonia japonica</i> Yendo).
<i>Neosiphonia harveyi</i> (J.W.Bailey) M.S.Kim, H.G.Choi, Guiry & G.W.Saunders	Evidence of the introduction of this species is given in McIvor <i>et al.</i> (2001, as <i>Polysiphonia harveyi</i> J.W.Bailey) of this species which has a centre of origin in the Far East.
<i>Pikea californica</i> Harvey	An introduction from the North Pacific known from the Scilly Isles; see Maggs & Guiry (1987). Recently found in the Falmouth area by David Fenwick (fide M.D. Guiry).
<i>Polyopes lancifolius</i> (Harvey) Kawaguchi & Wang	Non-native from Japan, recorded from the Channel Isles; Mineur <i>et al.</i> (2010, 2012).
<i>Polysiphonia subtilissima</i> Montagne	Listed as a non-native species in Minchin & Eno (2002); see also Maggs & Hommersand (1993).
<i>Porphyra yezoensis sensu</i> Kornmann	As ‘ <i>Porphyra</i> sp. A’ in Brodie & Irvine (2003) who suggest that this is a non-native species. See Kornmann (1986).
<i>Pyropia drachii</i> Feldmann	Probable non-native. First reported from Britain by Brodie & Irvine (2003). Molecular data indicate that it groups with <i>Pyropia</i> species from the Pacific.
<i>Pyropia leucosticta</i> (Thuret) Neefus & J.Brodie	Molecular evidence indicates that this species occurs in a clade of N. Pacific species (Sutherland <i>et al.</i> , 2011).
<i>Sarcodiotheca gaudichaudii</i> (Montagne) P.W.Gabrielson	Reported as an introduced species; see Farnham (1980).
<i>Solieria chordalis</i> (C.Agardh) J.Agardh	Reported as an introduced species; see Farnham & Jephson (1977).
<i>Stenogramma interruptum</i> (C.Agardh) Montagne ex Harvey	Tentatively listed as a non-native on the basis of a reported worldwide distribution.
Green algae	
<i>Codium fragile</i> subsp. <i>fragile</i> (Suringar) Hariot	Non-native with likely origin in Japan (Provan <i>et al.</i> 2005); see also Maggs & Kelly (2007).
<i>Ulva californica</i> Wille	Recognized recently in Britain; see Maggs <i>et al.</i> (2007).
<i>Umbraulva dangeardii</i> M.J.Wynne & G.Furnari	Considered to be introduced from the Pacific Ocean; see Maggs <i>et al.</i> (2007) as <i>Umbraulva olivascens</i> (P.J.L.Dangeard) G.Furnari <i>nom. inval.</i>
Brown algae	
<i>Colpomenia peregrina</i> Sauvageau	Introduced, perhaps from the north-west Pacific; see Cho <i>et al.</i> (2005) and included references.
<i>Corynophlaea umbellata</i> (C.Agardh) Kützting	Reported from Hampshire by Fletcher & Farrell (1999) on <i>Sargassum muticum</i> .
<i>Fucus evanescens</i> C.Agardh	The widespread distribution of this species in the North Pacific and North Atlantic suggests that this is a non-native.
<i>Sargassum muticum</i> (Yendo) Fensholt	First recorded in Britain from Hampshire in 1973 (Farnham <i>et al.</i> , 1973).
<i>Undaria pinnatifida</i> (Harvey) Suringar	Found on floating pontoons, Solent, southern England, 1994 (Fletcher & Manfredi, 1995).

^{iv}*Gracilaria vermiculophylla* (Ohmi) Papenfuss has been reported from Hengistbury Head, Dorset (Christine Maggs, pers. comm., October 2015) but the identification requires confirmation; see also Guiry (2012).

Table 4. Summary of the seaweed flora of Britain based on the revised check-list. Numbers in parentheses represent the number of species recorded in Hardy & Guiry (2006).

Phylum/Class	Classes	Orders	Families	Genera	Numbers				
					Species	Sub-species	Varieties	Formae	Ecad
Rhodophyta	7	19	54	171	347 (339)		1		
Chlorophyta	3	7	19	45	109 (100)	1			
Phaeophyceae	1	10	24	100	183 (185)		1	1	1
Total	11	36	97	316	639 (624)	1	2	1	1

FINANCIAL SUPPORT

Funding was provided by John Speddan Lewis for a provisional Red Data list for UK seaweeds which enabled us to revise the species list for British seaweeds.

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APPENDIX 1

Nomenclatural innovation

Pyropia drachii (Feldmann) J. Brodie comb. nov.

Basionym: *Porphyra drachii* Feldmann 1981 ('1978/1979'), *Vie et Milieu, série AB*, 28–29(3), p. 426, figures 1–4.

The basis for the new combination for this species is Brodie *et al.* (2007b), in which *Porphyra drachii* was shown to group with species transferred to the genus *Pyropia* in Sutherland *et al.* (2011). For further information regarding this species in Britain, including the designation of a neotype in the absence of the original material, see Brodie & Irvine (2003).

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