Identification cards: the common macroalgae of Bonaire (Rhodophyta, Chlorophyta, Phaeophyceae)

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Identification cards
Common seaweeds of Bonaire

Macroalgae on Bonaire

Macroalgae are large algae, also called seaweeds, that are typically divided in three major groups: red macroalgae (Rhodophyta), brown macroalgae (Phaeophyceae), and green macroalgae (Chlorophyta).

Over 250 seaweed species are known from Bonaire. They vary tremendously in shape and color and are found in a range of habitats. They flourish in shallow and deep areas on coral reefs all around the island, in seagrass beds, mangrove forests and in the intertidal.

Macroalgae – important organisms

Macroalgae are mostly notorious as aggressive competitors for space that can overgrow reef corals. However, macroalgae play an important part in all marine ecosystems: they provide food for herbivores, and they stabilize the structure of reefs. Algae are also remarkable in that they are responsible for the high productivity that characterizes coral reefs and seagrass beds.

Identifying macroalgae

These identification cards provide an overview of almost 60 red, brown and green seaweed species that are frequently encountered on Bonaire, to help you explore the macroalgal biodiversity in the marine parks.

← Habitats on Bonaire with high seaweed diversity

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Rhodophyta
Common red algal species of Bonaire

Amphiroa beauvoisii

Heavily calcified algae, but with non-calcified joints. Dichotomously branched. Pink or white in color. Lower segments are cylindrical, higher segments are slightly flattened. To 5 cm high. Branches are less than 2 mm in diameter.

Amphiroa rigida

Heavily calcified and brittle algae that forms open clumps. The joints are non-calcified and not swollen. Dichotomously branched. Pink, white or pale purple in color. Branches are cylindrical throughout and 1-2 mm in diameter.

Amphiroa fragilissima

Heavily calcified and fragile algae that forms dense clumps or mats. Non-calcified joints that are often swollen. Dichotomously branched (sometimes even trichotomous). Pink or white in color. Branches are cylindrical throughout and 1-2 mm in diameter. Often grows mixed with other species.

Amphiroa tribulus

Heavily calcified and fragile algae that forms clumps to 10 cm high. Irregularly branched, sometimes whorled at the non-calcified joints. Pink or white in color. Branches are 2-4 mm wide and can be cylindrical to flat (the edges are often flattened).

Rhodophyta
Common red algal species of Bonaire

Amphiroa hancockii

Heavily calcified algae that forms stony clumps to 15 cm in diameter. Irregularly or dichotomously branched. Pink, pale purple or white in color. Branches are to 1 cm wide and older branches are generally flattened.

Botryocladia spp.

These species exist of wiry stalks with few to many bulbous (or flattened bulbous) blades. The spheres are filled with mucilaginous gel. Often dark red or rose-red in color, sometimes with golden specks.

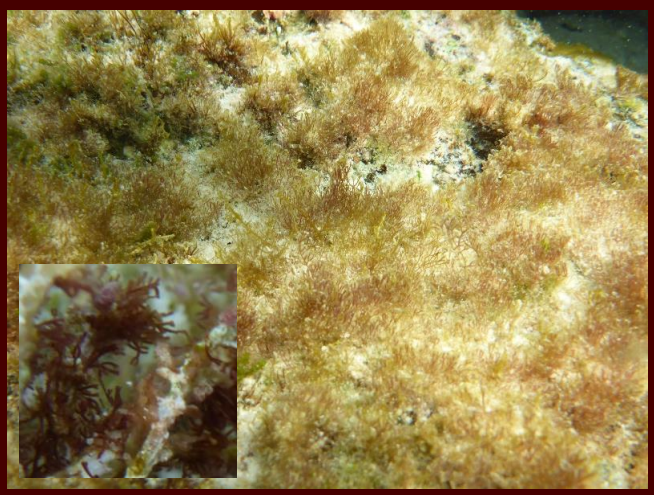
Coelothrix irregularis

Wiry species to 3 cm high. Irregularly branched. The branches are cylindrical and 0.3-0.8 mm in diameter. Very conspicuous species due to its bright iridescent blue color.

Galaxaura marginata

Consists of flat blades that are lightly calcified. Pink to pale purple in color. Blades are dichotomously branched. A faint banding pattern can be visible at the tips. Mostly 5-15 cm high.

Rhodophyta
Common red algal species of Bonaire



Ceramium spp.

Soft filamentous species that forms tufts or bushes 15-40 cm high, or dense mats up to 1.5 cm high. There are many *Ceramium* spp. and a microscope is required to be able to identify them.

Dasya spp.

Soft, bushy species. Bright red, dull red or rose-red in color. Irregularly or alternately branched. Can be confused with *Wrightiella* or *Wrangelia* spp.

Champia vieillardii

An inconspicuous species due to its small size (generally to 1 cm), and its translucent yellow-red color. Only the golden iridescence sometimes attracts attention. Flat, segmented branches that are gelatinous and taper to a blunt tip.

Hypnea spp.

Bushy and relatively tough species. Irregularly branched. Can be orange-red, brown-red or even dark green in color. *H. musciformis* has apices that terminate in wide hooks. *H. spinella* and *H. valentiae* have small spine-like branchlets in addition to the main branches.

Rhodophyta
Common red algal species of Bonaire

Pterocladiella capillacea

Tough species with creeping stolons that support small blades (3-10 cm high and 2 mm wide). Dark red or brown-red in color.

Martensia pavonina

Lobed blades that form thin, delicate lacework, pale pinkish-blue in color. Stalks are absent. Often grows attached to other algae.

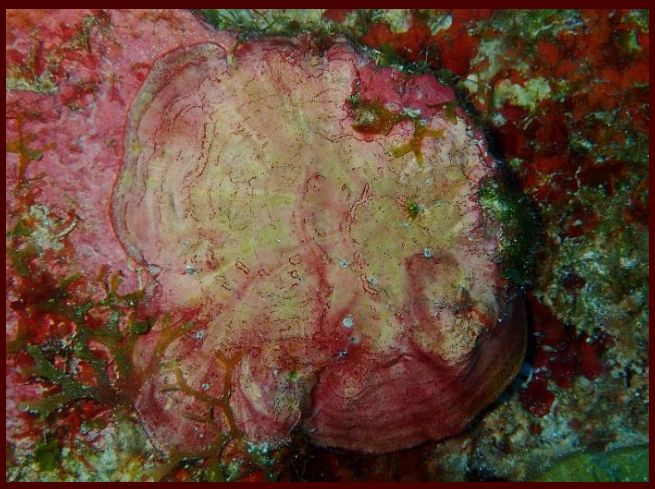
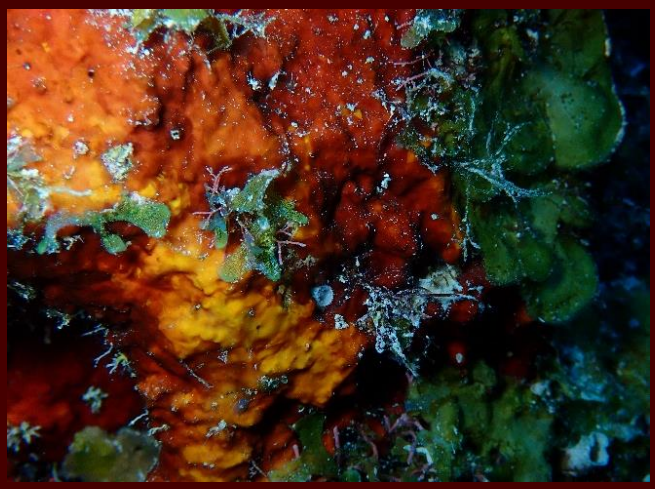
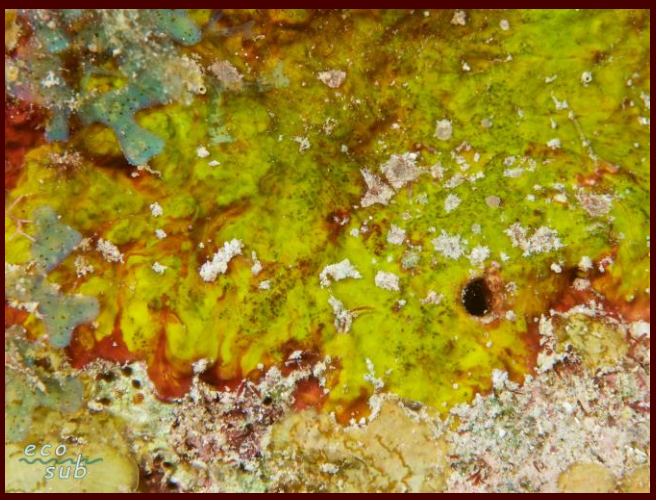
Gelidiella acerosa

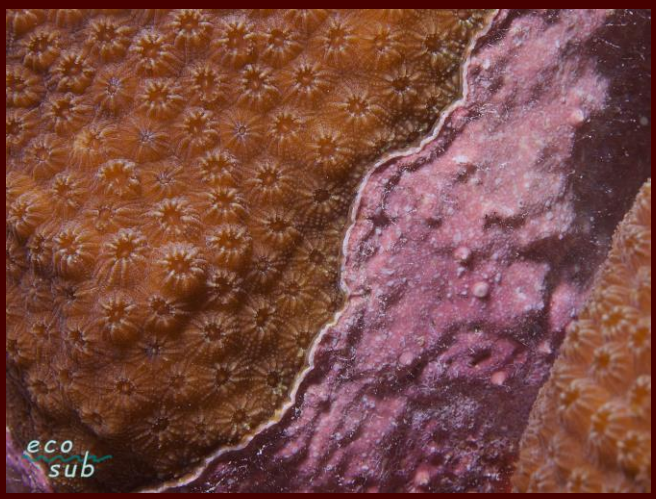
Tough species growing up to 8 cm high. Yellow to dark red-brown in color. With a thicker main axis and small branchlets (2-6 mm wide) in opposite rows. Commonly found in the intertidal.

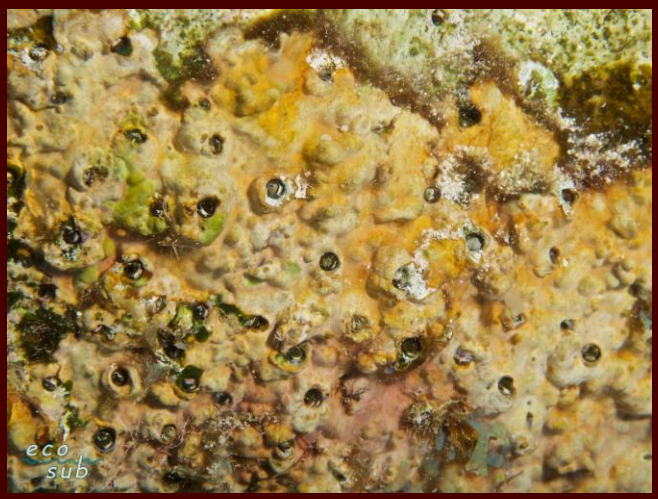
Laurencia spp.

Stiff and tough with branches that are often covered in small knobs. To 15 cm high. Very common in the intertidal. Specimens in the shade can have a very different color than individuals growing in the full sun. Color varies from purple-green to red-brown, yellow or pink.

Rhodophyta
Common red algal species of Bonaire





Crustose Coralline Algae (CCA)

These rock-hard algae grow as calcified crusts on hard substrates such as corals or rocks. Sometimes also grows on other seaweeds. Most species are difficult to identify in the field. They are very important in the formation of coral reefs, because they act as cement and promote coral growth and settlement of coral larvae.

Chlorophyta
Common green algal species of Bonaire

Caulerpa mexicana

Flattened feathers variable in size (4-25 cm high), arising from horizontal stolons. Branchlets taper to a pointy tap and are slightly constricted at the base (unlike *C. taxofolia*). Grows attached to rubble in shallow areas, or near seagrass and mangroves.

Caulerpa verticillata

Very delicate species that forms felt-like mats on mangrove roots. Whorled branchlets arise from creeping stolons. Branchlets are dichotomously branched and fork at the tips.

Caulerpa sertularioides

Green alga with several feather-shaped, upright branches up to 20 cm high, arising from horizontal creeping runners. Small branchlets are delicate, 0.3-0.5 mm in diameter, and never have swollen tips. Often grows in shallow sandy areas, or within seagrass beds.

Caulerpa ashmeadii

Looks similar to *C. sertularioides*, with several feather-shaped, upright branches up to 20 cm high, arising from horizontal creeping runners. However, the branchlets are greater than 0.5 mm in diameter and the tips are often swollen. Grows in shallow sandy areas, often near mangroves or seagrass beds.

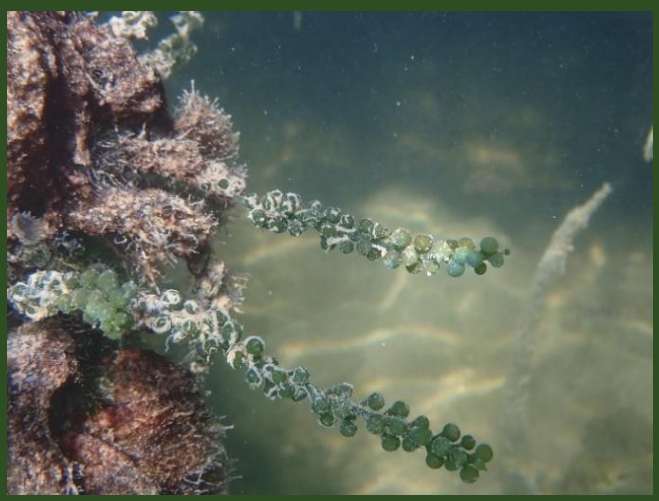
Chlorophyta
Common green algal species of Bonaire

Caulerpa macrophysa

The horizontal creeping runners (stolons) give rise to clusters of large, bead-like branchlets. Branchlets often have spotted or patchy pigmentation. To 6 cm high. Forms mats tightly attached to rocks and corals, often in the intertidal or shallow areas.

Caulerpa serrulata

Small blades, often twisted or spiraling, with serrated edges. Blades grow upwards from long runners. Up to 4 cm high. Green in color, often with a bluish tint. Grows in shallow, rocky substrates, or on coral reefs.



Caulerpa racemosa

Highly variable species that can easily be confused with *C. macrophysa*, *C. microphysa* and even *C. nummularia*. Like other *Caulerpa* species, *C. racemosa* has horizontal creeping runners (stolons) that give rise to clusters of branchlets. The branchlets can be bead-like, club-shaped, spherical, mushroom-shaped and even disc-shaped. Branchlets often have star-shaped pigmentation. Frequently found in the shadows of mangrove roots, in lagoons and seagrass beds.

Chlorophyta
Common green algal species of Bonaire

Bryopsis spp.

Small, featherlike algae that often grow in bushes together. Branching can be in two opposite rows or irregular. Up to 10 cm, but usually smaller. Most frequently found in the intertidal and shallow areas.

Anadyomene spp.

Green blades up to 10 cm high. Recognizable due to the veins that are faintly visible with the naked eye. Mainly grow together to forms prostrate sheets or erect clumps.

Neomeris annulata

Cylindrical, fingerlike algae. 1-3 mm in diameter and 1-3 cm high. The base is white and heavily calcified. The rest of the seaweed has a bright green color that darkens towards the top. The top is often covered in filaments. Can be found growing solitary or in clusters. Abundant in the intertidal or on small coral rubble in shallow areas, occasionally to 30 m deep.

Chlorophyta
Common green algal species of Bonaire

Acetabularia spp.

Blades in the form of small parasols, consisting of fused rays. 2-8 cm high. Heavily calcified and can appear to be green or white. Grows in shallow areas, attached to stones, shells or coral. On Bonaire often found in shallow lagoons near mangrove forests.

Batophora oerstedii

Fuzzy and soft species. From the main axis, loosely whorled branchlets arise every 1-2 mm. Branchlets are dichotomously forked. To 10 cm high. Often grows highly aggregated in shallow lagoons near mangroves.

Ulva spp.

These species have flattened blades with often ruffled margins. Blades can be strap-shaped, oval, roundish or irregular. Locally numerous, especially on the east coast of Bonaire at lagoons in the intertidal.

Chlorophyta
Common green algal species of Bonaire

Penicillus spp.

A green algae with the peculiar shape of a brush. The tip of the brush merges into a short stalk anchored in the sandy substrate. On Bonaire mainly found in the highly exposed reef flats on the east coast.

Avrainvillea spp.

The wedge-shaped blade of this species rises from a short stem connected to the holdfast. The blade margin is finely fibrous. These algae are found in a large range of habitats and depths, from rocks to seagrass beds, in both shallow areas and down to 125 m.

Valonia ventricosa

This alga forms large, thin-walled, round or elliptical spheres. Glossy dark green with reflective glower. The sacs are single cells that may grow to 10 cm in diameter, among the largest known on Earth. Grows solitary or together with several loosely attached individuals.

Valonia macrophysa

Club-shaped spherical cells, 5-15 mm in diameter that grow tightly together in clusters. Glossy dark green. Often found growing on or between coral.

Chlorophyta

Common green algal species of Bonaire

Dictyosphaeria cavernosa

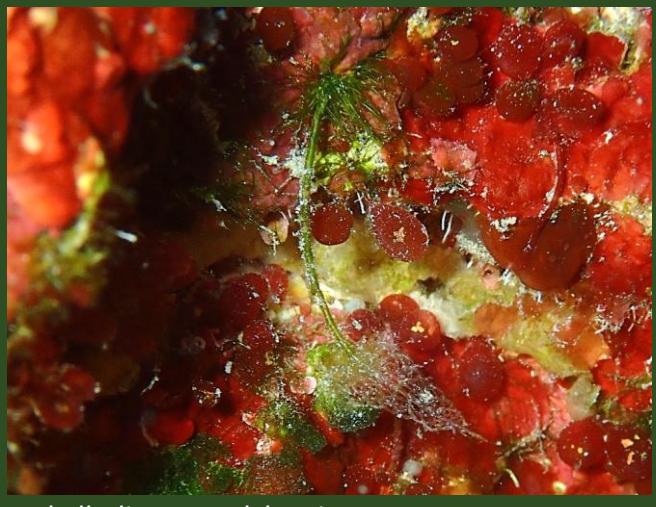
Sack-like seaweed that is hollow and irregularly lobed. Light green in color. To 12 cm in diameter, sometimes larger. Individual cells are visible but small (less than 3 mm in diameter) and angular in shape, appearing like a honeycomb. Attached to rocks or coral.

Dictyosphaeria ocellata

Forms dense, firm, irregular crusts that are not hollow (as opposed to *D. cavernosa*). Glossy green. To 3 cm thick. Individual cells are visible but small (to 2 mm in diameter) and either angular in shape or forming long rows. On Bonaire usually found in mangrove areas.

Dictyosphaeria versluysii

Spherical when young. Adult specimens are flattened. Not hollow. Individual cells are visible but small (to 1 mm in diameter) and angular in shape, appearing like a honeycomb. On Bonaire usually found in the intertidal, but less common than *D. cavernosa* and *D. ocellata*.



Phyllodictyon pulcherrimum

Small and inconspicuous net-like blade that sits on a stalk. From the central stalk, 8-12 pairs of branchlets emerge to form the blade. Usually grows solitary. Hard to find due to its size (2-3 cm high), but not uncommon in deeper water (20-30 m).

Chlorophyta
Common green algal species of Bonaire

Halimeda opuntia

Forms densely crowded clumps to 20 cm high. Yellow-green to dark green, sometimes with white patches. Exists out of chains of flat segments that are heavily calcified. Chains branch randomly. Segments are often ribbed and up to 11 mm wide. Very common on Bonaire on the shallo reef flat, especially near fire corals.

Halimeda opuntia f. *triloba*

Another form of *H. optunia* forms loose instead of dense clumps. Segments often have three lobes. Irregularly branched. Can be found in seagrass beds.

Halimeda spp.

Apart from the very common *H. opuntia*, many other species of *Halimeda* commonly occur on Bonaire. These are harder to distinguish without help of a microscope.

Chlorophyta
Common green algal species of Bonaire

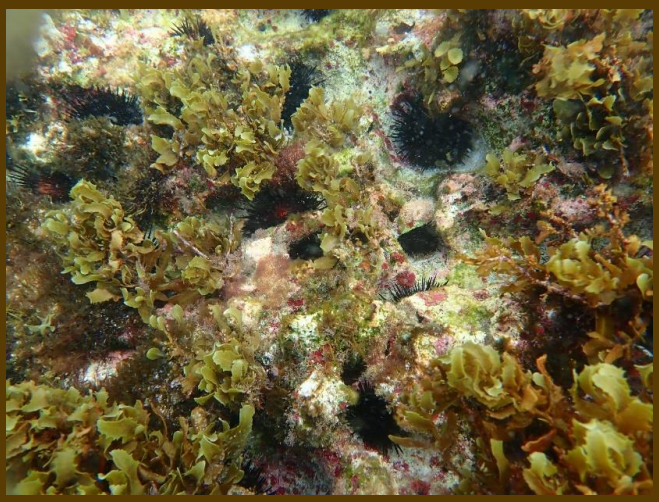
Codium intertextum

Forms creeping, spongy mats. Unbranched, but with overlapping lobes. To 6 cm thick. Yellow-green to dark green in color. Adheres to rocks and other substrate, but also in areas with a lot of sediment (see left photo). Commonly found on the east coast of Bonaire, where it can cover very large areas on the reef flat.

Codium taylori

Cylindrical branches, often slightly flattened, growing erect to form small clumps. Dichotomously branched. To 15 cm high. Glossy dark green. Spongy but soft. On Bonaire predominantly found in the intertidal.

Phaeophyceae
Common brown algal species of Bonaire



Sargassum polyceratium

Leathery species. Densely branched. Branches have small spines and are covered with numerous blades with rounded tips. Has spherical air bladders on a short stalk. To 1 m high, but often smaller. Common in the turbulent areas on the east coast of Bonaire, from the lower intertidal to 15m deep.

Sargassum hystrix

Leathery species that usually does not exceed 7 cm. Smooth, cylindrical stipes. The oval blades are dark brown with white zone along midrib. Air bladders have sharp, small spines. Frequently grows in deeper reef areas.

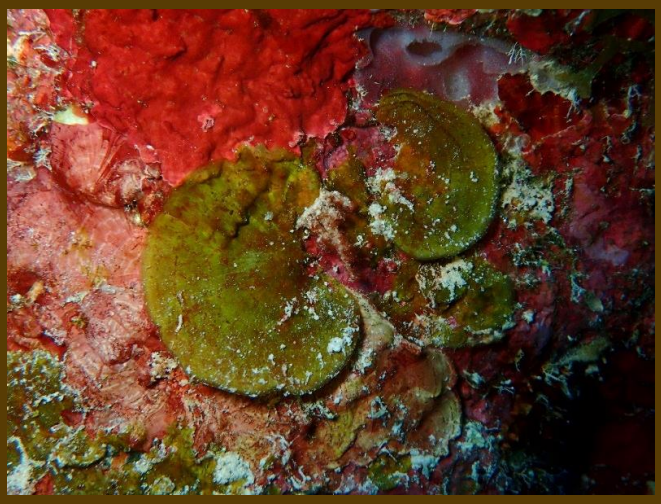
Turbinaria turbinata

Leathery species. Brown to yellow-brown. Pyramid shaped blades, often with a bulging center (convex). Up to 40 cm high. Common in the intertidal or in shallow, exposed areas on the east coast of Bonaire.

Turbinaria tricostata

Leathery species. Brown to yellow-brown. Pyramid shaped blades with sunken center (concave). Mostly 4 cm high, but occasionally up to 17 cm. Common in the intertidal or in shallow, exposed areas on the east coast of Bonaire.

Phaeophyceae
Common brown algal species of Bonaire



Lobophora spp.

These species were formerly all classified as *Lobophora variegata*, but recent scientific research based on DNA showed that there are many *Lobophora* species co-occurring in the Caribbean. They have many forms: fan-shaped, encrusting or ruffled. Light brown to orange in color. A very common algae that grows over coral and rocks.

Taonia abbottiana

Fan-shaped species up to 15 cm wide. Yellow-brown with narrow white bands. Older sections often become ragged. Apical margins not inrolled.

Padina spp.

This brown alga forms rounded, thin, undulating blades that curve upward near the edges. The surfaces of the fans are calcified and whitened. Attaches to rocky substrates on shallow reef flats.

Phaeophyceae
Common brown algal species of Bonaire

Dictyota bartayresiana

Flat, strap-shaped blades that fork at the end. Widely dichotomously branched. Grows erect. Light brown with dark olive bands. Blue-green iridescent bands are often visible as well. Commonly found on coral reefs around Bonaire.

Dictyota pfaffi

Flat, strap-shaped blades that fork at the end. Dichotomously branched. Grows creeping or prostrate to form densely interwoven mats. Light brown to green with dark spots. Commonly found on coral reefs around Bonaire.

Dictyota ciliolata

Flat, strap-shaped blades that fork in the end. Blades have small but visible marginal teeth. Narrowly dichotomously or irregularly branched. Grows erect. Light brown with green iridescence in striations. Frequently found on the east coast of Bonaire.

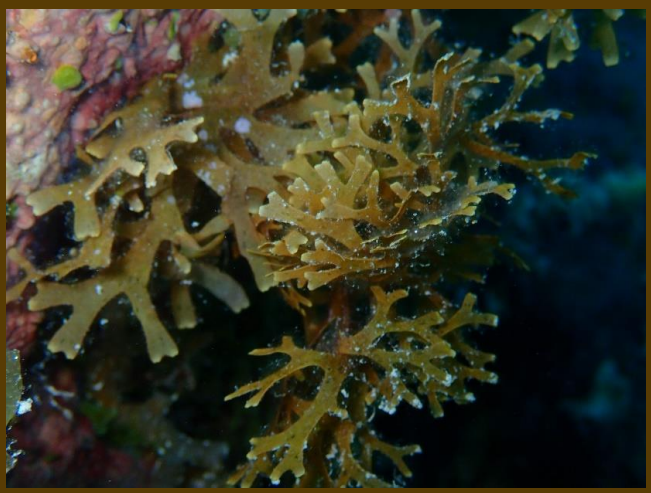
Dictyota menstrualis

Flat, strap-shaped blades that fork in the end. Dichotomously branched. Grows erect. Light brown to dark brown. Not banded, but often with thin transverse striations. Commonly found on coral reefs around Bonaire.

Phaeophyceae
Common brown algal species of Bonaire

Dictyota mertensii

Flat, strap-shaped blades. Upper branching alternate. Grows erect. Brown with blue green iridescence shine over entire blade. Frequently found in the intertidal or shallow wave-exposed areas.



Dictyota pinnatifida

Flat, strap-shaped blades that fork at the end. Branching alternate, irregular or dichotomous. Orange yellow-brown. Grows on rocks or coral. Can be easily confused with other brown *Dictyota* spp.

Dictyota pulchella

Flat, strap-shaped blades that fork at the end. Branching widely dichotomous. Lower straps are 5 mm wide, but they narrow after each branching division to form narrow tips. Forms entangled clumps, especially on dead coral or rubble.

Hydroclathrus clathrus

An irregularly shaped network of hollow tubes, perforated with holes. Usually 10 cm long but can grow much longer. Yellow to golden-brown. On Bonaire usually found in the intertidal, growing lightly attached to rocks and rubble.