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Black Sea Monitoring Guidelines

Macrophytobenthos

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Introduction

Monitoring of the ecological state of Black Sea coastal ecosystems on the basis of structural-functional organization of macrophytobenthos communities has a number of advantages:

- macrophytes are primary producers, being the first autotrophic link in the ecological transformation of matter, and as a result of which are the first to react to changes in the ecological state of the coastal ecosystem;
- macrophytes are attached organisms, inhabiting coastal biotopes which to greater degree undergo anthropogenic impact and are the most valuable for monitoring;
- macrophytes are macro in dimensions and are widely distributed in the coastal ecosystems making them convenient for monitoring as technically their study is simplified;
- macrophytes has long life cycle to present an integrated response on the environmental status;
- macrophytes are presented by large dominant species, which form an indicatory community - *Cystoseira, Zostera, Phyllophora*;
- macrophytes communities has a sensitive structural-functional organization which well reflects the variability of the environmental conditions.

The biggest problems to use of macrophytes in monitoring are:

- underwater visual observation with the usage of a higher technology equipment (diver outfit, underwater camera, ROV and others);
- expensive methods of sampling;
- destroy the nature structure of community under the breaking waves on the upper horizons (loss of real phytobiomass).

The parameters of structural-functional organization of macrophytobenthic communities include: floristic composition, abundance, biomass, morphological parameters and difference indexes which respond to change in quality of a substrate, illumination, hydrodynamics, salinity, concentration levels of nutrients and toxicants. These parameters may be used as monitoring parameters illustrating the integral reaction on abiotic condition of benthic plant communities to changes occurring in coastal, shallow water ecosystems. Especially useful for monitoring the trophosaprobiontic state of coastal waters are indices of a surface of macrophyte algae (Minicheva, 1987, 2003).

Use of macrophytes for the estimation of Ecological Status Class of coastal ecosystem in accordance with the requirements of EU Water Framework Directive (WFD) and EU Marine Strategy Framework Directive (MSFD) allowed also to offer the row of new indicators of the macrophytes based on morphofunctional parameters: Three Dominants Ecological Activity (S/W3Dp); Average Species Ecological Activity (S/Wx); Phytocenosis Ecological Activity (S/Wph); Phytocenosis Surface Index (SIph) (Minicheva, 2013).

The main aims of monitoring of macrophytobenthos communities are to:

- control changes in spatial distribution and abundance of macrophytes, including evaluation of the percentage of macrophyte coverage of substrate;
- control changes in floristic composition in communities, the laminar structure (epiphyte - basiphyte);
- control changes in the structure of organization of the community including abundance and biomass;
- control changes of the morpho-functional organization including a specific surface of separate species and the total surface of community;
- control of indicators (see Appendix 3) reflecting a change of Ecological Status Class of coastal ecosystem in accordance with the requirements of WFD and MSFD.

The results of control are the main for analysis of short and long term reactions of macrophytobenthos to change of environmental conditions in the coastal ecosystem caused by man-main impact:

- replacement of natural substratum (hydrotechnical construction);
- disturbance of benthic biotope (trawling, dredging, dumping);
- lowering of transparency, increasing of levels of nutrients and toxicants.

1 Sampling

1.1 Sampling equipment and technical means

Equipment for qualitative sampling macrophytes

For scrubbing (cutting the rhizoidal part) of the thallus on hard surface substrates *a scraper* is necessary. It has a handle of light floatable material and a surface made up of stainless steel, a sharp edge with 5-7 cm wide base. Scalpels or other cutting instruments may be used.

For scraping the surface macrophytes from vertical walls of hydrotechnical constructions part of which are above water, *a scraper with the long handle* is used which has the form of a frame one edge of which is sharp. The scraper is equipped with a mesh bag for catching algae thalli. *A dredge* of usual construction is used from board ship sampling benthic hydrobionts. Visual assessment of macrophytobenthos distributions is performed. At great transparency a box with a glass bottom may be used.

Equipment for quantitative macrophyte sampling.

Frames for quantitative calculations are used for sampling macrophytes on a certain surface area of a seabed. Contour frames may be used for those areas protected from waves with soft seabed where meadows of marine grasses develop. These frames are 100x100 cm of different material which as a rule are not bound by mesh nets, and are lowered on macrophyte meadows limiting the dimensions of the community to one square meter, and vegetation is carefully extracted. This method can be used at small depths and in conditions of calm weather to avoid loss of samples. It is more convenient and reliable to use *periphyton frames* on firm and soft natural substrates, as well as on artifical surfaces of hydroconstructions. The periphyton frame is a contour made of stainless steel, one side of with has a gently sloping surface for better slipping of thallus. It has a sleeve from a mesh net used for collecting all of the thalli. The scraper is put into the sleeve with one hand, while the explorer fixes the frame on the substrate algae surface whith the other. The algae are thoroughly scraped off under water, placed in one of the corner of the sleeve. The thallus is then removed from the frame sleeve above water. Depending on the type of substrate periphyton frames of 10x10 cm; 20x20 cm; 20x40 cm may be used (Fig.1.)

Fig.1. Scraper and periphyton frames for the quantitative samples of macrophytobenthos

When working on board ship, for quantitative calculation of macrophytes *the Petersen grab sampler* or *«Ocean» sampler* 0,1 or 0,25 m^2 opening is used (Guide…,1980).

Only in the supra- and pseudolittoral the sampling of macrophytes is possible without special underwater equipment. The explorer may use *rubber boots* or *overalls* and a small *floating platform* (penoplastic, pneumatic mattress), tied to the belt and pulled with the samples and other accessories. At a depth of 60-70 cm (the length of an outstretched hand) in is necessary to use underwater technical means and SCUBA. For visual assessment an underwater mask with a wide vision is used. An underwater camera, may be used to take pictures of typical sites of phytocenoses. At a distance from sampling sites from the coast, ships and other means may be used for diving. Otherwise the abovementioned dredge and grabs are convenient.

1.2 Strategy of sampling

In a coastal area

On rocky and gently sloping natural shores formed by hard ores or sediments, in layers from supra- to lower sublittoral, it is more convenient to apply the method *of linear transects* or *cuts* (Gromov, 1973). Cuts are laid perpendicular to relief of shores towards the sea. Using the natural borders of growth of characteristic associations of macrophytes, the layers in the cut are defined for sampling. For example for the cape part of the open coast the following layers can be selected: [+1 m – 0 m]; [0 m – 0.5 m]; [0.5 m – 1.5 m]; [1.5 m – 3.0 m]; [3.0 m – 5.0 m]; [5.0 m – 10.0 m]. In each layer at 10-15 meters aside from the conditional line of the cut visual evaluation of phytocoenoses is done. The percent of projected coverage of bottom of macrophytes is determined, the tier, abundance according to the Drude scale. Information is recorded by a diver under water on special plastic plates. Depending on the structure of phytocoenoses and heterogeneity of the spatial distribution of macrophytes on each of the layers 3 -10 frames of quantitative account are made.

In the coastal areas with a considerably changed coastline (technogenic, recreational areas), with even surfaced hydrotechnical constructions, it is possible to use an exposition-belt method for macrophytobenthos sampling. For this it is necessary to determine the artificial surfaces the exposition of which reflects all heterogenity of environmental conditions of the area. For example, walls of traverses, breakwaters, boons or piers located at different angles or in the conditions of different wave action are used as, model surfaces for macrophyte sampling. For artificial surfaces located, as a rule, vertically, or having a small slope angle, a distinct narrow belt of mono- or phytocoenoses of macrophytes is selected. On vertical surfaces the width of belts covered by typical associations is from 20-50 cm to a few meters. In accordance to this distribution of belts, sampling layers are determined, similar to the method of linear cuts on a natural coast.

In open water

During work at a considerable distance from the coast on floatins without a diver, it is not possible to make visual evaluations of macrophyte growths. In this case it is impossible to estimate the percent of projected coverage of bottom with macrophytes, and impossible to select the areas of the most dense growth of macrophytes. Correspondingly, it is not necessary to sample 100% coverage with macrophyte biomass vegetation on the meadow. (Biomass vegetation "on the meadow" for 100% coverage). In this case it is necessary to take into account when planning the network of sampling stations, that the material obtained, will be a random sample, for all of the explored area, which, as a rule, to 100% is not covered by the macrophyte vegetation. In the case when research is conducted at an identical depth (for example, exploring of the «fields» or «meadows» of macrophytes) the net station network has the appearance of squares of evenly covering the explored area. The distance between the stations is determined on the basis of spatial heterogeneity of growth. At one station not less than three fold quantitative samples are made with grabs. On transect between the stations for high-quality estimation, it is possible to use bottom dredging.

1.3 Determination of projective cover percentage using underwater video equipment

The method is based on underwater video recording of macrophyte communities (filming of registration video tracks) and conversion of the footage received into graphic form with further processing and counting using graphic editor.

The sequence of operations aimed at receiving of percentage of bottom projective cover with macrophytes could be divided into the following stages:

Filming of registration video tracks

Filming is performed under high water transparency using video camera in underwater housing. Laser pointers are attached on both sides of the camera (the usual distance between pointers is 50 cm) (Fig.2). For filming the camera is located perpendicularly to substrate and moved smoothly keeping the distance from the bottom or other surfaces covered with macrophytes.

Fig.2. Underwater camera with the laser pointers

Video sequence division into separate shots and selection of the images required to stitch panorama

The footage (or its fragments) are imported to video editor (the most common are Adobe, Canopus, Sony Vegas) having the function of video fragment division into a sequence of separate shots (Fig. 3). The shots are exported into a separate folder.

Fig. 3. Video track division into sequential shots

To form up the panorama selection of every 15th -20th shot is enough. At higher speed of camera it might be every 10th -12th shot, at lower speed - every 25th -30th one. The chosen shots are selected and copied to the separate folder .

Panorama stitching

The chosen shots are imported to panorama stitching software (PTGui Pro 9.) Than the low-informative edges of shots are cut off (10-15% on each side) to bring down distortion of the panorama (Fig. 4).

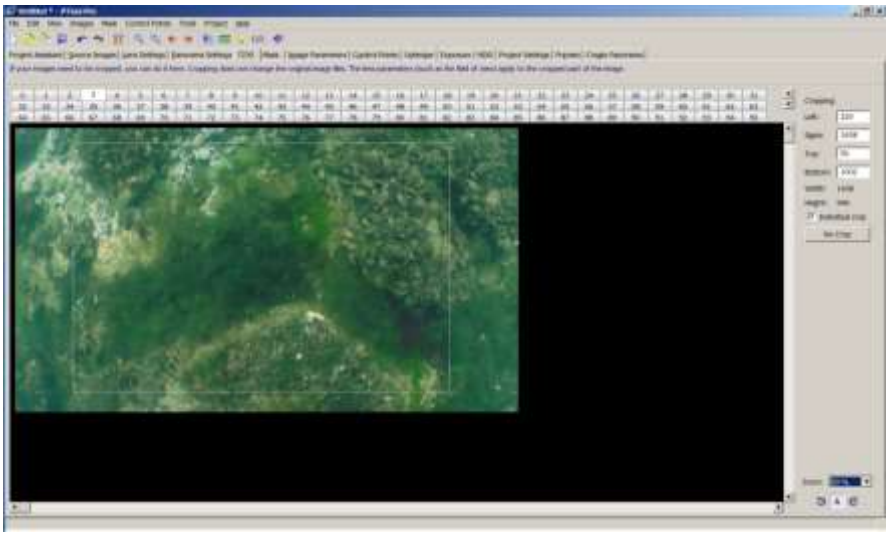


Fig. 4. Determination of low-informative edges of shots

At the next stage common (control) points should be found on the neighboring shots. Manual establishing of control points on the neighboring shots is possible. It is preferable to have minimum 3-4 common points between the neighboring images (Fig. 5).

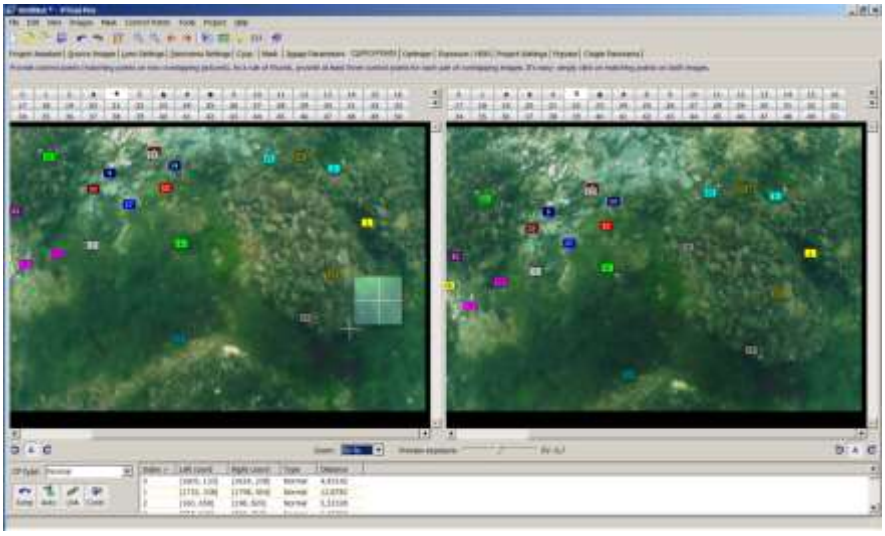
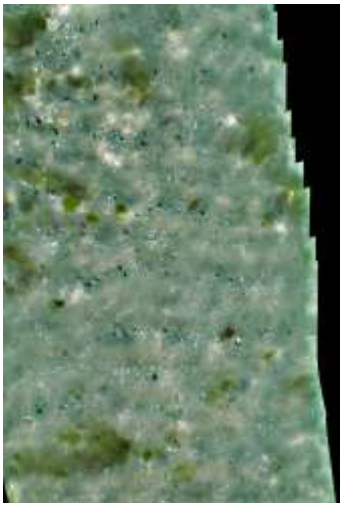


Fig. 5. Choice and positioning of control points



Further on image enhancement function should be switched on in the program. After that panorama stitching function could be started. An example of ready panorama is presented on Fig. 6.

Fig. 6. Example of panorama of sandy bottom with macrophytes

Selection of fragments of graphic image

The received panorama is imported to graphic editor (Adobe Photoshop). The next task is color highlighting of studied plot area and area covered with macrophytes. To do this the new layer is created, on which the area of entire panorama is shown in chosen color, for example red. Than another layer is created, where the plots covered with macrophytes are shown in in another contrast color, for example black (Fig. 7). It would be beneficial to save those layers as JPEG or BMP images with reduced resolution.

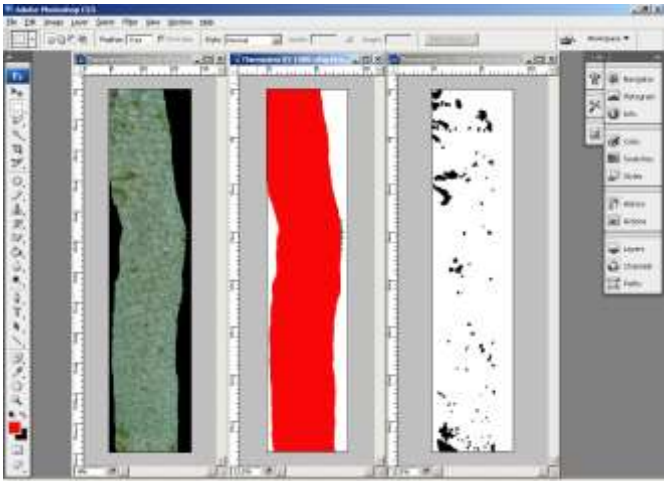


Fig. 7. Highlighting of panorama general area and macrophytes with color

Projective cover area calculation

To calculate the percentage of bottom cover with macrophytes the panorama is imported into the program for curvilinear figures square calculation IpSquare 1,8. Select part of the panorama of chosen color with a click of cursor, than use the button «Calculate area» on the screen and the value of the area will be shown in a special box. Area of the studied plot is taken as 100%. Area of macrophytes cover is taken for x. Percentage of bottom or another studied surface cover with macrophytes is calculated according to respective proportion.

1.4 Fixing

Each macrophyte sample should be placed in a plastic or gauze bag and supplied with a detailed label with information about the sampling place and conditions. Fixing of samples may be permanent or temporary. It is assumed that temporary fixings of macrophyte samples is up to the time of their delivery to the laboratory (not more than 12 hours). The basic condition of temporary fixation is very thorough deleting of water from thallus, with gauze napkins or filter paper and temporary storage in portable ice chests. The permanent fixing of macrophyte samples is carried out with 4% solution of formalin or $> 40^0$ alcohol. Macrophytes may be frozen for long storage.

2 Treatment of samples

2.1 Washing

The first obligatory procedure before the beginning of treatment of samples in laboratory conditions is washing of macrophyte samples. The sample is placed in separate vessels of 3 - 10 liters volume and filled with running water. It is agitated by circular motions of thalli, forcing them to float while the rest of hard particles precipitate. The washed thalli are poured into a benthos sieve, with small mesh. The sediment is removed and the procedure is repeated 3 - 5 times to reach the state of a clean bottom.

2.2 Species identification

The washed sample is placed in a spacious cuvette with clean water. The algal mass is straightened with pincers and similar species thalli are identified. Special attention is paid to the presence of small epiphytes on thalli of large perennial species. From the thalli of each species a preparation is made on a glass slide for microscopy. Transverse or longitudinal cuts are made if necessary. For this purpose, the thallus is clamped between two blocks of parenchyma of two-year old shoots of the elder (Sambucus) bush, and a cut is made with a sharp razor. Species determination of algal macrophytes of the Black Sea is carried out according to keys (Zinova, 1967; Vinigradova, 1974, at all see Annex 1, 2).

2.3 Determination of mass and quantity

Before determining the mass of the macrophytobenthos sample, it is obligatory to separate all of the species in the sample obtained with a periphyton frame or grab. The analysis of macrophyte samples is conducted in flat cuvettes with a wide bottom, in water, using pincers. If it is an epiphyte attachment the thallus is separated with a scalpel. The sorted-out species are placed in Petri dishes or in other suitable laboratory glassware. Each sample is weighed separately. Depending on the dimensions of the species, it is possible to use different types of torsion or electronic balances giving a 0,01 g accuracy. As weighing of macrophytes is conducted in conditions of «wet mass», it is necessary to take care that no water remains on the thallus. Moisture is removed from the surface of the thallus by drying with a filter paper until the «wet trace» disappears. However, it is necessary not to dry the sample to the state of loss of cellular moisture.

After weighing, the number of thalli are counted for each species which has been identified. These are large perennial forms possessing a distinct rhizoidal part and also sea grasses, with clearly separated plants.

2.4 Measurement of morphological parameters

For the identification of dimensions of population structure, the height of the thalli representing a random sample of the population is measured. Similarly, as determining the abundance, the thallus height may be determined only in separated thalli. The sample should consist of not less than 50 thalli. The selected thalli are placed in a dry cuvette or on a filter paper and with the help of a ruler, caliper or roulette tape the distance from the basal to the apical part of the thallus is measured.

For calculating all of the morpho-functional parameters (see 5.2), it is necessary to make statistically significant determinations of parameters which are directly related to the specific surface of the thallus. For macrophytes having a cylindrical form, the parameter is the diameter of the thallus (d), and for macrophytes having a laminated structure – the thickness of the thallus (h). For measuring large cylindrical structures of a few millimeters in diameter, a caliper is used. Measuring of cylindrical structures of a diameter from a few to several hundred mkm is done with a microscope. The preparation is carefully straightened out on the glass slide. The same with measuring of large laminated structures is done with a caliper. In the case of a thin thallus (some tens of mkm), preparations for microscopic observations should be done (see 4.2.).

2.5 Mounting specimens

The final stage for treating the macrophytobenthos is mounting the specimens from whole thalli for a herbarium. A herbarium is not only a convenient form for documenting of material and creating a collection for illustrating the floristic composition in the area under study, but it also has aesthetic, and sometimes even artistic value. The thallus is straightened out with pincers in a wide cuvette

filled with water. A sheet of heavy paper (Whatman) is carefully slipped under so as not to disturb the natural ramification of the sample. The residue water is drained, and it is placed in a «shirt» prepared from a filter paper (a double sheet enclosing the herbarium sheet) and laid under a press. During the first days it is necessary to change the filter «shirt» to drain off the water. This is especially important for species with a «fleshy» thallus, in which there is a danger of mould growth spoiling the herbarium. After completely drying out the herbarium sheet is provided with a detailed label on the place, time and conditions of sampling. A temporary «shirt» from a filter paper can be substituted by a permanent «shirt» from any kind of paper (tracing paper, parchment, polished paper). The herbarium samples in order of system, are placed in a special herbarium cupboard located in well ventilated premises for long storage. Besides this, recommendations can be using the "Guidelines by herbarium of marine plants" (Milchakova, 2011).

3 Calculation of indices

3.1 Structural-functional indices

Biomass <in meadow>

The necessity of calculation of this index is that for sampling of macrophytobenthos, the method of visual estimation, allowing to select areas of maximal coverage of the bottom with macrophytes is used. As a rule, periphyton frames are laid in areas with a 100 % projected coverage. Correspondingly, a rise in the value of the algal mass occurs characteristic for the whole area explored. However, such an index, in spite of its high absolute value is useful for describing the potential possibilities of coverage of the bottom vegetation.

For the calculation of the index of biomass «in meadow» (B_{mead}), it is necessary to add the mass of all species fixed in the frame for quantitative account, and then multiply the total mass of the frame by a coefficient showing the size of the frame for calculating on a square meter of the bottom. The V_{mead} index is calculated as:

$$V_{mead} = W\Sigma \bullet C,$$

Where $W\Sigma$ - total mass of fixed species in the sample: C - coefficient of conversion of frame dimensions to m^2.

Thus the dimensions of macrophyte biomass are expressed in g .$м^{-2}$ or in kg. m^{-2} .

For example: In a sample from a periphyton 10 x 10 cm frame, three species of macrophytes were fixed of a mass: W_1=2.5 g; W_2= 4.0 g; W_3= 5.3 g. Herein, the total mass of the sample is: $W\Sigma$ = 11,8 g. in a frame equal to 100. Consequently, V_{mead} makes up 1180 g.$м^{-2}$ or 1.180 kg.$м^{-2}$.

Average biomass

The index of average microphytobenthos biomass (B_a) shows the real mass of vegetation developing on the explored area taking into account the percentage of projected coverage of the bottom with macrophytes. The value of average biomass V_a can be calculated according to the formula:

$$V_a = \frac{V_{mead} \bullet PC}{100\%},$$

where V_{mead} is the biomass in meadow; PC is percentage of projected coverage of the bottom of macrophytes.

For example, it was found out that for the explored area the value of the V_{mead} index is 500 ($g.m^{-2}$). But here the projected coverage of the bottom of macrophytes is equal to 50%. Herein the value of the average biomass will make up 250 $g.m^{-2}$.

Abundance

As well as in the case of the biomass, the abundance (A) of macrophytes is calculated according to the amount of the thalli fixed in the sample per square meter of the bottom.

$$A = n \bullet C,$$

Where n is the number of thalli in the sample; C – the coefficient of recalculation according to the dimensions of the frame per square meter.

For example, in a 20 x 20 cm frame 15 thalli of a certain species of macrophytes were encountered. The abundance of this species is then: 15•25= 375 thalli per square meter of the bottom.

Shannon Diversity

The condition of the bottom biocenoses is estimated using mainly the Shannon species diversity index to be calculated by means of the formula

$$H_N = -\sum \frac{n_i}{N} \log_2 \frac{n_i}{N}$$

where H_N is the sample's species diversity; n_i is the quantity or biomass of the i-th species (specimens/m^2 or g/m^2), N is the quantity or the biomass of all species (specimens/m^2 or g/m^2).

Production

The production is estimated by means of the Boyznen-Jensen formula (quoted by Babkov, Golikov, 1984) employed when the observation is performed not systematically:

$$P = ((B_2–B_1)+B_e)/t_2-t_1,$$

where B_1 is the biomass at the beginning of the period of observation (t_1), B_2 is the biomass at the end of the period of observation (t_2), B_e is the biomass of eliminated individuals calculated as follows:

$$B_e = ½ \cdot (B_2/N_2+B_1/N_1) \cdot (N_2-N_1),$$

where N_1 and N_2 is the density at the beginning and at the end of the period of observation respectively. In breaks between observations the population should not be augmented by young individuals. It is appropriate to conduct two surveys – at the start and at the end of macrophytic vegetation.

Stock

To obtain the stock of the macrophytes (Q) it is advisable to use the formula proposed by K.P. Gemp (1963):

$$Q = B \cdot TPC \cdot S/100,$$

where B – average macrophyte biomass (g/m^2), TPC – total projective cover (%), S – square, occupied by macrophytes (m^2). It is also useful to use the correction factor - the cosine of the angle of inclination of the bottom (R), proposed by E.I. Blinova et al. (2005):

$$Q = B \cdot TPC \cdot S/\cos(R) \cdot 100$$

Age and Size-Weight structure

For the Black Sea it is useful to describe the methods for studying the age and size-weight structure of the species which are dominant in the plant communities, namely, *Cystoseira crinita* and *C. barbata.* The investigation is conducted by randomly extracting 30-40 individuals from the sample for which the thallome age, weight and length are determined. The thallome age of *Cystoseira* sp. can be obtained from the formula proposed by A.A. Kalugina-Gutnik (1975):

$$T = B_1+B_2/11,$$

where B_1 is the number of main branches formed in a year, B_2 is the number of "stumps" remaining after the fallen main branches. The age can also be determined from the length of the main stem using for this purpose the equation obtained by V.P. Parchevski and G.V. Parchuk (1979) by means of regressive analysis:

$$T = 0,132 + 0,352\ L_m$$

where L_m is the length of the Cystoseira's main stem in cm.

3.2 Morphofunctional indices

From all of the complex of morphofunctional indices which can be calculated for the level of structural elements, thalli, population and community, the most important for monitoring of macrophytobenthos is the specific surface of the population $(S/W)_p$ and the index of the surface of the community (SI_{cm}). However, in the algorithms when calculating these two indices, the stages of calculation of contiguous indices are used for which in this methodical guide the complete algorithms for all six indices are given.

All the morphological variety of the benthos vegetation structure elements, from which the multicellular algal thalli consist and the single plants of the submerged macrophytes, is possible to bring to three main geometric forms: cylinder, lamella and ball. Each of these forms has a parameter, that is directly connected and defines the specific surface value when change the size of the figure. For the ball and cylinder this is the diameter, for lamella - the thickness (Minicheva, 1992).

For the simplification of the specific surface calculation problem, it's necessary to take the following relative classification of the morphological types of the benthos vegetation macroscopic forms, on the grounds of which the methods of the specific surface calculation of the structure elements are built (Fig.7).

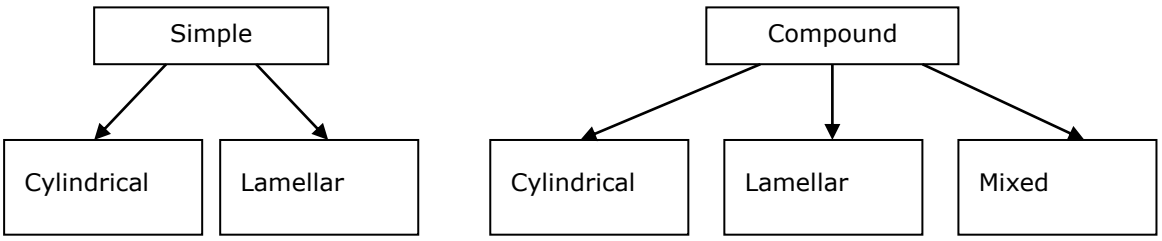


Fig.7. The scheme of the morphological types of the macroscopic forms benthos vegetation.

All the morphological variety of the macrophytes thallus structure given by this scheme is possible to divide into the simple and compound type. The plants pertain to the *simple* type, as it's different parts of the thallus have the same morphological form and minor size differences (the maximum value of the functionally depending parameters exceeds the minimum for not more than in 5

times). To the *compound* type of the morpho-functional structure pertain the plants in which composition enter the groups of the structure elements, that have different morphological form, or having essential differences in the parameters functionally connected with the specific surface (the maximum value functionally depending parameters exceeds the minimum for more than in 5 times).

In turn the simple type is divided into the cylindrical and lamellar ones. To the *simple cylindrical* type pertain the plants, which thallus is characterized by cylindrical form and minor diameter size differences values (the maximum value exceeds the minimum for not more than in 5 times). To the *simple lamellar* type pertain the plants of the lamellar form with the close values of the thallus thickness (the maximum value exceeds the minimum for not more than in 5 times).

The compound thallus type is divided into the compound cylindrical, compound lamellar and mixed compound (refer to fig. 7). In the plants of the *compound cylindrical* type exist several structure elements groups for which, the average values of the diameters differ for more than in 5 times. In the plants of the *compound lamellar* type exist several structure elements groups, for which, the average values of the thallus thickness differ for more than in 5 times. To the *mixed compound* type pertain the plants, in which the structure elements groups of the lamellar, cylindrical or spherical forms are present simultaneously.

The specific surface indexes of the multicellular algae and flowering plants

***Specific surface of the structure elements* $(S/W)_{se}$**

The define methods of the given index $(S/W)_{se}$ has the differences for morphological structures of the cylindrical, lamellar and spherical forms. Earlier, in practice, mostly was used the method of the direct surface area measurement, the main essence of which is brought to the selection of the cognate with the layer form geometric figure and the surface area calculation on the known mathematical formulas. For instance, cylindrical and spherical structures area is possible to calculate on the formulas of the cylinder and the ball. Besides, the *S/W* layer fragment of the lamellar seaweeds define was done by the "method of the etalon". However, a practice has shown that the least labour-intensive and the most uitable method of the specific surface value define is the allometric method (Minicheva, 1992).

The cylindrical type of the structure elements

The value $\boldsymbol{(S/W)_{se}}$ of the cylindrical macrophytes is inversely proportional to their diameter.

1. The methods of the specific surface of the structure elements $\boldsymbol{(S/W)_{se}}$ calculation of the simple cylindrical species:

1.1 Prepare the structure elements preparation of the cylindrical type.

1.2 With the help of the microscope (binocular, sliding) to measure the diameter of the structure elements: d_1, d_2, … d_n.

1.3 To calculate the average reliable value of the structure elements diameters - d_x.

1.4 To conduct the specific surface value calculation on the equation:

$$\boldsymbol{(S/W)_x = 3334\ d_x^{-0,916}},$$

where d_x - is an average structure elements diameter (mkm), $(S/W)_x$ - is an average specific surface of the structure elements - $\boldsymbol{(S/W)_{se}}$ ($m^2\ kg^{-1}$).

The lamellar type of the structure elements

The $\boldsymbol{(S/W)_{se}}$ value lamellar macrophytes is inversely proportional to their thickness.

2. The methods of the specific surface calculation of the structure elements $\boldsymbol{(S/W)_{se}}$ of the lamellar type:

2.1 To prepare the preparation of the structure elements transverse cut of the thallus of the lamellar type.

2.2 With the help of the microscope (binocular, sliding) to measure the height of the cut - a structure elements' thickness: h_1, h_2, … h_n.

2.3 To calculate the reliable average value of the cut thicknesses - h_x.

2.4 To conduct the specific surface value calculation on equation:

$$\boldsymbol{(S/W)_x = 2000 * h^{-0,988}},$$

where h_x - is an average thickness value of the cut (mkm), $(S/W)_x$ - is an average specific surface of the structure elements - $\boldsymbol{(S/W)_{se}}$ (m^2 kg^{-1}).

The spherical type of the structure element

The $\boldsymbol{(S/W)_{se}}$ value of the spherical macrophytes is inversely proportional to their diameter.

3. The methods of the specific surface calculation of the structure elements $\boldsymbol{(S/W)_{se}}$ of the spherical species:

3.1 To prepare the structure elements preparation of the spherical type.

3.2 With the help of the microscope (binocular, sliding) to measure the structure elements diameters: d_1, d_2, … d_n.

3.3 To calculate the reliable average value of the structure elements diameter - d_x.

3.4 To conduct the specific surface value calculation on the equation:

$$\boldsymbol{(S/W)_x = 6058,87 * d^{-1,0026}},$$

where d_x - is an average structure elements diameter (mkm), $(S/W)_x$ - is an average specific surface of the structure elements, equal $\boldsymbol{(S/W)_{se}}$ (m^2 kg^{-1}).

Specific surface of the thallus $\boldsymbol{(S/W)_t}$

Simple cylindrical thallus type

The methods of the thallus specific surface calculation of the simple cylindrical type corresponds to the principle algorithm of the to structure element specific surface calculation of the cylindrical type (refer to ii. 1.1 - 1.4).

Simple lamellar thallus type

The methods of the thallus specific surface calculation of the simple lamellar type corresponds to the principle algorithm of the structure element specific surface calculation of the lamellar type (refer to ii. 2.1 - 2.4).

Compound cylindrical thallus type

The compound cylindrical type macrophytes $\boldsymbol{(S/W)_t}$ value is the morphological structures groups sum $\boldsymbol{(S/W)_{se}}$, from which the thallus composes. Herewith the $\boldsymbol{(S/W)_t}$ reflects the composite contribution of all the morphological structure groups , from which the thallus composes.

4. The methods of the thallus specific surface calculation **$(S/W)_t$** of the compound cylindrical species:

4.1 To select the structure elements groups in the thallus, ratio between maximum and minimum diameter value that does not exceed 5-times value: d_1, d_2 … d_n.

4.2 To calculate the specific surface of each structure element group $((S/W)_{se})_1$, $((S/W)_{se})_2$,… $((S/W)_{se})_n$ (refer to ii. 2.1 - 2.4).

4.3 To divide the thallus on the detailed structure element groups and define their weight - w_1, w_2, … w_n.

4.4 To calculate the value of the external surface of each structure elements group : s_1, s_2, … s_n on proportions: $s_i = ((S/W)_{se})_i * w_i$,

where i - is a structure elements group.

4.5 To calculate the total surface and weight of the thallus:

$$\sum_{i=1}^{n} s_i \text{ и } \sum_{i=1}^{n} w_i$$

4.6 To correlate the thallus surface s_i to its weight w_i, getting value **$(S/W)_t$**.

Compound lamellar thallus type

The thallus specific surface of the compound lamellar species **$(S/W)_t$** is calculated on the grounds of the $(S/W)_{se}$ values of the lamellar type (refer to i. 2), and corresponds to the principle algorithm of the thallus specific surface calculation of the compound cylindrical type (refer to ii. 4.1 - 4.6).

Mixed thallus type

The specific surface of the thallus of the mixed type **$(S/W)_t$** is calculated on the grounds of the corresponding structure elements values$(S/W)_{se}$ (cylindrical (refer to i. 1), lamellar (refer to i. 2) and spherical type (refer to i. 3)), and corresponds to the principle algorithm of the thallus specific surface calculation of the compound cylindrical type (refer to ii. 4.1 - 4.6).

Specific surface of the population $(S/W)_p$

At the specific surface calculation of the macrophytes population is necessary to take into consideration the population structure, which is formed due to the age, dimensional, morphological, and also other heterogeneities, inherent to the populations. In this connection, for the **$(S/W)_p$** calculation, it is necessary to have the individual's sample, $(S/W)_t$ which representively reflects the dispersal of the given values within population.

5. The methods of the populations specific surface **$(S/W)_p$** calculation:

5.1 On the population growing area, keeping stated step on the locality, is selected a motivated thallus number. At the cylindrical structures diameter before 100 mkm step of the thallus selection forms 15-30 cm. At the greater diameter sizes, the step of the selection is not less than 3-5 м. For the lamellar forms with the layer thickness less than 50 mkm the first variant is available, at the more high values - the second variant is available.

5.2 Using corresponding methods, designed for the thallus specific surface value define of the different morphological type, to calculate the specific surface of the selected thalluses - $(S/W)_t$.

5.3 With the help of the standard methods of the statistical processing, on the base of the got values $(S/W)_{ti}$ to calculate the population specific surface value:

$$(S/W)_p = (\sum_{i=1}^{n} (S/W)_{ti})/n,$$

where I - a thallus number in the population.

Table 1 presents information about $(S/W)_p$ value for some representatives of macrophyto benthos of northwestern part of Black Sea.

Table 1. The $(S/W)_p$ coefficient of the macrophytes of the mass species of the north-western part of the Black Sea and adjoining basins

Species	***S/W*$_p$**	***+/-m***
Ectocarpus siliculosus (Dillwyn) Lyngbye	172,90	4,10
Scytosiphon lomentaria (Lyngb.) J. Ag.	27,04	0,59
Punctaria latifolia Grev.	*22,74*	1,47
Bangia fuscopurprea (Dillw.) Lyngb.	88,31	3,42
Pyropia leucosticta (Thuret) Neefus & J.Brodie	63,05	2,36
Acrochaetium virgatulum (Harvey) Batters, 1902	270,7	4,20
Ceramium virgatum Roth	25,32	1,23
Ceramium diaphanum var. *elegans* (Roth) Roth	26,17	1,14
Callithamnion corymbosum (J. E. Smith) Lyngb.	165,00	4,21
Polysiphonia denudata (Dillw.) Kutz.	56,98	1,29
Polysiphonia elongata (Huds.) Harv.	20,8	3,6
Ulothrix implexa (Kutz.) Kutz., 1849	317,80	7,01
Ulothrix zonata (Web. Et Mohr) Kutz.	150,00	4,29
Ulva clathrata (Roth) C.Agardh	61,83	3,54
Ulva intestinalis Linnaeus	36,16	1,11
Ulva linza Linnaeus	39,00	1,8
Ulva rigida Ag., 1822	36,34	1,64
Chaetomorpha linum (O.F.Müller) Kützing	32,25	1,12
Chaetomorpha. aerea (Dillw) Kutz., 1849	28,37	0,58
Rhizoclonium riparium (Roth) Harvey	219,40	5,17
Cladophora vadorum (Aresch.) Kutz.	90,89	4,27
Cladophora vagabunda (L.) Hoek.	47,82	2,84
Cladophora albida (Huds.) Kutz.	85,50	3,48
Cladophora laetevirens (Dillw.) Kutz.	46,20	2,8
Cladophora liniformis Kutz.	88,10	3,44
Cladophora sivashensis C.Meyer	113,14	2,24
Urospora penicilliformis (Roth) Aresch.	119,00	7,20
Bryopsis plumosa (Huds.) Ag.	23,56	1,13
Lyngbya confervoides C.Agardh ex Gomont	318.1	2.70
Calothrix aeruginea Thuret ex Bornet & Flahault	400,00	9,80
Porphyrosiphon luteus (Gomont) Anagnostidis & Komárek	650,00	5,30
Zostera marina L.	10,15	2,3

Species	S/W_p	**+/-*m***
Zostera (Zosterella) noltei Hornemann	19,77	2,15
Stuckenia pectinata L. Böerner (1912) (*Potatamogeton pectinatus)*	6,5	1,05

***Specific surface of the community* $(S/W)_c$**

The $(S/W)_c$ value is an average value $(S/W)_p$, for all the species of the benthos vegetation, including micro- and macroalgae, and also aquatic plants, incoming in the community.

6. The methods of the community specific surface calculation $(S/W)_{cm}$:

6.1 To calculate the $(S/W)_{pi}$ values for all the species, incoming to the community (refer to ii. 5.1 - 5.3).

6.2 With the help of the standard methods of the statistical processing, on the base of the got values $(S/W)_{pi}$ to calculate the community specific surface value $(S/W)_{cm}$:

$$(S/W)_{cm}=(\sum_{i=1}^{n} (S/W)_{pi})/n$$

where *i* - a population number, incoming to the community.

Benthos vegetation surfaces indexes

***Population surface index* SI_p**

The macrophytes SI_p value characterizes total monocenosis photosynthesizing surface, formed by species of the bottom vegetation, in calculation on the m^2 of the bottom.

7. Methods of the population surface index SI_p calculation:

7.1 To calculate the specific surface of the investigative population - $(S/W)_p$. (refer to ii. 5.1 - 5.3).

7.2 Using standard phytocenosis studies methods (Morozova-Vodyanickaya, 1936; Kalugina-Gutnik, 1969; Eremenko, 1980) define the average population biomass - B_p.

7.3 To calculate the population surface index on the formula:

$$SI_p = (S/W)_p * B_p,$$

where $(S/W)_p$ - a specific surface of the population ($m^2 * kg^{-1}$), B_p - a population biomass ($kg * m^{-2}$), SI_p - a population surface index (un.).

***Community surface index* SI_{cm}**

The SI_{cm} value characterizes total photosynthesizing surface of the species, incoming into the community, in calculation on m^2 of the bottom.

8. Methods of the community surface index SI_{cm} calculation:

8.1 To calculate the population specific surface - $(S/W)_{pi}$ of all the species of bottom vegetation, incoming into the structure of investigative community (refer to ii. 5.1 - 5.3).

8.2 Using standard methods of the marine phytocenosis studies (Morozova-Vodyanickaya, 1936; Kalugina-Gutnik, 1969; Eremenko, 1980), define the cenopopulations biomass, composing phytocenosis - B_i.

8.3 To calculate the surface indexes coenopopulations, composing community, on formula: $SI_{pi} = (S/W)_i * B_i$,

8.4 To calculate community surface index on formula:

$$\mathbf{SI_{cm}} = \sum_{i=1}^{n} \mathbf{SI_{pi}},$$

where *i* - a coenopopulations number, composing community.

3.3 Ecological Evaluation Indices

It is proposed to consider the possibilities of three macrophytes' morphofunctional indicators, which could be proposed for expressing the Ecological Evaluation (EEI) Index when assessing coastal ecosystems' Ecological Status Class (ESC) based on phytobenthos state (tab. 2).

Table 2. Macrophytes' morphofunctional indicators proposed for assessment of marine coastal ecosystems' ESC

Indices	Calculation formula
Three Dominants Ecological Activity, **S/W_{3Dp}**	$S/W_{3DP} = \frac{\sum 3(S/W)_{pi}}{3n}$ where: S/W_{pi} - specific surface of populations of three first phytobenthos dominants
Average Species Ecological Activity, **S/W_x**	$S/W_x = \frac{\sum (S/W)_{pi}}{ni}$ where: S/W_{pi} - specific surface of all populations in the community
Phytocenosis Surface Index, **SI_{ph}**	$SI_{ph} = \sum (B_{pi} \times (S/W)_{pi})$ where: S/W_{pi} - specific surface of phytocenosis populations; B_{pi} – biomass of phytocenosis populations

As all the proposed morphofunctional indicators have their advantages and disadvantages (tab. 3) expert decision on each specific morphofunctional indicator choice as the EEI should be taken depending on specific task of a study.

Table 3. Comparison of advantages and disadvantages of macrophytes' morphofunctional indicators proposed for coastal ecosystems' ESC assessment

Indicator	Advantages	Disadvantages
Three Dominants Ecological Activity, **S/W_{3Dp}**	- Efficient for comparative express-assessment of ecosystems with different floristic composition. - Low level of labour input. - Low probability of computation error. - Low level of user's qualification.	- Characteristics of artificial phytosystem (only first three dominants). - Low sensitivity for short-period (seasonal) monitoring of ESC for water bodies with perennial dominants.
Average Species Ecological Activity, **S/W_x**	- High sensitivity for temporal (seasonal, long-period) monitoring of ESC in water bodies with simplified species composition.	- High level of labour input. - High probability of computation error. - - High level of user's qualification.

Indicator	Advantages	Disadvantages
Phytocensis Surface Index, **SI_{ph}**	- Characteristics of natural phytosystem (phytocenosis – basic unit of vegetation). - High sensitivity for spatial and temporal monitoring. - Possibility of historical databases recalculation on structural parameters.	- High level of labour input. - High probability of computation error - (loss of biomass on upper horizons).

The proposed EEI classification schemes could be used to assess the ESC of water bodies in Ukrainian sector of the Black Sea ecosystem, as for determination of their parameters we have used the data on macrophytes' morphofunctional organization from the Danube Delta to the Strait of Kerch, including limans ecosystems (tab.4). Given that the EEI classification schemes covers the almost possibility range of morphofunctional organization of Black Sea's macrophytobentos (in spate of the data were obtained only with Ukrainian sector) at this stage it can be used to regional monitoring. However, in future these classification schemes would require intercalibration taking into account the values of macrophytes' morphofunctional indicators for other National coasts of the Black Sea.

Table 4 EEI classification scheme for macrophytes' morphofunctional indices

ESC	EEI range					
	$(S/W)_{3Dp}$, $m^2.kg^{-1}$	**EQR**	**$(S/W)_x$, $m^2.kg^{-1}$**	**EQR**	**SI_{ph}, units**	**EQR**
High	$(S/W)_{3Dp} < 15$	≥ 0.82	$(S/W)_x < 60$	≥0.98	$SI_{ph} < 25$	≥ 0.95
Good	$15 \le (S/W)_{3Dp} \le 30$	0.54	$60 \le (S/W)_x \le 80$	0.79	$25 \le SI_{ph} \le 40$	0.84
Moderate	$31 \le (S/W)_{3Dp} \le 45$	0.37	$81 \le (S/W)_x \le 120$	0.58	$41 \le SI_{ph} \le 65$	0.55
Poor	$46 \le (S/W)_{3Dp} \le 60$	0.25	$121 \le (S/W)_x \le 200$	0.17	$66 \le SI_{ph} \le 90$	0.15
Bad	$(S/W)_{3Dp} > 60$	≥0	$(S/W)_x > 200$	≥0	$SI_{ph} > 90$	≥0

General notes

For successful monitoring of the states of coastal ecosystems while using macrophytobenthos, an important condition is the selection of a location and time performance for conducting the survey. Alternative stations for monitoring macrophytobenthos, are located in clean open sites, coastal areas with good water exchange, natural substrate, as well as in sites with the greatest man-made load and artificially changed biotopes. The optimum length of time between macrophytobenthos sampling should be 1 month. Minimum frequency of performance of sampling - once per season.

Agreement of works performed on location and time of monitoring surveys of macrophytobenthos between representatives of all Black Sea countries, will enhance the effect of the assessment of a contemporary state and the making of decisions for optimum management of regional coastal ecosystems. Another problem that has now become relevant for monitoring of the Black Sea to harmonize of macrophytobentos indicators to EC Directives: WFD and MSFD.

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Annexes:

Annex 1. Check-list of Black Sea macrophytes (complied by project MISIS with input of project EMBLAS experts)

Annex 2. Recommended list of the main handbooks, methodological references and softwares manuals.

Annex 3. Macrophytobenthos indicators for Black Sea monitoring.

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Annex 1 Check-list of Black Sea Macrophytes (complied by project MISIS with input of project EMBLAS experts).

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Check-List

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
CHLOROPHYTA													
	Ulvales	Ulvellaceae	Acrochaete	145998	***Acrochaete leptochaete* (Huber) R.Nielsen, 1983**	*Ectochaete leptochaete* (Huber) Wille, 1909; *Phaeophila leptochaete* (Huber) R.Nielsen, 1972; *Entocladia leptochaete* (Huber) Burrows, 1991			1,2	1,6,8	1.2		
	Ulvales	Ulvellaceae	Acrochaete	146002	***Acrochaete viridis* (Reinke) R.Nielsen, 1979**	*Endoderma viride* (Reinke) De Toni, *1889;Phaeophila viridis (Reinke) Burrows, 1976;Entocladia viridis Reinke, 1879*		6	1,2	1,2,8,9,10	2,3,4	1	
	Ulvales	Ulvellaceae	Acrochaete	146003	***Acrochaete wittrockii* (Wille) R.Nielsen, 1983**	*Chlorofilum ephemerum* P.J.L.Dangeard, 1965 *Ectochaete wittrockii* (Wille) Kylin, 1938 *Entocladia wittrockii* Wille, 1880 *Phaeophila wittrockii* (Wille) R.Nielsen, 1972					1,3,4		
	Ulotrichales	Ulotrichaceae	Acrosiphonia	144407	***Acrosiphonia arcta* (Dillwyn) Gain, 1912**	*Acrosiphonia centralis (Lyngbye) Kjellman, 1893* *Cladophora lanosa (Roth) Kützing, 1843* *Conferva lanosa Roth, 1806* *Spongomorpha centralis (Lyngbye) Kützing*					1,2,3	1,2,4,9,10	
	Cladophorales	Cladophoraceae	Aegagropila	381150	***Aegagropila linnaei* Kützing, 1843**					1			
	Bryopsidales	Chaetosiphonaceae	Blastophysa	144478	***Blastophysa rhizopus* Reinke, 1889**	*Blastophysa polymorpha* Kjellmann, 1897			1,2			2	
	Ulvales	Kornmanniaceae	Blidingia	145949	***Blidingia marginata (J.Agardh) P.J.L.Dangeard, 1958***	*Enteromorpha marginata J.Agardh, 1842; Enteromorpha micrococca Kützing, 1856*		2,3,4,5,6	1,2	1,2,3,4,5,8,9,10	2	2.9	
	Ulvales	Kornmanniaceae	Blidingia	145950	***Blidingia minima* (Nägeli ex Kützing) Kylin, 1947**	*Enteromorpha compressa var. minima (Nägeli ex Hauck) Hamel, 1931* *Enteromorpha minima Nägeli ex Kützing, 1849* *Enteromorpha nana (Sommerfelt) Sjöstedt, 1939* *Enteromorpha nana var. minima (Nägeli ex Hauck) Sjøstedt, 1939* *Ulva intestinalis var. nana Sommerfelt, 1826*				1,2,3,4,5,6,8,9,10	1,3,4	2,4,9	
	Ulvales	Bolbocoleonaceae	Bolbocoleon	144865	***Bolbocoleon piliferum* N.Pringsheim, 1862**	*Bolbocoleau piliferum* N. Pringsheim				2, 10	1,2,3,4	2,4,9,10	
	Bryopsidales	Bryopsidaceae	Bryopsis	144447	***Bryopsis corymbosa* J.Agardh, 1842**	*Bryopsis alterna Schousboe, 1892* *Bryopsis elegans Meneghini ex Zanardini, 1868* *Bryopsis fastigata Kützing, 1845* *Bryopsis implexa De Notaris, 1846* *Bryopsis ramosa Schousboe, 1892*				1,2,9		2.4	
	Bryopsidales	Bryopsidaceae	Bryopsis	144448	***Bryopsis cupressina* J.V.Lamouroux, 1809**	*Bryopsis cupressoides J.Agardh, 1842* *Bryopsis flagellata Kützing, 1856* *Bryopsis penicillata Suhr, 1844* *Bryopsis pseudoplumosa Ardissone, 1864* *Bryopsis sicula Ardissone, 1884* *Bryopsis thuyoides Kützing, 1856*			1,2	1,2,5,8,9,10			
	Bryopsidales	Bryopsidaceae	Bryopsis	708492	***Bryopsis cupressina* var. *adriatica* (J.Agardh) M.J.Wynne 2005**	*Bryopsis adriatica (J.Agardh) Frauenfeld, 1854;Bryopsis cupressoides var. adriatica J.Agardh, 1842 ; Bryopsis hypnoides f. adriatica (J.Agardh) J.Agardh*		6				2,4,9,10	
	Bryopsidales	Bryopsidaceae	Bryopsis	144450	***Bryopsis duplex* de Notaris,1844**	*Bryopsis balbisiana J.V.Lamouroux, 1813; Bryopsis balbisiana var. disticha J.Agardh, 1842*			1,2	10		2,4,9,10	

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
						Bryopsis caudata Kützing, 1856 *Bryopsis disticha (J.Agardh) Kützing, 1856* *Bryopsis duplex var. caudata (Kützing) Ardissone* *Bryopsis intricata Meneghini, 1845*							
	Bryopsidales	Bryopsidaceae	Bryopsis	144457	***Bryopsis plumosa* (Hudson) C.Agardh, 1823**	*Bryopsis arbuscula (A.P.de Candolle) J.V.Lamouroux, 1809; Bryopsis hypnoides var. arbuscula (De Candolle) Schiffner, 1935* *Bryopsis plumosa var. condensata Kjellman, 1897* *Fucus arbuscula A.P.de Candolle, 1805* *Ulva plumosa Hudson, 1778*		3,4,5,6,7,8	1,2,3,5	1,2,3,4,5,6,8,9,10	1,2,3,4	1,2,4,6,8,9,10	
	Bryopsidales	Bryopsidaceae	Bryopsis	144452	***Bryopsis hypnoides* J.V.Lamouroux, 1809**	*Bryopsis hypnoides f. atlantica J.Agardh, 1887 ; Bryopsis hypnoides f. praelongata J.Agardh, 1887*		4,6	1,2	1,2,3,4,5,8,9	1,2,3,4	2,4,6,9,10	
	Bryopsidales	Caulerpaceae	Caulerpa	144471	**Caulerpa prolifera (Forsskål) J.V.Lamouroux, 1809**	*Fucus prolifera Forsskål, 1775*					3	2	
	Ulvales	Capsosiphonaceae	Capsosiphon	145935	***Capsosiphon fulvescens* (C.Agardh) Setchell & N.L.Gardner, 1920**	*Bangia aureola (C.Agardh) Endlicher, 1843, Capsosiphon aureolus (C.Agardh) Gobi, 1879, Enteromorpha aureola (C.Agardh) Kützing, 1849, Enteromorpha fulvescens (C.Agardh) Greville, 1830 , Ilea fulvescens (C.Agardh) J.Agardh, 1883, Prasiola aureola (C.Agardh) Trevisan, 1842, Prasiola fulvescens (C.Agardh) Trevisan, 1842, Solenia fulvescens (C.Agardh) C.Agardh, 1824, Ulva aureola C.Agardh, 1829, Ulva fulvescens C.Agardh, 1823.*						2,4,9	
	Cladophorales	Cladophoraceae	Chaetomorpha	145020	***Chaetomorpha aerea* (Dillwyn) Kützing, 1849**	*Chaetomorpha princeps (Kützing) Kützing, 1845;Chaetomorpha variabilis (Kützing) Kützing, 1845;* *Conferva aerea Dillwyn, 1806*		3,4,5,6,7,8	1,2,3,4,5	2,3,4,5,8,9,10	1,2,3,4	1,2,4,6,9,10	
	Cladophorales	Cladophoraceae	Chaetomorpha	157107	***Chaetomorpha capillaris (Kützing) Børgesen, 1925***	*Rhizoclonium capillare Kützing, 1847*		6			1,3,4	2.9	
	Cladophorales	Cladophoraceae	Chaetomorpha	145022	***Chaetomorpha crassa (C.Agardh) Kützing, 1845***	*Chaetomorpha torulosa Kützing, 1845* *Conferva torulosa Zanardini, 1843*		6			1,2,3,4	2,4,9	
	Cladophorales	Cladophoraceae	Chaetomorpha	624256	***Chaetomorpha vieillardii (Kützing) M.J.Wynne, 2011***	*Bangia vieillardii Kützing, 1863; Chaetomorpha crassa (C.Agardh) Kützing, 1845* *Conferva crassa C.Agardh, 1824*		3,4,5					
	Cladophorales	Cladophoraceae	Chaetomorpha	145026	***Chaetomorpha ligustica* (Kützing) Kützing, 1849**	*Chaetomorpha mediterranea (Kützing) Kützing, 1849* *Chaetomorpha mediterranea var. crispa (Feldmann) Gallardo, Gómez Garreta, Ribera, Cormaci, Furnari, Giaccone & Boudouresque, 1993* *Chaetomorpha tortuosa (Dillwyn) Kleen, 1874* *Conferva capillaris (Kützing) Rabenhorst, 1847* *Rhizoclonium arenosum (Carmichael) Kützing, 1849* *Rhizoclonium lubricum Setchell & N.L.Gardner, 1919*				1, 10		4.10	
	Cladophorales	Cladophoraceae	Chaetomorpha	145027	***Chaetomorpha linum* (O.F.Müller) Kützing, 1845**	*Caerea linum Collins; Chaetomorpha linum f. aerea (Dillwyn) F.S.Collins* *Chaetomorpha sutoria (Berkeley) Harvey, 1858* *Conferva linoides C.Agardh, 1822* *Conferva linoides S.F.Gray, 1821* *Lychaete linum (O.F.Müller) Areschoug, 1851*		3,4,5,6	1,2,3,4,5	1,2,3,4,8,9,10	1,2,3,4	1,2,4,6,9,10	
	Cladophorales	Cladophoraceae	Chaetomorpha				*Chaetomorpha pisiformis* (Rpth.)					2.9	

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							Ag., 1812						
	Cladophorales	Cladophoraceae	Chaetomorpha	145024	***Chaetomorpha gracilis* Kützing, 1845**				1,2		1.2	2,4,9,10	
	Cladophorales	Cladophoraceae	Chaetomorpha	145031	***Chaetomorpha zernovii* Woronichin, 1925**						2	2,4,9,10	
							Chlorocystis rainhardii (Gardn.) A. Zin., 1885					2.9	
	Chlamydomonadales	Chlorochytriaceae	Chlorochytrium	144898	**Chlorochytrium cohnii E.P.Wright, 1877**							4.6	
	Cladophorales	Cladophoraceae	Cladophora	145033	***Cladophora albida* (Nees) Kutzing, 1843**	*Cladophora hamosa (Kützing) Kützing, 1849 ; Cladophora magdalenae Harvey, 1851* *Cladophora neapolitana Schiffner, 1926* *Cladophora neesiorum (C.Agardh) Kützing, 1845*		4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,8,9,10	1,2,3,4	1,2,4,8,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145037	***Cladophora coelothrix* Kützing, 1843**	*Cladophora repens (J.Agardh) Harvey, 1849; Cladophoropsis modonensis (Kützing) Reinbold, 1905*			1,2,3,4,5	1,9,10	1,2,3,4	2,4,6,9	
	Cladophorales	Cladophoraceae	Cladophora	145042	***Cladophora dalmatica* Kützing, 1843**	*Cladophora oblitterata J.Söderström, 1963*		3,4,5,6,7		1,6,8,9,10	1,2,3,4	2,4,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145043	***Cladophora echinus* (Biasoletto) Kützing, 1849**					9, 10	1	2,4,6,9	
	Cladophorales	Cladophoraceae	Cladophora	145051	***Cladophora laetevirens* (Dillwyn) Kützing, 1843**			1,3,4,5,6,7,8	1,2,3	1,2,3,4,5,8,9,10	1,2,3,4	1,2,4,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145052	***Cladophora lehmanniana* (Lindenberg) Kützing, 1843**	*Cladophora longiarticulata (Kützing) Kützing, 1853* *Cladophora ramulosa Meneghini, 1844* *Cladophora utriculosa Kützing, 1843*		1		1,2,5,8,9,10		1	
	Cladophorales	Cladophoraceae	Cladophora	145045	***Cladophora flexuosa* (O.F.Müller) Kützing, 1843**	*Cladophora gracilis (Griffiths) Kützing, 1845* *Conferva flexuosa O.F.Müller, 1782*				2, 10		1	
	Cladophorales	Cladophoraceae	Cladophora	145046	***Cladophora fracta* (O.F.Müller ex Vahl) Kützing, 1843**	*Cladophora fracta var. normalis Rabenhorst, 1868* *Conferva patens C.Agardh, 1824*		6		2,3,4,5,8,10	1	1	
	Cladophorales	Cladophoraceae	Cladophora	145048	***Cladophora glomerata* (Linnaeus) Kützing, 1843**	*Chantransia flavicans Desvaux, 1813* *Chantransia glomerata (Linnaeus) de Lamarck & De Candolle, 1805* *Chantransia vaginata (Ducluzeau) Desvaux, 1813* *Cladophora fasciculata Kützing, 1845* *Conferva capillaris Linnaeus, 1753* *Conferva glomerata Linnaeus, 1753*		6		1,2,3,4,5,8,9,10	1	1,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145047	***Cladophora globulina* (Kützing) Kützing, 1845**	*Cladophora lacustris* Kützing, 1845						1	
	Cladophorales	Cladophoraceae	Cladophora	211752	***Cladophora hauckii* Børgesen, 1946**	*Cladophora fracta f. hauckii (Børgesen) Slootweg*				10			
	Cladophorales	Cladophoraceae	Cladophora	145049	***Cladophora hutchinsiae* (Dillwyn) Kützing, 1845**	*Cladophora diffusa Harvey* *Cladophora rectangularis (A.W.Griffiths) Harvey, 1846* *Cladophora rissoana Montagne ex Kützing, 1849* *Conferva hutchinsiae Dillwyn, 1809* *Conferva rectangularis A.W.Griffiths, 1833*				1,2,3,4,5,6,8,9,10		10		

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	Cladophorales	Cladophoraceae	Cladophora	145059	***Cladophora pellucida* (Hudson) Kützing, 1843**	*Cladophora pseudopellucida* Hoek, 1963				1,2,3,4,5,6,8,9,10			
	Cladophorales	Cladophoraceae	Cladophora	145060	***Cladophora prolifera* (Roth) Kützing, 1843**	*Chantransia prolifera* (Roth) Chevalier, 1836 *Cladophora rugulosa* G.Martens, 1866				1,2,5,6,8,9,10			
	Cladophorales	Cladophoraceae	Cladophora	145063	***Cladophora ruchingeri* (C.Agardh) Kützing, 1845**	*Cladophora gracilis f. elongata Collins, 1902* *Cladophora gracilis var. stricta Schiffner, 1938* *Cladophora nitida var. ruchingeri (C.A.Agardh) Ardissone, 1886; Cladophora sericea f. ruchingeri (C.A.Agardh) Hamel, 1929* *Conferva ruchingeri C.Agardh, 1824*		1					
	Cladophorales	Cladophoraceae	Cladophora	145064	***Cladophora rupestris* (Linnaeus) Kützing, 1843**	*Aegagropila biformis Wittrock, 1878* *Annulina rupestris (Linnaeus) Link, 1820* *Ceramium rupestre (Linnaeus) de Lamarck & De Candolle, 1805* *Chloronitum rupestre (Linnaeus) Gallion, 1828* *Cladophora bertolonii Kützing, 1849* *Cladophora lyngbyana Kützing, 1845* *Cladophora nuda (Harvey) Harvey, 1849* *Cladophora opposita Kützing, 1843* *Cladophora plumosa Kützing, 1843* *Cladophora ramosissima (Draparnaud ex Kützing) Kützing, 1843* *Cladophora ramossisima (Draparnaud ex Kützing) Kützing, 1849* *Cladophora rupestris f. contracta Simmons, 1897* *Cladophora rupestris f. flaccida Suringar, 1857* *Cladophora rupestris f. mediterranea (Kützing) Ardissone* *Cladophora rupestris f. nuda (Harvey) Holmes & Batters ex Batters, 1902* *Cladophora rupestris f. rigida Suringar, 1857* *Cladophora rupestris f. submarina Foslie, 1884* *Cladophora rupestris var. baltica Kützing, 1845* *Cladophora rupestris var. mediterranea Kützing, 1849* *Cladophora rupestris var. nuda Hamel, 1925* *Cladophora sertularina var. adriatica Kützing, 1849* *Conferva glauca Roth, 1800* *Conferva lyngbyana (Kützing) Rabenhorst, 1847* *Conferva nuda Harvey, 1836* *Conferva ramosissima Draparnaud ex Kützing, 1845* *Conferva rupestris Linnaeus, 1753* *Conferva rupestris var. glauca (Roth) Roth, 1806*		1				6	
	Cladophorales	Cladophoraceae	Cladophora	145070	***Cladophora vagabunda* (Linnaeus) Hoek, 1963**	*Ceramium vagabundum (Linnaeus) Roth, 1800; Cladophora brachyclona Montagne ex Kützing, 1849* *Cladophora expansa (Mertens) Kützing, 1843* *Cladophora fascicularis (Mertens ex C.Agardh) Kützing, 1843* *Cladophora flaccida Kützing, 1845* *Cladophora inserta Dickie, 1876* *Cladophora mauritiana Kützing, 1849* *Cladophora penicillata Kützing, 1853* *Conferva pulverulenta Mertens ex Jürgens, 1824*		4,5,6,7,8	1,2,3,4,5	1,6,9	1,2,3,4	1,2,4,6,9,10	

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	Cladophorales	Cladophoraceae	Cladophora	145065	***Cladophora sericea*** **(Hudson) Kützing, 1843**	*Ceramium sericeum de Lamarck & De Candolle, 1805; Cladophora crystallina (Roth) Kützing, 1843* *Cladophora glaucescens (A.W.Griffiths ex Harvey) Harvey, 1849* *Cladophora mediterranea Hauck, 1885* *Cladophora nitida Kützing, 1843* *Cladophora ovoidea Kützing, 1843* *Cladophora rudolphiana (C.Agardh) Kützing, 1843* *Conferva sericea Hudson, 1762*		2,4,5,6,7,8	1,2	1,2,3,4,5,8,9,10	1,2,3,4	1,2,4,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145066	***Cladophora sivashensis*** **C.Meyer, 1922**			6			1,2,3,4	2,4,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145069	***Cladophora vadorum*** **(Areschoug) Kützing, 1849**	*Cladophora corynarthra Kützing, 1845 ;Cladophora gracilis var. vadorum (Areschoug) F.S.Collins*		3,5	1,2,4,5		1,2,3,4	2,4,6,9,10	
	Cladophorales	Cladophoraceae	Cladophora	145054	***Cladophora liniformis*** **Kützing, 1849**			3,4,6			1,2,3,4	2,4,6,8,9,10	
	Siphonocladales	Boodleaceae	Cladophoropsis	145875	***Cladophoropsis membranacea*** **(Hofman Bang ex C.Agardh) Børgesen, 1905**	*Cladophoropsis gerloffii Nizamuddin, 1988*					1,2,3,4	2,4,9	
	Bryopsidales	Codiaceae	Codium	145092	***Codium tomentosum*** **Stackhouse, 1797**	*Fucus tomentosus var. marginifer Turner, 1811*				1,2,9,10		6	
	Bryopsidales	Codiaceae	Codium	145093	***Codium vermilara*** **(Olivi) Delle Chiaje, 1829**					10	1,2,3,4	2,4,9,10	
	Oltmannsiellopsidales	Oltmannsiellopsidaceae	Dangemannia	495323	***Dangemannia microcystis*** **(P.J.L.Dangeard) T.Friedl & C.J.O'Kelly, 2002**	*Planophila microcystis (P.J.L.Dangeard) Kornmann & Sahling, 1983* *Ulvella microcystis P.J.L.Dangeard, 1965*				2			
	Ulvales	Ulvellaceae	Entocladia	371793	***Entocladia cladophorae*** **(Hornby) Starmach, 1972**					1,6,10			
	Ulvales	Ulvaceae	Enteromorpha	552817	***Enteromorpha linza*** **var. *crispata*** **(Bertoloni) J.Agardh**					1,2,8,9			
	Ulvales	Ulvaceae	Enteromorpha	551232	***Enteromorpha linza*** **var. *minor*** **Schiffner**					1,2,8,9			
	Ulvales	Ulvaceae	Enteromorpha	145968	***Enteromorpha maeotica*** **Proshkina-Lavrenko, 1945**			4,5	1,2		1	4,9,10	
	Ulvales	Ulvellaceae	Epicladia	146008	***Epicladia perforans*** **(Huber) R.Nielsen, 1980**	*Entocladia perforans (Huber) Levring, 1937*			1,2			2,4,9	
	Ulvales	Ulvellaceae	Epicladia	146010	***Epicladia pontica*** **Rochlina, 1932**							2,4,9	
	Ulotrichales	Gomontiaceae	Eugomontia	145922	***Eugomontia sacculata*** **Kornmann, 1960**				1,2				
	Bryopsidales	Udoteaceae	Flabellia	145094	***Flabellia petiolata*** **(Turra) Nizamuddin, 1987**	*Udotea petiolata (Turra) Børgesen, 1926*				8, 10			
	Ulvales	Gayraliaceae	Gayralia	553198	***Gayralia oxysperma f. wittrockii*** **(Bornet) P.C.Silva, 1996**	*Monostroma wittrockii Bornet, 1880*		6			1,3,4	2	
	Ulotrichales	Gomontiaceae	Gomontia	144903	***Gomontia polyrhiza*** **(Lagerheim) Bornet & Flahault, 1888**	*Codiolum polyrhizum* Lagerheim, 1886 ; *Gomontia manxiana* Chodat		2,3,6	1,2		1,3,4	1,2,4,9,10	
	Chaetophorales	Chaetophoraceae	Gongrosira	414977	***Gongrosira*** **Kützing, 1843**	*Pseudoleptosira* Nayal, 1935		2					

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	Bryopsidales	Halimedaceae	Halimeda	144483	***Halimeda tuna* (J.Ellis & Solander) J.V.Lamouroux, 1816**	*Corallina tuna J. Ellis et Solander, 1768* *Halimeda platydisca Decaisne, 1842*				8, 10			
	Ulotrichales	Gomontiaceae	Monostroma	238933	***Monostroma fuscum* (Post., Rupr) Wittrock, 1866**							2,9,10	
	Ulotrichales	Gomontiaceae	Monostroma	550926	***Monostroma oxyspermum var. laceratum* (Thuret) Hamel**	*Monostroma laceratum* Thuret ; Gayralia oxysperma (Kützing) K.L.Vinogradova ex Scagel et al., 1989 ;						9	
	Ectocarpales	Chordariaceae	Myriactula	162809	***Myriactula pulvinata* (Kützing) Kuntze, 1898**	*Myriactis pulvinata* Kützing, 1843						1	
	Bryopsidales	Ostreobiaceae	Ostreobium	145095	***Ostreobium quekettii* Bornet & Flahault, 1889**	*Ostreobium reineckei* Bornet, 1896		2,3,6	1,2		1,3,4	2,4,9,10	
	Bryopsidales	Derbesiaceae	Pedobesia	375374	***Pedobesia simplex* (Meneghini ex Kützing) M.J.Wynne & Leliaert, 2001**	*Derbesia lamourouxii (J.Agardh) Solier, 1846* *Pedobesia lamourouxii (J.Agardh) Feldmann, Loreau, Codomier & Couté, 1975*					1.4	2,4,9	
	Ulvales	Ulvaceae	Percursaria	145979	***Percursaria percursa* (C.Agardh) Rosenvinge, 1893**	*Enteromorpha percursa* (C.Agardh) J.Agardh, 1842		6	1,2			2,4,9,10	
	Ulvales	Phaeophilaceae	Phaeophila	145778	***Phaeophila dendroides* (P.L.Crouan & H.M.Crouan) Batters, 1902**	*Phaeophila floridearum Hauck, 1876*		2,6	1,2	1,2,8,9,10	1,2,3,4	2,4,9,10	
	Chaetophorales	Chaetophoraceae	Pringsheimiella	144876	***Pringsheimiella scutata* (Reinke) Marchewianka, 1925**	*Pringsheimia udotea* Børgesen, 1913; *Pringsheimiella udotea* (Børgesen) W.R.Taylor, 1960			1,2	1,2,5,8,10	1,2,3,4	2,4,9,10	
	Ulvales	Ulvaceae	Pseudopringsheimia	144880	***Pseudopringsheimia confluens* (Rosenvinge) Wille, 1909**	*Ulvella confluens Rosenvinge, 1893*			1,2		1.4	2	
	Cladophorales	Cladophoraceae	Rhizoclonium	240486	***Rhizoclonium hieroglyphicum* (C.Agardh) Kützing, 1845**			5			1.3	2,9,10	
	Cladophorales	Cladophoraceae	Rhizoclonium	145075	***Rhizoclonium riparium (Roth) Harvey, 1849***	*Conferva riparia Roth, 1806* *Rhizoclonium implexum (Dillwyn) Kützing, 1845* *Rhizoclonium kerneri Stockmayer, 1890*		4,5,6	1,2,3,4,5	1,2,3,6,8	1,2,3,4	1,2,9	
	Cladophorales	Cladophoraceae	Rhizoclonium	145076	***Rhizoclonium tortuosum* (Dillwyn) Kützing, 1845**	*Conferva tortuosa Dillwyn, 1805*		3,5	1,2,5	1,2,3,4,5,8,9,10	1,2,3,4	2,4,10	
	Siphonocladales	Siphonocladaceae	Siphonocladus	145877	***Siphonocladus pusillus* (C.Agardh ex Kützing) Hauck, 1884**						1.4	2,4,9	
							Spirogyra decimina (O.F.Müller) Dumortier					10	
							Spirogyra subsalsa Kützing					10	
							Spirogyra subsalina Cedercreutz					1	
	Chaetophorales	Chaetophoraceae	Stromatella	144881	***Stromatella monostromatica* (P.J.L.Dangeard) Kornmann & Sahling, 1985**					2		6	
	Ulvales	Ulvaceae	Ulva	156078	***Ulva clathrata (Roth) C.Agardh,***	*Enteromorpha clathrata (Roth) Greville, 1830; Enteromorpha clathrata*		1,3,4,5	1,2	1,2,3,4,5,	1,2,3,4	2,4,9,10	

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					1811	*var. crinita (Nees) Hauck, 1884* *Enteromorpha crinita Nees, 1820* *Enteromorpha gelatinosa Kützing, 1849* *Enteromorpha muscoides (Clemente) Cremades, 1990* *Enteromorpha ramulosa (Smith) Carmichael, 1833* *Ulva muscoides Clemente, 1807* *Ulva ramulosa Smith, 1810*				6,8,9,10		
	Ulvales	Ulvaceae	Ulva	234462	***Ulva compressa Linnaeus, 1753***	*Enteromorpha complanata Kützing, 1845; Enteromorpha compressa (Linnaeus) Nees, 1820* *Enteromorpha usneoides Bonnemaison ex J.Agardh, 1883* *Ilea compressa (Linnaeus) Gaillon, 1828* *Scytosiphon compressus (Linnaeus) Lyngbye, 1819*		1,3,4,5,6,7,8	1,2,4	1,2,3,4,5,6,8,9,10	1,2,3,4	1,2,4,9,10	
	Ulvales	Ulvaceae	Ulva	145981	***Ulva curvata* (Kützing) De Toni, 1889**					10		6	
	Ulvales	Ulvaceae	Ulva	234468	***Ulva flexuosa Wulfen, 1803***	*Enteromorpha flexuosa (Wulfen) J.Agardh, 1883; Enteromorpha lingulata J.Agardh, 1883* *Enteromorpha tubulosa (Kützing) Kützing, 1856*		1,3,4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,6,8,9,10	1,2,3,4	1,2,4,9,10	
	Ulvales	Ulvaceae	Ulva	688224	***Ulva flexuosa flexuosa Wulfen, 1803***			6					
	Ulvales	Ulvaceae	Ulva	382510	***Ulva flexuosa paradoxa (C.Agardh) M.J.Wynne, 2005***	*Conferva paradoxa Dillwyn, 1809* *Enteromorpha clathrata var. hopkirkii (M'Calla ex Harvey) G.Hamel, 1931* *Enteromorpha erecta (Lyngbye) Carmichael, 1833* *Enteromorpha flexuosa paradoxa (C.Agardh) Bliding, 1963* *Enteromorpha hopkirkii M'Calla ex Harvey, 1849* *Enteromorpha paradoxa (C.Agardh) Kützing, 1845* *Enteromorpha paradoxa var. typica Batters* *Enteromorpha plumosa Kützing, 1843* *Scytosiphon erectus Lyngbye, 1819* *Ulva paradoxa C.Agardh, 1817*		6					
	Ulvales	Ulvaceae	Ulva	495888	***Ulva flexuosa pilifera (Kützing) M.J.Wynne, 2005***	*Enteromorpha flexuosa pilifera (Kützing) Bliding, 1963* *Enteromorpha pilifera Kützing, 1856*		6				6	
	Ulvales	Ulvaceae	Ulva	234471	***Ulva intestinalis Linnaeus, 1753***	*Enteromorpha compressa var. intestinalis (Linnaeus) Hamel, 1931;* *Enteromorpha intestinalis (Linnaeus) Nees, 1820* *Ilea intestinalis (Linnaeus) Leiblein, 1827* *Scytosiphon intestinalis (Linnaeus) Lyngbye, 1819*		3,4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,8,9,10	1,2,3,4	1,2,4,9,10	
	Ulvales	Ulvaceae	Ulva	234473	***Ulva kylinii* (Bliding) Hayden, Blomster, Maggs, P.C.Silva, M.J.Stanhope & J.R.Waaland, 2003**	*Enteromorpha kylinii* Bliding, 1948		6		1,2,3,5,8,9,10	1	6.10	
	Ulvales	Ulvaceae	Ulva	234474	***Ulva linza Linnaeus, 1753***	*Enteromorpha ahlneriana Bliding, 1944 ; Enteromorpha linza (Linnaeus) J.Agardh, 1883* *Enteromorpha procera K.Ahlner, 1877* *Ulva bertolonii C.Agardh, 1823* *Ulva enteromorpha var. lanceolata (Linnaeus) Le Jolis, 1863*		1,3,4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,6,8,9,10	1,2,3,4	1,2,4,6,9,10	

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						Ulva fasciata S.F.Gray, 1821 *Ulva lanceolata Linnaeus, 1767* *Ulva procera (K.Ahlner) Hayden, Blomster, Maggs, P.C.Silva, M.J.Stanhope & J.R.Waaland, 2003*							
	Ulvales	Ulvaceae	Ulva	234476	***Ulva prolifera O.F.Müller, 1778***			3,4,5,6,7,8	4,5	1,2,3,5,6,8,9,10	1,2,3,4	1,2,4,9,10	
	Ulvales	Ulvaceae	Ulva	527195	***Ulva prolifera* subsp. *gullmariensis* (Bliding) E.Taskin**	*Enteromorpha prolifera* subsp. *gullmariensis* Bliding 1963				10			
	Ulvales	Ulvaceae	Ulva	234478	***Ulva radiata* (J.Agardh) Hayden, Blomster, Maggs, P.C.Silva, M.J.Stanhope & J.R.Waaland 2003**	*Enteromorpha radiata* J.Agardh 1883				1, 9			
	Ulvales	Ulvaceae	Ulva	240523	***Ulva taeniata* (Setchell) Setchell & N.L.Gardner, 1920**	*Ulva dactylifera* Setchell & N.L.Gardner, 1920				1			
	Ulvales	Ulvaceae	Ulva	234481	***Ulva torta (Mertens) Trevisan, 1841***	*Bangia torta (Mertens) C.Agardh; Enteromorpha torta (Mertens) Reinbold, 1893* *Ilea torta (Mertens) Trevisan, 1845*		3,6			1	2	
	Ulvales	Ulvellaceae	Ulvella	144886	***Ulvella lens* P.L.Crouan & H.M.Crouan, 1859**			2,3,6	1,2,3	1,2,3,4,5,8,9,10	1,2,3,4	2,4,9,10	
	Ulvales	Ulvellaceae	Ulvella	144887	***Ulvella nadsonii* (Rochlina) Gallardo, Gómez Garreta, Ribera, Cormaci, Furnari, Giaccone & Boudouresque, 1993**	*Pseudulvella nadsonii Rochlina, 1932*						2,4,9	
	Ulvales	Ulvellaceae	Ulvella	732246	***Ulvella leptochaete (Huber) R.Nielsen, C.J.O'Kelly & B.Wysor in Nielsen et al., 2013***	*Acrochaete leptochaete* (Huber) R.Nielsen, 1983 ; Acrochaete polymorpha (L.Moewus) R.Nielsen, 1988 ; Ectochaete leptochaete (Huber) Wille, 1909 ; Ectochaete polymorpha L.Moewus, 1950 ; Endoderma leptochaete Huber, 1893; Entocladia leptochaete (Huber) Burrows, 1991 ; Entocladia moewusiae O'Kelly & Yarish, 1981 ; Phaeophila leptochaete (Huber) R.Nielsen, 1972 ; Phaeophila polymorpha (L.Moewus) R.Nielsen, 1972						2,4,9	
	Ulvales	Ulvellaceae	Ulvella	732245	***Ulvella wittrockii (Wille) R.Nielsen, C.J.O'Kelly & B.Wysor in Nielsen et al., 2013***	*Acrochaete wittrockii* (Wille) R.Nielsen, 1983 ; Chlorofilum ephemerum P.J.L.Dangeard, 1965 ; Ectochaete wittrockii (Wille) Kylin, 1938 ; Endoderma wittrockii (Wille) De Toni, 1889 ; Entocladia wittrockii Wille, 1880 ; Phaeophila wittrockii (Wille) R.Nielsen, 1972						4.9	
	Ulvales	Ulvellaceae	Ulvella	732259	***Ulvella viridis* (Reinke) R.Nielsen, C.J.O'Kelly & B.Wysor in Nielsen et al., 2013**	*Acrochaete viridis* (Reinke) R.Nielsen, 1979 ; Endoderma minuta Möbius, 1889 ; Endoderma viride (Reinke) De Toni, 1889 ; Entocladia viridis Reinke, 1879 ; Entoderma viridis (Reinke) Wille, 1890 ; Phaeophila viridis (Reinke) Burrows, 1976						4,9,10	
	Ulvales	Ulvaceae	Ulvaria	157123	***Ulvaria obscura (Kützing) P.Gayral ex C.Bliding, 1969***	*Monostroma blytii Wittrock; Monostroma blyttii (Areschoug) Wittrock, 1866 ;Monostroma obscurum (Kützing) J.Agardh, 1883;Ulva obscura Kützing, 1843*						4	
	Ulotrichales	Ulotrichaceae	Ulothrix	145927	***Ulothrix implexa* (Kützing) Kützing, 1849**	*Hormiscia implexa (Kützing) Rabenhorst, 1868 Klebsormidium rivulare (Kützing) M.O.Morison & Sheath, 1985*		4,5,6,7,8	3,4	1,8,9,10	1.2	1,2,4,8,9,10	
	Ulotrichales	Ulotrichaceae	Ulothrix	145925	***Ulothrix flacca* (Dillwyn) Thuret, 1863**	*Lyngbya carmichaelii Harvey, 1833; Lyngbya flacca (Dillwyn) Harvey, 1849*		2,3,4,5,6,7,8	3	1,2,3,4,5,6,8,9,10	1.2	1,2,4,9,10	

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						Ulothrix consociata Wille, 1901 *Ulothrix pseudoflacca Wille, 1901*							
	Ulotrichales	Ulotrichaceae	Ulothrix	145932	***Ulothrix tenerrima* (Kützing) Kützing 1843**	*Conferva tenerrima* Kützing 1833				1,2,9	3	2,9,10	
	Ulotrichales	Ulotrichaceae	Ulothrix				*Ulothrix tenuissi-ma* Kütz				1	2,4,9	
	Ulotrichales	Ulotrichaceae	Ulothrix	145934	***Ulothrix zonata* (Weber & Mohr) Kützing, 1843**	*Conferva zonata* F.Weber & Mohr, 1804				1,2,8,9,10	1,3,4	2.9	
	Ulvales	Ulvaceae	Ulva	145984	***Ulva lactuca* Linnaeus, 1753**	*Phyllona lactuca (Linnaeus) F.H.Wiggers, 1780 Ulva fasciata Delile, 1813* *Ulva fenestrata Postels & Ruprecht, 1840*		3,4,5,6,8		1,2,3,4,5,6,8,9,10		1,2,6,9	
	Ulvales	Ulvaceae	Ulva	145990	***Ulva rigida* C.Agardh, 1823**	*Ulva armoricana P.Dion, B.de Reviers & G.Coat, 1998; Ulva scandinavica Bliding, 1969* *Ulva spathulata Papenfuss, 1960*		3,6,7	3,4,5	1,2,3,4,5,6,8,9,10	1,2,3,4	1,2,4,8,9,10	
	Ulvales	Gayraliaceae	Gayralia	214368	***Gayralia oxysperma* (Kützing) K.L.Vinogradova ex Scagel *et al.* 1989**	*Monostroma crepidinium Farlow, 1881; Monostroma orbiculatum Thuret, 1854* *Monostroma oxycoccum Thuret, 1854* *Monostroma oxyspermum (Kützing) Doty, 1947* *Ulva oxysperma Kützing, 1843* *Ulvaria oxysperma (Kützing) Bliding, 1969*		2	1,2			10	
	Chlorococcales	Sphaeropleaceae	Sphaeroplea	495185	***Sphaeroplea annulina* (Roth) C.Agardh 1824**	*Sphaeroplea leibleinii* Kützing 1843				10			
	Ulotrichales	Ulotrichaceae	Spongomorpha	144413	***Spongomorpha aeruginosa* (Linnaeus) Hoek, 1963**	*Chlorochytrium inclusum* Kjellman, 1883 *Conferva aeruginosa* Linnaeus, 1753 *Spongomorpha congregata* (C.Agardh) Kützing, 1843 *Spongomorpha lanosa* (Roth) Kützing					1	2,4,9,10	
	Chaetophorales	Chaetophoraceae	Stigeoclonium	422903	***Stigeoclonium tenue* (C.Agardh) Kützing, 1843**	*Draparnaldia tenuis* C.Agardh, 1814, *Myxonema tenue* (C.Agardh) Rabenhorst, 1847, *Stigeoclonium irregulare* Kützing, 1845 , *Stigeoclonium longearticulatum* (Hansgirg) Heering, 1914, *Stigeoclonium pygmaeum* Hansgirg, 1886 , *Stigeoclonium subsecundum* Kützing, 1836, *Stigeoclonium subsecundum* var. *javanicum* Ritcher, 1914, *Stigeoclonium subsecundum* var. *tenuis* Nordstedt, 1880, *Stigeoclonium tenue* var. *irregulare* (Kützing) Rabenhorst, 1868, *Stigeoclonium variabile* Nägeli, 1963						1,8,9,10	
	Ulotrichales	Ulotrichaceae	Urospora	144420	***Urospora penicilliformis* (Roth) Areschoug, 1866**	*Codiolum gregarium A.Braun, 1855; Conferva peniciliformis Roth, 1806 Hormiscia penicilliformis (Roth) Areschoug, 1866* *Urospora isogona (Smith) Batters* *Urospora mirabilis Areschoug, 1866*		1,4,5,6,7,8	1,2		1,2,3,4	1,2,4,9,10	
	Chlorodendrales	Chlorodendraceae	Tetraselmis	376158	***Tetraselmis marina* (Cienkowski) R.E.Norris, Hori & Chihara, 1980**	*Chlorangium marinum Cienkowski, 1881 , Prasinocladus marinus (Cienkowski) Waern, 1952*						2,4,9	
	Siphono-cladales	Valoniaceae	Valonia	145883	***Valonia macrophysa Kützing, 1843***					3			
	Siphono-cladales	Valoniaceae	Valonia	145884	***Valonia utricularis* (Roth) C.Agardh, 1823**					3			

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CHARO-PHYTA													
	Charales	Characeae	Chara				*Chara aculeolata Kütz.*				1		
	Charales	Characeae	Chara	399472	***Chara tomentosa* Linnaeus, 1753**	*Chara ceratophylla K.F.G.Wallroth, 1815* *Chara ceratophylla ceratophylla (Wallroth) A.Braun, 1867* *Chara ceratophylla var. inflatum C.F.W.Wallroth, 1833* *Chara ceratophylla var. macroptila A.Braun, 1835* *Chara ceratophylla var. microptila A.Braun, 1835*					1		
	Charales	Characeae	Chara	399468	***Chara canescens J.L.A.Loiseleur-Deslongschamps, 1810***							10	
	Charales	Characeae	Chara	399466	***Chara aspera C.L.Willdenow, 1809***							10	
	Charales	Characeae	Nitella	495202	***Nitella tenuissima (Desvaux) Kützing, 1843***							10	
	Charales	Characeae	Chara	547443	***Chara vulgaris* Linnaeus, 1753**	*Chara batrachosperma J.L.Thuillier, 1799* *Chara elongata K.Wallroth* *Chara foetida A.Braun, 1834* *Chara foetida f. capitata (Wahlstedt) N.Filarszky, 1932* *Chara foetida f. compacta N.Filarszky, 1932* *Chara foetida f. crassibracteata N.Filarszky, 1931* *Chara foetida f. crassior N.Filarszky, 1932* *Chara foetida f. diversifolia N.Filarszky, 1931* *Chara foetida f. flagellifolia N.Filarszky, 1930* *Chara foetida f. flexilis N.Filarszky, 1931* *Chara foetida f. heteroverticillata N.Filarszky, 1930* *Chara foetida f. incurvata N.Filarszky, 1930* *Chara foetida f. longiarticulata H.Filarszky, 1931* *Chara foetida f. mikrostephana N.Filarszky, 1932* *Chara foetida f. pseudopygmaea N.Filarszky, 1932* *Chara foetida f. recurvata N.Filarszky, 1936* *Chara foetida f. rivalis N.Filarszky, 1931* *Chara foetida f. rosariifolia N.Filarszky, 1931* *Chara foetida f. seminuda N.Filarszky, 1931* *Chara foetida f. subinermis A.Braun, 1867* *Chara foetida f. submacrophylla N.Filarszky, 1927* *Chara foetida f. submucronata N.Filarszky, 1931* *Chara foetida f. thermalis N.Filarszky, 1931* *Chara foetida f. virescens N.Filarszky, 1932* *Chara foetida var. gallocantae Prósper, 1910* *Chara foetida var. steudneri A,Braun, 1867* *Chara magellanica A.Braun* *Chara montana Schleicher ex C.H.Persoon, 1807* *Chara pleiospora U.Ganterer, 1847*					1	10	

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						Chara polysperma Kützing, 1845 (synonym) *Chara refracta Kützing, 1834* *Chara sphagnoides J.Wallman, 1853* *Chara tholeyroniana M.Gandoger, 1875* *Chara vulgaris eu-vulgaris J.S.Zaneveld, 1940* *Chara vulgaris var. aequibracteata Y.Y.Li, 1985* *Chara vulgaris var. montana (Schleicher ex C.H.Persoon) De Candolle, 1815* *Chara vulgaris var. refracta (Kützing) J.Groves & Bullock-Webster, 1924* *Chara vulgaris var. subinermis W.Migula, 1897* *Chara vulgaris var. vulgaris (Linnaeus) R.D.Wood, 1962* *Nitella batrachosperma (Thuillier) C.Agardh, 1824*							
	Charales	Characeae	Chara				*Chara intermedia L.*				1		
	Charales	Characeae	Lamprothamnium	179053	***Lamprothamnium papulosum* (K.Wallroth) J.Groves, 1916**	*Chara alopecuroidea A.R.Delile ex A. Braun nom.nud., 1847* *Chara alopecuroidea (Delile ex A.Braun) J.Wallman, 1853* *Chara alopecuroidea var. montagnei A.Braun, 1847* *Chara alopecuroidea var. papulosa (Wallroth) Kützing, 1849* *Chara alopecuroidea var. wallrothii (Ruprecht) A.Braun, 1847* *Chara montagnei A.Braun* *Chara papulosa K.Wallroth, 1833* *Chara spinescens Fée fide A.Braun, 1897* *Chara wallrothii F.J.Ruprecht, 1845* *Lamprothamnium papulosum f. montagnei (A.Braun) G.Feldmann, 1946* *Lamprothamnium papulosum var. montagnei (A.Braun) R.Corillion, 1957* *Lamprothamnus alopecuroides (Delile ex A. Braun) A.Braun, 1882* *Lamprothamnus alopecuroides var. montagnei (A.Braun) A.Braun, 1882* *Lamprothamnus alopecuroides var. wallrothii (Ruprecht) A.Braun, 1882* *Lamprothamnus papulosus (K.Wallroth) A.Béguinot & L.Formiggini, 1907* *Lamprothamnus papulosus var. montagnei (A.Braun) A.Beguinot & L.Formiggini, 1907* *Lychnothamnus montagnei (A.Braun) C.F.Nyman, 1884* *Lychnothamnus wallrothii A. Braun, 1857*					1	10	
	Charales	Characeae	Lamprothamnium				*Lamiprothamnion alocoperoides* L.				1		
	Charales	Characeae	Tolypella	416187	***Tolypella nidifica (O.F.Müller) Leonhardi, 1864***							10	
XANTHOPHYTA													
	Vaucheriales	Vaucheriaceae	Vaucheria	146021	***Vaucheria dichotoma* (Linnaeus) Martius, 1817**	*Conferva dichotoma* Linnaeus, 1753		3	5			2.10	
	Vaucheriales	Vaucheriaceae	Vaucheria	689146	***Vaucheria dichotoma f. marina* Hauck, 1884**			2,6					
	Vaucheriales	Vaucheriaceae	Vaucheria				*Vaucheria litorea Hofm.- Bang.,*					2.9	

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							Ag. 1823						
	Vaucheriales	Vaucheriaceae	Vaucheria		**Vaucheria piloboloides Thuret, 1854**	*Vaucheria fuscescens Kützing, 1856*						2	
PHAEOPHYTA													
	Ectocarpales	Acinetosporaceae	Acinetospora	145398	***Acinetospora crinita* (Carmichael) Sauvageau, 1899**	*Acinetospora pusilla (Griffiths ex Harvey) De Toni, 1895* *Acinetospora pusilla var. crinita (Carmichael) Batters* *Acinetospora vidovichii (Meneghini) Sauvageau, 1898* *Ectocarpus crinitus Carmichael, 1833* *Ectocarpus pusillus Harvey, 1841* *Ectocarpus vidovichii Meneghini, 1843* *Haplospora vidovichii (Meneghini) Bornet, 1891*				1,2,3,6,10	3	2.9	
	Desmarestiales	Arthrocladiaceae	Arthrocladia	145306	***Arthrocladia villosa* (Hudson) Duby, 1830**	*Arthrocladia australis Kützing, 1845* *Arthrocladia villosa f. australis (Kützing) Hauck, 1875* *Chordaria villosa (Hudson) C.Agardh, 1817* *Conferva villosa Hudson, 1778* *Sporochnus villosus (Hudson) C.Agardh, 1824*					1,2,3	2.9	
	Ectocarpales	Chordariaceae	Asperococcus	145311	***Asperococcus bullosus* J.V.Lamouroux, 1813**	*Asperococcus turneri (Dillwyn ex Smith) W.J.Hooker, 1833 (invalid)* *Asperococcus turneri var. profundus (Feldmann) Ballesteros, 1983* *Encoelium bullosum (J.V.Lamouroux) C.Agardh, 1820* *Gastridium opuntium Lyngbye, 1819*				1,2,5,9,10	3	2,9,10	
	Ectocarpales	Chordariaceae	Asperococcus	376395	***Asperococcus ensiformis* (Delle Chiaje) M.J.Wynne, 2003**	*Asperococcus compressus A.W.Griffiths ex W.J.Hooker, 1833 ; Haloglossum compressum (A.W.Griffiths ex W.J.Hooker) G.Hamel, 1937* *Haloglossum griffithsianum Kützing, 1843* *Laminaria ensiformis Delle Chiaje, 1829*			1,2	1,2,9,10			
	Ectocarpales	Chordariaceae	Asperococcus	145313	***Asperococcus fistulosus* (Hudson) W.J.Hooker, 1833**	*Asperococcus echinatus (Mertens ex Roth) C.Agardh, 1817* *Asperococcus echinatus f. villosa Kylin, 1907* *Asperococcus fistulosus f. villosus Kylin, 1907* *Asperococcus rugosus J.V.Lamouroux, 1813* *Chordaria filum var. fistulosa (Hudson) C.Agardh, 1817* *Ectocarpus repens Reinke, 1889* *Encoelium echinatum (Mertens ex Roth) C.Agardh, 1820* *Hecatonema kjellmani Nordstedt, 1912* *Hecatonema reptans Kylin, 1907* *Phycocelis crouaniorum Athanasiadis, 1996* *Phycocelis reptans (P.L.Crouan & H.M.Crouan) Kjellman, 1890* *Scytosiphon filum var. fistulosus (Hudson) C.Agardh, 1820* *Scytosiphon fistulosus (Hudson) C.Agardh, 1811* *Scytosiphon lomentaria f. fistulosus (Hudson) Foslie, 1890* *Ulva fistulosa Hudson, 1778*				1,2,5,9,10		6	
	Fucales	Sargassaceae	Cystoseira	145508	***Cystoseira barbata* (Stackhouse) C.Agardh, 1820**	*Abrotanifolia barbata Stackhouse, 1809; Cystoseira barbata f. hoppii (C.Agardh) Woronichin, 1908* *Cystoseira barbata var. hoppii (C.Agardh) J.Agardh, 1842* *Cystoseira hoppii C.Agardh, 1820* *Fucus barbatus Goodenough & Woodward, 1797*		1,3,4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,8,9,10	1,2,3	1,2,9,10	
	Fucales	Sargassaceae	Cystoseira	553642	***Cystoseira barbata f. aurantia***	*Cystoseira concatenata f. repens A.D.Zinova & Kalugina*				1,2,8,9			

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					(Kützing) Giaccone, 1985								
	Fucales	Sargassaceae	Cystoseira	553134	***Cystoseira barbata* f. *repens* A.D.Zinova & Kalugina, 1974**					1, 10	1.3		
	Fucales	Sargassaceae	Cystoseira	677114	***Cystoseira barbata var. flaccida* (Kützing) Woronichin, 1908**						1.3	1.6	
	Fucales	Sargassaceae	Cystoseira	145514	***Cystoseira crinita* Duby, 1830**	*Fucus crinitus Desfontaines, 1799*		3,4,5	1,2,3,4,5	1,2,3,4,5,6,8,9,10	1,2,3	2,9,10	
	Fucales	Sargassaceae	Cystoseira	553391	***Cystoseira crinita* f. *bosphorica* (Sauvageau) A.D.Zinova & Kalugina, 1974**			1,6		1,2,3,4,5,8,9,10	1		
	Fucales	Sargassaceae	Cystoseira	145513	***Cystoseira corniculata* (Turner) Zanardini, 1841**	*Fucus ericoides var. corniculatus* Turner, 1809				1,2,6,8,9,10			
	Fucales	Sargassaceae	Cystoseira	145511	***Cystoseira compressa* (Esper) Gerloff & Nizamuddin, 1975**	*Cystoseira abrotanifolia f. fimbriata Sauvageau* *Cystoseira compressa f. rosetta (Ercegovic) M.Cormaci, G.Furnari, G.Giaccone, B.Scammacca & D.Serio, 1992* *Cystoseira compressa rosetta Ercegovic, 1952* *Cystoseira filicina Bory de Saint-Vincent* *Cystoseira fimbriata Bory de Saint-Vincent, 1832* *Fucus compressus Esper, 1799* *Fucus fimbriatus Desfontaines, 1799*				1,2,5,8,10			
	Fucales	Sargassaceae	Cystoseira	145518	***Cystoseira foeniculacea* (Linnaeus) Greville, 1830**	*Cystoseira abrotanifolia (Linnaeus) C.Agardh, 1820* *Cystoseira concatenata (Linnaeus) C.Agardh, 1820* *Cystoseira discors (Linnaeus) C.Agardh, 1828* *Cystoseira ercegovicii Giaccone, 1973* *Fucus abrotanifolius Linnaeus, 1753* *Fucus barbatus Linnaeus, 1753* *Fucus concatenatus Linnaeus, 1753* *Fucus discors Linnaeus, 1767* *Fucus foeniculaceus Linnaeus, 1753* *Phyllacantha concatenata (Linnaeus) Kützing*				2, 6			
	Fucales	Sargassaceae	Cystoseira	708560	***Cystoseira foeniculacea f. schiffneri* (Hamel) Gómez Garreta, Barceló, Ribera & Rull Lluch, 2001**	*Cystoseira acanthophora Schiffner, 1926* *Cystoseira discors f. dubia Ercegovic, 1952* *Cystoseira ercegovicii f. schiffneri (Hamel) Giaccone, 1985* *Cystoseira pycnoclada Schiffner ex Gerloff & Nizamuddin, 1976* *Cystoseira schiffneri Hamel, 1939*				1,8,9,10			
	Discosporangiales	Choristocarpaceae	Choristocarpus	145887	***Choristocarpus tenellus* Zanardini, 1860**	*Ectocarpus tenellus* Kützing, 1849						2.9	
	Ectocarpales	Chordariaceae	Cladosiphon	144911	***Cladosiphon contortus* (Thuret) Kylin, 1940**	*Castagnea contorta Thuret, 1863*					1,2,3	2,9,10	
	Ectocarpales	Chordariaceae	Cladosiphon	144914	***Cladosiphon mediterraneus* Kützing, 1843**	*Castagnea fistulosa (Zanardini) Derbés & Solier, 1851, Castagnea mediterranea (Kützing) Hauck, Castagnea polycarpa Derbès & Solier, 1851, Mesogloia fistulosa Zanardini, 1843,Nemacystus posidoniae (Meneghini) Hauck*						2,6,9	
	Sphacelariales	Cladostephaceae	Cladostephus	145888	***Cladostephus spongiosus* (Hudson) C.Agardh, 1817**	*Ceramium spongiosum (Hudson) Wahlenberg, 1826; Cladostephus densus Kützing, 1856*		3,4,6	1,2,5	1,2,3,4,5,8,9,10	1,2,3	1,2,9,10	

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						Cladostephus hirsutus (Linnaeus) C.-F.Boudouresque & M.Perret-Boudouresque, 1984 *Cladostephus laxus C.Agardh, 1824* *Cladostephus spongiosum f. laxus (C.Agardh) Areschoug, 1850* *Cladostephus spongiosum var. laxum (C.Agardh) C.Agardh, 1828* *Cladostephus spongiosus f. verticillatus (Lightfoot) Prud'homme van Reine, 1972* *Cladostephus verticillatus (Lightfoot) Lyngbye, 1819* *Conferva verticillata Lightfoot, 1777* *Fucus bryum Strøm, 1788*							
	Scytosiphonales	Scytosiphonaceae	Colpomenia	145857	***Colpomenia sinuosa* (Mertens ex Roth) Derbès & Solier, 1851**	*Asperococcus sinuosus (Mertens ex Roth) Bory de Saint-Vincent, 1832* *Asperococcus sinuosus (C.Agardh) Zanardini, 1841* *Encoelium sinuosum (Mertens ex Roth) C.Agardh, 1820* *Encoelium vesicatum (Harvey) Kützing, 1849* *Hydroclathrus sinuosus (Mertens) ex Roth) Zanardini, 1843* *Soranthera leathesiformis P.L.Crouan & H.M.Crouan, 1865* *Stilophora vesicata Harvey, 1834* *Tremella cerina Clemente, 1807* *Tremella rugosula Clemente, 1807* *Ulva sinuosa Mertens ex Roth, 1806*				10			
	Scytosiphonales	Scytosiphonaceae	Colpomenia	145856	***Colpomenia peregrina* Sauvageau, 1927**	*Colpomenia sinuosa var. peregrina* Sauvageau, 1927			1,2,5				
	Ectocarpales	Chordariaceae	Corynophlaea	144949	***Corynophlaea flaccida* (C.Agardh) Kützing, 1858**	*Corynephora flaccida C.Agardh, 1827; Leathesia flaccida (C.Agardh) Endlicher, 1843* *Leathesia kuetzingii Hauck, 1884* *Myriactis adriatica (J.Agardh) De Toni, 1895*			1,2		3	2,9,10	
	Ectocarpales	Chordariaceae	Cylindrocarpus	144952	***Cylindrocarpus microscopicus* P.L.Crouan & H.M.Crouan, 1851**	*Ectocarpus investiens Hauck, 1885, Ectocarpus microscopicus (P.L.Crouan & H.M.Crouan) Batters, 1902, Streblonema investiens (Hauck) Ardissone, 1886*						2,6,9	
	Ectocarpales	Chordariaceae	Corynophlaea	144951	***Corynophlaea umbellata* (C.Agardh) Kützing, 1843**	*Corynephora umbellata C.Agardh; Leathesia umbellata (C.Agardh) Endlichter, 1843*		3,4,5,6	1,2	1,2,3,4,5,6,9,10	1,2,3	1,2,9,10	
	Cutleriales	Cutleriaceae	Cutleria	145297	***Cutleria multifida* (Turner) Greville, 1830**	*Aglaozonia parvula (Greville) Zanardini, 1843* *Aglaozonia reptans (P.L.Crouan & H.M.Crouan) Kützing, 1849* *Cutleria multifida f. angustifrons Holmes & Batters, 1890* *Dictyota penicillata J.V.Lamouroux, 1809* *Padina parvula (Greville) Zanardini, 1843* *Padina reptans P.L.Crouan & H.M.Crouan, 1833* *Padinella parvula (Greville) Areschoug, 1843* *Zonaria multifida C.Agardh, 1820* *Zonaria parvula Greville, 1828* *Zonaria reptans (P.L.Crouan & H.M.Crouan) P.L.Crouan & H.M.Crouan, 1852*				10			
	Desmarestiales	Desmarestiaceae	Desmarestia	145310	***Desmarestia viridis* (O.F.Müller) J.V.Lamouroux, 1813**	*Chordaria viridis (O.F.Müller) C.Agardh, 1817; Desmarestia media var. tenuis Setchell & N.L.Gardner, 1924* *Desmarestia pacifica Setchell & N.L.Gardner, 1924*		8				3,7,8,9	

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						Dichloria viridis (O.F.Müller) Greville, 1830 *Fucus viridis O.F.Müller, 1782* *Gigartina viridis (O.F.Müller) Lyngbye, 1819* *Iridea fluitans Stackhouse, 1816* *Krobylopteris oltmannsii Schmidt, 1942* *Sporochnus viridis (O.F.Müller) Greville, 1830*							
	Dictyotales	Dictyotaceae	Dictyopteris	145360	***Dictyopteris polypodioides* (A.P.De Candolle) J.V.Lamouroux, 1809**	*Dictyopteris ambigua (Clemente) Cremades, 1990* *Dictyopteris membranacea (Stackhouse) Batters, 1902* *Dictyopteris punctata Noda, 1973* *Dictyopteris tripolitana Nizamuddin, 1981* *Fucus ambiguus Clemente, 1807* *Fucus membranaceus Stackhouse, 1795* *Fucus polypodioides Desfontaines, 1799* *Haliseris polypodioides (A.P.de Candolle) C.Agardh, 1820* *Polypodoidea membranacea Stackhouse, 1809*				1,2,3,4,5, 8,9,10			
	Dictyotales	Dictyotaceae	Dictyota	145371	***Dictyota implexa* (Desfontaines) J.V.Lamouroux, 1809**	*Dichophyllium implexum (Desfontaines) Kützing, 1843* *Dictyota dichotoma f. implexa (Desfontaines) Hauck, 1883* *Dictyota dichotoma var. implexa (Desfontaines) S.F.Gray, 1821* *Dictyota linearis (C.Agardh) Greville, 1830* *Fucus implexus Desfontaines, 1799* *Zonaria linearis C.Agardh, 1820*				5, 8,10	3	2,6,9,10	
	Dictyotales	Dictyotaceae	Dictyota	145369	***Dictyota fasciola* (Roth) J.V.Lamouroux, 1809**	*Dictyota denticulata (Kützing) Kützing, 1849 ; Dilophus fasciola (Roth) M.A.Howe, 1914* *Dilophus mediterraneus var. crassus Schiffner, 1931* *Fucus fasciola Roth, 1797*		4,6	1,2	1,2,3,4,5, 8,9,10	1,2,3	1,2,9,10	
	Dictyotales	Dictyotaceae	Dictyota	382506	***Dictyota fasciola* var. *repens* (J.Agardh) Ardissone, 1883**	*Dictyota repens J.Agardh, 1842* *Dilophus fasciola var. repens (J.Agardh) Feldmann, 1937* *Dilophus repens (J.Agardh) J.Agardh, 1882*		6		1,2,9,10	1	1.10	
	Dictyotales	Dictyotaceae	Dictyota	145374	***Dictyota mediterranea* (Schiffner) G.Furnari, 1997**	*Dilophus mediterraneus Schiffner, 1931*				10			
	Dictyotales	Dictyotaceae	Dictyota	145375	***Dictyota menstrualis* (Hoyt) Schnetter, Hörning & Weber-Peukert, 1987**	*Dictyota dichotoma var. menstrualis Hoyt, 1927*				1,2,3,4,5, 8,9,10		6	
	Dictyotales	Dictyotaceae	Dictyota	145367	***Dictyota dichotoma* (Hudson) J.V.Lamouroux, 1809**	*Dictyota apiculata J.Agardh, 1894* *Dictyota latifolia Kützing, 1859* *Dictyota rotundata J.V.Lamouroux, 1809* *Dictyota volubilis Kützing, 1849* *Fucus zosteroides J.V.Lamouroux, 1805* *Ulva dichotoma Hudson, 1762* *Zonaria dichotoma (Hudson) C.Agardh, 1817*				1,9,10	1,2,3	2,6,9,10	
	Dictyotales	Dictyotaceae	Dictyota	145379	***Dictyota spiralis* Montagne, 1846**				1,2	10	1,2,3	2.9	
	Ectocarpales	Ectocarpaceae	Ectocarpus	145403	***Ectocarpus caspicus* Henckel, 1909**			6				3	
	Ectocarpales	Ectocarpaceae	Ectocarpus	145404	***Ectocarpus fasciculatus* Harvey**	*Ectocarpus acutus var. acutus Setchell & Gardner, 1922;Ectocarpus*			1,2	10	1,2,3	2,8,9,10	

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					1841	*acutus var. haplogloiae Doty, 1947* *Ectocarpus confervoides f. pygmaeus (Areschoug) Kjellman, 1890* *Ectocarpus drapamaldioides (P.L.Crouan & H.M.Crouan) Kjellman, 1872* *Ectocarpus fasciculatus var. draparnaldioides P.L.Crouan & H.M.Crouan, 1867* *Ectocarpus fasciculatus var. pycnocarpus (Rosenvinge) Cardinal, 1964* *Ectocarpus fasciculatus var. pygmaeus (Areschoug) Batters, 1902* *Ectocarpus landsburgii Harvey, 1849* *Ectocarpus pycnocarpus Rosenvinge, 1893*							
	Ectocarpales	Ectocarpaceae	Ectocarpus	157164	***Ectocarpus penicillatus (C.Agardh) Kjellman, 1890***	*Ectocarpus confervoides f. penicillatus (C.Agardh) Kjellman, 1872* *Ectocarpus siliculosus var. penicillatus C.Agardh, 1824*					1.3	6.9	
	Ectocarpales	Ectocarpaceae	Ectocarpus	145410	***Ectocarpus siliculosus* (Dillwyn) Lyngbye, 1819**	*Ceramium confervoides Roth, 1797; Ceramium confervoides var. ferrugineum Roth, 1806* *Ceramium densum Roth, 1800* *Ceramium siliculosum (Dillwyn) C.Agardh, 1811* *Ceramium siliculosum var. atrovirens C.Agardh, 1817* *Ceramium siliculosum var. ferrugineum (Roth) C.Agardh, 1817* *Ceramium siliculosum var. nebulosum C.Agardh, 1817* *Ectocarpus confervoides Le Jolis, 1863* *Ectocarpus confervoides f. arctus (Kützing) Kjellman, 1872* *Ectocarpus confervoides f. irregularis F.S.Collins, 1906* *Ectocarpus confervoides f. siliculosus (Dillwyn) Kjellman, 1872* *Ectocarpus confervoides f. spalatinus (Kützing) Kjellman, 1872* *Ectocarpus confervoides var. arctus (Kützing) Lily Newton, 1931* *Ectocarpus confervoides var. brumalis Holden* *Ectocarpus confervoides var. siliculosus (Dillwyn) Farlow, 1881* *Ectocarpus hansteeni Foslie, 1894* *Ectocarpus hiemalis f. spalatinus (Kützing) Kjellman, 1890* *Ectocarpus siliculosus f. fluviatilis (Kützing) Kuylenstierna, 1990* *Ectocarpus siliculosus f. nebulosa (C.Agardh) Kjellman, 1890* *Ectocarpus siliculosus var. atrovirens (C.Agardh) C.Agardh, 1824* *Ectocarpus siliculosus var. caespitosus C.Agardh, 1824* *Ectocarpus siliculosus var. confervoides (Roth) Kjellmann* *Ectocarpus siliculosus var. ferrugineus (Roth) C.Agardh, 1824* *Ectocarpus siliculosus var. nebulosus (C.Agardh) C.Agardh, 1824*		1,3,4,5, 6,7,8	1,2,3	1,2,3,4,5, 6,8,9,10	1,2,3	1,2,8,9, 10	
	Ectocarpales	Ectocarpaceae	Ectocarpus	547461	***Ectocarpus siliculosus var. arctus (Kützing) Gallardo, 1992***	*Ectocarpus siliculosus f. arctus (Kützing) Kuckuck, 1891* *Ectocarpus confervoides f. crassus Kjellman, 1890*				2,3,4,6,8			
	Ectocarpales	Ectocarpaceae	Ectocarpus	550728	***Ectocarpus siliculosus var. dasycarpus (Kuckuck) Gallardo, 1992***	*Ectocarpus confervoides f. crassus Kjellman, 1890* *Ectocarpus confervoides f. dasycarpa (Kuckuck) Rosenvinge & Lund* *Ectocarpus dasycarpus Kuckuck, 1891* *Ectocarpus siliculosus f. gedanensis Lakowitz, 1907* *Ectocarpus siliculosus var. crassus (Kjellman) Gallardo, 1992* *Ectocarpus sliculosus f. dasycarpus (Kuckuck) Rosenvinge & Lund, 1941*				1,2,3,4,5, 6,8,9,10	1.3	2.9	
	Ectocarpales	Ectocarpaceae	Ectocarpus	162551	***Ectocarpus siliculosus var.***	*Ectocarpus hiemalis P.L.Crouan & H.M.Crouan, 1867*				1,2,3,4,5,		1,2,10	

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					***hiemalis* (P.L.Crouan & H.M.Crouan) Gallardo, 1992**	*Ectocarpus siliculosus f. hiemalis (P.L.Crouan & H.M.Crouan ex Kjellman) Kuckuck, 1891*				6,8,9,10			
	Ectocarpales	Chordariaceae	Eudesme	144918	***Eudesme virescens* (Carmichael ex Berkeley) J.Agardh, 1882**	*Aegira virescens (Carmichael ex Harvey) Setchell & N.L.Gardner* *Aegira zosterae (Mohr) Fries, 1835* *Castagnea virescens (Carmichael ex Harvey) Thuret, 1863* *Castagnea virescens f. aestivales-autumnales Areschoug, 1875* *Castagnea virescens f. vernales Areschoug, 1875* *Castagnea zosterae (Mohr) Thuret, 1863* *Castagnea zosterae (Mohr) Krok, 1869* *Linckia zosterae (Mohr) Lyngbye, 1819* *Mesogloia virescens Carmichael ex Berkeley, 1833* *Mesogloia zosterae (Mohr) Areschoug, 1842*				2,6,10	3	9.10	
	Ectocarpales	Ectocarpaceae	Ectocarpus	157164	***Ectocarpus penicillatus* (C.Agardh) Kjellman, 1890**	*Ectocarpus confervoides f. penicillatus (C.Agardh) Kjellman, 1872* *Ectocarpus siliculosus var. penicillatus C.Agardh, 1824*				1,2,3,6,8,9,10	1	2.9	
	Ectocarpales	Chordariaceae	Elachista	144937	***Elachista fucicola* (Velley) Areschoug, 1842**	*Conferva fucicola Velley, 1795* *Elachista fucicola f. grevillei Hamel* *Elachista fucicola f. lubrica (Ruprecht) Printz, 1926* *Elachista fucicola var. lubrica (Ruprecht) Rosenvinge, 1893* *Elachista globosa Ørsted, 1844* *Elachista grevillei Arnott ex Harvey, 1857* *Elachista lubrica Ruprecht, 1850* *Myriactula lubrica (Ruprecht) Jaasund, 1960*					3	2	
	Ectocarpales	Chordariaceae	Elachista	144942	***Elachista scutulata* (Smith) Areschoug, 1843**	*Conferva scutulata Smith, 1812* *Elachista scutellata Duby, 1830*						2.9	
	Ectocarpales	Acinetosporaceae	Feldmannia	157180	***Feldmannia caespitula* (J.Agardh) Knoepffler-Péguy 1970**				1,2,5	2,3,4,5,8			
	Ectocarpales	Acinetosporaceae	Feldmannia	156093	***Feldmannia globifera* (Kützing) G.Hamel, 1939**	*Ectocarpus globifer Kützing, 1843*				1, 8			
	Ectocarpales	Acinetosporaceae	Feldmannia	145417	***Feldmannia lebelii* (Areschoug ex P.L.Crouan & H.M.Crouan) G.Hamel, 1939**	*Ectocarpus caespitulus J.Agardh, 1842* *Ectocarpus lebelii Areschoug ex P.L.Crouan & H.M.Crouan, 1867* *Feldmannia caespitula var. lebelii (Areschoug ex P.L.Crouan & H.M.Crouan) Knoepffler-Péguy, 1970*				1,2,3,4,6,8,9,10	1.3	2.9	
	Ectocarpales	Acinetosporaceae	Feldmannia	145418	***Feldmannia padinae* (Buffham) G.Hamel, 1939**	*Ectocarpus padinae (Buffham) Sauvageau* *Giffordia padinae Buffham, 1893*				2,5,8,10			
	Ectocarpales	Acinetosporaceae	Feldmannia	145419	***Feldmannia paradoxa* (Montagne) G.Hamel, 1939**	*Ectocarpus globifer var. rupestris Batters* *Ectocarpus paradoxus Montagne*					1.3	2.9	
	Ectocarpales	Acinetosporaceae	Feldmannia	145415	***Feldmannia irregularis* (Kützing) G.Hamel, 1939**	*Ectocarpus arabicus Figari & De Notaris, 1853 ; Ectocarpus arabicus Kützing, 1855* *Ectocarpus coniger Børgesen, 1935* *Ectocarpus coniger var. arabicus Nasr, 1941* *Ectocarpus guadelupensis* *Ectocarpus irregularis Kützing, 1845* *Ectocarpus izuensis* *Ectocarpus lebelii var. agigensis P.L.Crouan & H.M.Crouan*		4,6	1,2,3,4	1,2,3,4,6,8,9,10	1,2,3	1,2,8,9,10	

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						Ectocarpus mucronatus De A.Saunders, 1898 *Ectocarpus nanus Levring, 1938* *Ectocarpus simpliciusculus var. vitiensis Askenasy, 1888* *Giffordia irregularis (Kützing) Joly, 1965* *Hincksia irregularis (Kützing) C.Amsler, 1991*							
	Ectocarpales	Chordariaceae	Giraudia	145324	***Giraudia sphacelarioides* Derbès & Solier, 1851**					1, 2	1,2,3	2,9,10	
	Sphacelariales	Stypocaulaceae	Halopteris	145906	***Halopteris filicina* (Grateloup) Kützing, 1843**	*Ceramium filicinum Grateloup, 1806* *Sphacelaria filicina (Grateloup) C.Agardh, 1824*				1,2,8,9,10			
	Ectocarpales	Chordariaceae	Halothrix	144944	***Halothrix lumbricalis* (Kützing) Reinke, 1888**	*Ectocarpus lumbricalis Kützing, 1845* *Elachista lumbricalis (Kützing) Hauck, 1883* *Halothrix rectiuscula Y.-P.Lee, 2001*				1,2,3,6,8			
	Ectocarpales	Chordariaceae	Hecatonema	372505	***Hecatonema streblonematoides* (Setchell & N.L.Gardner) Loiseaux, 1970**	*Compsonema myrionematoides Setchell & N.L.Gardner, 1922* *Compsonema nummuloides Setchell & N.L.Gardner, 1922* *Compsonema pusillum Setchell & N.L.Gardner, 1922* *Compsonema ramulosum Setchell & N.L.Gardner, 1922* *Compsonema secundum Setchell & N.L.Gardner, 1922* *Compsonema secundum f. terminale Setchell & N.L.Gardner, 1922* *Compsonema speciosum f. piliferum Setchell & N.L.Gardner, 1922* *Compsonema streblonematoides Setchell & N.L.Gardner, 1922* *Hecatonema variabile W.A.Setchell & N.L.Gardner, 1922*				1			
	Ectocarpales	Acinetosporaceae	Hincksia	145440	***Hincksia sandriana* (Zanardini) P.C.Silva, 1987**	*Ectocarpus elegans Thuret, 1863* *Ectocarpus sandrianus Zanardini, 1843* *Giffordia elegans (Thuret) Knoeppfler-Peguy, 1974* *Giffordia sandriana (Zanardini) G.Hamel, 1939*				1,2,6,8,9,10			
	Ectocarpales	Acinetosporaceae	Kuetzingiella	145444	***Kuetzingiella battersii* (Bornet ex Sauvageau) Kornmann, 1956**	*Ectocarpus battersii Bornet ex Sauvageau, 1895* *Feldmannia battersii (Bornet ex Sauvageau) Hamel, 1939*				1,2,6,8,9,10			
	Ectocarpales	Chordariaceae	Leathesia	494940	***Leathesia marina* (Lyngbye) Decaisne, 1842**	*Chaetophora marina Lyngbye, 1819; Clavatella difformis (Linaeus) Fries, 1835* *Clavatella nostoc-marina Bory de Saint-Vincent, 1823* *Corynephora marina (C.Agardh) C.Agardh, 1824* *Leathesia difformis Areschoug, 1847 (synonym)* *Leathesia difformis var. tingitana Schousboe ex Bornet, 1892* *Leathesia nana Setchell & N.L.Gardner, 1924* *Leathesia tuberiformis S.F.Gray, 1821*			1,2		1,2,3	1,2,9,10	
	Ectocarpales	Chordariaceae	Liebmannia	144921	***Liebmannia leveillei J.Agardh, 1842***	*Liebmannia major P.L.Crouan & H.M.Crouan, Mesogloia leveillei (J.Agardh) Meneghini, 1843*						2.9	
	Ectocarpales	Chordariaceae	Litosiphon	145327	***Litosiphon laminariae* (Lyngbye) Harvey, 1849**	*Asperococcus laminariae (Lyngbye) P.L.Crouan & H.M.Crouan; Asperococcus pusillus Carmichael, 1833* *Bangia laminariae Lyngbye, 1819* *Bangiella laminariae (Lyngbye) Gaillon, 1833* *Clathrodiscus oligosporus (Strömfelt) Waern, 1950* *Dictyosiphon pusillus (Carmichael ex W.J.Hooker) Areschoug, 1847* *Encoelium pusillum (Carmichael ex W.J.Hooker) J.Agardh, 1836* *Entonema oligosporum (Strömfelt) Kylin, 1947*		6	1,2	1,2,6,9,10	1.3	2.9	

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						Litosiphon hibernicus (Johnson) Batters, 1902 *Litosiphon pusillus (Carmichael) Harvey, 1849* *Litosiphon tenuis Levring, 1937 (synonym)* *Pilocladus danicus (Kylin) Kornmann, 1954* *Pogotrichum hibernicum T.Johnson, 1892* *Punctaria laminariae (Lyngbye) P.L.Crouan & H.M.Crouan* *Punctaria pusilla P.L.Crouan & H.M.Crouan, 1867* *Scytosiphon pusillus (Carmichael ex W.J.Hooker) Fries, 1845* *Streblonema danicum Kylin, 1947* *Streblonema oligosporum Strömfelt, 1884* *Streblonema thureti Sauvageau, 1936* *Streblonema volubile (P.L.Crouan & H.M.Crouan) Pringshein, 1862*							
	Ectocarpales	Chordariaceae	Microspongium	707754	***Microspongium stilophorae* (P.L.Crouan & H.M.Crouan) Cormaci & G.Furnari, 2012**	*Ectocarpus stilophorae P.L.Crouan & H.M.Crouan, 1867, Ectocarpus stilophorae f. caespitosus Rosenvinge, 1893, Ectocarpus stilophorae var. caespitosus (Rosenvinge) Lily Newton, 1931, Microspongium tenuissimum (Hauck) A.F.Peters, 2003, Streblonema stilophorae (P.L.Crouan & H.M.Crouan) Kylin, 1908, Streblonema stilophorae f. caespitosum (Rosenvinge) Kylin, 1908 , Streblonema tenuissimum Hauck, 1884*		6				2.9	
	Ectocarpales	Chordariaceae	Mikrosyphar	145447	***Mikrosyphar polysiphoniae* Kuckuck, 1897**					1,2,3,4,6,8,10			
	Ectocarpales	Chordariaceae	Microcoryne	144956	***Microcoryne ocellata* Strömfelt, 1888**					1			
	Ectocarpales	Chordariaceae	Myriactula	144957	***Myriactula arabica* (Kützing) Feldmann, 1937**	*Gonodia arabica (Kützing) Børgesen, 1934* *Myriactis arabica (Kützing) Kuckuck, 1929* *Phycophila arabica Kützing, 1858*				1,2,3,5,6,8,9,10	3	2.9	
	Ectocarpales	Chordariaceae	Myriotrichia	145331	***Myriotrichia clavaeformis* Harvey, 1834**	*Ectocarpus sphaericus Derbès & Solier, 1851* *Myrionema irregulare Jaasund, 1951* *Myriotrichia clavaeformis f. filiformis (Harvey) Kjellman, 1890* *Myriotrichia clavaeformis var. minima Holmes & Batters* *Myriotrichia clavaeformis var. subcylindrica Batters, 1895* *Myriotrichia filiformis Harvey, 1841* *Myriotrichia harveyana Nägeli, 1847* *Streblonema sphaericum (Derbès & Solier) Thuret, 1863*				1,2,3,4,5,6,8,9,10	1,2,3	2.9	
	Ectocarpales	Chordariaceae	Myrionema	495991	***Myrionema orbiculare* J.Agardh, 1848**	*Ascocyclus orbicularis (J.Agardh) Kjellman, 1890 ; Ascocyclus ramosus Waern, 1952* *Myrionema ramosum Pankow, 1971*		6	1,2	1,2,6,9,10	1	2,9,10	
	Ectocarpales	Chordariaceae	*Myrionema*		***Myrionema balticum* (Reinke) Foslie, 1894**	Myrionema balticum f. californicum Setchell & N.L.Gardner, 1922 ; Myrionema attenuatum var. trichophora Hollenberg, 1970 ; Myrionema attenuatum f. doliiforme Setchell & N.L.Gardner, 1922 ;Myrionema attenuatum Setchell & N.L.Gardner, 1922 ;Ascocyclus balticus Reinke, 1889					2.3	9	
	Ectocarpales	Chordariaceae	Myriotrichia	146286	***Myriotrichia repens* Hauck, 1879**	*Dichosporangium repens* (Hauck) Hauck, 1884					2	9	
	Ectocarpales	Chordariaceae	Myriactula	144967	***Myriactula rivulariae* (Suhr ex Areschoug) Feldmann, 1937**	*Elachista attenuata Harvey, 1846* *Elachista pulvinata (Kützing) Harvey, 1800* *Elachista rivulariae Suhr ex Areschoug, 1842*			1,2	1,2,3,4,6,8,9,10	1,2,3	2,9,10	

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
						Gonodia pulvinata (Kützing) Nieuwland, 1917							
	Ectocarpales	Chordariaceae	Myrionema	144984	***Myrionema seriatum (Reinke) Kylin, 1947***	*Ascocyclus foecundus var. seriatus Reinke, 1889, Myrionema foecundum f. seriatum (Reinke) Kylin, 1907, Phycocelis foecundus var. seriatus (Reinke) Lakowitz, 1929*						2.9	
	Ectocarpales	Chordariaceae	Myrionema	144985	***Myrionema strangulans* Greville, 1827**	*Myrionema intermedium Foslie, 1894; Myrionema intermedium Foslie, 1894* *Myrionema leclancherii Harvey, 1846* *Myrionema maculiforme Kützing, 1845* *Myrionema punctiforme (Lyngbye) Harvey, 1833* *Myrionema punctiforme (Lyngbye) Areschoug, 1847* *Myrionema strangulans var. punctiforme (Harvey) Lily Newton, 1931* *Myrionema vulgare Thuret, 1863* *Myrionema vulgare var. maculaeformis (Kützing) Piccone, 1889* *Phaeosphaerium punctiforme (Lyngbye) Kjellman, 1890*		6	1,2,3	1,2,3,6,8,9,10		2,6,9	
	Sporochnales	Sporochnaceae	Nereia	145911	***Nereia filiformis (J.Agardh) Zanardini, 1846***	*Desmarestia filiformis J.Agardh* *Nereia montagnei Derbès & Solier, 1851*					1,2,3	6,9,10	
	Dictyotales	Dictyotaceae	Padina	145385	***Padina pavonica* (Linnaeus) Thivy, 1960**	*Fucus pavonicus Linnaeus, 1753 ; Fucus pavonius Linnaeus, 1759* *Padina mediterranea Bory de Saint-Vincent, 1827* *Padina pavonia (Linnaeus) J.V.Lamouroux, 1816* *Ulva pavonia (Linnaeus) Linnaeus, 1767* *Zonaria pavonia C.Agardh, 1820*			1,2	1,2,5,8,9,10	1,2,3	1,2,9,10	
	Scytosiphonales	Scytosiphonaceae	Petalonia	145865	***Petalonia zosterifolia* (Reinke) Kuntze, 1898**	*Ilea zosterifolia (Reinke) Norstedt, 1912; Petalonia fascia var. zosterifolia (Reinke) W.R.Taylor, 1937* *Phyllitis zosterifolia Reinke, 1889*		3,6	1,2	1,2,8,9,10		2,9,10	
	Ectocarpales	Ectocarpaceae	Phaeostroma	145451	***Phaeostroma bertholdii* Kuckuck, 1895**			3,6				2.9	
	Ectocarpales	Pilayellaceae	Pilayella	145482	***Pilayella littoralis* (Linnaeus) Kjellman, 1872**			3,6	1,2	10	1.2	1,2,9,10	
	Ectocarpales	Ectocarpaceae	Pilinia	145457	***Pilinia rimosa* Kützing, 1843**	*Leptonema lucifugum Kuckuck, 1897, Leptonematella lucifuga (Kuckuck) P.C.Silva, 1959 , Waerniella lucifuga (Kuckuck) Kylin, 1947, Waerniella lucifuga var. australis A.B.Cribb, 1965*						10	
	Ectocarpales	Chordariaceae	Protectocarpus	144986	***Protectocarpus speciosus* (Børgesen) Kornmann, 1955**	*Compsonema speciosum (Børgesen) Setchell & N.L.Gardner, 1922; Ectocarpus speciosus (Børgesen) Kuckuck, 1922* *Hecatonema diffusum Kylin, 1907* *Hecatonema faeroense (Børgesen) Levring, 1937* *Hecatonema speciosum (Børgesen) A.D.Cotton, 1912* *Myrionema speciosum Børgesen, 1902*			1,2,5	10			
	Ralfsiales	Ralfsiaceae	Pseudolithoderma	144990	***Pseudolithoderma extensum* (P.L.Crouan & H.M.Crouan) S.Lund, 1959**	*Lithoderma extensum (P.L.Crouan & H.M.Crouan) G.Hamel, 1935 ,Lithoderma fatiscens Kuckuck, 1894, Pseudolithoderma fatiscens (Kuckuck) Svedelius, 1910, Ralfsia extensa P.L.Crouan & H.M.Crouan, 1867*						1,2,9,10	
	Ectocarpales	Chordariaceae	Punctaria	145346	***Punctaria latifolia* Greville, 1830**	*Punctaria hiemalis Kylin, 1907 ; Punctaria plantaginea var. crouanii Thuret*		5,6,7,8	1,2		1,2,3	2,7,9,10	
	Ectocarpales	Chordariaceae	Punctaria	145347	***Punctaria plantaginea* (Roth) Greville, 1830**	*Asperococcus plantagineus (Roth) Fries, 1835* *Homoeostroma plantagineum J.Agardh, 1896*				1,2,3,4,5,8,9,10	3	2.9	

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						Laminaria plantaginea (Roth) C.Agardh, 1817 *Phycolapathum plantagineum (Roth) Kützing, 1849* *Punctaria rubescens (Lyngbye) J.Agardh, 1896* *Zonaria plantaginea (Roth) C.Agardh, 1824*							
	Ectocarpales	Chordariaceae	Punctaria	145348	***Punctaria tenuissima* (C.Agardh) Greville, 1830**	*Desmotrichum balticum Kützing, 1845; Desmotrichum balticum f. paradoxum Gran, 1897* *Desmotrichum repens Kylin, 1907* *Desmotrichum scopulorum Reinke, 1888* *Desmotrichum scopulorum f. fennicum Skottsberg, 1911* *Desmotrichum undulatum (J.Agardh) Reinke, 1889* *Diplostromium balticum (Kützing) J.Agardh, 1896* *Diplostromium tenuissimum (C.Agardh) Kützing, 1843* *Entonema effusum (Kylin) Kylin, 1947* *Punctaria baltica (Kützing) Batters, 1902* *Punctaria undulata J.Agardh, 1836* *Streblonema effusum Kylin, 1907* *Zonaria tenuissima C.Agardh, 1824*		3,4,5,6	1,2,3	1	1,2,3	2,9,10	
	Ralfsiales	Ralfsiaceae	Ralfsia	145001	***Ralfsia verrucosa* (Areschoug) Areschoug, 1845**	*Cruoria verrucosa Areschoug, 1843; Ralfsia verrucosa var. cochlearum Areschoug, 1876* *Ralfsia verrucosa var. lignicola Areschoug, 1847*		4,5,6	1,2,4		1.3	1,2,9,10	
	Fucales	Sargassaceae	Sargassum	145552	***Sargassum acinarium (Linnaeus) Setchell, 1933***	*Fucus acinarius Linnaeus, 1753* *Fucus linariifolius Turner, 1807* *Fucus linifolius Turner, 1811* *Sargassum linifolium C.Agardh, 1820* *Sargassum linifolium f. gibraltica Grunow* *Sargassum vulgare var. linifolium (C.Agardh)*				1,2,5,8,9,10			
	Fucales	Sargassaceae	Sargassum	494809	***Sargassum hornschuchii C.Agardh, 1820***	*Sargassum (Sargassum) hornschuchii* C. Agardh, 1820 *Stichophora hornschuchii* (C.Agardh) Kützing, 1845				1,2,4,6,7			
	Fucales	Sargassaceae	Sargassum	494801	***Sargassum vulgare C.Agardh, 1820***	*Fucus salicifolius* S.G.Gmelin, 1768 *Sargassum (Sargassum) vulgare* C. Agardh, 1820 *Sargassum coarctatum* Kützing, 1843 *Sargassum megalophyllum* Montagne, 1846 *Sargassum vulgare var. megalophyllum* (Montagne) Vickers, 1896				1,2,5,6,8,9,10	2.5	6	
	Scytosiphonales	Scytosiphonaceae	Scytosiphon	145869	***Scytosiphon lomentaria* (Lyngbye) Link, 1833**	*Stypocaulon bipinnatum Kützing, 1855; Chlorosiphon shuttleworthianus Kützing, 1843* *Chorda autumnalis Areschoug, 1862* *Chorda lomentaria Lyngbye, 1819* *Chorda lomentaria f. autumnalis (Areschoug) Areschoug, 1875* *Chorda lomentaria var. autumnalis (Areschoug) Areschoug, 1862* *Chordaria attenuata Foslie, 1887* *Fucus lomentarius (Lyngbye) Sommerfelt, 1826* *Microspongium gelatinosum Reinke, 1888* *Scytosiphon filum var. lomentarius (Lyngbye) C.Agardh, 1820* *Scytosiphon lomentaria f. castagneus (Carmichael) Kleen, 1874* *Scytosiphon lomentaria f. fistulosus Reinke, 1907*		3,4,5,6,7,8	1,2	1,2,8,9,10	1,2,3	1,2,6,9,10	

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						Scytosiphon lomentaria var. zostericola Thuret, 1863 *Scytosiphon pygmaeus Reinke, 1888* *Scytosiphon simplicissimus (Clemente) Cremades, 1990*						
	Ectocarpales	Chordariaceae	Spermatoch-nus	145008	***Spermatochnus paradoxus* (Roth) Kützing, 1843**	*Chordaria paradoxa (Roth) Lyngbye, 1819* *Chordaria rhizodes var. paradoxa (Roth) C.Agardh, 1817* *Scytosiphon paradoxus (Roth) Hornemann, 1818* *Sporochnus rhizodes var. paradoxus (Roth) C.Agardh, 1824* *Stilophora lyngbyei J.Agardh, 1841* *Stilophora paradoxa (Roth) Areschoug, 1845*				1,9,10	1,2,3	2,6,9,10	
	Sphacelariales	Sphacelariaceae	Sphacelaria	145892	***Sphacelaria cirrosa* (Roth) C.Agardh, 1824**	*Ceramium cirrosum (Roth) C.Agardh, 1811; Sphacelaria bipinnata (Kützing) Piccone, 1884* *Sphacelaria cirrosa f. mediterranea Sauvageau, 1902* *Sphacelaria cirrosa f. meridionalis Sauvageau, 1902* *Sphacelaria cirrosa f. patentissima (Greville) Lund, 1950* *Sphacelaria cirrosa f. septentrionalis Sauvageau, 1902* *Sphacelaria cirrosa var. aegagropila C.Agardh, 1824* *Sphacelaria cirrosa var. gracilis (Lyngbye) Hornemann, 1837* *Sphacelaria cirrosa var. irregularis (Kützing) Hauck* *Sphacelaria cirrosa var. patentissima Greville, 1827* *Sphacelaria cirrosa var. pennata (Lyngbye) Hauck, 1884* *Sphacelaria hystrix Suhr ex Reinke* *Sphacelaria irregularis Kützing* *Sphacelaria pennata Lyngbye, 1819* *Sphacelaria pennata f. meriodinalis (Sauvageau) D.E.G.Irvine, 1956* *Sphacelaria pennata f. patentissima (Greville) D.E.G.Irvine, 1956* *Sphacelaria pennata f. septentrionalis (Sauvageau) D.E.G.Irvine, 1956* *Sphacelaria pennata var. fusca (Lyngbye) D.E.G.Irvine, 1956* *Sphacelaria pennata var. gracilis Lyngbye, 1819* *Sphacelaria plumosa var. gracilis (Lyngbye) C.Agardh, 1828* *Sphacelaria rhizophora Kützing*		3,4,6	1,2,4,5	1,2,3,4,5, 8,9,10	1,2,3	1,2,8,9, 10	
	Sphacelariales	Stypocaulaceae	Stypocaulon	145907	***Stypocaulon scoparium* (Linnaeus) Kützing, 1843**	*Halopteris scoparia (Linnaeus) Sauvageau, 1904* *Halopteris scoparia f. spinulosa (Lyngbye) Rueness, 1977* *Halopteris spinulosa (Lyngbye) Sauvageau, 1904* *Halopteris spinulosa var. patentissima Sauvageau, 1904* *Sphacelaria scoparia (Linnaeus) Lyngbye, 1819* *Sphacelaria scoparia f. aestivalis (J.Agardh) Areschoug, 1850* *Sphacelaria scoparia f. hiemalis (J.Agardh) Areschoug, 1850* *Sphacelaria scoparia var. aestivalis J.Agardh, 1842* *Sphacelaria scoparia var. hiemalis J.Agardh, 1842* *Sphacelaria scoparioides Lyngbye, 1819* *Sphacelaria spinulosa Lyngbye, 1819* *Stypocaulon scoparium f. petentissimum (Sauvageau) Lund, 1950* *Stypocaulon scoparium f. spinulosum (Lyngbye) Reinke, 1892* *Stypocaulon scoparium var. scoparioides (Lyngbye) Holmes & Batters, 1891*				1,2,3,4,5, 8,9,10	1,2,3	2.9	
	Sphacelariales	Sphacelariaceae	Sphacelorbus	624203	***Sphacelorbus nanus* (Nageli ex**	*Sphacelorbus Draisma, Prud'homme & H.Kawai, 2010*						2,9,10	

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					Kützing) Draisma, Prud'homme & H.Kawai, 2010	*Sphacelaria nana Nägeli ex Kützing, 1855*							
	Ectocarpales	Chordariaceae	Stictyosiphon	145352	***Stictyosiphon adriaticus* Kützing, 1843**			3,6	1,2		3	2,9,10	
	Ectocarpales	Chordariaceae	Stictyosiphon	145354	***Stictyosiphon soriferus* (Reinke) Rosenvinge, 1935**	*Kjellmania arasakii Yamada, 1953* *Kjellmania sorifera Reinke, 1889* *Kjellmania striarioides Gran, 1897*					1,2,3	2.9	
	Ectocarpales	Chordariaceae	Stilophora	146283	***Stilophora nodulosa* (C.Agardh) P.C.Silva, 1996**	*Castagnea tuberculosa (Hornemann) J.Agardh, 1882* *Ceramium tuberculosum Hornemann, 1816* *Chordaria nodulosa (C.Agardh) C.Agardh, 1820* *Chordaria tuberculosa (Hornemann) Lyngbye, 1819* *Stilophora tuberculosa (Hornemann) Reinke, 1889* *Stilophora tuberculosa f. corniculata Reinke, 1889*				1,2,3,4,5, 6,8,9,10	1.3	2,6,9,10	
	Ectocarpales	Chordariaceae	Stilophora	145009	***Stilophora tenella (Esper) P.C.Silva, 1996***	*Ceramium rhizodes C.Agardh, 1811; Ceramium tuberculosum Roth, 1800* *Chordaria rhizodes (C.Agardh) C.Agardh, 1817* *Chordaria rhizodes var. simplex C.Agardh, 1817* *Dictyota papillosa J.V.Lamouroux, 1820* *Dictyota papillosa (C.Agardh) Greville, 1830* *Fucus rhizodes Ehrhart ex Turner, 1819* *Fucus rhizodes var. tenuior Wahlenberg, 1826* *Fucus tenellus Esper, 1800* *Sporochnus rhizodes (C.Agardh) C.Agardh, 1820* *Stilophora papillosa (J.V.Lamouroux) J.Agardh* *Stilophora rhizodes (C.Agardh) J.Agardh, 1841 (nom. illeg.)* *Zonaria papillosa (J.V.Lamouroux) C.Agardh*		4,5,6	1,2	1,2,3,4,5, 6,8,9,10	1,2,3	1,2,9,10	
	Ectocarpales	Chordariaceae	Striaria	145356	***Striaria attenuata* (Greville) Greville, 1828**	*Carmichaelia attenuata Greville, 1827; Striaria attenuata f. crinita (J.Agardh) Kylin, 1907* *Striaria attenuata f. fragilis (J.Agardh) Kjellman, 1890* *Striaria attenuata f. ramosissima (Kützing) Hauck* *Striaria attenuata f. tenuissima Kylin, 1947* *Striaria attenuata var. crinita (C.Agardh) Kützing, 1845* *Striaria fragilis J.Agardh, 1841*		4,5,6	1,2	1,2,3,4,5, 9,10	1,2,3	2,9,10	
	Ectocarpales	Chordariaceae	Streblonema	145468	***Streblonema parasiticum* (Sauvageau) De Toni, 1895**	*Ectocarpus parasiticus Sauvageau, 1892* *Entonema parasiticum (Sauvageau) G.Hamel*		6			1,2,3	2,9,10	
	Ectocarpales	Chordariaceae	Streblonema	145463	***Streblonema fasciculatum* Thuret, 1863**	*Ectocarpus pringsheimi Reinke, 1889* *Streblonema fasciculatum var. simplex Batters*				8, 1		6	
	Cutleriales	Cutleriaceae	Zanardinia	178910	***Zanardinia typus* (Nardo) P.C.Silva, 2000**	*Padina omphalodes Montagne, 1838* *Stifftia prototypus Nardo, 1841* *Stifftia typus Nardo, 1835* *Zanardinia prototypus (Nardo) Nardo, 1841* *Zanardinia typus (Nardo) G.Furnari, 1999*			1,2,4,5	1,2,3,4,5, 8,9,10	1,2,3	1,2,9,10	
RHODOPHYTA													
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144328	***Acrochaetium battersianum* G.Hamel, 1927**	*Audouinella battersiana (Hamel) P.S.Dixon, 1976* *Chromastrum battersianum (Hamel) Stegenga & Mulder, 1979*					1,2,3,6	2.9	

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						Kylinia battersiana (Hamel) Kylin, 1944							
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	553127	***Acrochaetium hallandicum f. parvulum* (Kylin) Rosenvinge**			6					
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144356	***Acrochaetium humile* (Rosenvinge) Børgesen, 1915**	*Audouinella humilis (Rosenvinge) Garbary, 1979; Audouinella humilis (Rosenv.) Garbary* *Chantransia humilis Rosenvinge, 1909 (synonym)* *Chromastrum humile (Rosenvinge) Papenfuss, 1945* *Colaconema humile (Rosenvinge) Woelkerling, 1971* *Audouinella leptonema (Rosenvinge) Garbary, 1979* *Chantransia leptonema Rosenvinge, 1909*			1,2	1,2,6,8,9,10	1,2,3,6	2.9	
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144360	***Acrochaetium kylinii* G.Hamel, 1927**	*Rhodochorton endophyticum* Kylin, 1907				8, 1			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144362	***Acrochaetium leptonema* (Rosenvinge) Børgesen, 1915**				1,2	1,2,6,9,10			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	498760	***Acrochaetium mahumetanum* G.Hamel, 1927**	*Audouinella mahumetana (G.Hamel) Garbary, 1979 ; Chromastrum mahumetanum (G.Hamel) Stegenga & Mulder, 1979*		1,4,6		1,3,6			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144366	***Acrochaetium mediterraneum* (Levring) Athanasiadis, 2002**	*Audouinella mediterranea (Levring) Ballesteros, 1985* *Chantransia mediterranea Levring, 1942* *Chromastrum mediterranea (Levring) De Toni, 1947*				3, 10			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144368	***Acrochaetium microscopicum* (Nägeli ex Kützing) Nägeli, 1858**	*Acrochaetium compactum C.-C.Jao, 1936* *Acrochaetium crassipes (Børgesen) Børgesen, 1915* *Acrochaetium hirsutum (K.M.Drew) P.W.Gabrielson* *Acrochaetium trifilum (Buffham) Batters, 1902* *Audouinella crassipes (Børgesen) Garbary, 1979* *Audouinella microscopica (Nägeli ex Kützing) Woelkerling, 1971* *Audouinella trifila (Buffham) P.S.Dixon, 1976* *Callithamnion microscopicum Nägeli ex Kützing, 1849* *Chantransia crassipes Børgesen, 1909 (synonym)* *Chantransia microscopica (Nägeli ex Kützing) Ardissone & Strafforello, 1877* *Chantransia trifila Buffham, 1892* *Chromastrum hirsutum (K.M.Drew) Papenfuss, 1945* *Chromastrum microscopicum (Nägeli ex Kützing) Papenfuss, 1945* *Kylinia crassipes (Børgesen) Kylin, 1944* *Kylinia hirsuta (K.M.Drew) Kylin, 1944* *Kylinia microscopica (Nägeli ex Kützing) Kylin* *Rhodochorton hirsutum K.M.Drew, 1928* *Rhodochorton microscopicum (Naeg.) Drew, 1928*				1,2,3,4,6,8,9,10	1,2,3,6	1,2,9,10	
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144372	***Acrochaetium moniliforme* (Rosenvinge) Børgesen, 1915**	*Audouinella moniliformis (Rosenvinge) Garbary, 1979* *Chantransia moniliformis Rosenvinge, 1909* *Chromastrum moniliforme (Rosenvinge) Papenfuss, 1945* *Kylinia moniliformis (Rosenvinge) Kylin, 1944* *Rhodochorton moniliforme (Rosenvinge) Drew, 1928*				1,2,8,10			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144377	***Acrochaetium parvulum* (Kylin) Hoyt, 1920**	*Audouinella parvula (Kylin) P.S.Dixon, 1976; Chantransia hallandica var. parvula (Kylin) Rosenvinge, 1909*		3,4,5	1,2	1,2,3,4,5,6,8,9,10	1,2,3,6	2,9,10	

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						Chantransia parvula Kylin, 1906 (synonym) *Chromastrum parvulum (Kylin) Papenfuss, 1945* *Kylinia parvula (Kylin) Kylin, 1944* *Rhodochorton parvulum (Kylin) Drew, 1928*							
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	371038	***Acrochaetium rosulatum* (Rosenvinge) Papenfuss, 1945**	*Audouinella rosulata (Rosenvinge) P.S.Dixon, 1976; Kylinia rosulata Rosenvinge, 1909*			1,2	1,2,3,6,8,9,10			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144386	***Acrochaetium savianum* (Meneghini) Nägeli, 1862**	*Acrochaetium bornetii Papenfuss, 1945; Acrochaetium intermedium C.-C.Jao, 1936* *Acrochaetium zosterae Papenfuss, 1945* *Audouinella saviana (Meneghini) Woelkerling, 1973* *Callithamnion affine Kützing, 1843* *Callithamnion pygmaeum Kützing, 1849* *Callithamnion savianum Meneghini, 1840* *Chantransia saviana (Meneghini) J.Agardh, 1883* *Colaconema savianum (Meneghini) R.Nielsen, 1994*		6	1,2	1,2,9,10	1,2,3,6	8.9	
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144387	***Acrochaetium secundatum* (Lyngbye) Nägeli, 1858**	*Acrochaetium luxurians f. secundatum (Lyngbye) Thuret; Acrochaetium rhipidandrum (Rosenvinge) G.Hamel, 1927* *Acrochaetium virgatulum f. secundatum (Lyngbye) Hamel, 1927* *Audouinella rhipidandra (Rosenvinge) P.S.Dixon, 1976* *Audouinella secundata (Lyngbye) P.S.Dixon, 1976* *Callithamnion byssaceum Kützing, 1843* *Callithamnion daviesii var. secundatum Lyngbye, 1819* *Callithamnion secundatum (Lyngbye) Agardh, 1828* *Ceramium secundatum (Lyngbye) C.Agardh, 1824* *Chantransia rhipidandra Rosenvinge, 1909* *Chantransia secundata (Lyngbye) Thuret, 1863* *Chantransia virgatula f. secundata (Lyngbye) Rosenvinge, 1909* *Chantransia virgatula secundata (Lyngbye) Printz, 1926* *Chromastrum rhipidandrum (Rosenvinge) Papenfuss, 1945* *Chromastrum secundatum (Lyngbye) Papenfuss, 1945* *Colaconema secundatum (Lyngbye) Woelkerling, 1973* *Kylinia rhipidandra (Rosenvinge) Kylin* *Kylinia secundata (Lyngbye) Papenfuss, 1947* *Rhodochorton rhipidandrum (Rosenvinge) Drew*		4,5,6	1,2,3	1,2,3,8,9,10	1,2,3,6	1,2,9,10	
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144391	***Acrochaetium subpinnatum* Bornet ex G.Hamel, 1927**	*Audouinella subpinnata (Bornet ex G.Hamel) Garbary, 1979* *Chromastrum subpinnatum (Bornet ex G.Hamel) Stegenga & Mulder, 1979* *Kylinia subpinnata (Bornet ex G.Hamel) Kylin, 1944*				1			
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	551333	***Acrochaetium thuretii var. agamum* (Rosenvinge) Dawson, 1945**			1					
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	144397	***Acrochaetium virgatulum* (Harvey) Batters, 1902**	*Acrochaetium luxurians (J.Agardh ex Kützing) Nägeli, 1861; Acrochaetium virgatulum f. luxurians (J.Agardh e Kützing) F.S.Collins* *Acrochaetium virgatulum f. tetricum (Rosenvinge) G.Hamel, 1927* *Acrochaetium virgatulum var. luxurians (J.Agardh ex Kützing)*		1,4,5,6	1,2,3,4,5	1,2,3,6	1,2,3,6	1,2,9,10	

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						Acrochaetium virgatulum var. tetricum (Rosenvinge) Celan *Audouinella virgatula (Harvey) P.S.Dixon, 1976* *Callithamnion luxurians J.Agardh ex Kützing, 1849* *Callithamnion virgatulum Harvey, 1833 (synonym)* *Chantransia luxurians (J.Agardh) Kjellman, 1880* *Chantransia virgatula (Harvey) Thuret, 1863* *Chantransia virgatula f. farlowi Kjellman, 1883* *Chantransia virgatula f. luxurians (J.Agardh) Rosenvinge, 1909* *Chromastrum secundatum f. virgatulum (Harvey) Papenfuss, 1945* *Chromastrum virgatulum (Harvey) Papenfuss, 1945* *Kylinia virgatula (Harvey) Papenfuss, 1947* *Kylinia virgatula f. luxurians (J.Agardh) F.S.Collins* *Rhodochorton virgatulum (Harvey) K.M.Drew, 1928*							
	Acrochaetiales	Acrochaetiaceae	Acrochaetium	553542	***Acrochaetium virgatulum f. secundata* (Lyngbye) Rosenvinge**			1					
	Gigartinales	Phyllophoraceae	Ahnfeltiopsis	213966	***Ahnfeltiopsis furcellata* (C.Agardh) P.C.Silva & DeCew, 1992**	*Gymnogongrus furcellatus (C.Agardh) J.Agardh, 1851* *Gymnogongrus furcellatus var. patens J.Agardh, 1851* *Sphaerococcus furcellatus C.Agardh, 1822*				6			
	Ceramiales	Callithamniaceae	Aglaothamnion	144501	***Aglaothamnion tenuissimum* (Bonnemaison) Feldmann-Mazoyer, 1941**	*Aglaothamnion byssoides (Arnott ex Harvey) C.F.Boudouresque & M.M.Perret-Boudouresque, 1987* *Aglaothamnion furcellariae (J.Agardh) Feldmann-Mazoyer, 1941* *Callithamnion arachnoideum C.Agardh, 1828* *Callithamnion arnottii Trevisan, 1845* *Callithamnion byssoides Arnott ex Harvey, 1833* *Callithamnion furcellariae J.Agardh, 1851* *Callithamnion hiemale Kjellman, 1907* *Callithamnion tenuissimum (Bonnemaison) Kützing, 1849* *Ceramium tenuissimum Bonnemaison, 1828*				3,4,6,8,9			
	Ceramiales	Rhodomelaceae	Alsidium	144784	***Alsidium corallinum* C.Agardh, 1827**					1,2,3,6,8,10		2,5,9	
	Corallinales	Corallinaceae	Amphiroa	145100	***Amphiroa rigida* J.V.Lamouroux, 1816**	*Amphiroa amethystina Zanardini, 1844* *Amphiroa inordinata Zanardini, 1844* *Amphiroa isioides J.V.Lamouroux* *Amphiroa rigida var. antillana Børgesen, 1917* *Amphiroa spina Kützing, 1843*				1,2,3,4,6,8,9,10			
	Ceramiales	Ceramiaceae	Antithamnion	144509	***Antithamnion cruciatum* (C.Agardh) Nägeli, 1847**	*Antithamnion cruciatum f. radicans (J.Agardh) Hauck, 1882; Antithamnion cruciatum var. profundum Feldmann-Mazoyer, 1941* *Antithamnion cruciatum var. pumilum (Harvey) Reinke, 1891* *Antithamnion cruciatum var. radicans (J.Agardh) F.S.Collins, 1900* *Antithamnion cruciatum var. tenerum Schiffner* *Callithamnion cruciatum C.Agardh, 1827* *Callithamnion cruciatum f. radicans (J.Agardh) Rosenvinge, 1924* *Callithamnion cruciatum var. majus J.Agardh* *Callithamnion cruciatum var. pumilum (Harvey) Harvey, 1841*		1,3,4,5,6	1,2,3,5	1,2,3,4,5,6,8,9,10	1,2,3,7	2,5,9,10	

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						Callithamnion cruciatum var. radicans J.Agardh, 1841 *Callithamnion imbricatum Schousboe ex Suhr, 1840* *Callithamnion pumilum Harvey, 1833*							
	Ceramiales	Ceramiaceae	Antithamnion	144513	***Antithamnion heterocladum* Funk, 1955**					2,3,8,10		10	
	Ceramiales	Ceramiaceae	Antithamnion	144516	***Antithamnion tenuissimum* (Hauck) Schiffner, 1916**	*Antithamnion cruciatum* f. *tenuissima* Hauck, 1883				1,2,3,6,8,9,10	1,3,7	2,6,5,9,10	
	Ceramiales	Delesseriaceae	Apoglossum	144737	***Apoglossum ruscifolium (Turner) J.Agardh, 1898***	*Delesseria ruscifolia (Turner) J.V.Lamouroux, 1813 ; Delesseria ruscifolia var. minor (Turner) C.Agardh* *Fucus ruscifolius Turner, 1802*			1,2,5	1,2,3,4,5,6,8,9,10	1,2,3,7	2,5,9,10	
	Goniotrichales	Goniotrichaceae	Asterocytis				*Asterocytis wolleana* (Hansgirg)Lagerheim		1,2				
	Bangiales	Bangiaceae	Bangia	551756	***Bangia atropurpurea* (Mertens ex Roth) C.Agardh, 1824**	*Bangia fuscopurpurea var. atropurpurea (Roth) Lyngbye, 1819 ; Bangia fuscopurpurea var. lejolisii (De Notaris) Rabenhorst, 1868* *Bangiadulcis atropurpurea (Roth) W.A.Nelson, 2007* *Bangiella atropurpurea (Roth) Gaillon, 1833* *Conferva atropurpurea Mertens ex Roth, 1806* *Oscillatoria atropurpurea (Roth) C.Agardh, 1817*		6	1,2,5	1,2,3,4,6,8,9,10	1.6	2,9,10	
	Bangiales	Bangiaceae	Bangia	157261	***Bangia fuscopurpurea* (Dillwyn) Lyngbye, 1819**	*Bangia arctica Foslie, 1881; Bangia atropurpurea var. fuscopurpurea (Dillwyn) C.Agardh, 1824* *Bangia crispa Lyngbye, 1818* *Bangia fuscopurpurea var. crispa (Lyngbye) Kjellman, 1880* *Bangia fuscopurpurea var. pumila (Areschoug) Rabenhorst, 1868* *Bangia lejolisii De Notaris, 1863* *Bangia pumila Areschoug, 1862* *Bangia versicolor Kützing, 1843* *Bangia virescens Foslie, 1890* *Bangiella crispa (Lyngbye) Gaillon, 1833* *Bangiella fuscopurpurea (Dillwyn) Gaillon, 1833* *Phyllona pumila (Areschoug) Kuntze, 1891* *Porphyra fuscopurpurea (Dillwyn) P.L.Crouan & H.M.Crouan, 1867* *Porphyra lejolisii (De Notaris) P.L.Crouan & H.M.Crouan, 1867* *Porphyra pumila (Areschoug) P.L.Crouan & H.M.Crouan, 1867*		3,4,5,7			1,2,3,6	1,2,9	
	Bonnemaisoniales	Bonnemaisoniaceae	Bonnemaisonia	144440	***Bonnemaisonia asparagoides* (Woodward) C.Agardh, 1822**	*Bonnemaisonia adriatica Zanardini, 1847* *Bonnemaisonia asparagoides var. teres Harvey* *Callithamnion serpens P.L.Crouan & H.M.Crouan, 1859* *Conferva littoralis Forsskål, 1775* *Fucus asparagoides Woodward, 1794* *Hymenoclonium serpens (P.L.Crouan & H.M.Crouan) Batters, 1895* *Plocamium asparagoides (Woodward) J.V. Lamouroux, 1813*				1, 10			
	Ceramiales	Ceramiaceae	Bornetia	144524	***Bornetia secundiflora* (J.Agardh) Thuret, 1855**	*Griffithsia secundiflora* J.Agardh, 1841				10		6	
	Ceramiales	Callithamniaceae	Callithamnion	144526	***Callithamnion corymbosum***	*Callithamnion versicolor (C.Agardh) C.Agardh, 1828; Ceramium pedicel-*		1,3,4,5,	1,2,3,4,	1,2,3,4,5,	1,2,3,7	1,2,5,6,	

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					(Smith) Lyngbye, 1819	*latum Hornemann, 1818* *Ceramium versicolor C.Agardh, 1824* *Conferva corymbosa Smith, 1812*		6,7,8	5	6,8,9,10		8,9,10	
	Ceramiales	Callithamniaceae	Callithamnion	144528	***Callithamnion granulatum* (Ducluzeau) C.Agardh, 1828**	*Callithamnion grunulatum (Duckluzeau) C. Agardh ; Callithamnion harveyanum J.Agardh, 1841* *Callithamnion spongiosum Harvey, 1833* *Ceramium granulatum Ducluzeau, 1805*		3,4,5,6	1,2	1,2,3,4,5,6,8,9,10	1,2,3,7	2,5,9,10	
	Ceramiales	Wrangeliaceae	Compsothamnion	144572	***Compsothamnion gracillimum* De Toni, 1903**	*Compsothamnion thuyoides var. gracillimum (De Toni) Halos, 1964*					1.2	6.1	
	Ceramiales	Ceramiaceae	Ceramium	146335	***Ceramium arborescens* J.Agardh, 1894**	*Ceramium arborescens f. boreale Petersen, 1926; Ceramium rubriforme Kylin, 1907* *Ceramium vimineum J.Agardh, 1894*		4	1,2,5	1,2,6	1,2,3	2,6,9,10	
	Ceramiales	Ceramiaceae	Ceramium	144537	***Ceramium ciliatum* (J.Ellis) Ducluzeau, 1806**	*Ceramium diaphanum var. ciliatum (Ellis) Duby, 1830* *Ceramium nudiusculum (Kützing) Zanardini, 1847* *Echinoceras ciliatum (J.Ellis) Kützing, 1841* *Echinoceras nudiusculum Kützing, 1841*				1,2,3,4,5,6,8,9,10	1,2,3,7	1,2,5,9,10	
	Ceramiales	Ceramiaceae	Ceramium	381785	***Ceramium ciliatum* var. *robustum* (J.Agardh) Mazoyer**	*Ceramium robustum J.Agardh*				1,2,3,4,5,6,8,9,10			
	Ceramiales	Ceramiaceae	Ceramium	144540	***Ceramium circinatum* (Kützing) J.Agardh, 1851**	*Ceramium biasolethianum (Kützing) Ardissone; Ceramium circinatum f. densecorticatum Voronikh* *Ceramium circinatum var. trascurrens Kützing* *Ceramium decurrens (Kützing) Kützing ex Harvey, 1849* *Ceramium ramulosum Meneghini* *Hormoceras circinatum Kützing, 1842* *Hormoceras decurrens Kützing, 1842*		3,4,5,6	1,2,5	1,2,3,4,5,8,9,10	1,3,7	1,2,5,9,10	
	Ceramiales	Ceramiaceae	Ceramium	144541	***Ceramium codii* (H.Richards) Mazoyer, 1938**	*Ceramium mucronatum Segi, 1944* *Ceramothamnion adriaticum Schiller* *Ceramothamnion codii H.Richards, 1901*				1,2,3,8,10			
	Ceramiales	Ceramiaceae	Ceramium	144569	***Ceramium tenuicorne* (Kützing) Waern, 1952**	*Ceramium arachnoideum (C.Agardh) J.Agardh, 1851; Ceramium circinnatum f. inferne-corticatum Lakowitz, 1907* *Ceramium circinnatum f. spongiosum Waern, 1952* *Ceramium corticatulum Kylin, 1907* *Ceramium diaphanum f. corticatulo-strictum Kylin, 1909* *Ceramium diaphanum f. corticatulum (Kylin) Sjöstedt, 1920* *Ceramium diaphanum f. strictoides H.E.Petersen, 1908* *Ceramium diaphanum f. strictum (Harvey) Foslie, 1893* *Ceramium diaphanum var. arachnoideum C.Agardh, 1828* *Ceramium gobii Waern, 1992* *Ceramium gracillimum Gobi, 1877* *Ceramium strictum Harvey, 1849* *Ceramium strictum f. corticatulo-strictum (Kylin) Sjöstedt, 1928* *Ceramium strictum f. strictoides (Petersen) Sjöstedt, 1928* *Ceramium strictum f. stricto-tenuissimum Petersen, 1908* *Ceramium strictum f. verum Petersen, 1908* *Ceramium strictum tenuicorne (Kützing) Rueness & Kornfeldt, 1992*		3,5				2,6,9	

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						Ceramium tenuissimum var. arachnoideum (C.Agardh) Foslie, 1893 *Gongroceras tenuicorne Kützing, 1841*							
	Ceramiales	Ceramiaceae	Ceramium	144546	***Ceramium diaphanum* (Light-foot) Roth, 1806**	*Boryna diaphana (Lightfoot) Grateloup; Ceramium diaphanum f. medium Sjöstedt, 1928* *Ceramium diaphanum f. modificatum Petersen, 1908* *Ceramium diaphanum f. zostericolum Petersen, 1908* *Ceramium diaphanum var. tenuissimum Roth, 1806* *Ceramium gracillimum (Kützing) Zanardini, 1847* *Ceramium nodiferum (Kützing) P.L.Crouan & H.M.Crouan, 1878* *Ceramium nodosum (Kützing) Griffiths & Harvey, 1847* *Ceramium pygmaeum Schiffner, 1933 (synonym)* *Ceramium tenuissimum (Roth) Areschoug, 1847* *Ceramium tenuissimum var. tenellum G.Mazoyer* *Conferva diaphana Lightfoot, 1777* *Gongroceras nodiferum Kützing, 1849* *Gongroceras tenuissimum Kützing, 1842* *Hormoceras diaphanum (Lightfoot) Kützing* *Hormoceras gracillimum Kützing, 1842* *Hormoceras nodosum Kützing, 1842*		3,4,5,6,7,8	1,2,5	1,8,9,10	1,2,3,7	1,2,5,8,9,10	
	Ceramiales	Ceramiaceae	Ceramium	467522	***Ceramium diaphanum* var. *elegans* (Roth) Roth, 1806**	*Ceramium elegans (Roth) Ducluzeau, 1806; Hormoceras polygonum Kützing, 1862*		3,4,5,7,8	1,2,4,5		1.2	1,2,5,6,9,10	
	Ceramiales	Ceramiaceae	Ceramium	144545	***Ceramium deslong-champsii* Chauvin ex Duby, 1830**	*Ceramium agardhianum Griffiths ex Harvey, 1841* *Ceramium diaphanum var. strictum (Kützing) Feldmann-Mazoyer, 1941* *Ceramium patens Meneghini, 1844* *Ceramium pellucidum (Kützing) Rabenhorst, 1847* *Ceramium pellucidum (Kützing) Zanardini, 1847* *Ceramium strictum (Kützing) Rabenhorst, 1847* *Ceramium strictum (Kützing) Harvey, 1849* *Gongroceras deslongchampsii (Chauvin ex Duby) Kützing, 1842* *Gongroceras pellucidum Kützing* *Gongroceras strictum Kützing, 1842* *Hormoceras catenula Kützing, 1847* *Ceramium diaphanum (Lightfoot) Roth var. strictum (Kützing) Feldmann-Mazoyer*		6		1,2,3,4,5,6,8,9,10	1,3,7	1,2,5,9	
	Ceramiales	Ceramiaceae	Ceramium	144547	***Ceramium echionotum* J.Agardh, 1844**	*Acanthoceras transcurrens Kützing ,Ceramium echionotum var. corticatum Mazoyer,Ceramium echionotum var. transcurrens (Kützing) Batters, Chaetoceras echionotum (J.Agardh) Kützing*						5.10	
	Ceramiales	Ceramiaceae	Ceramium	553543	***Ceramium elegans f. litorale* Celan & Serbanescu, 1959**			1,6					
	Ceramiales	Ceramiaceae	Ceramium	144549	***Ceramium gaditanum* (Clemente) Cremades, 1990**	*Ceramium flabelligerum J.Agardh, 1844* *Conferva gaditana Clemente, 1807*				1,2,3,4,6,8,9,10			
	Ceramiales	Ceramiaceae	Ceramium	144538	***Ceramium cimbricum* H.E.Petersen, 1924**	*Ceramium elegans var. fastigiatum Celan & Serbanescu, 1959; Ceramium fastigiatum Harvey, 1834* *Ceramium fastigiramosum S.M.Boo & I.K.Lee, 1985*		4,6				1	

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	Ceramiales	Ceramiaceae	Ceramium	144556	***Ceramium pedicellatum* C.Agardh, 1817**			3,6	1,2		1,2,3,7	9.10	
	Ceramiales	Ceramiaceae	Ceramium	374822	***Ceramium rosenvingei* Petersen, 1908**	*Ceramium robustum Petersen, 1929* *Ceramium rosenvingei f. transgrediens Petersen, 1908* *Ceramium rubrum f. decurrens (J.Agardh) Kjellman, 1880* *Ceramium rubrum var. decurrens J.Agardh, 1851*		6				5	
	Ceramiales	Ceramiaceae	Ceramium	381853	***Ceramium rubrum* var. *barbatum* G.Feldmann-Mazoyer, 1941**	*Ceramium barbatum Kützing, 1842* *Ceramium nodulosum var. barbatum (Kützing) Furnari & Serio*		3,4,5,7,8		9, 1			
	Ceramiales	Ceramiaceae	Ceramium	550741	***Ceramium rubrum* var. *implexocontortum* (Solier) Feldmann-Mazoyer**			3,4,5,6,7,8		2,3,4,5,6,8,9,10			
	Ceramiales	Ceramiaceae	Ceramium	552820	***Ceramium rubrum var. pedicellatum* J.Agardh**			6					
	Ceramiales	Ceramiaceae	Ceramium	550742	***Ceramium rubrum var. tenue* C.Agardh, 1824**			6					
	Ceramiales	Ceramiaceae	Ceramium	144564	***Ceramium siliquosum* (Kützing) Maggs & Hommersand, 1993**	*Ceramium elegans f. longiarticulata Celan & Serbanescu* *Ceramium elegans var. diaphanoideum Celan & Serbanescu* *Ceramium radiculosum Grunow ex Hauck, 1875* *Hormoceras siliquosum Kützing, 1847*		6		1,2,3,4,5,6,9,10	1,3,7		
	Ceramiales	Ceramiaceae	Ceramium	551105	***Ceramium siliquosum* var. *elegans* (Roth) G.Furnari, 1999**					1,2,3,4,5,6,8,10	7	5	
	Ceramiales	Ceramiaceae	Ceramium	381854	***Ceramium siliquosum* var. *lophophorum* (Feldman-Mazoyer) Serio**	*Ceramium diaphanum var. lophophorum Feldmann-Mazoyer*				1,2,8,9,10			
	Ceramiales	Ceramiaceae	Ceramium	550931	***Ceramium siliquosum* var. *zostericola* (Thuret) G.Furnari, 1999**	*Ceramium diaphanum var. zostericola (Thuret) Feldmann-Mazoyer, 1941*				1,2,3,4,5,6,8,9,10			
	Ceramiales	Ceramiaceae	Ceramium	554755	***Ceramium diaphanum* var. *zostericola* f. *acrocarpum* (Kützing) Feldmann-Mazoyer, 1941**	*Hormoceras acrocarpum Kützing, 1863*				10			
	Ceramiales	Ceramiaceae	Ceramium	553338	***Ceramium siliquosum* f. *minusculum* (G.Mazoyer) Garreta et al., 2001**	*Ceramium diaphanum f. minusculum G.Mazoyer*				1,2,3,4,5,8,10			
	Ceramiales	Ceramiaceae	Ceramium	144567	***Ceramium tenerrimum* (G.Martens) Okamura 1921**	*Hormoceras tenerrimum G.Martens, 1866*				1,2,3,4,6,8,9,10		9	
	Ceramiales	Ceramiaceae	Ceramium	381855	***C. tenerrimum* var. *brevizonatum* (H.E.Petersen) Feldmann-Mazoyer**					1,2,3,4,6,10			
	Ceramiales	Ceramiaceae	Ceramium	144569	***Ceramium tenuicorne* (Kützing) Waern, 1952**	*Ceramium gobii Waern, 1992* *Ceramium strictum Harvey, 1849*		6	1,2	5		6.10	
	Ceramiales	Ceramiaceae	Ceramium	178915	***Ceramium virgatum* Roth, 1797**	*Boryna nodulosa (Lightfoot) Grateloup; Ceramium flabelliferum Kützing* *Ceramium lanciferum Kützing* *Ceramium nobile J.Agardh, 1894* *Ceramium nodulosum (Lightfoot) Ducluzeau, 1806*		1,3,4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,6,9,10	2	9.10	

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
						Ceramium pedicellatum J.Agardh, 1894 *Ceramium polymorphum (Linnaeus) De Candolle, 1805* *Ceramium repens Zanardini, 1847* *Ceramium rubrum C.Agardh, 1811* *Ceramium rubrum f. balticum Petersen, 1908* *Ceramium rubrum f. divaricatum Petersen, 1908* *Ceramium rubrum f. irregularis-subcorticatum Petersen, 1908* *Ceramium rubrum f. modificatum Petersen, 1908* *Ceramium rubrum f. proliferum (C.Agardh) Kjellman, 1883* *Ceramium rubrum f. subtypicum Petersen, 1908* *Ceramium rubrum var. pallens C.Agardh, 1811* *Ceramium rubrum var. proliferum C.Agardh, 1824* *Ceramium rubrum var. pygmaeum Sonder, 1848* *Ceramium villosum Kützing, 1849* *Conferva nodulosa Lightfoot, 1777* *Conferva polymorpha Linnaeus, 1753* *Conferva rubra Hudson, 1762 (synonym)* *Polysiphonia polymorpha (Linnaeus) Duby, 1830* *Ulva confervoides Linnaeus, 1753*							
	Ceramiales	Ceramiaceae	Ceramium	144562	***Ceramium secundatum* Lyngbye, 1819**			3	1,2	1,2,3,4,5,8,9,10	1,2,3,7	5,9,10	
	Ceramiales	Wrangeliaceae	Compsothamnion	144573	***Compsothamnion thuyoides* (Smith) Nägeli, 1862**	*Callithamnion gracillimum C.Agardh, 1828* *Callithamnion thuyoides (Smith) C.Agardh, 1828* *Ceramium thuyoides (Smith) C.Agardh, 1824* *Phlebothamnion gracillimum (C.Agardh) Kützing, 1849*				1,2,3,5,6,8,9,10		2,4,9	
	Rhodymeniales	Rhodomelaceae	Chrysymenia	145845	***Chrysymenia ventricosa* (J.V.Lamouroux) J.Agardh, 1842**	*Chrysymenia digitata Zanardini* *Chrysymenia ventricosa var. digitata (Zanardini) Hauck* *Dumontia ventricosa J.V.Lamouroux, 1813* *Halymenia ventricosa (J.V.Lamouroux) C.Agardh, 1822*				1, 2			
	Rhodymeniales	Champiaceae	Chylocladia	145808	***Chylocladia verticillata* (Lightfoot) Bliding 1928**				1,2	1, 2	1,2,6	2.9	
	Stylonematales	Stylonemataceae	Chroodactylon	145685	***Chroodactylon ornatum* (C.Agardh) Basson, 1979**	*Asterocytis ramosa (Thwaites) Gobi ex F.Schmitz, 1896; Chroodactylon ornata (C. Agardh) Basson, 1979* *Chroodactylon ramosum (Thwaites) Hansgirg, 1885*		6	1,2	1,2,3,4,5,6,8,9,10	1,2,3,6	1,2,9,10	
	Stylonematales	Stylonemataceae	Chroodactylon				*Chroodactylon wolleana* Hansg., 1886					2.9	
	Ceramiales	Wrangeliaceae	Chondracanthus	145623	***Chondracanthus acicularis* (Roth) Fredericq, 1993**	*Ceramium aciculare Roth, 1806* *Fucus acicularis Wulfen, 1803* *Fucus confervoides var. macrocarpus Clemente, 1807* *Gigartina acicularis (Roth) J.V.Lamouroux, 1813* *Gigartina falcata J.Agardh, 1851*				10		2.9	
	Ceramiales	Rhodomelaceae	Chondrophycus	495359	***Chondrophycus glandulifer* (Kützing) Lipkin & P.C.Silva, 2002**	*Laurencia glandulifera (Kützing) Kützing, 1849* *Chondria glandulifera Kützing, 1845*				10			

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	Corallinales	Hapalidiaceae	Choreonema	145103	***Choreonema thuretii* (Bornet) F.Schmitz, 1889**	*Chaetolithon deformans (Solms-Laubach) Foslie, 1898* *Endosiphonia thuretii (Bornet) Ardissone, 1883* *Melobesia deformans Solms-Laubach, 1881* *Melobesia thuretii Bornet, 1878*				1,8,9,10	1,2,6	2.9	
	Ceramiales	Rhodomelaceae	Chondria	144794	***Chondria boryana* (De Notaris ex J.Agardh) De Toni, 1903**	*Chondriopsis boryana J.Agardh* *Laurencia boryana De Notaris ex J.Agardh, 1842*				1,9,10		6	
	Ceramiales	Rhodomelaceae	Chondria	144795	***Chondria capillaris* (Hudson) M.J.Wynne, 1991**	*Alsidium tenuissimum f. crassus P.L.Crouan & H.M.Crouan, 1865;* *Chondria tenuissima (Withering) C.Agardh, 1817* *Chondria tenuissima f. divergens Hauck* *Chondria tenuissima var. uncinata (Zanardini) De Toni* *Chondriopsis mediterranea (Kützing) J.Agardh* *Fucus tenuissimus Withering, 1796*		1,3,4,5, 6		1,2,3,4,6, 8,9,10	1,2,3,7	1,2,5,6, 9,10	
	Ceramiales	Rhodomelaceae	Chondria	144799	***Chondria dasyphylla* (Woodward) C.Agardh, 1817**	*Alsidium dasyphyllum P.L.Crouan & H.M.Crouan, 1865; Chondriopsis dasyphyllus (Woodward) J.Agardh, 1863* *Fucus dasyphyllus Woodward, 1794 (synonym)* *Laurencia dasyphylla (Woodward) Greville, 1830*		3,6	1,2	1,2,3,4,5, 6,8,9,10	1,2,3,7	1,2,5,9, 10	
	Gigartinales	Phyllophoraceae	Coccotylus	494997	***Coccotylus brodiei* (Turner) Kützing, 1843**	*Fucus brodiei Turner; Phyllophora truncata f. brodiaei (Turner) Newroth & Taylor, 1971*		3,5,6,8	1,2			6	
	Gigartinales	Phyllophoraceae	Coccotylus	145654	***Coccotylus truncatus* (Pallas) M.J.Wynne & J.N.Heine, 1992**	*Actinococcus roseus Suhr ex Kützing, 1843* *Actinococcus subcutaneus (Lyngbye ex Hornemann) Rosenvinge, 1893* *Chondrus brodiei (Turner) Greville, 1830* *Chondrus truncatus Postels & Ruprecht, 1840* *Coccotylus brodiaei var. concatenatus Kützing* *Coccotylus brodiei var. angustissimus Kützing* *Coccotylus brodiei var. cuneifolius R.Wollny* *Coccotylus brodiei var. ligulatus Kützing* *Coccotylus truncatus f. brodiei (Turner) M.J.Wynne & Heine, 1992* *Fucus truncatus Pallas, 1776* *Phyllophora brodiei (Turner) Endlicher, 1843* *Phyllophora brodiei f. baltica Areschoug ex Gobi, 1877* *Phyllophora brodiei f. concatenata (C.Agardh) Kylin, 1907* *Phyllophora brodiei f. elongata (Hauck) Svedelius, 1901* *Phyllophora brodiei f. filiformis Rosenvinge, 1931* *Phyllophora brodiei f. interrupta (Greville) Rosenvinge, 1893* *Phyllophora brodiei f. ligulata (C.Agardh) Sjöstedt, 1920* *Phyllophora brodiei f. stellata Rosenvinge, 1931* *Phyllophora brodiei interrupta (Greville) Rosenvinge, 1893* *Phyllophora brodiei var. angustissima C.Agardh* *Phyllophora brodiei var. baltica (Areschoug ex Gobi) Hauck, 1883* *Phyllophora brodiei var. concatenata (C.Agardh) Areschoug, 1847* *Phyllophora brodiei var. elongata Hauck, 1883* *Phyllophora interrupta (Greville) J.Agardh, 1862* *Phyllophora parvula Darbishire, 1896* *Phyllophora truncata (Pallas) A.D.Zinova, 1970* *Sphaerococcus brodiei (Turner) C.Agardh, 1817*				1,2,3,4,5, 6,8,9,10	1,3,6	8,9,10	

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
						Sphaerococcus brodiei var. concatenatus C.Agardh, 1817 *Sphaerococcus brodiei var. concatenatus Lyngbye, 1819* *Sphaerococcus brodiei var. ligulatus C.Agardh, 1822* *Sphaerococcus interruptus Greville, 1829* *Sphaerococcus membranifolius var. concatenatus(C.Agardh) Wahlenberg, 1826*							
	Colaconematales	Colaconemataceae	Colaconema	375771	***Colaconema codicola* (Børgesen) H.Stegenga, J.J.Bolton, & R.J.Anderson, 1997**	*Acrochaetium codicola Børgesen, 1927* *Audouinella codicola (Børgesen) Garbary, 1979* *Rhodochorton codicola (Børgesen) Nakamura, 1944* *Rhodothamniella codicola (Børgesen) C.Bidoux & F.Magne, 1989*				1,2,9,10			
	Colaconematales	Colaconemataceae	Colaconema	164103	***Colaconema daviesii* (Dillwyn) Stegenga, 1985**	*Acrochaetium alcyonidii var. cylindricum Jao, 1936* *Acrochaetium daviesii (Dillwyn) Nägeli, 1862* *Acrochaetium radicans (Harvey) G.Hamel, 1927* *Audouinella daviesii (Dillwyn) Woelkerling, 1971* *Callithamnion daviesii (Dillwyn) Lyngbye, 1819* *Callithamnion lanuginosum (Dillwyn) Lyngbye, 1819* *Callithamnion pubes C.Agardh, 1828* *Callithamnion radicans Harvey, 1855* *Chantransia daviesii (Dillwyn) Thuret, 1863* *Chantransia radicans (Harvey) De Toni, 1897* *Rhodochorton daviesii (Dillwyn) K.M.Drew, 1928* *Trentepohlia daviesii (Dillwyn) Harvey, 1836*		3,6	1,2,3	1,2,3,4,6,9,10	1,2,6	2.9	
	Colaconematales	Colaconemataceae	Colaconema	503115	***Colaconema hallandicum* (Kylin) Afonso-Carillo, Sanson, Sangil & Diaz-Villa, 2007**	*Acrochaetium dufourii Collins, 1909; Acrochaetium polyblastum (Rosenvinge) Børgesen, 1915* *Audouinella dufourii (Collins) Garbary, 1987* *Audouinella polyblasta (Rosenvinge) J.H.Price, Lawson & D.M.John, 1986* *Audouinella sargassi (Børgesen) Garbary, 1979* *Chantransia hallandica var. brevior Rosenvinge, 1909* *Chantransia polyblasta Rosenvinge, 1909* *Chantransia sargassi (Børgesen) De Toni, 1924* *Chromastrum polyblastum (Rosenvinge) Papenfuss, 1945* *Kylinia polyblasta (Rosenvinge) Papenfuss, 1947* *Kylinia sargassi (Børgesen) Kylin, 1944*		5		1,2,3,6,8,9,10			
	Colaconematales	Colaconemataceae	Colaconema	502057	***Colaconema thuretii* (Bornet) P.W.Gabrielson, 2000**	*Acrochaetium thuretii (Bornet) F.S.Collins & Hervey, 1917 ; Audouinella thuretii (Bornet) Woelkerling, 1971* *Chantransia efflorescens var. thuretii Bornet, 1904* *Chantransia thuretii (Bornet) Kylin, 1907* *Chantransia thuretii var. agama Rosenvinge, 1909* *Rhodochorton thuretii (Bornet) K.M.Drew, 1928* *Rhodochorton thuretii var. agama (Rosenvinge) K.M.Drew, 1928*		1,3,4,5,8	1,2,5		1,2,3,6	2,6,9	
	Corallinales	Corallinaceae	Corallina	145107	***Corallina elongata* J.Ellis & Solander, 1786**	*Corallina deshayesii Montagne, 1846; Corallina mediterranea Areschoug, 1852* *Corallina officinalis var. mediterranea (Areschoug) Hauck, 1883*		3	1,2,5	1,2,3,4,6,8,9,10	1,2,3,6	2,9,10	
	Corallinales	Corallinaceae	Corallina	372903	***Corallina panizzoi* R.Schnetter &**	*Corallina officinalis f. fastigiata Kützing, 1849*				6, 8		6	

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					U.Richter, 1979								
	Corallinales	Corallinaceae	Corallina	145108	***Corallina officinalis* Linnaeus, 1758**	*Corallina compacta P.L.Crouan & H.M.Crouan, 1867; Corallina officinalis f. compacta (P.L.Crouan & H.M.Crouan) Hamel & Lemoine, 1953* *Corallina officinalis f. profunda Farlow, 1881* *Corallina officinalis f. vulgaris Kützing, 1858* *Corallina officinalis var. compacta (P.L.Crouan & H.M.Crouan) Batters, 1902* *Corallina officinalis var. flabellifera Schiffner, 1931*		5,6,7,8	1,2,3,4,5	1,2,3,4,5,9,10	1,3,6	2,9,10	
							***Cruoriopsis rosenvingii* Borg.**					10	
	Gigartinales	Cystocloniaceae	Cystoclonium	145615	***Cystoclonium purpureum* (Hudson) Batters, 1902**	*Capillaria purpurascens Stackhouse, 1809* *Choreocolax cystoclonii Kylin, 1907* *Cystoclonium purpurascens (Hudson) Kützing, 1843* *Cystoclonium purpurascens f. dendroideum Kjellman, 1883* *Cystoclonium purpureum f. cirrhosum J.Agardh ex A.D.Zinova, 1955* *Cystoclonium purpureum f. dendroideum (Kjellman) A.D.Zinova, 1955* *Cystoclonium purpureum var. cirrhosum J.Agardh ex Lily Newton* *Fucus corallinus O.F.Müller, 1777* *Fucus elongatus Gunnerus, 1772* *Fucus purpurascens Hudson, 1778* *Fucus purpureus Hudson, 1762* *Fucus scorpioides O.F.Müller, 1782* *Fucus tuberculatus Solander, 1777* *Gigartina purpurascens (Hudson) J.V.Lamouroux, 1813* *Gigartina purpurascens var. cirrosa Lyngbye, 1819* *Gracilaria purpurascens (Stackhouse) Greville, 1830* *Sphaerococcus purpurascens (Hudson) C.Agardh, 1817* *Sphaerococcus purpurascens var. scorpioides (O.F.Müller) C.Agardh, 1817*						2.9	
	Ceramiales	Dasyaceae	Dasya	376050	***Dasya apiculata* (C.Agardh) De Toni, 1903**	*Bonnemaisonia apiculata C.Agardh, 1835* *Eupogodon apiculatus (C.Agardh) P.C.Silva, 1987*					1	2,5,6,10	
	Ceramiales	Dasyaceae	Dasya	144714	***Dasya baillouviana* (S.G.Gmelin) Montagne, 1841**	*Dasya elegans (G.Martens) C.Agardh, 1828* *Dasya elegans var. ramosissima Schiffner, 1938* *Dasya mazei (P.L.Crouan & H.M.Crouan) G.Murray, 1888* *Eupogodon mazei P.L.Crouan & H.M.Crouan, 1865* *Fucus baillouviana S.G.Gmelin, 1768* *Rhodonema elegans G.Martens, 1824*		1,6		1,2,3,4,5,6,8,9,10	1,3,7	1,2,5,10	
	Ceramiales	Dasyaceae	Dasya	144716	***Dasya corymbifera* J.Agardh, 1841**	*Callithamnion corymbiferum (Kützing) Trevisan, 1845* *Callithamnion corymbiferum (Kützing) Zanardini, 1847* *Dasya venusta Harvey, 1849*				1, 2		6	
	Ceramiales	Dasyaceae	Dasya	144719	***Dasya hutchinsiae* Harvey, 1833**	*Dasya arbuscula* Harvey, 1849				1,2,3,4,6,8,9,10		2,5,9	
	Ceramiales	Dasyaceae	Dasya	144720	***Dasya ocellata* (Grateloup) Harvey, 1833**	*Ceramium ocellatum* Grateloup, 1806 *Dasya simpliuscula* C.Agardh, 1828				1,2,6,10			

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	Ceramiales	Rhodomelaceae	Dipterosiphonia	144810	***Dipterosiphonia rigens (Shousboe ex C.Agardh) Falkenberg, 1901***	*Ceramium rigens* Shousboe ex C.Agardh				1,2,3,4,6,8,9	1,3,7	2,5,9	
	Ceramiales	Dasyaceae	Dasya	376050	***Dasya apiculata (C.Agardh) De Toni, 1903***	Bonnemaisonia apiculata C.Agardh, 1835; Dasyopsis apiculata (C.Agardh) A.D.Zinova; Eupogodon apiculatus (C.Agardh) P.C.Silva, 1987					1,2,3,7	9	
	Ceramiales	Dasyaceae	Dasya	239192	***Dasya pedicellata* (C.Agardh) C.Agardh, 1824**			3,4	1,2		1,2,7	9.10	
	Erythropeltidales	Erythrotrichiaceae	Erythrotrichia	162586	***Erythrotrichia bertholdii* Batters, 1900**						1,3,6	2	
	Erythropeltidales	Erythrotrichiaceae	Erythrotrichia	145490	***Erythrotrichia carnea* (Dillwyn) J.Agardh, 1883**	*Bangia ciliaris pulchella (Harvey) De Toni, 1897; Bangia pulchella Harvey, 1859* *Ceramium ceramicola (Lyngbye) Hornemann, 1836* *Erythrotrichia ceramicola (Lyngbye) Areschoug, 1850*		3,6	1,2,3	1,2,3,4,5,6,8,9,10	1,2,3,6	2	
	Erythropeltidales	Erythrotrichiaceae	Erythrocladia	145487	***Erythrocladia irregularis* Rosenvinge, 1909**				1,2			2	
	Gigartinales	Phyllophoraceae	Erythrodermis	145655	***Erythrodermis traillii (Holmes ex Batters) Guiry & Garbary, 1990***	*Erythrodermis allenii Batters, 1900* *Phyllophora traillii Holmes ex Batters, 1890*					1,3,6	2	
	Erythropeltidales	Erythrotrichiaceae	Erythrocladia	145491	***Erythrotrichia investiens* (Zanardini) Bornet, 1892**	*Bangia investiens Zanardini, 1847*				3	1,2,3,6	9	
	Erythropeltidales	Erythrotrichiaceae	Erythrocladia	145494	***Erythrotrichia reflexa* (P.L.Crouan & H.M.Crouan) Thuret ex De Toni, 1897**	*Bangia reflexa P.L.Crouan & H.M.Crouan, 1852* *Porphyra reflexa (P.L.Crouan & H.M.Crouan) P.L.Crouan & H.M.Crouan, 1867*					1,2,3,6	1,9,10	
	Erythropeltidales	Erythrotrichiaceae	Erythrocladia	494813	***Erythrotrichia vexillaris* (Montagne) G.Hamel, 1929**	*Bangia ciliaris dispersa (Montagne) De Toni, 1897* *Bangia dispersa Montagne, 1856* *Phyllona vexillaris (Montagne) Kuntze, 1898* *Porphyra vexillaris Montagne, 1856*				3		9	
	Ceramiales	Delesseriaceae	Erythroglossum	144751	***Erythroglossum sandrianum* (Zanardini) Kylin, 1924**							2	
	Ceramiales	Dasyaceae	Eupogodon	144728	***Eupogodon planus* (C.Agardh) Kützing 1845**	*Carpoblepharis pinnatifolia (Suhr) Kützing, 1847; Dasya cervicornis J.Agardh, 1841* *Dasya ornithoryncha Montagne, 1846* *Dasya plana C.Agardh, 1827 (synonym)* *Dasya spinella C.Agardh, 1827* *Dasyopsis cervicornis (J.Agardh) F.Schmitz, 1893* *Dasyopsis pinnatifolia (Suhr) F.Schmitz, 1893* *Dasyopsis plana (C.Agardh) Falkenberg, 1901* *Dasyopsis tenella Weber-van Bosse, 1921* *Eupogodon cervicornis (J.Agardh) Kützing, 1849* *Eupogodon flabellatus Kützing, 1864* *Eupogodon pinnatifolius (Suhr) P.C.Silva, 1987* *Eupogodon spinellus (C.Agardh) Kützing, 1849* *Eupogodon tenellus (Weber-van Bosse) Silva, 1987* *Ptilota pinnatifolia Suhr, 1834* *Rytiphlaea pumila Zanardini, 1841*			1,2	1,2,3,4,6,8,9,10		2	

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						Sarcomenia sandersonii Harvey ex J.Agardh, 1896							
	Gracilariales	Furcellariaceae	Furcellaria	145620	***Furcellaria lumbricalis* (Hudson) J.V.Lamouroux, 1813**	*Ceramium fastigiatum (Linnaeus) R.H.Wiggers, 1780* *Fastigiaria furcellata (Linnaeus) Stackhouse, 1809* *Fastigiaria linnaei Stackhouse, 1809* *Fucus fastigiatus Linnaeus, 1753* *Fucus furcellatus Linnaeus, 1763* *Fucus lumbricalis Hudson, 1762* *Fucus lumbricalis var. fastigiatus Turner, 1807* *Furcellaria fastigiata (Turner) J.V.Lamouroux, 1813* *Furcellaria fastigiata f. aegagropila Reinke, 1889* *Furcellaria fastigiata f. minor (C.Agardh) Svedelius, 1901* *Furcellaria fastigiata f. tenuior Areschoug, 1883* *Furcellaria fastigiata var. minor C.Agardh, 1817* *Furcellaria lumbricalis var. fastigiata (Turner) Lyngbye, 1819* *Polyides lumbricalis var. fastigiatus C.Agardh, 1822* *Polyides rotunda f. fastigiatus (C.Agardh) Duby, 1830* *Sphaerococcus fastigiatus (Linnaeus) Wahlenberg, 1826*						2,9,10	
	Rhodymeniales	Champiaceae	Gastroclonium	145811	***Gastroclonium reflexum (Chauvin) Kützing, 1849***	*Chylocladia reflexa (Chauvin) Zanardini, 1843* *Lomentaria pygmaea Duby, 1830* *Lomentaria reflexa Chauvin, 1831*					1,2,6	9	
	Ceramiales	Ceramiaceae	Gayliella	377234	***Gayliella flaccida* (Harvey ex Kützing) T.O.Cho & L.J.McIvor, 2008**	*Ceramium flaccidum (Harvey ex Kützing) Ardissone, 1871* *Ceramium gracillimum f. intermedium Foslie, 1893* *Hormoceras flaccidum Harvey ex Kützing, 1862*				10			
	Gelidiales	Gelidiaceae	Gelidiella	145571	***Gelidiella nigrescens* (Feldmann) Feldmann & G.Hamel, 1934**	*Echinocaulon nigrescens Feldmann, 1931*				2,8,10			
	Gelidiales	Gelidiaceae	Gelidiella	145573	***Gelidiella ramellosa* (Kützing) Feldmann & G.Hamel, 1934**	*Echinocaulon ramellosum (Kützing) Feldmann, 1931* *Gelidium corneum var. ramellolsum (Kützing) Harvey, 1863* *Gelidium ramellosum (Kützing) Trevisan, 1845*				1,2,3,4,5, 8,9,10			
	Gracilariales	Pterocladiophilaceae	Gelidiocolax	145707	***Gelidiocolax christianae* Feldmann & G.Feldmann, 1963**					1			
	Gelidiales	Gelidiaceae	Gelidium	550755	***Gelidium corneum* var. *pectinatum* Ardissone & Strafforello, 1883**					1		6	
	Gelidiales	Gelidiaceae	Gelidium	145580	***Gelidium crinale* (Hare ex Turner) Gaillon, 1828**	*Fucus crinalis Hare ex Turner; Gelidium corneum var. crinale (Turner) Greville, 1830* *Gelidium spinescens (Kützing) Trevisan, 1845* *Gelidium spinescens (Kützing) Zanardini, 1847*			1,2,3,4, 5	1,8,9,10	1,2,3,6	2,9,10	
	Gelidiales	Gelidiaceae	Gelidium	550757	***Gelidium crinale* var. *corymbosum* (Kützing) Feldmann & G.Hamel, 1936**					1,8,9,10	1.6		
	Gelidiales	Gelidiaceae	Gelidium	145588	***Gelidium pulchellum* (Turner) Kützing, 1868**	*Fucus corneus var. pulchellus Turner, 1819* *Gelidium pulchellum var. claviferum (Turner) Feldmann & Hamel, 1936*				1, 8			
	Gelidiales	Gelidiaceae	Gelidium	145590	***Gelidium pusillum* (Stackhouse)**	*Fucus hetaerophyllus Clemente, 1807*				6			

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					Le Jolis, 1863	*Fucus pusillus Stackhouse, 1795* *Gelidium repens Okamura, 1899*							
	Gelidiales	Gelidiaceae	Gelidium	145593	***Gelidium spathulatum* (Kützing) Bornet, 1892**	*Gelidium crinale var. spathulatum (Kützing) Hauck, 1883* *Gelidium crinale var. spathulatum (Kützing) Schiffner, 1916* *Gelidium polycladum Kützing, 1868*				1,8,9,10		6	
	Gelidiales	Gelidiaceae	Gelidium	145594	***Gelidium spinosum* (S.G.Gmelin) P.C.Silva, 1996**	*Fucus spinosus S.G.Gmelin, 1768; Gelidium corneum var. latifolium Greville, 1830* *Gelidium latifolium Bornet ex Hauck, 1883*		5	1,2,3,4,5	1,2,3,5,8,9	1,2,3,6	2,9,10	
	Gelidiales	Gelidiaceae	Gelidium	382513	***Gelidium spinosum* var. *hystrix* (J.Agardh) Furnari, 1997**	*Gelidium corneum var. hystrix J.Agardh* *Gelidium latifolium var. hystrix (J.Agardh) Hauck, 1883*				1,2,3,4,6,8,9,10			
	Gigartinales	Phyllophoraceae	Gymnogongrus	145657	***Gymnogongrus griffithsiae* (Turner) Martius, 1833**	*Actinococcus aggregatus F.Schmitz, 1893; Chondrus griffithsiae (Turner) J.Agardh, 1842* *Fucus griffithsiae Turner, 1808* *Sphaerococcus griffithsiae (Turner) C.Agardh*			1,2	1,2,3,6,8,9,10			
	Gracilariales	Gracilariaceae	Gracilariopsis	146960	***Gracilariopsis longissima* (S.G.Gmelin) M.Steentoft, L.M.Irvine & W.F.Farnham, 1995**	*Ceramium confervoides F.H.Wiggers, 1780 ; Fucus confervoides Linnaeus, 1763* *Fucus longissimus S.G.Gmelin, 1768* *Fucus verrucosus Hudson, 1762* *Gracilaria confervoides (Linnaeus) Greville, 1830* *Gracilaria verrucosa (Hudson) Papenfuss, 1950* *Hypnea confervoides (C.Agardh) J.Agardh, 1842* *Sphaerococcus confervoides (F.H.Wiggers) Stackhouse, 1797*			1,2,4	1,9,10	1,2,3,6	2,9,10	
	Gracilariales	Gracilariaceae	Gracilaria	145692	***Gracilaria armata* (C.Agardh) Greville, 1830**	*Sphaerococcus armatus C.Agardh, 1827*				1,6,10		6	
	Gracilariales	Gracilariaceae	Gracilaria	145698	***Gracilaria dura* (C.Agardh) J.Agardh, 1842**	*Sphaerococcus durus C.Agardh, 1822*				1,2,3,4,6,10	1,2,3,6	2,6,9,10	
	Gracilariales	Gracilariaceae	Gracilaria	145700	***Gracilaria gracilis* (Stackhouse) M.Steentoft, L.M.Irvine & W.F.Farnham, 1995**	*Fucus confervoides var. gracilis (Stackhouse) Turner, 1802* *Fucus gracilis Stackhouse, 1801* *Fucus gulaman M.Blanco, 1837* *Fucus procerrimus Esper, 1800* *Gracilaria confervoides f. gracilis (Stackhouse) Grunow, 1874* *Gracilaria confervoides f. tenuissima Rosenvinge, 1931* *Gracilaria confervoides var. gracilis (Stackhouse) Batters, 1902* *Gracilaria confervoides var. procerrima (Esper) Greville, 1830* *Sphaerococcus capillaris Kützing, 1863*				1,2,3,4,5,6,8,9,10			
	Gracilariales	Gracilariaceae	Gracilaria	157354	***Gracilaria tikvahiae* McLachlan, 1979**	*Gracilaria foliifera var. angustissima W.R.Taylor, 1940*						6	
	Halymeniales	Halymeniaceae	Gracilaria	145246	***Grateloupia dichotoma* J.Agardh, 1842**	*Grateloupia dichotoma f. nana Ardissone, 1883*				1,2,3,4,6,8,9,10	1,2,3,6	2,6,9	
	Corallinales	Corallinaceae	Haliptilon	550770	***Haliptilon virgatum var. australe (Grunow) Garbary & H.W.Johansen, 1982***	*Corallina virgata Zanardini, 1841; Haliptilon virgatum (Zanardini) Garbary & H.W.Johansen, 1982* *Jania granifera J.V.Lamouroux, 1812*			1,2		1,2,3,6		
	Ceramiales	Wrangeliaceae	Halurus	144595	***Halurus flosculosus* (J.Ellis) Maggs & Hommersand, 1993**	*Conferva flosculosa J.Ellis, 1768, Conferva setacea Hudson, 1778, Griffithsia arachnoidea C.Agardh, 1828, Griffithsia flosculosa (J.Ellis) Batters, 1902, Griffithsia setacea (Hudson) C.Agardh, 1817*						2,5,9	

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	Nemaliales	Liagoraceae	Helminthora	145753	***Helminthora divaricata* (C.Agardh) J.Agardh, 1852**	*Acrochaetium polyidis (Rosenvinge) Børgesen, 1915* *Chantransia polyidis Rosenvinge, 1909* *Colaconema polyidis (Rosenvinge) Woelkerling, 1971* *Dudresnaya divaricata (C.Agardh) J.Agardh, 1852* *Mesogloia divaricata C.Agardh, 1824* *Mesogloia hornemanni Suhr ex Hornemann, 1836* *Nemalion ramosissimum Zanardini, 1847*					1.6		
	Ceramiales	Dasyaceae	Heterosiphonia	144731	***Heterosiphonia crispella* (C.Agardh) M.J.Wynne, 1985**	*Callithamnion crispellum C.Agardh, 1828* *Dasya wurdemannii J.Bailey ex Harvey, 1853* *Heterosiphonia crispella var. laxa (Børgesen) M.J.Wynne, 1985* *Heterosiphonia wurdemannii (J.Bailey ex Harvey) Falkenberg, 1897* *Heterosiphonia wurdemannii var. laxa Børgesen, 1919*				10			
	Ceramiales	Dasyaceae	Heterosiphonia	144732	***Heterosiphonia plumosa* (J.Ellis) Batters, 1902**	*Callithamnion coccineum (Hudson) Lyngbye, 1819* *Ceramium patens Greville, 1827* *Dasya coccinea (Hudson) Areschoug, 1845* *Dasya coccinea f. tenuis J.Agardh, 1863* *Dasya coccinea var. tenuis Liebmann, 1845* *Heterosiphonia coccinea (Hudson) Falkenberg, 1901* *Heterosiphonia plumosa var. patens (Greville) Batters* *Heterosiphonia plumosa var. tenuior Batters* *Hutchinsia coccinea (Hudson) C.Agardh, 1817*				1,2,8,9,10	1	2,5,10	
	Ceramiales	Rhodomelaceae	Heterosiphonia	214222	***Herposiphonia secunda* (C.Agardh) Ambronn, 1880**	*Herposiphonia tenella f. secunda (C.Agardh) Hollenberg, 1968* *Hutchinsia secunda C.Agardh, 1824* *Polysiphonia secunda (C.Agardh) Zanardini, 1840*				1,2,3,4,6,8,9,10	1		
	Ceramiales	Rhodomelaceae	Heterosiphonia	382517	***Herposiphonia secunda* f. *tenella* (C.Agardh) M.J.Wynne, 1985**	*Herposiphonia tenella (C.Agardh) Ambronn, 1880* *Hutchinsia tenella C.Agardh, 1828* *Polysiphonia tenella (C.Agardh) Moris & De Notaris, 1839*				1,2,3,4,6,8,9,10		2.5	
	Ceramiales	Rhodomelaceae	Heterosiphonia	214219	***Herposiphonia tenella* (C.Agardh) Ambronn, 1880**							2,5,9	
	Hildenbrandiales	Hildenbrandiaceae	Hildenbrandia	371032	***Hildenbrandia crouaniorum* J.Agardh, 1851**				1,2				
	Hildenbrandiales	Hildenbrandiaceae	Hildenbrandia	145712	***Hildenbrandia rubra* (Sommerfelt) Meneghini, 1841**	*Hildenbrandia nardi Zanardini, 1840; Hildenbrandia prototypus Nardo, 1834* *Hildenbrandia rosea Kützing, 1843* *Hildenbrandia sanguinea Kützing, 1843* *Rhododermis drummondii Harvey, 1844*		3,4,5,6,8	1,2,5		1,3,6	2.9	
	Corallinales	Corallinaceae	Hydrolithon	145118	***Hydrolithon farinosum* (J.V.Lamouroux) D.Penrose & Y.M.Chamberlain, 1993**	*Fosliella farinosa (J.V.Lamouroux) M.A.Howe, 1920 ; Melobesia farinosa J.V.Lamouroux, 1816* *Melobesia granulata (Meneghini) Zanardini, 1843*		3,5,6	1,2	1,2,3,6,8,9,10	1,2,3,6	1,2,9,10	
	Gigartinales	Cystocloniaceae	Hypnea	145634	***Hypnea musciformis* (Wulfen) J.V.Lamouroux, 1813**	*Fucus musciformis Wulfen, 1789* *Hypnea rissoana J.Agardh, 1842* *Sphaerococcus divaricatus C.Agardh, 1827* *Sphaerococcus musciformis (Wulfen) C.Agardh, 1822*				1,2,3,4,6,8,9,10	1.6	2.9	
	Ceramiales	Delesseriaceae	Hypoglossum	144756	***Hypoglossum hypoglossoides* (Stackhouse) F.S.Collins &**	*Delesseria hypoglossum (Woodward) J.V.Lamouroux, 1813* *Delesseria hypoglossum var. ovalifolia J.Agardh, 1842*				1,3,4,5,6,8,9,10	1,3,7	2,5,9	

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					Hervey, 1917	*Delesseria ligulata Gray, 1821* *Fucus hypoglossoides Stackhouse, 1801* *Fucus hypoglossum Woodward, 1794* *Hypoglossum crispum (Zanardini) Kützing* *Hypoglossum tenuifolium var. carolinianum Williams, 1951* *Hypoglossum woodwardii Kützing, 1843* *Hypoglossum woodwardii var. angustifolia Kützing* *Hypoglossum woodwardii var. arborescens J.Agardh* *Hypoglossum woodwardii var. crispa P.L.Crouan & H.M.Crouan* *Hypoglossum woodwardii var. glomerata Chauvin* *Hypoglossum woodwardii var. ovalifolium (J.Agardh) Rabenhorst, 1847* *Hypoglossum woodwardii var. ovalifolium (J.Agardh) Kützing, 1849*							
	Corallinales	Corallinaceae	Jania	145127	***Jania longifurca* Zanardini, 1844**	*Corallina longifurca Zanardini, 1841* *Corallina rubens f. longifurca Zanardini, 1843* *Jania rubens f. longifurca Mazza, 1909*				6, 8,10			
	Corallinales	Corallinaceae	Jania	375194	***Jania rosea* (Lamarck) Decaisne, 1842**	*Corallina crispata J.V.Lamouroux, 1816* *Corallina cuvieri J.V.Lamouroux, 1816* *Corallina gracilis J.V.Lamouroux, 1816* *Corallina pilifera J.V.Lamouroux, 1816* *Corallina plumifera Kützing, 1849* *Corallina rosea Lamarck, 1815* *Cornicularia cuvieri (J.V.Lamouroux) V.J.Chapman & P.G.Parkinson, 1974* *Cornicularia gracilis (J.V.Lamouroux) V.J.Chapman & P.G.Parkinson, 1974* *Cornicularia pilifera (J.V.Lamouroux) V.J.Chapman & P.G.Parkinson, 1974* *Cornicularia rosea (Lamarck) V.J.Chapman & P.G.Parkinson, 1974* *Haliptilon cuvieri (J.V.Lamouroux) H.W.Johansen & P.C.Silva, 1978* *Haliptilon gracile (J.V.Lamouroux) H.W.Johansen, 1971* *Haliptilon roseum (Lamarck) Garbary & H.W.Johansen, 1982* *Jania cuvieri (J.V.Lamouroux) Decaisne, 1842*				10		6	
	Corallinales	Corallinaceae	Jania	145130	***Jania rubens* (Linnaeus) J.V.Lamouroux, 1816**	*Corallina cristata Linnaeus, 1758 ; Corallina rubens Linnaeus, 1758* *Jania spermophorus J.V.Lamouroux, 1812*		4,6		1,2,3,4,6,8,9	1,2,3,6	2,9,10	
	Corallinales	Corallinaceae	Jania	548045	***Jania rubens* var. *corniculata* (Linnaeus) Yendo, 1905**	*Corallina corniculata Linnaeus, 1758* *Corallina elegans Lenormand ex Areschoug, 1852* *Corallina plumula Zanardini, 1843* *Corallina rubens var. corniculata (Linnaeus)* *Jania corniculata (Linnaeus) J.V.Lamouroux, 1812* *Jania nitidula Meslin, 1976* *Jania plumula (Zanardnini) Zanardini, 1844*				1,2,3,4,5,6,8,9,10			
	Corallinales	Corallinaceae	Jania	499546	***Jania virgata* (Zanardini) Montagne, 1846**	*Corallina virgata Zanardini, 1841* *Haliptilon virgatum (Zanardini) Garbary & H.W.Johansen, 1982* *Jania granifera J.V.Lamouroux, 1812* *Corallina granifera J. Ellis et Solander*				1,2,3,4,5,6,8,9,10	1.2	6,9,10	

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	Ceramiales	Rhodomelaceae	Laurencia	144818	***Laurencia coronopus* J.Agardh, 1852**			3,4,5,6	1,2		1,2,3,7	1,2,5,6,9,10	
	Ceramiales	Rhodomelaceae	Laurencia	144825	***Laurencia microcladia* Kützing, 1865**					10			
	Ceramiales	Rhodomelaceae	Laurencia	144827	***Laurencia obtusa* (Hudson) J.V.Lamouroux, 1813**	*Chondria obtusa (Hudson) C.Agardh, 1817; Fucus obtusus Hudson, 1778* *Laurencia obtusata (misspelling)* *Sphaerococcus obtusus (Hudson) Wahlenberg, 1826*		3,6	1,2,4,5	1,2,3,4,5,6,8,9,10	1,2,3,7	1,2,5,9,10	
	Ceramiales	Rhodomelaceae	Laurencia				*Laurencia obtusa* (Hudson) J.V.Lamouroux, 1813 var. *genuina* Kutz.	6					
	Ceramiales	Rhodomelaceae	Laurencia	550793	***Laurencia obtusa* var. *gracilis* (C.Agardh) Zanardini, 1847**	*Chondria obtusa var. gracilis C.Agardh, 1822* *Chondria obtusa var. gracilis Martens, 1824* *Fucus gelatinosus Desfontaines, 1799* *Laurencia gelatinosa J.V.Lamouroux, 1813* *Laurencia obtusa var. crucifera Kützing* *Laurencia obtusa var. gelatinosa (Lamouroux) J.Agardh, 1852*		6		1,2,3,4,6,8,9,10			
	Ceramiales	Rhodomelaceae	Laurencia	163503	***Laurencia pinnatifida* (Gmelin) Lamouroux**			6			1,3,7		
	Ceramiales	Rhodomelaceae	Laurencia	144832	***Laurencia radicans* (Kützing) Kützing, 1849**						1,3,7	2,5,10	
	Ceramiales	Wrangeliaceae	Lejolisia	144596	***Lejolisia mediterranea* Bornet, 1859**							2,5,9	
	Nemaliales	Liagoraceae	Liagora	145764	***Liagora viscida* (Forsskål) C.Agardh, 1822**	*Fucus viscidus Forsskål, 1775 ; Liagora cladoniaeformis Bory de Saint-Vincent, 1832*				1,2,3,5,6,8,9,10			
	Corallinales	Hapalidiaceae	Lithothamnion	373903	***Lithothamnion propontidis* Foslie, 1899**							10	
	Corallinales	Corallinaceae	Lithophyllum	145144	***Lithophyllum cystoseirae* (Hauck) Heydrich, 1897**	*Dermatolithon cystoseirae (Hauck) H.Huvé, 1962* *Dermatolithon cystoseirae var. saxicola H.Huvé, 1962* *Dermatolithon papillosum var. cystoseirae (Hauck) M.Lemoine, 1953* *Lithophyllum papillosum var. cystoseirae (Hauck) Me.Lemoine, 1924* *Melobesia cystoseirae Hauck* *Tenarea tortuosa var. cystoseirae (Huack)* *Titanoderma cystoseirae (Hauck) Woelkerling, Y.M.Chamberlain & P.C.Silva, 1985*		3,4,5,6	1,2,3,5	1,2,3,4,6,8,9,10	1,2,3,6	1,2,9,10	
	Corallinales	Corallinaceae	Lithophyllum	145157	***Lithophyllum orbiculatum* (Foslie) Foslie, 1900**	*Crodelia orbiculata (Foslie) Kylin, 1956* *Goniolithon subtenellum Foslie, 1899* *Lithophyllum subtenellum (Foslie) M. Lemoine, 1915* *Lithothamnion orbiculatum Foslie, 1895* *Lithothamnion subtenellum (Foslie) Me.Lemoine, 1915* *Pseudolithophyllum orbiculatum (Foslie) M.Lemoine, 1929*				1,2,9,10			
	Corallinales	Corallinaceae	Lithophyllum	157328	***Lithophyllum corallinae* (P.L.Crouan & H.M.Crouan)**	*Dermatolithon corallinae (P.L.Crouan & H.M.Crouan) Foslie, 1902; Dermatolithon pustulatum var. corallinae Foslie ex Belsher et al., 1976*			1,2	1,2,8,9,10	1,2,3,6		

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					Heydrich 1897	*Lithophyllum macrocarpum f. corallinae (P.L.Crouan & H.M.Crouan) Foslie, 1909* *Lithophyllum pustulatum var. corallinae (P.L.Crouan & H.M.Crouan) Foslie, 1905* *Melobesia corallinae P.L.Crouan & H.M.Crouan, 1867* *Tenarea corallinae (P.L.Crouan & H.M.Crouan) Notoya, 1974* *Titanoderma corallinae (P.L.Crouan & H.M.Crouan) Woelkerling, Y.M.Chamberlain & P.C.Silva, 1985*							
	Corallinales	Corallinaceae	Lithophyllum	238908	***Lithophyllum pustulatum* (J.V.Lamouroux) Foslie, 1904**	*Dermatolithon caspica (Foslie) Zaberzhinskaya ex A.D.Zinova, 1967;* *Dermatolithon confinis (P.L.Crouan & H.M.Crouan) Boudouresque, Perret-Boudouresque & Knoepffler-Peguy, 1984* *Dermatolithon hapalidiodes (P.L.Crouan & H.M.Crouan) Foslie, 1898* *Dermatolithon hapalidioides f. confine (P.Crouan & H.Crouan) Foslie, 1899* *Dermatolithon pustulatum (J.V.Lamouroux) Foslie, 1898* *Epilithon pustulatum (J.V.Lamouroux) M.Lemoine, 1921* *Litholepis caspica (Foslie) Foslie, 1905* *Lithophyllum adplicitum (Foslie) L.Newton, 1931* *Lithophyllum hapalidioides (P.L.Crouan & H.M.Crouan) Hariot, 1889* *Lithophyllum hapalidioides f. confinis (P.L.Crouan & H.M.Crouan) Foslie, 1905* *Lithothamnion adplicitum Foslie, 1897* *Melobesia caspica Foslie, 1899* *Melobesia confinis P.L.Crouan & H.M.Crouan, 1867* *Melobesia hapalidioides P.L.Crouan & H.M.Crouan, 1867* *Melobesia pustulata J.V.Lamouroux, 1816 (synonym)* *Melobesia verrucata J.V.Lamouroux, 1816* *Tenarea caspica (Foslie) Adey, 1970* *Tenarea confinis (P.L.Crouan & H.M.Crouan) Adey & P.J.Adey, 1973* *Tenarea hapalidioides (P.L.Crouan& H.M.Crouan) Adey & P.J.Adey, 1973* *Tenarea pustulata (J.V.Lamouroux) Shameel, 1983* *Titanoderma caspicum (Foslie) Woelkerling, 1986* *Titanoderma confine (P.L.Crouan & H.M.Crouan) J.H.Price, D.M.John & G.W.Lawson, 1986* *Titanoderma hapalidioides (P.L.Crouan & H.M.Crouan) J.H.Price et al., 1986* *Titanoderma pustulatum (J.V.Lamouroux) Nägeli, 1858* *Titanoderma pustulatum var. confine (P.L.Crouan & H.M.Crouan) Y.M.Chamberlain, 1991*		3,6	1,2,3	1,2,3,8,9,10	1,2,3,6	2.9	
	Rhodymeniales	Lomentariaceae	Lomentaria	145821	***Lomentaria articulata* (Hudson) Lyngbye, 1819**	*Chondria articulata (Hudson) C.Agardh, 1817* *Chrysymenia acicularis J.Agardh, 1842* *Chylocladia articulata (Hudson) Greville, 1833* *Lomentaria acicularis (J.Agardh) Falkenberg, 1879*				1,2,3,4,6,8,9,10	1,3,6	2.9	
	Rhodymeniales	Lomentariaceae	Lomentaria	382520	***Lomentaria articulata* var. *linearis* Zanardini, 1841**	*Lomentaria linearis (Zanardini) Zanardini, 1849* *Lomentaria phalligera (J.Agardh) Endlicher, 1843*				6		6	

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	Rhodymeniales	Lomentariaceae	Lomentaria	145825	***Lomentaria clavellosa* (Lightfoot ex Turner) Gaillon, 1828**	*Chondria clavellosa (Turner) C.Agardh, 1822; Chondria clavellosa var. lyngbyei C.Agardh, 1822* *Chondrothamnion clavellosum (Turner) Kützing, 1843* *Chrysymenia clavellosa (Lightfoot ex Turner) J.Agardh, 1842* *Chylocladia clavellosa (Turner) Areschoug, 1838* *Chylocladia clavellosa var. sedifolia J.Agardh, 1852* *Chylocladia clavellosa var. sedifolia (Turner) Greville, 1833* *Fucus clavellosus Lightfoot ex Turner, 1802* *Fucus clavellosus var. sedifolius Turner, 1802* *Gastridium clavellosum (Turner) Lyngbye, 1819* *Gastridium purpurascens Lyngbye, 1819* *Gigartina clavellosa (Turner) J.V.Lamouroux, 1813* *Lomentaria clavellosa var. sedifolia Harvey* *Lomentaria sedifolia (Turner) Strömfelt ex Foslie, 1894*		1,3,4,5, 6,7,8	1,2,3,5	1,2,3,4,5, 6,8,9,10	1,2,3,6	2,8,9,10	
	Rhodymeniales	Lomentariaceae	Lomentaria	145826	***Lomentaria compressa* (Kützing) Kylin, 1931**	*Chondrosiphon compressus Kützing, 1843*			1,2		3.6	2.9	
	Rhodymeniales	Lomentariaceae	Lomentaria	145828	***Lomentaria firma (J.Agardh) Falkenberg, 1879***	*Chrysymenia firma J.Agardh, 1842*						2.9	
	Rhodymeniales	Lomentariaceae	Lomentaria	145832	***Lomentaria uncinata* Meneghini ex Zanardini, 1849**					10		2.9	
	Ceramiales	Rhodomelaceae	Lophosiphonia	144837	***Lophosiphonia cristata* Falkenberg, 1901**					8, 1			
	Ceramiales	Rhodomelaceae	Lophosiphonia	144838	***Lophosiphonia reptabunda* (Suhr) Kylin, 1956**	*Hutchinsia reptabunda Suhr, 1831; Lophocladia reptabunda (Suhr) Kylin* *Polysiphonia adunca Kützing, 1849* *Polysiphonia reptabunda (Suhr) Kützing, 1843*		3,6	1,2		1,2,3,7	2,5,9,10	
	Ceramiales	Rhodomelaceae	Lophosiphonia	146367	***Lophosiphonia obscura* (C.Agardh) Falkenberg, 1897**	*Hutchinsia obscura C.Agardh, 1828* *Lophosiphonia subadunca (Kützing) Falkenberg, 1901* *Polysiphonia obscura (C.Agardh) J.Agardh, 1842* *Polysiphonia parvula Zanardini, 1847* *Polysiphonia subadunca Kützing, 1843* *Polysiphonia subadunca var. major Zeller, 1873*				1,2,3,4,5, 6,8,9,10	1,2,3,7	1,2,5,9, 10	
	Palmariales	Meiodiscaceae	Meiodiscus	145773	***Meiodiscus spetsbergensis* (Kjellman) G.W.Saunders & McLachlan, 1991**	*Audouinella spetsbergensis (Kjellman) Woelkerling, 1973* *Rhodochorton mesocarpum f. penicilliforme (Kjellman) Kjellman, 1883* *Rhodochorton mesocarpum var. penicilliforme (Kjellman) Rosenvinge, 1893* *Rhodochorton penicilliforme (Kjellman) Rosenvinge, 1894* *Rhodochorton spetsbergense (Kjellman) Kjellman, 1883*					1,2,3,6	9	
	Corallinales	Hapalidiaceae	Melobesia	145182	***Melobesia membranacea* (Esper) J.V.Lamouroux, 1812**	*Corallina membranacea Esper, 1796* *Epilithon corticiforme (Kützing) Heydrich, 1908* *Epilithon membranaceum (Esper) Heydrich, 1897* *Hapalidium coccineum P.L.Crouan & H.M.Crouan, 1859* *Hapalidium hildebrandtioides P.L.Crouan & H.M.Crouan, 1867* *Hapalidium roseolum Kützing, 1843* *Lithothamnion corticiforme (Kützing) Foslie, 1898* *Lithothamnion membranaceum (Esper) Foslie, 1898*				1,2,8,9,10	1,2,3,6	2,6,9	

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						Melobesia corticiformis Kützing, 1849 *Melobesia hildebrantioides (P.L.Crouan & H.M.Crouan) Foslie, 1898* *Melobesia rosea Rosanoff, 1866*							
	Nemaliales	Liagoraceae	Nemalion	145765	***Nemalion helminthoides* (Velley) Batters, 1902**	*Boanema scoparia Ercegovic, 1927* *Fucus helminthoides Velley, 1792* *Mesogloia hudsonii C.Agardh, 1824* *Mesogloia rubra (Hudson) Areschoug, 1840* *Nemalion hudsonii (C.Agardh) Chauvin, 1842* *Nemalion lubricum Duby, 1830*				1,2,3,4,6,8,9,10	1,3,6	2.9	
	Ceramiales	Rhodomelaceae	Neosiphonia	375453	***Neosiphonia elongella* (Harvey) M.S.Kim & I.K.Lee, 1999**	*Polysiphonia elongella* Harvey, 1833				3, 10		6	
	Ceramiales	Delesseriaceae	Nitophyllum	144770	***Nitophyllum punctatum* (Stackhouse) Greville, 1830**	*Aglaophyllum punctatum (Stackhouse) Areschoug, 1847* *Aglaophyllum punctatum var. ocellatum (Greville) Areschoug, 1847* *Delesseria ocellata (J.V.Lamouroux) J.V.Lamouroux, 1813* *Delesseria punctata (Stackhouse) C.Agardh, 1822* *Fucus ocellatus J.V.Lamouroux, 1802* *Fucus punctatus Stackhouse, 1796* *Nitophyllum ocellatum (J.V.Lamouroux) J.Agardh, 1842* *Nitophyllum punctatum var. crispatum Harvey* *Nitophyllum punctatum var. fimbriatum Harvey* *Nitophyllum punctatum var. lobatum Funk* *Nitophyllum punctatum var. ocellatum (J.V.Lamouroux) Harvey, 1841* *Nitophyllum punctatum var. pollexfenii Harvey* *Nitophyllum punctatum var. reniforme J.Agardh* *Papyracea punctata (Stackhouse) Stackhouse, 1809* *Ulva punctata (Stackhouse) Stackhouse, 1797* *Wormskioldia punctata (Stackhouse) Sprengel, 1827*				1,2,3,4,6,8,9,10	1,2,3,7	2,5,9	
	Ceramiales	Rhodomelaceae	Osmundea	144842	***Osmundea hybrida* (A.P.de Candolle) K.W.Nam, 1994**	*Fucus hybridus A.P.de Candolle, 1805* *Fucus pinnatifidus var. angustus Turner, 1802* *Laurencia caespitosa J.V.Lamouroux, 1813* *Laurencia caespitosa var. subsimplex Montagne* *Laurencia hybrida (A.P.de Candolle) T.Lestiboudois, 1827* *Laurencia pinnatifida var. angusta (Turner) Greville, 1830*						6,9,10	
	Ceramiales	Rhodomelaceae	Osmundea	144847	***Osmundea pinnatifida* (Hudson) Stackhouse, 1809**	*Chondria pinnatifida (Hudson) C.Agardh, 1822; Fucus pinnatifidus Hudson, 1762 (synonym)* *Gelidium pinnatifidum (Hudson) Lyngbye, 1819* *Laurencia pinnatifida (Hudson) J.V.Lamouroux, 1813*		3	1,2,4	1,2,3,4,5,6,8,9,10		9	
	Ceramiales	Rhodomelaceae	Osmundea	156279	***Osmundea truncata* (Kützing) K.W.Nam & Maggs, 1994**	*Laurencia truncata Kützing, 1865*					1	5.6	
	Ceramiales	Rhodomelaceae	Palisada	495580	***Palisada perforata* (Bory de Saint-Vincent) K.W.Nam, 2007**	*Chondria papillosa C.Agardh, 1822* *Chondrophycus papillosus (C.Agardh) D.J.Garbary & J.T.Harper, 1998* *Chondrophycus perforatus (Bory de Saint-Vincent) K.W.Nam, 1999* *Fucus papillosus Forsskål, 1775* *Laurencia papillosa (C.Agardh) Greville, 1830* *Laurencia perforata (Bory de Saint-Vincent) Montagne, 1840*				1,2,3,4,5,6,8,9,10	1,3,7	9.10	

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						Palisada papillosa (C.Agardh) K.W.Nam, 2006							
	Ceramiales	Rhodomelaceae	Palisada	526644	***Palisada thuyoides* (Kützing) Cassano, Sentíes, Gil-Rodríguez & M.T.Fujii, 2009**	*Chondria obtusa var. paniculata C.Agardh, 1822; Chondrophycus thuyoides (Kützing) G.Furnari, 2001* *Laurencia obtusa var. paniculata (C.Agardh) Zanardini, 1847* *Laurencia paniculata (C.Agardh) J.Agardh, 1852* *Laurencia thuyoides Kützing, 1865*		4,5,6	1,2,5	1,2,3,4,6,8,9	1,3,7	1,4,10	
	Gelidiales	Gelidiellaceae	Parviphycus	376619	***Parviphycus antipai* (Celan) B.Santelices, 2004**	*Gelidiella antipai Celan, 1938* *Gelidiella stichidiospora E.Y.Dawson, 1953*			1,2	1,2,3,4,6,8,9,10	1.6	2,9,10	
	Gelidiales	Gelidiellaceae	Parviphycus	624198	***Parviphycus pannosus* (Feldmann) G.Furnari, 2010**	*Echinocaulon pannosum Feldmann, 1931* *Gelidiella pannosa Feldmann & G.Hamel, 1934* *Gelidiella tenuissima Feldmann & G.Hamel, 1936* *Gelidium pannosum Bornet ex Weber-van Bosse, 1921* *Parviphycus tenuissimus B.Santelices, 2004*				1			
	Peyssonneliales	Peyssonneliaceae	Peyssonnelia	145273	***Peyssonnelia armorica* (P.L.Crouan & H.M.Crouan) Weber-van Bosse, 1916**	*Cruoria crucialis (Dufour) Zanardini, 1870* *Cruoriella armorica P.L.Crouan & H.M.Crouan, 1859* *Cruoriopsis crucialis Dufour, 1864* *Cruoriopsis rosenvingei Bøergesen, 1929*		6			1,2,3	2.9	
	Peyssonneliales	Peyssonneliaceae	Peyssonnelia	145285	***Peyssonnelia rosa-marina* Boudouresque & Denizot, 1973**					2,3,6,8,10			
	Peyssonneliales	Peyssonneliaceae	Peyssonnelia	145287	***Peyssonnelia rubra* (Greville) J.Agardh, 1851**	*Zonaria rubra Greville, 1827*		1,6	1,2,3,4,5	1,2,3,4,6,8,9,10	1,2,3,6	2,8,9,10	
	Peyssonneliales	Peyssonneliaceae	Peyssonnelia	145288	***Peyssonnelia squamaria* (S.G.Gmelin) Decaisne, 1842**	*Dictyota squamaria (S.G.Gmelin) Poiret, 1812* *Dictyota squamata J.V.Lamouroux, 1809* *Fucus squamarius S.G.Gmelin, 1768*		6		1,2,3,4,5,6,8,9,10	1,3,6	6	
	Peyssonneliales	Peyssonneliaceae	Peyssonnelia	145278	***Peyssonnelia dubyi* P.L.Crouan & H.M.Crouan, 1844**	*Cruoriella armorica var. de-zwaanii Weber-van Bosse, 1921; Cruoriella codana Rosenvinge, 1917* *Cruoriella dubyi (P.L.Crouan & H.M.Crouan) F.Schmitz, 1889* *Hildenbrandia dubyi P.L.Crouan & H.M.Crouan ex Kützing, 1869* *Peyssonnelia codana (Rosenvinge) Denizot, 1968*		1,4,6	1,2,3,5	1, 10	1,3,6	1,2,6,9,10	
	Ectocarpales	Ectocarpaceae	Pilinia	145457	***Pilinia rimosa* Kützing, 1843**	*Leptonematella lucifuga (Kuckuck) P.C.Silva, 1959; Waerniella lucifuga (Kuckuck) Kylin, 1947; Leptonematella lucifuga (Kuckuck) P.C.Silva, 1959 ; Waerniella lucifuga (Kuckuck) Kylin, 1947*						2.9	
	Gigartinales	Phyllophoraceae	Phyllophora	145660	***Phyllophora crispa* (Hudson) P.S.Dixon, 1964**	*Chondrus bangi (Hornemann) Lyngbye, 1819; Chondrus bangi var. tenuior Lyngbye, 1819* *Chondrus bangii (Hornemann) Lyngbye* *Colacolepis incrustans F.Schmitz, 1893* *Fucus bangii Hornemann, 1813* *Fucus crispus Hudson, 1762* *Fucus nervosus A.P.de Candolle, 1805* *Fucus prolifer Lightfoot, 1777 (synonym)* *Phyllophora bangii (Hornemann) Areschoug, 1845* *Phyllophora epiphylla f. bangi (Hornemann) Fries ex Rosenvinge, 1931* *Phyllophora nervosa (A.P.de Candolle) Greville, 1830* *Phyllophora rubens f. bangi (Hornemann) Levring, 1935*		3,4,5,6,8	1,2,3,4,5	1,2,3,4,5,6,8,9,10	1,2,3,6	1,2,8,9,10	

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						Phyllophora rubens f. nervosa (De Candolle) Hauck *Rhizophyllis bangi (Hornemann) J.Agardh, 1851* *Rhodymenia bangi (Hornemann) J.Agardh, 1876* *Sphaerococcus bangi (Hornemann) C.Agardh, 1817*							
	Corallinales	Hapalidiaceae	Phymatolithon	145199	***Phymatolithon calcareum* (Pallas) W.H.Adey & D.L.McKibbin, 1970**	*Apora polymorpha Gunnerus, 1768* *Eleutherospora polymorpha (Linnaeus) Heydrich, 1900* *Lithophyllum calcareum (Pallas) Foslie, 1898* *Lithothamnion calcareum (Pallas) Areschoug, 1852* *Lithothamnion polymorphum (Linnaeus) Areschoug, 1852* *Melobesia calcarea (Pallas) Harvey, 1849* *Melobesia compressa M'Calla, 1849* *Millepora polymorpha Linnaeus, 1767* *Phymatolithon polymorphum Foslie, 1898*					1	2,6,9	
	Corallinales	Hapalidiaceae	Phymatolithon	145202	***Phymatolithon lenormandii* (Areschoug) W.H.Adey, 1966**	*Phymatolithon lenormandii* (Areschoug) W.H.Adey, 1966			1,2,5	1,2,5,9,10	1,2,3,6	2,9,10	
	Corallinales	Hapalidiaceae	Phymatolithon	145203	**Phymatolithon purpureum (P.L.Crouan & H.M.Crouan) Woelkerling & L.M.Irvine, 1986**	Lithothamnion purpureum P.L.Crouan & H.M.Crouan, 1867					3.6	10	
	Gigartinales	Phyllophoraceae	Phyllophora	145664	***Phyllophora pseudoceranoides* (S.G.Gmelin) Newroth & A.R.A.Taylor, 1971**	*Chondrus membranifolius Greville, 1830; Fucus fimbriatus Hudson, 1778* *Fucus membranifolius C.Agardh, 1810* *Fucus pseudoceranoïdes S.G.Gmelin, 1768* *Phyllophora membranifolia f. angustissima (C.Agardh) Sjöstedt, 1920* *Phyllophora membranifolia f. fibrillosa (C.Agardh) Svedelius, 1901* *Phyllophora membranifolia var. angustissima (C.Agardh) Krok, 1869* *Phyllophora membranifolia var. fibrillosa (C.Agardh) Krok, 1869* *Sphaerococcus brodiei var. angustissimus (C.Agardh) C.Agardh, 1822* *Sphaerococcus membranifolius var. angustissimus C.Agardh, 1817* *Sphaerococcus membranifolius var. fibrillosus C.Agardh, 1817* *Sphaerococcus membranifolius var. pinnatus C.Agardh, 1822*		3,6,7,8		1,2,3,4,6,8,9,10		2,8,9,10	
	Corallinales	Corallinaceae	Pneophyllum	213921	***Pneophyllum confervicola* (Kützing) Y.M.Chamberlain, 1983**	*Fosliella minutula (Foslie) Ganesan, 1964 ; Guerinea callithamnionides (P.L.Crouan & H.M.Crouan) Picquenard, 1912* *Hapalidium callithamnioides P.L.Crouan & H.M.Crouan, 1859* *Hapalidium confervicola (Kützing) Areschoug, 1852* *Hapalidium confervoides (Kützing) P.L.Crouan & H.M.Crouan, 1867* *Hapalidium phyllactidium Kützing, 1849* *Heteroderma minutulum (Foslie) Foslie, 1909* *Melobesia callithamnioides (P.L.Crouan & H.M.Crouan) Falkenberg, 1879* *Melobesia confervicola (Kützing) Foslie, 1900* *Melobesia fosliei Rosenvige, 1917* *Melobesia minutula Foslie, 1904* *Melobesia minutula f. lacunosa Foslie, 1905* *Pneophyllum confervicola f. minutulum (Foslie) Y.M.Chamberlain, 1983*			1,2	1,2,8	1,2,3,6	2,9,10	
	Corallinales	Corallinaceae	Pneophyllum	145206	***Pneophyllum fragile Kützing, 1843***	*Dermatolithon lejolisii (Rosanoff) Foslie, 1898* *Fosliella lejolisii (Rosanoff) M.A.Howe, 1920*					1,2,3,6	8.10	

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						Heteroderma lejolisii (Rosanoff) Foslie, 1909 *Melobesia lejolisii Rosanoff, 1866* *Melobesia microspora Rosenvige, 1917* *Pneophyllum lejolisii (Rosanoff) Y.M.Chamberlain, 1983* *Pneophyllum microsporum (Rosenvinge) Y.M.Chamberlain, 1983*							
	Ceramiales	Rhodomelaceae	Polysiphonia	162854	***Polysiphonia brodiei* (Dillwyn) Sprengel, 1827**			3,4,5,6		1,2,3,4,5,6,8,9,10	1.2	5	
	Ceramiales	Rhodomelaceae	Polysiphonia	144614	***Polysiphonia breviarticulata* (C.Agardh) Zanardini, 1840**	*Hutchinsia breviarticulata C.Agardh, 1824* *Polysiphonia chrysoderma Kützing, 1849* *Polysiphonia physartra Kützing, 1849*				1,2,8,9,10	1,2,3,7	2,5,9	
	Ceramiales	Rhodomelaceae	Polysiphonia	144623	***Polysiphonia denudata* (Dillwyn) Greville ex Harvey, 1833**	*Hutchinsia biasolettoana C.Agardh, 1827; Hutchinsia variegata C.Agardh, 1824* *Polysiphonia leptura Kützing* *Polysiphonia variegata (C.Agardh) Zanardini, 1840* *Polysiphonia variegata (C.Agardh) J.Agardh, 1842* *Polysiphonia vidovichii Meneghini ex Kützing*		1,3,4,5,6	1,2,3,4,5	1,2,3,4,6,8,9,10	1,2,3,7	1,2,5,8,9,10	
	Ceramiales	Rhodomelaceae	Polysiphonia	144625	***Polysiphonia deusta* (Roth) Sprengel, 1827**	*Conferva deusta Roth, 1800* *Polysiphonia biasolettoana Zanardini, 1841* *Polysiphonia biasolettoana (C.Agardh) J.Agardh, 1842* *Polysiphonia deusta (Roth) J.Agardh, 1842*				1,2,10		6	
	Ceramiales	Rhodomelaceae	Polysiphonia	144628	***Polysiphonia elongata* (Hudson) Sprengel, 1827**	*Boryna elongata (Hudson) Bory de Saint-Vincent, 1829; Polysiphonia elongata var. robusta (Kützing) Schiffner* *Polysiphonia elongata var. rosea (Greville) J.Agardh* *Polysiphonia elongata var. ruchingeri (C.Agardh) Schiffner* *Polysiphonia elongata var. sanguinolenta (C.Agardh) Harvey, 1833* *Polysiphonia elongata var. ß denudata Harvey* *Polysiphonia elongata var. stenocarpa (Kützing) Schiffner* *Polysiphonia fragilis Spherk, 1869* *Polysiphonia haematites Kützing, 1843* *Polysiphonia laxa Kützing, 1843* *Polysiphonia leptoclonia Zanardini ex De Toni, 1907* *Polysiphonia macroclonia Kützing, 1843* *Polysiphonia microdendron J.Agardh, 1841* *Polysiphonia robusta Kützing, 1843* *Polysiphonia rosea Greville, 1824* *Polysiphonia ruchingeri (C.Agardh) Zanardini, 1841* *Polysiphonia schuebeleri Foslie, 1881* *Polysiphonia stenocarpa Kützing, 1849* *Polysiphonia strictoides (Lyngbye) Kützing* *Polysiphonia trichodes Kützing, 1843* *Polysiphonia variegata var. fragilis (Sperk) Woronichin* *Rhodomela elongata (Hudson) Fries, 1835*		1,3,4,5,6,7,8	1,2,3,4,5	1,2,3,4,5,6,8,9,10	1,2,3,7	1,2,5,8,9,10	
	Ceramiales	Rhodomelaceae	Polysiphonia	144634	***Polysiphonia fibrillosa* (Dillwyn) Sprengel, 1827**	*Ceramium violaceum var. tenue Roth, 1806; Conferva fibrillosa Dillwyn, 1809* *Hutchinsia aculeata C.Agardh, 1817*		3,6		1,4,5,6,8,10	1,3,7	1,2,5,6,9,10	

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						Hutchinsia divaricata Hornemann, 1840 *Hutchinsia divaricata C.Agardh, 1817* *Hutchinsia expansa C.Agardh, 1817* *Hutchinsia fibrillosa (Dillwyn) C.Agardh, 1817* *Hutchinsia implicata Lyngbye, 1819* *Hutchinsia stricta (Roth) Lyngbye, 1819* *Hutchinsia tenuis C.Agardh, 1828* *Polysiphonia aculeata (C.Agardh) Fries, 1845* *Polysiphonia bulbosa Fries, 1845* *Polysiphonia carmichaeliana Harvey, 1833* *Polysiphonia divaricata (C.Agardh) Sprengel, 1827* *Polysiphonia elongata f. expansa (C.Agardh) J.Agardh ex Levring, 1940* *Polysiphonia expansa (C.Agardh) Fries, 1845* *Polysiphonia fibrillosa (Dillwyn) J.Agardh, 1842* *Polysiphonia grevillei Harvey, 1849* *Polysiphonia griffithsiana Harvey, 1841* *Polysiphonia myriococca Montagne, 1841* *Polysiphonia nutans Montagne, 1841* *Polysiphonia richardsonii W.J.Hooker ex Harvey, 1833* *Polysiphonia spinulosa Greville, 1824* *Polysiphonia tenuis (C.Agardh) E.M.Fries, 1836* *Polysiphonia violacea f. aculeata (C.Agardh) Rosenvinge, 1924* *Polysiphonia violacea f. bulbosa (Suhr ex Areschoug) Kylin, 1907* *Polysiphonia violacea f. fibrillosa (Dillwyn) Rosenvinge, 1924* *Polysiphonia violacea f. subbrodiei (Areschoug) Kylin, 1907* *Polysiphonia violacea f. tenuis (Roth) Rosenvinge, 1924* *Polysiphonia violacea var. bulbosa Suhr ex Areschoug, 1847* *Polysiphonia violacea var. fibrillosa (Dillwyn) Areschoug, 1847* *Polysiphonia violacea var. subbrodiei Areschoug, 1847* *Polysiphonia violacea var. tenuissima Areschoug, 1847*							
	Ceramiales	Rhodomelaceae	Polysiphonia	144639	***Polysiphonia fucoides* (Hudson) Greville, 1824**	*Ceramium violaceum Roth, 1797 ; Ceramium violaceum var. nigrescens (Hudson) Wahlenberg, 1826* *Hutchinsia nigrescens (Hudson) Lyngbye, 1819* *Hutchinsia nigrescens var. pectinata C.Agardh, 1824* *Hutchinsia violacea (Roth) C.Agardh, 1817* *Hutchinsia violacea var. nigrescens (Hudson) C.Agardh, 1817* *Polysiphonia atropurpurea Moore, 1837* *Polysiphonia nigrescens (Hudson) Greville ex Harvey, 1833* *Polysiphonia nigrescens f. flaccida (Areschoug) Kylin, 1907* *Polysiphonia nigrescens f. fucoides (Hudson) J.Agardh, 1863* *Polysiphonia nigrescens f. pectinata (C.Agardh) J.Agardh, 1863* *Polysiphonia nigrescens f. protensa J.Agardh, 1863* *Polysiphonia nigrescens f. senticosa (Kützing) J.Agardh, 1863* *Polysiphonia nigrescens var. flaccida Areschoug, 1847* *Polysiphonia senticosa Suhr ex Kützing, 1849* *Polysiphonia violacea (Roth) Sprengel, 1827*			1,2,3,5	1,2,3,4,5,6,8,9,10	1,2,3,7	2,5,9,10	

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	Ceramiales	Rhodomelaceae	Polysiphonia	144653	***Polysiphonia opaca* (C.Agardh) Moris & De Notaris, 1839**	*Hutchinsia opaca C.Agardh, 1824; Hutchinsia ramulosa C.Agardh, 1824* *Polysiphonia aculeifera Zanardini, 1847* *Polysiphonia condensata Kützing, 1863* *Polysiphonia disticha Zanardini, 1847* *Polysiphonia erythrocoma Kützing, 1843* *Polysiphonia fasciculata Kützing, 1843* *Polysiphonia laxiuscula Meneghini, 1849* *Polysiphonia macrocephala Zanardini, 1864* *Polysiphonia melanochroa Kützing, 1849* *Polysiphonia ophiocarpa Kützing, 1843* *Polysiphonia phleborhiza Kützing, 1849* *Polysiphonia ramulosa (C.Agardh) Sprengel, 1827* *Polysiphonia repens Kützing, 1843* *Polysiphonia scoparia Kützing, 1843* *Polysiphonia spiculifera Zanardini ex Kützing, 1864* *Polysiphonia umbellifera Kützing, 1843*		1,3,5,6	1,2,3,5	1,2,3,4,5,6,8,9,10	1,2,3,7	1,2,5,9,10	
	Ceramiales	Rhodomelaceae	Polysiphonia	144655	***Polysiphonia paniculata* Montagne, 1842**	*Polysiphonia californica* Harvey, 1853				1,2,5,9,10		5	
	Ceramiales	Rhodomelaceae	Polysiphonia	144659	***Polysiphonia pulvinata* (Roth) Sprengel, 1827**	*Hutchinsia pulvinata (Roth) C.Agardh, 1828* *Polysiphonia urceolata f. pulvinata (Roth) Kylin, 1944*				1,8,9	1,2,3	2,9,1	
	Ceramiales	Rhodomelaceae	Polysiphonia	144663	***Polysiphonia sanguinea* (C.Agardh) Zanardini, 1840**	*Hutchinsia sanguinea C.Agardh, 1827; Polysiphonia deusta Kützing* *Polysiphonia kellneri Zanardini* *Polysiphonia longiarticulata Zanardini* *Polysiphonia megarthra Zanardini ex De Toni, 1907* *Polysiphonia purpurea (C.Agardh) J.Agardh, 1842* *Polysiphonia pycnocoma Kützing, 1849* *Polysiphonia sanguinea (C.Agardh) J.Agardh, 1842*		3,5,6	1,2		1	2,5,8,9,10	
	Ceramiales	Rhodomelaceae	Polysiphonia	144664	***Polysiphonia scopulorum Harvey, 1855***	*Lophosiphonia scopulorum (Harvey) Womersley, 1950* *Vertebrata scopulorum (Harvey) Kuntze, 1891*				3			
	Ceramiales	Rhodomelaceae	Polysiphonia	144666	***Polysiphonia sertularioides* (Grateloup) J.Agardh, 1863**	*Ceramium sertularioides Grateloup, 1806 ; Polysiphonia acanthophora Kützing, 1843* *Polysiphonia badia Kützing, 1849* *Polysiphonia flaccidissima var. smithii Hollenberg, 1942* *Polysiphonia grisea Kützing, 1843* *Polysiphonia macrarthra Zanardini, 1874* *Polysiphonia purpurata Zanardini ex De Toni, 1907*			1,2,5	1,2,3,4,5,6,8,9,10		5	
	Ceramiales	Rhodomelaceae	Polysiphonia	144672	***Polysiphonia stricta* (Dillwyn) Greville, 1824**	*Ceramium strictum Roth, 1806* *Conferva patens Dillwyn, 1809* *Conferva stricta Mertens ex Dillwyn, 1804* *Conferva urceolata Lightfoot ex Dillwyn, 1809* *Hutchinsia abyssina Lyngbye, 1880* *Hutchinsia comosa C.Agardh, 1824* *Hutchinsia roseola C.Agardh, 1828* *Hutchinsia stricta (Dillwyn) C.Agardh, 1817* *Hutchinsia urceolata (Lightfoot ex Dillwyn) Lyngbye, 1819*				1,5,6,9,10		5	

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
						Polysiphonia formosa Suhr, 1831 *P. patens (Dillwyn) Harvey, 1833* *P. pulvinata Liebmann, 1845* *P. roseola (C.Agardh) Fries, 1835* *P. spiralis L.Batten, 1923* *P. urceolata (Lightfoot ex Dillwyn) Greville, 1824* *P. urceolata f. comosa (C.Agardh) J.Agardh, 1863* *P. urceolata f. formosa (Suhr) J.Agardh, 1863* *P. urceolata f. pulvinata Kylin, 1907* *P. urceolata f. roseola (C.Agardh) J.Agardh, 1863*							
	Ceramiales	Rhodomelaceae	Polysiphonia	144675	***Polysiphonia subulata* (Ducluzeau) Kützing, 1863**	*Ceramium subulatum Ducluzeau, 1805; Polysiphonia impolita Zanardini* *Polysiphonia lithophila Kützing* *Polysiphonia montagnei De Notaris ex J.Agardh, 1842* *Polysiphonia multicapsularis Zanardini* *Polysiphonia perreymondii J.Agardh, 1842* *Polysiphonia violacea f. subulata (Ducluzeau) Hauck* *Polysiphonia violacea var. subulata (Ducluzeau) L.Batten*			1,2		1.2	5.6	
	Ceramiales	Rhodomelaceae	Polysiphonia	144676	***Polysiphonia subulifera* (C.Agardh) Harvey, 1834**	*Hutchinsia subulifera C.Agardh, 1827; Polysiphonia armata J.Agardh, 1842* *Polysiphonia incurva Zanardini* *Polysiphonia ramellosa Kützing, 1843* *Polysiphonia subulifera (C.Agardh) Zanardini, 1841* *Polysiphonia subulifera var. templetonii Harvey*		3,4,6	1,2,3,4,5	1, 8,10	1,2,3,7	1,5,9,10	
	Ceramiales	Rhodomelaceae	Polysiphonia	144677	***Polysiphonia tenerrima* Kützing, 1843**	*Polysiphonia sertularioides var. tenerrima* Hauck, 1885				1,2,3,4,6,8,9,10		5	
	Ceramiales	Rhodomelaceae	Polysiphonia	144679	***Polysiphonia tripinnata* J.Agardh, 1842**				1,2	1,2,5,8,9,10		5	
	Bangiales	Bangiaceae	Porphyra	238963	***Porphyra atropurpurea* (Olivi) De Toni, 1897**	*Porphyra coriacea Zanardini, 1842*				10			
	Bangiales	Bangiaceae	Porphyra	503407	***Porphyra minor* Zanardini, 1847**					1,2,5,6,8			
	Bangiales	Bangiaceae	Porphyra	211505	***Porphyra laciniata* C.Agardh, 1824**					4			
	Bangiales	Bangiaceae	Porphyra	144437	***Porphyra umbilicalis* Kützing, 1843**	*Porphyra insolita P.Kornmann & P.-H.Sahling, 1991* *Porphyra umbilicalis f. epiphytica F.S.Collins, 1903* *Porphyra umbilicalis var. vulgaris Ruprecht, 1850* *Ulva umbilicalis Linnaeus, 1753* *Wildemania laciniata (Lightfoot) DeToni, 1892* *Wildemania laciniata var. umbilicalis (Linnaeus) Malard ex Chalon, 1905*				1,2,3,4,6,8,9,10		6	
	Bangiales	Bangiaceae	Pyropia	626059	***Pyropia leucosticta* (Thuret) Neefus & J.Brodie, 2011**	*Phyllona atropurpurea (Olivi) Kuntze, 1898; Phyllona coriacea (Zanardini) Kuntze, 1891* *Phyllona vermicellifera (Kützing) Kuntze, 1891* *Porphyra vermicellifera Kützing, 1843*		1,3,4,5,6,7,8	1,2,3,5	1,2,3,4,5,6,8,9,10	1,2,3,6	2,9,10	
	Ceramiales	Rhodomelaceae	Pterosiphonia	144852	***Pterosiphonia pennata* (C.Agardh) Sauvageau, 1897**	*Ceramium pennatum Roth, 1806;Hutchinsia pennata C.Agardh, 1824* *Polysiphonia pennata (C.Agardh) J.Agardh, 1842* *Pterosiphonia californica Kylin, 1941*		3,6	1,2	1,2,8,9,10		2,5,9	

Higher taxonomic level	Order	Family	Genus	AphiaID	Valid scientific name	Synonyms	Species not identified in WORMS	RO	BG	TR	RU	UA	GE
	Ceramiales	Ceramiaceae	Pterothamnion	144683	***Pterothamnion plumula* (J.Ellis) Nägeli, 1855**	*Antithamnion plumula (J.Ellis) Thuret, 1863* *Antithamnion plumula var. demersum L'Hardy-Halos, 1968* *Callithamnion plumula (J.Ellis) Lyngbye, 1819* *Ceramium plumula (J.Ellis) C.Agardh, 1817* *Platythamnion plumula (J.Ellis) Boudouresque, Belsher & Marcot-Coqueugniot, 1977*					1,2,3,7	5,9,10	
	Gelidiales	Pterocladiaceae	Pterocladiella	145599	***Pterocladiella capillacea* (S.G.Gmelin) Santelices & Hommersand, 1997**	*Fucus capillaceus S.G.Gmelin, 1768; Fucus pinnatus Hudson, 1762* *Gelidium capillaceum (S.G.Gmelin) Meneghini, 1854* *Gelidium capillaceum (S.G.Gmelin) Meneghini, 1854* *Gelidium corneum f. clavatum Ardissone, 1874* *Gelidium okamurae Setchell & N.L.Gardner, 1937* *Gelidium pyramidale N.L.Gardner, 1927* *Pterocladia capillacea (S.G.Gmelin) Bornet, 1876* *Pterocladia complanata N.H.Loomis, 1949* *Pterocladia densa Okamura, 1934* *Pterocladia lindaueri K.C.Fan, 1961* *Pterocladia mexicana W.R.Taylor, 1945* *Pterocladia okamurae (Setchell & N.L.Gardner) W.R.Taylor, 1945* *Pterocladia pinnata (Hudson) Papenfuss, 1950* *Pterocladia pyramidale (Gardner) Dawson, 1945* *Pterocladia robusta W.R.Taylor, 1945*			1,2	1,2,3,4,5,6,8,9,10	1,2,3,6	2,9,10	
	Gelidiales	Pterocladiaceae	Pterocladiella	145600	***Pterocladiella melanoidea* (Schousboe ex Bornet) Santelices & Hommersand, 1997**	*Gelidium melanoideum Schousboe ex Bornet, 1892* *Pterocladia melanoidea (Schousboe ex Bornet) Dawson, 1962*				1,2,8			
	Gelidiales	Pterocladiaceae	Pterocladiella	550861	***Pterocladiella melanoidea* var. *filamentosa* (Schousboe ex Bornet) M.J.Wynne, 1998**	*Gelidium melanoideum* Schousboe ex Bornet, 1892 *Pterocladia melanoidea* (Schousboe ex Bornet) Dawson, 1962				1,2,6,8,9,10			
	Ceramiales	Ceramiaceae	Pterothamnion	144683	***Pterothamnion plumula* (J.Ellis) Nägeli, 1855**	*Conferva plumula* J. Ellis *Callithamnion plumula* (J.Ellis) Lyngbye, 1819 *Antithamnion plumula* var. *demersum* L'Hardy-Halos, 1968 *Antithamnion plumula* (J.Ellis) Thuret, 1863 *Platythamnion plumula* (J.Ellis) Boudouresque, Belsher & Marcot-Coqueugniot, 1977				1,2,3,4,6,8,9,10		2	
	Acrochaetiales	Acrochaetiaceae	Rhodochorton	144404	***Rhodochorton purpureum* (Lightfoot) Rosenvinge, 1900**	*Audouinella islandica (Rosenvinge) G.R.South & Tittley, 1986* *Audouinella purpurea (Lightfoot) Woelkerling, 1973* *Callithamnion purpureum (Lightfoot) Harvey, 1841* *Callithamnion rothii (Turton) Lyngbye, 1819* *Ceramium rothi (Turton) W.J.Hooker, 1821* *Rhodochorton bisporiferum Baardseth, 1941* *Rhodochorton intermedium (Kjellman) Kjellman, 1883* *Rhodochorton islandicum Rosenvinge, 1900* *Rhodochorton parasiticum Batters, 1896* *Rhodochorton purpureum f. intermedium (Kjellman) Lund, 1959* *Rhodochorton purpureum f. rothi (Turton) Lund, 1959*					1,2,3,6	2,8,9,10	

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						Rhodochorton rothii (Turton) Nägeli, 1862 *Rhodochorton rothii f. kjellmanii Hamel, 1927* *Rhodochorton rothii var. typicum Kjellmann, 1883* *Rhodochorton tenue Kylin, 1925*							
	Acrochaetiales	Acrochaetiaceae	Rhodochorton	144405	***Rhodochorton velutinum* (Hauck) G.Hamel, 1927**	*Audouinella velutina (Hauck) G.R.South & Tittley, 1986* *Chantransia velutina Hauck, 1875*					1,2,3,6	2.9	
	Palmariales	Meiodiscaceae	Rubrointrusa	495808	***Rubrointrusa membranacea* (Magnus) S.L.Clayden & G.W.Saunders, 2010**	*Audouinella membranacea (Magnus) Papenfuss, 1945* *Callithamnion membranaceum Magnus, 1875* *Colaconema membranaceum (Magnus) Woelkerling, 1973* *Rhodochorton membranaceum (Magnus) Hauck, 1883*				1,2,3,4,6,9,10	1,2,3,6	2.9	
	Gigartinales	Solieriaceae	Solieria	145682	***Solieria dura* (Zanardini) F.Schmitz, 1895**	*Rhabdonia dura Zanardini, 1858*				10			
	Erythropeltidales	Erythrotrichiaceae	Sahlingia	145502	***Sahlingia subintegra* (Rosenvinge) Kornmann, 1989**	*Erythrocladia subintegra Rosenvinge, 1909* *Erythropeltis subintegra (Rosenvinge) Kornmann & Sahling, 1985*				1,2,3,4,6,8,9,10	1,2,3,6	2.9	
	Ceramiales	Callithamniaceae	Seirospora	144695	***Seirospora giraudyi* (Kützing) De Toni, 1903**					1, 2			
	Ceramiales	Callithamniaceae	Seirospora	144697	***Seirospora interrupta* (Sm.) F. Schmitz**	*Callithamnion byssoides f. seirosporifera Holmes & Batters, 1891* *Callithamnion hormocarpum Holmes, 1873* *Callithamnion interruptum (Smith) C.Agardh, 1828* *Callithamnion seirosperma (Harvey) Harvey* *Callithamnion seirospermum (Harvey) Harvey, 1841* *Callithamnion versicolor var. seirospermum Harvey, 1834* *Seirospora griffithsiana Harvey, 1846* *Seirospora hormocarpa (Holmes) Batters* *Seirospora seirosperma (Harvey) P.S.Dixon, 1964*					1.2	2,5,9	
	Ceramiales	Wrangeliaceae	Spermothamnion	144699	***Spermothamnion flabellatum* Bornet, 1876**					1,2,4,6,8,9,10			
	Ceramiales	Wrangeliaceae	Spermothamnion	144702	***Spermothamnion repens* (Dillwyn) Rosenvinge 1924**	*Callithamnion repens var. tenellum (Dillwyn) Lyngbye, 1819* *Callithamnion roseolum (C.Agardh) C.Agardh, 1828* *Callithamnion turneri (Mertens ex Roth) C.Agardh, 1828* *Ceramium repens (Dillwyn) C.Agardh, 1817* *Ceramium repens var. tenellum (Dillwyn) C.Agardh, 1817* *Ceramium roseolum C.Agardh, 1824* *Ceramium turneri Mertens ex Roth, 1806* *Spermothamnion repens f. roseolum (C.Agardh) Rosenvinge, 1924* *Spermothamnion repens f. turneri (Mertens ex Roth) Rosenvinge, 1924* *Spermothamnion roseolum (C.Agardh) Pringsheim, 1862* *Spermothamnion turneri (Mertens ex Roth) Areschoug, 1845* *Spermothamnion turneri f. repens (Dillwyn) Kjellman, 1878* *Spermothamnion turneri f. roseolum (C.Agardh) Kjellman, 1880* *Spermothamnion turneri var. repens (Dillwyn) Areschoug, 1847* *Spermothamnion turneri var. roseolum (C.Agardh) Areschoug, 1847*				2			
	Ceramiales	Wrangeliaceae	Spermothamnion	550745	***Spermothamnion repens* var. *flagelliferum* (De Notaris) G.Feldmann, 1941**	*Callithamnion flagelliferum De Notaris, 1846*				3			

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	Ceramiales	Wrangeliaceae	Spermothamnion	144704	***Spermothamnion strictum* (C.Agardh) Ardissone, 1883**	*Callithamnion crouaniorum Kützing, 1849* *Callithamnion semipennatum J.Agardh, 1842* *Callithamnion strictum C.Agardh, 1828* *Herpothamnion crouaniorum (Kützing) Nägeli, 1862* *Herpothamnion semipennatum (J.Agardh) Nägeli, 1862* *Herpothamnion strictum (C.Agardh) Nägeli, 1862*		6				2,5,9,10	
	Gigartinales	Sphaerococcaceae	Sphaerococcus	145908	***Sphaerococcus coronopifolius* Stackhouse, 1797**	*Coronopifolia cartilaginea Stackhouse, 1809* *Coronopifolia coronopifolia Le Jolis, 1896* *Coronopifolia coronopifolium (Goodenough & Woodward) Kuntze, 1898* *Ethelia fissurata (P.L.Crouan & H.M.Crouan) Denizot, 1968* *Fucus coronopifolius Goodenough & Woodward, 1797* *Haematocelis fissurata P.L.Crouan & H.M.Crouan, 1867* *Rhynchococcus coronopifolia (Stackhouse) Kützing, 1843*						2.9	
	Ceramiales	Wrangeliaceae	Spermothamnion	144704	***Spermothamnion strictum* (C.Agardh) Ardissone, 1883**	*Callithamnion crouaniorum Kützing, 1849* *Callithamnion semipennatum J.Agardh, 1842* *Callithamnion strictum C.Agardh, 1828*		6			1,2,3,7	5.9	
	Stylonematales	Stylonemataceae	Stylonema	145688	***Stylonema alsidii* (Zanardini) K.M.Drew, 1956**	*Bangia alsidii Zanardini, 1840; Bangia elegans Chauvin, 1842* *Goniotrichum alsidii (Zanardini) M.A.Howe, 1914* *Goniotrichum dichotomum Kützing, 1845* *Goniotrichum elegans (Chauvin) Zanardini, 1847* *Porphyra elegans (Chauvin) P.L.Crouan & H.M.Crouan, 1867*		1,3,6	1,2,3,4,5	1,2,3,4,6,8,9,10	1,2,6	1,2,10	
	Stylonematales	Stylonemataceae	Stylonema	145689	***Stylonema cornu-cervi* Reinsch, 1875**	*Goniotrichum cornu-cervi (Reinsch) Hauck, 1885* *Stylonema cornu-crevi Reinsch*				1,2,3,4,6,8,10			
TRACHEOPHYTA													
	Alismatales	Potamogetonaceae	Potamogeton	416212	***Potamogeton perfoliatus* L.**							6.9	
	Alismatales	Potamogetonaceae	Ruppia	416218	***Ruppia cirrhosa* (Petagna) Grande, 1918**					7		6.9	
	Alismatales	Potamogetonaceae	Stuckenia	588573	***Stuckenia pectinata* (L.) Börner, 1912**	*Potamogeton pectinatus L.*		8	1,2,5	7		6.9	
	Alismatales	Potamogetonaceae	Zannichellia	416222	***Zannichellia palustris* L.**			8	4			6.9	
	Alismatales	Zosteraceae	Zostera	145795	***Zostera (Zostera) marina* Linnaeus, 1753**			5	1,2,5	1,2,3,4,6,7,8	1.2	6.9	
	Alismatales	Zosteraceae	Zostera	145796	***Zostera (Zosterella) noltii* Hornemann**	*Zostera nana Roth, 1827*		5,8	1,2,4,5	8	1.2	9	

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Ukrainian references

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2. Kalugina-Gutnik, A. A. (1975). Phytobentos of Black Sae. - Kiev: Naukova Dumka. – 247 p. (rus)

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8. Minicheva G.G., Kosenko M.N., Shvets A.V. (2009) Phytobenthos of Phyllophora large and small fields, as a reflection of the current ecological state of the north-western part of the Black Sea // Sea Journal of Ecology. - 8. - 4. - P. 24-40. (rus)

9. The North-Western part of the Black Sea: Biology and Ecology. Ed. Zaitsev, YP, Alexandrov BG, Minicheva GG - Kiev. - Naukova Dumka, 2006. - 701pp. (rus)

10. Tkachenko F.P. (2004) Species composition of algae-macrophytes of northwestern part of Black Sea (Ukraine) // Algology. – 14, - 3. - P.277-293. (rus)

Annex 2 Recommended List of the Main Handbooks, Methodological References and Software Manuals

Handbooks and key books:

Belous O.C., Titlyanova, T.B. & Titlyanov E.A. 2013. Marine plants of Trinity Bay and adjacent waters (Peter the Great Bay, Sea of Japan). Vladivostok: Dal'nauka. 263 p. (in Rus.).

Milchakova N.A. 2011. Marine Plants of the Black Sea. An Illustrated Field Guide. Sevastopol: DigitPrint. 144 p.

Perestenko L.P. 1994. Red algae of the seas of the Russian Far-East. St. Petersburg, Olga Publ. House, 331 p. (in Rus.).

Seaweeds of the British Isles. Volume 1. Rhodophyta. Part 2B. Corallinales, Hildenbrandiales. 1994. L.M. Irvine & Y.M. Chamberlain. London, HMSO. 275 p.

Seaweeds of the British Isles. Volume 1. Rhodophyta. Part 3A. Ceramiales. 1993. C.A. Maggs & M.H. Hommersand. London, HMSO. 444 p.

The Green Seaweeds of Britain and Ireland. 2007. Edited by J. Brodie, C.A. Maggs, D.M. John. Published by the British Phycological Society. 242 p.

Vinogradova K.L. 1974. The algae Ulva spp. (Chlorophyta) in the seas of the USSR. Leningrad, Nauka Publ. House, 166 p. (in Rus.).

Zinova A.D. 1967. The handbook of green, brown and red algae of the southern seas of the USSR. Leningrad, Nauka Publ. House, 399 p. (in Rus.).

Methodological references:

Afanasyev D.F., Sereda M.M. 2012. Methodological peculiarities of the Braun-Blanquet method used for marine bottom vegetation classification // Scientific Annals of the Danube Delta Institute (Tulcea, Romania). Vol. 18. P. 9–12.

Blinova E.I., Vilkova O.Y., Miljutin D.M., Pronina O.A., Shtrik V.A. 2005. Study of ecosystems of fish-industrial water reservoirs, and sampling and treatment of data on biological resources, and methods and technologies of their fishing and processing. Issue 3. Methods of bottom landscape investigations and stock assessment of benthic invertebrates and algae of marine coastal zone. VNIRO publishers. 135 p. (In Rus.).

Contemporary methods of marine macrophyte stocks exploration. 1991. Murmansk. KSC RAS, 45 p. (in Rus.).

Gemp K.P. 1963. New methods of commercial algae investigation in the White Sea // Problems of the using of commercial resources of the White Sea and Karelian inland water bodies. Moscow-Leningrad. p. 18. (In Rus.).

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Khailov K.M., Prazukin A.V., Kovardakov S.A. and Rygalov V.E. 1992. Functional morphology of multicellular marine algae. Kiev, Naukova Dumka Publ. House, p. 280 (in Rus.).

Kovardakov S.A., Prazukin A.V., Firsov Yu.K., Popov A.E. 1985. Complex adaptation of Cystoseira to the gradient conditions. Kiev, Naukova Dumka Publ. House, p. 216 (in Rus.).

Methods of fishery and environmental research in the Black Sea region. 2005. Krasnodar: Prosveshenie-Yug Publ. House, 311 p. (in Rus.).

Minicheva G. 2013. Use of the Macrophytes Morphofunctional Parameters to Asses Ecological Status Class in Accordance with the EU WFD**.** Marine Ecological Journal. -Vol.XII, № 3. –P. 5-21.

Minicheva G.G., Zotov A.B., Kosenko M.N. 2003. Methodical recommendations for determining the complex of morpho-functional parameters of unicellular and multicellular forms of aquatic vegetation// GEF Project for renewal of the Black Sea ecosystem. Odessa. 32 p.

Mirkin B.M., Naumova L.G. 2012. Contemporary state of the main conception of the science of vegetation. Ufa: BRAS, Gilem. 488 p. (in Rus.).

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Morozova-Vodyanitskaya, N.V. 1936. Experience in quantitative account of the Black Sea bottom vegetation // Proc. Sevastopol Biol. Station. 5. p. 48-59 (in Rus.).

Orfanidis S., Panayotidis P., Stamatis N. 2001. Ecological evaluation of transitional and coastal waters: A marine benthic macrophytes-based model // Mediterranean Marine Science. V. 2, Issue 2. P. 45-65.

Orfanidis S., Panayotidis P., Ugland K. I. 2011. Ecological Evaluation Index (EEI) application: a step forward in functional groups, formula and reference conditions value // Mediterranean Marine Science. V. 12, Issue 1. P. 199-231.

Parchevski V.P., Parchuk G.V. 1979. Analysis of morphological characteristics of the Black Sea Cystoseira in the ontogenetic range under natural conditions. The 3rd All-Union Conference on marine algology. Sevastopol. p. 96-98. (in Rus.).

Petrov K.M. 1966. Landscaping method of photoreading bottom of sea shallow waters // Theory and practice of deciphering of aerial photographs. Moscow-Leningrad. p. 37–49. (in Rus.).

Physiological and biochemical methods of investigation of algae. 1975. Kiev, Naukova Dumka Publ. House, p. 247 (in Rus.).

Ponyatovskaya V.M. 1964. Account of species abundance and distribution in natural vegetation communities // Field Geobotany. Moscow. Vol. 3.p. 203-290. (in Rus.).

Braun-Blanquet J. 1964. Pflanzensoziologie. Grundzuge der Vegetationskunde, Wien: Springer, 865 s.

Sörensen T. 1948. A method of stabilizing groups of equivalent amplitude in plant sociology based on the similarity of species content in its application to analyses of the vegetation on Danish commons. Danske vid. Selsk // Bot. Skr. 5. P. 1-34.

Voronov A. G. 1973. Geobotany. Moscow. 384 p. (In Rus.).

Weber H.E., Moravec, J. and Theurillat J.-P. 2000. International Code of Phytosociological Nomenclature. 3rd ed., J. Veget. Sci. V. 11, p. 739–768.

Software:

- spreadsheet application, for simple statistical calculation and common graphing: **Microsoft Excel (Excel 2007, Excel 2010, Excel 2013, Excel 2014)** (commercial software)
- data analysis, data management, data visualization, and data mining procedures: **Statistica (Statistica 6.0, Statistica 7.0, Statistica 7.1, Statistica 8.0, Statistica 9.0, Statistica 9.1, Statistica 10.0, Statistica 11.0, Statistica 12.0)** (commercial software)
- advanced statistical computing and graphics: **R-PROJECT (R version 3.0.3, R version 3.1.1)** (freeware)
- advanced statistical computing and graphics of ecological data (grouping, sorting, principal component identification, hypothesis testing, sample discrimination, trend correlation, comparisons, diversity, dominance and distribution calculating, permutational multivariate analysis of variance): **PRIMER (PRIMER 5. PRIMER 6)** (commercial software)
- advanced multivariate statistical analysis using ordination methods in the field of ecology and several related fields: **Canoco (Canoco 4.0, Canoco 4.5, Canoco 5)** (commercial software)
- multivariate analysis of ecological data entered in spreadsheets: **PC-ORD (Version 6)** (commercial software)**, MULVA** (freeware)
- **- for visualizing phylogenetic trees and rooted networks:** Dendroscope (Dendroscope 3) **(freeware)**
- a database management system for the storage, selection and export of vegetation data: **Turboveg (Turboveg 2, Turboveg 2.5, Turboveg 3)**
- software package for editing and analyses of phytosociological data: **JUICE (JUICE 7.0)** (freeware)
- for table classification and sorting: **TWINSPAN** (freeware)
- for mapping of species, species group or relevé distribution: **DMAP** (commercial software)

Web-pages:

http://www.marinespecies.org

http://www.algaebase.org

http://office.microsoft.com/en-001/excel/

http://www.statsoft.com/, http://www.statsoft.ru/

http://www.r-project.org/

http://www.primer-e.com/

http://www.canoco5.com/, http://www.microcomputerpower.com/

http://home.centurytel.net/~mjm/pcordwin.htm

http://dendroscope.org/

http://ibot.sav.sk/cdf/tvwin.pdf

http://www.sci.muni.cz/botany/juice/

http://www.dmap.co.uk/

http://www.eei.gr/

Annex 3 Macrophytobenthos Indicators for Black Sea Monitoring*

Proposed criteria for selection:

- Reflection of the structure functional organization or autotrophic process
- Easy to calculate based on the collected/monitoring available data
- Define quality classes/boundaries
- Sensitiveness to the anthropogenic load
- Correspond to MSFD requirement
- BS policy relevance

No	Indicators name	Index, Unit
Qualitative (State Indicators)		
1.	Community diversity	Number of species, Number of taxonomic group
2.	Status of key species	Systematic, saprobe status, Red Data Book status, long live cycle (perennial, ephemeral)
3.	Threatened species	Number, status
4.	Disappear species	Number, status
5.	Invasive species	Abundance, Cover, Biomasses, Distribution map
6.	Recovered species	Cover, Biomass, Distribution map
7.	Returning species	Cover, Biomass, Distribution map
Quantitative (Response Indicators)		
8.	Changes of lower depth distribution limit of macrophytes	m (for last specimen with min. 10% coverage)
9.	Changes of coverage bottom by macrophytes	Percent coverage of bottom
10.	Biomass of community (on meadow, average)	$kg.m^{-2}$
11.	Trends of Phytocoenoses Surface Index (SI_{ph})	units
12.	Biomass and abundance of dominant species	$kg.m^{-2}$
13.	Age and size structure of dominant species	Distribution diagrams of classes
14.	Trend of ecological activity (S/W_p) of replaces dominants	$m^2.kg^{-1}$
15.	Biomass and abundance of key species	$kg.m^{-2}$, $n.m^{-2}$
16.	Production and stock of commercial macro algae and sea grasses	$kg.m^{-2}.year^{-1}$, tone per investigate area
17.	Ratio of opportunistic and perennial macroalgae (biomass)	%
18	Ratio of above-and belowground biomass of seagrasses	%

No	Indicators name	Index, Unit
Ecological Evaluation Index		
19.	Three dominants activity (S/W_{3Dp})	$m^2.kg^{-1}$, classification scheme for 5 Ecological Status Classes correspond to MSFD
20.	Community activity (S/W_{xcom})	$m^2.kg^{-1}$, classification scheme for 5 Ecological Status Classes correspond to MSFD
21.	Phytocoenoses Surface Index (SI_{ph})	Units, classification scheme for 5 Ecological Status Classes correspond to MSFD
22.	Ecological Status Groups (ESG) ESG I, (k-selected species), (IC, IB, IA); ESG II, (r-selected species), (IIB, IIA).	% - ratio between species of ESGI and ESGII, classification scheme for 5 Ecological Status Classes correspond to MSFD

* Macrophytobenthos indicators were discussed by the authors with Dr. Natalya Milchakova (Institute Biology of Southern Seas the name of A.O. Kovalevskiy, Sebastopol) at a meeting of EMBLAS project, 14-17 July 2014 in Istanbul.

Black Sea Monitoring Guidelines
Macrophytobenthos

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