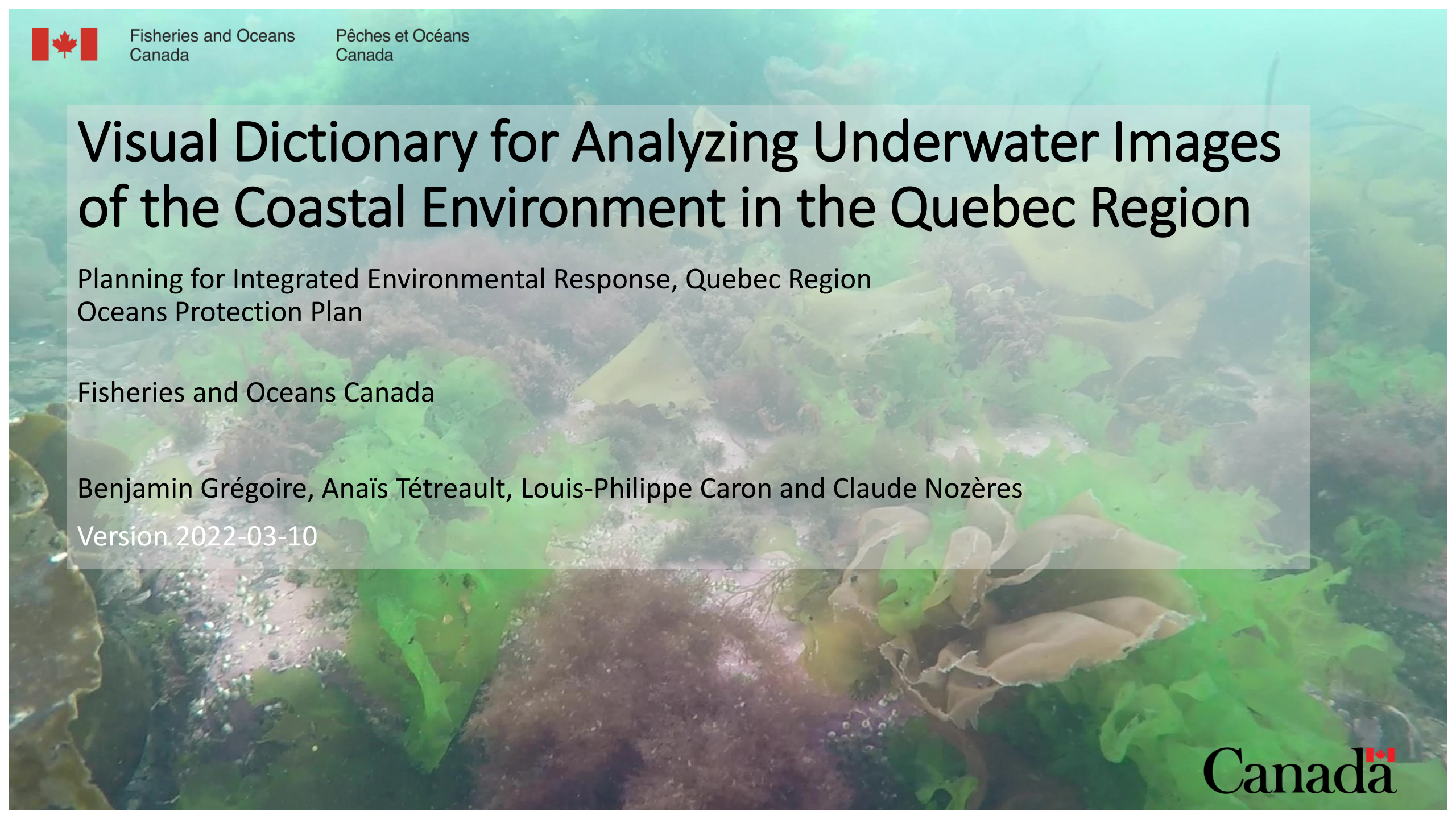


Fisheries and Oceans Canada
Pêches et Océans Canada

Visual Dictionary for Analyzing Underwater Images of the Coastal Environment in the Quebec Region

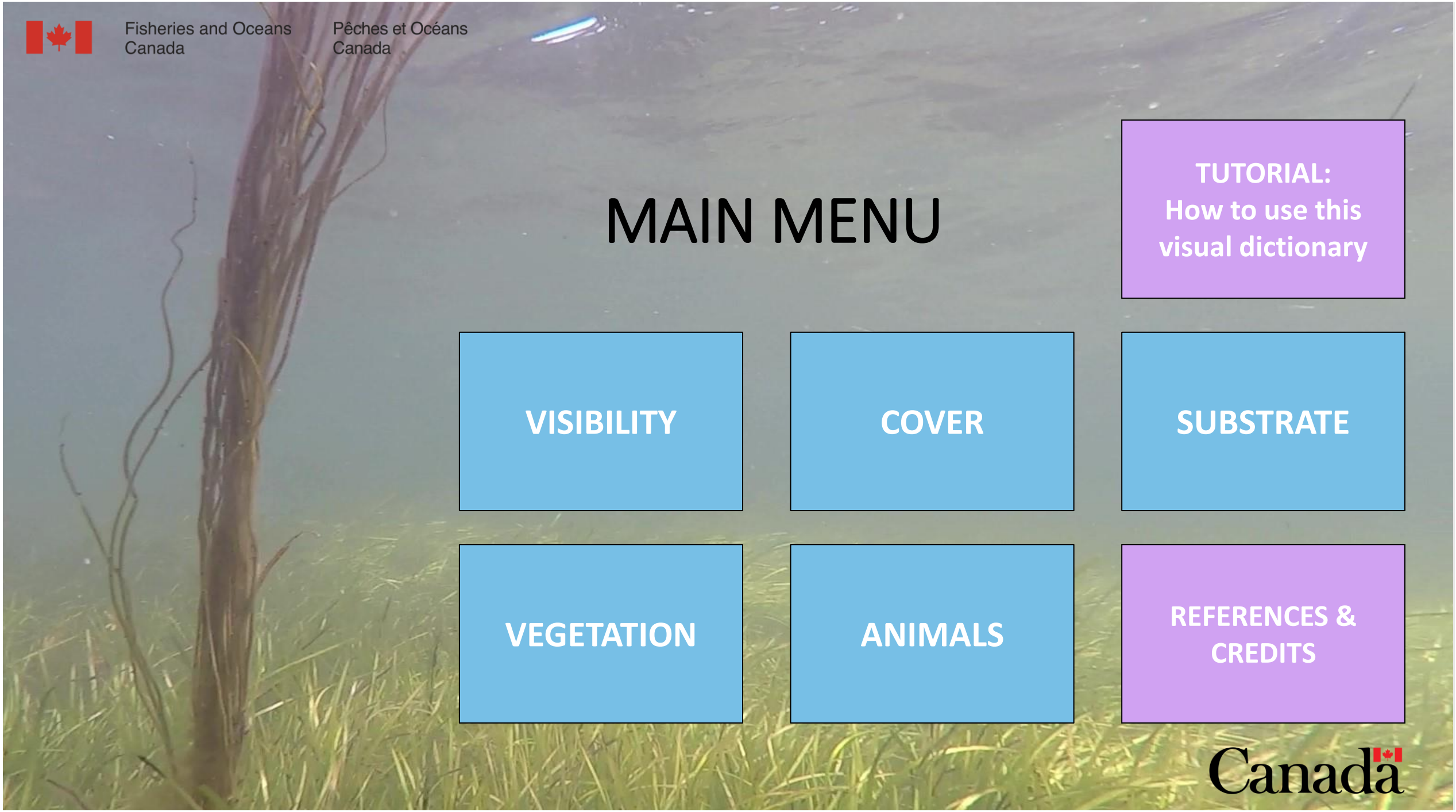
Planning for Integrated Environmental Response, Quebec Region
Oceans Protection Plan

Fisheries and Oceans Canada

Benjamin Grégoire, Anaïs Tétreault, Louis-Philippe Caron and Claude Nozères

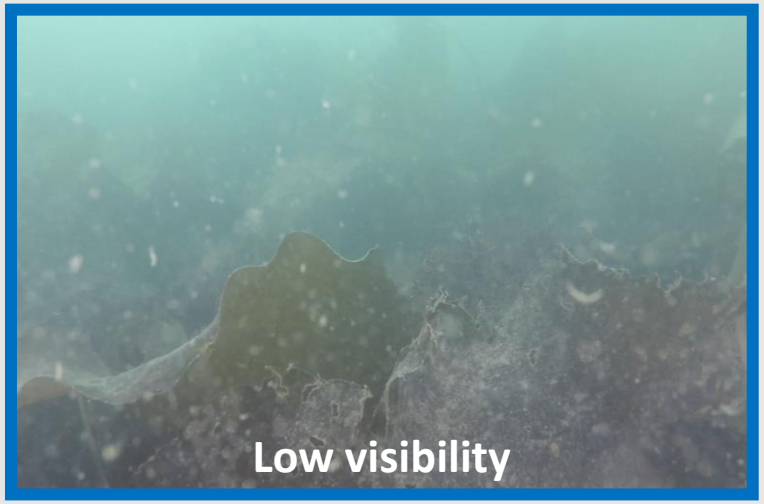
Version 2022-03-10

Canada


Fisheries and Oceans Canada
Pêches et Océans Canada
MAIN MENU
TUTORIAL: How to use this visual dictionary
VISIBILITY
COVER
SUBSTRATE
VEGETATION
ANIMALS
REFERENCES & CREDITS
Canada

VISIBILITY

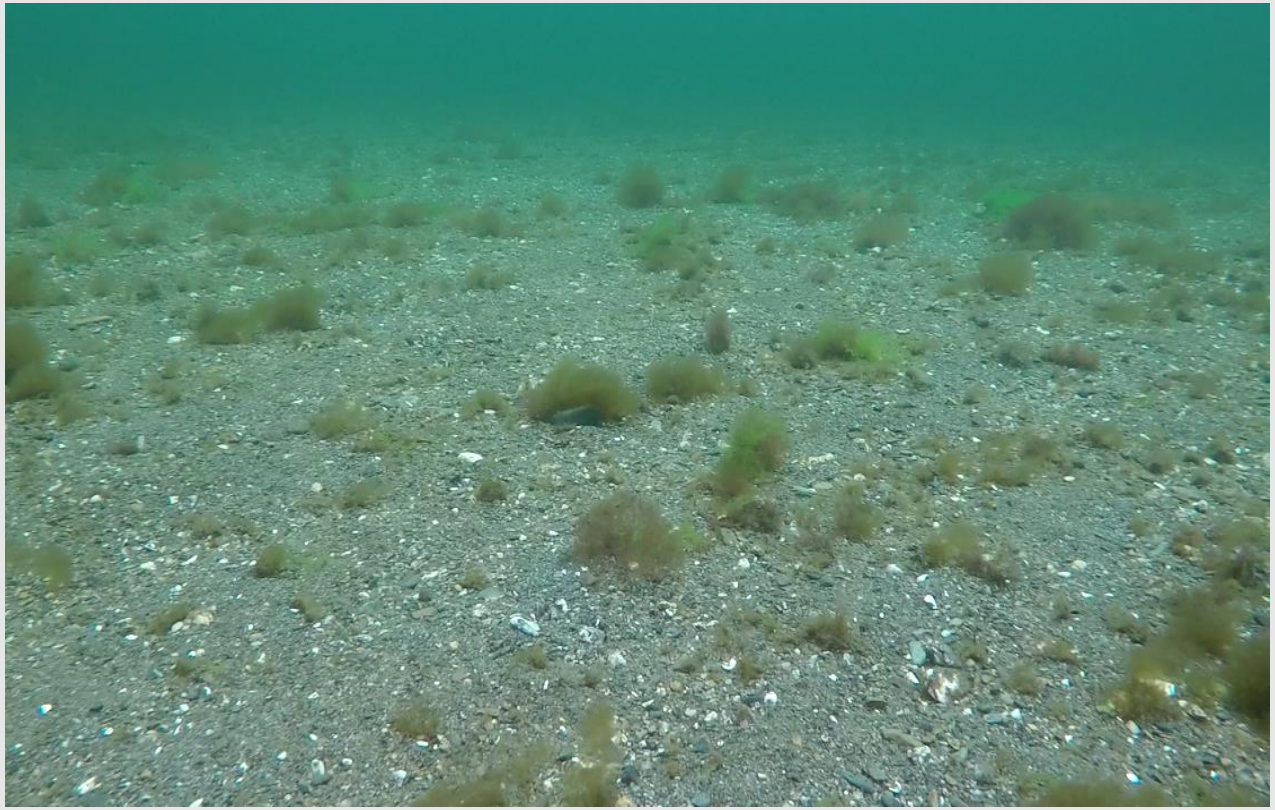
Evaluation of visibility, mainly influenced by suspended particles (turbidity) and phytoplankton.



1

Visibility

Excellent visibility



No particles or phytoplankton. The image is clear over a long distance. Characterization is made easier.

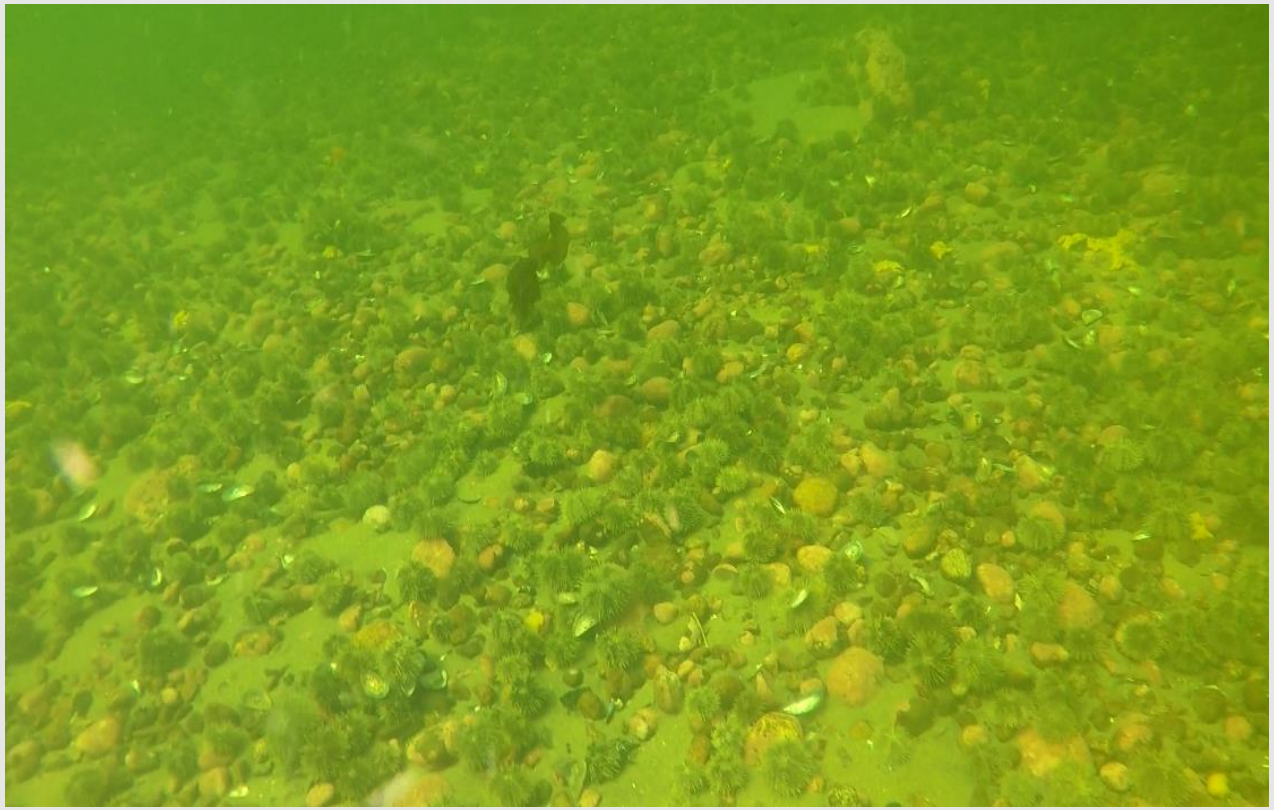
Visibility (VISIB)

Excellent visibility

2

Visibility

Good visibility



Few particles or phytoplankton. The image is clear over a long distance. Still possible to characterize macroalgae, but information in the distance is lost.

Visibility (VISIB)

Good visibility

3 Fair visibility

Presence of particles or phytoplankton that reduce visibility. The image is clear within a short distance. Macroalgae in the distance are not distinguishable.

Visibility (VISIB)

Fair visibility

4 Low visibility

Many particles or phytoplankton that significantly reduce visibility. The image is clear only where it is near the camera. Possible glare from particles. Characterization is limited at short distances from the camera and impossible at longer distances.

Visibility (VISIB)

Low visibility

5

Visibility

No visibility

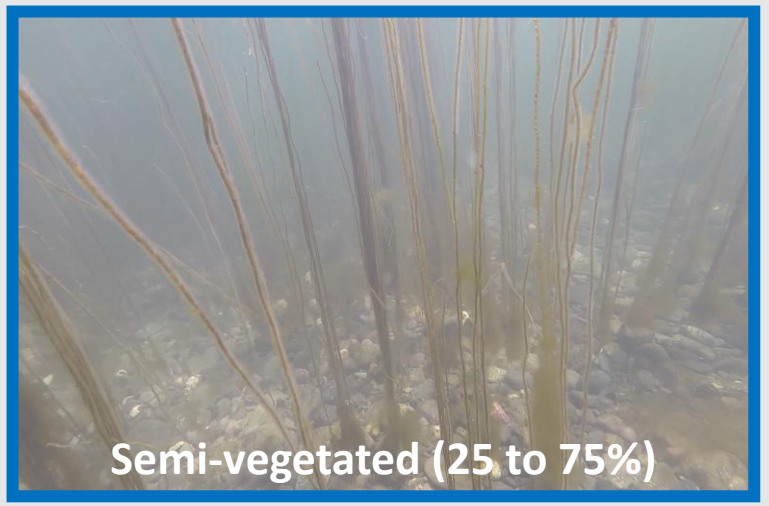
No characterization is possible. Significant glare from particles.

Visibility (VISIB)

No visibility

COVER

Estimated cover of erect vegetation (Vg_COV) and encrusting algae (Enc_COV)



nv

Cover

Non-vegetated

Vegetation cover between 0 and 1%.

Cover (Vg_COV and Enc_COV)

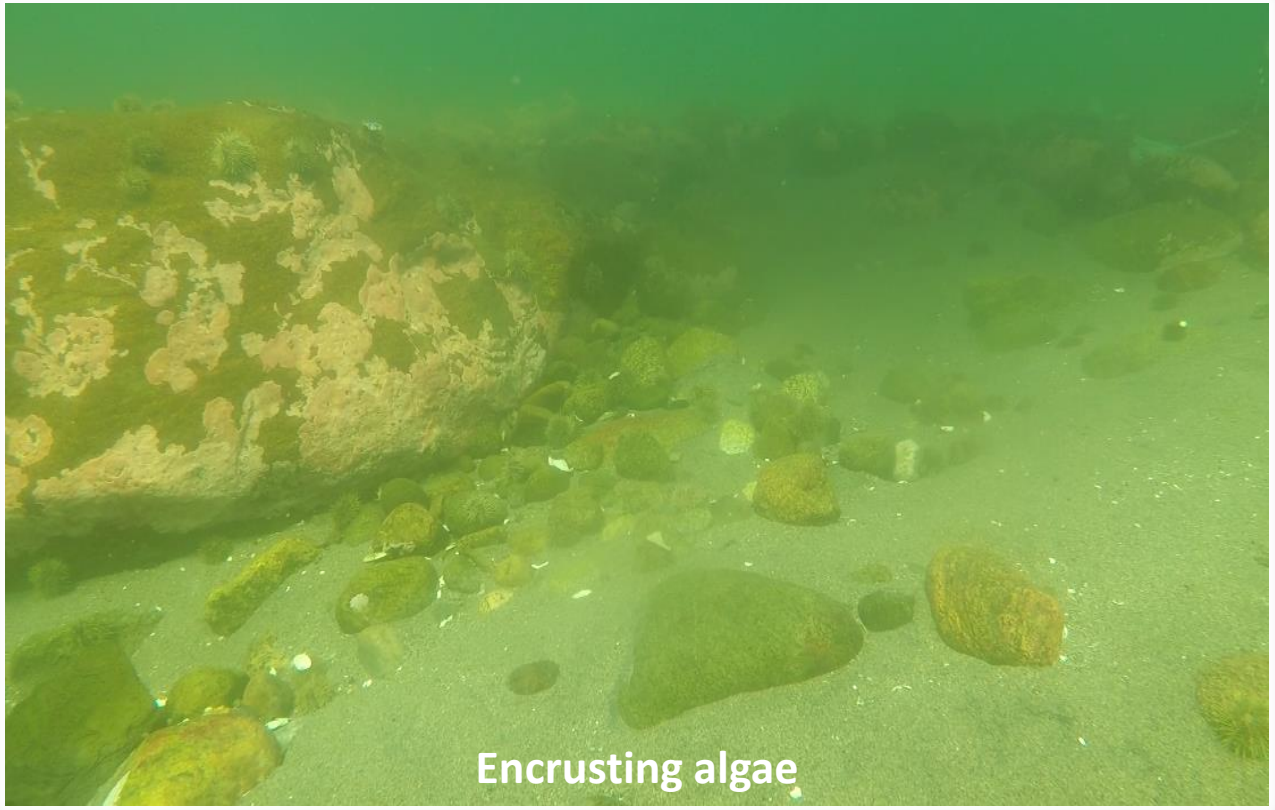
Non-vegetated

Cover

pv

Sparsely vegetated


Erect vegetation


Encrusting algae

Vegetation cover between 1 and 25%.

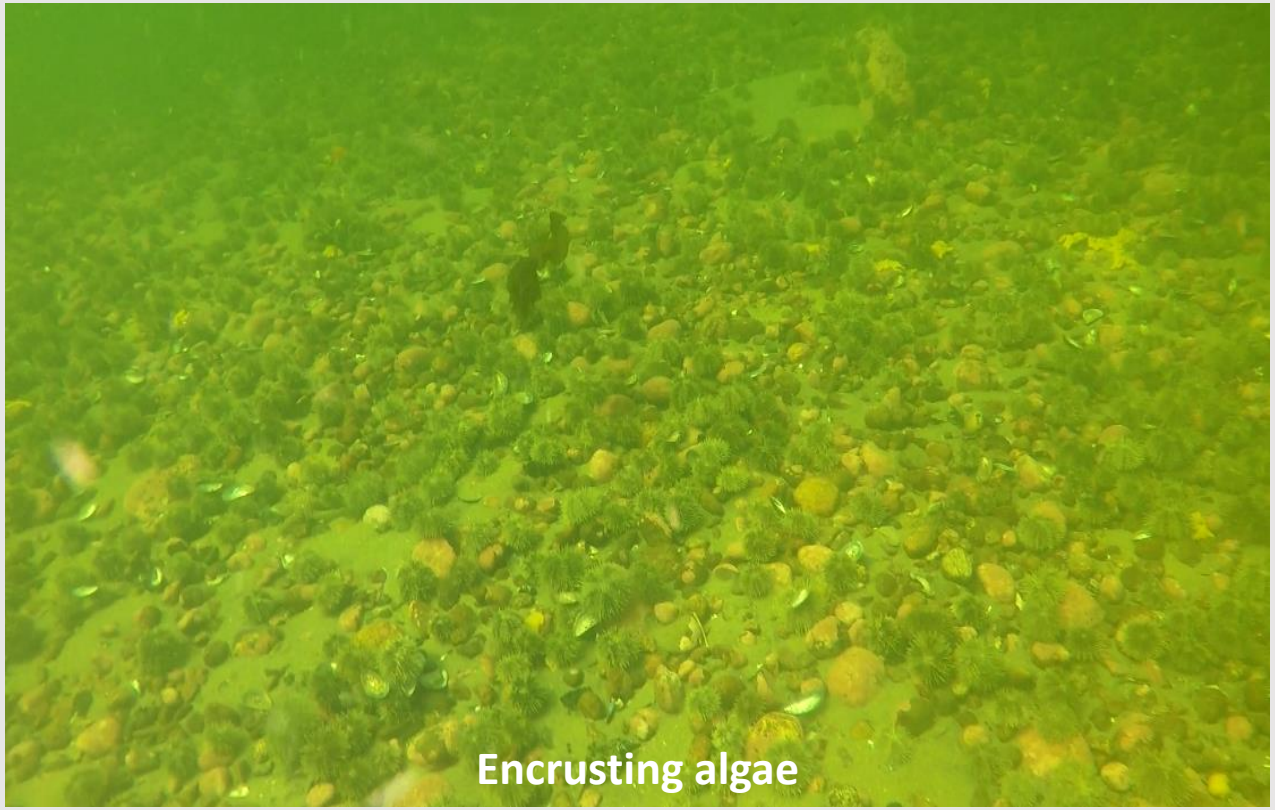
Cover (Vg_COV and Enc_COV)

Sparsely vegetated

SV

Cover

Semi-vegetated



Vegetation cover between 25 and 75%.

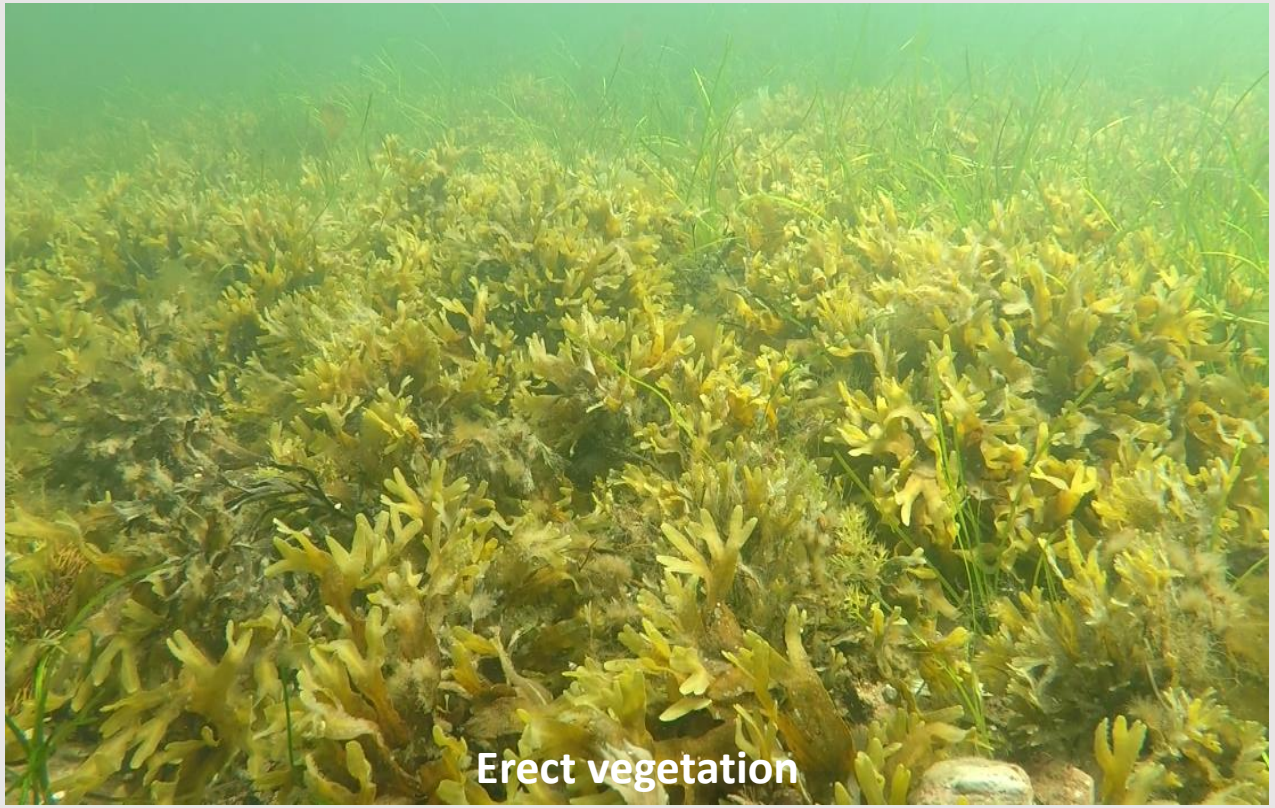
Cover (Vg_COV and Enc_COV)

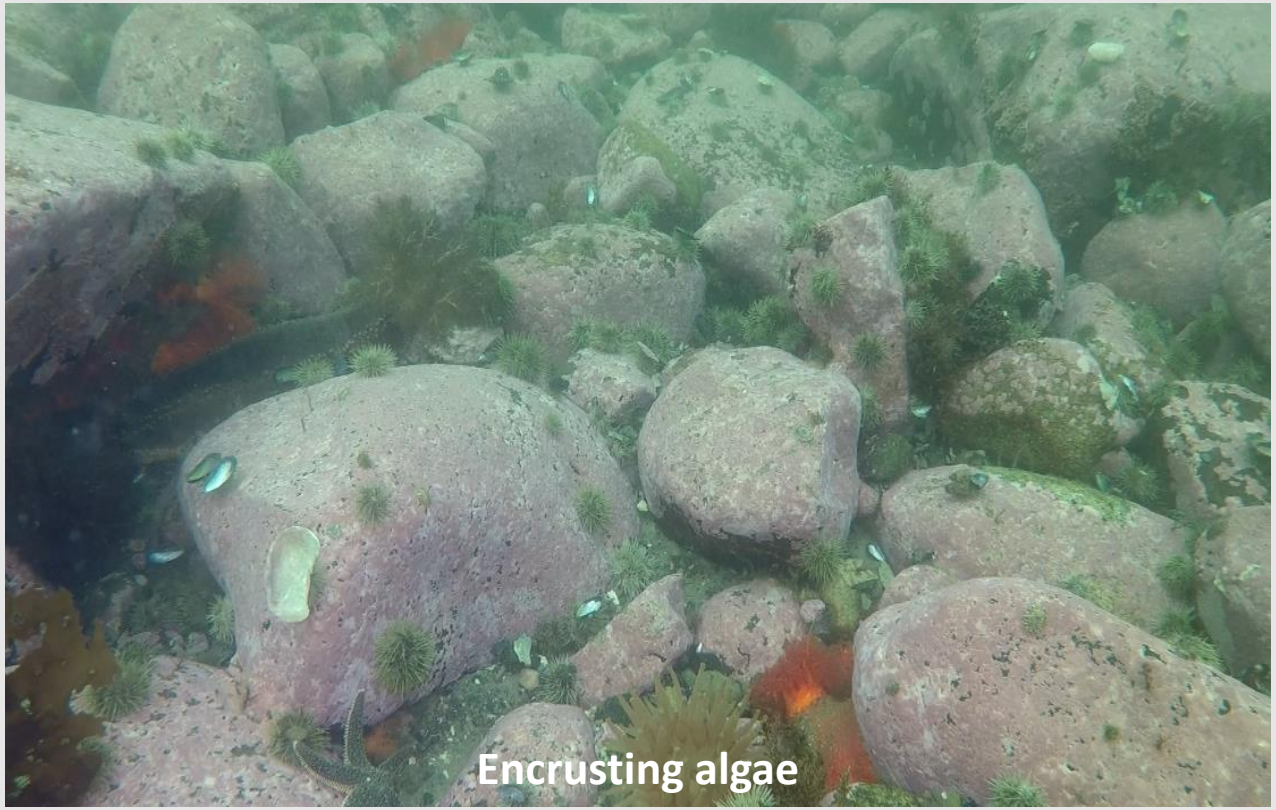
Semi-vegetated

V

Cover

Vegetated





Vegetation cover between 75 and 100%.

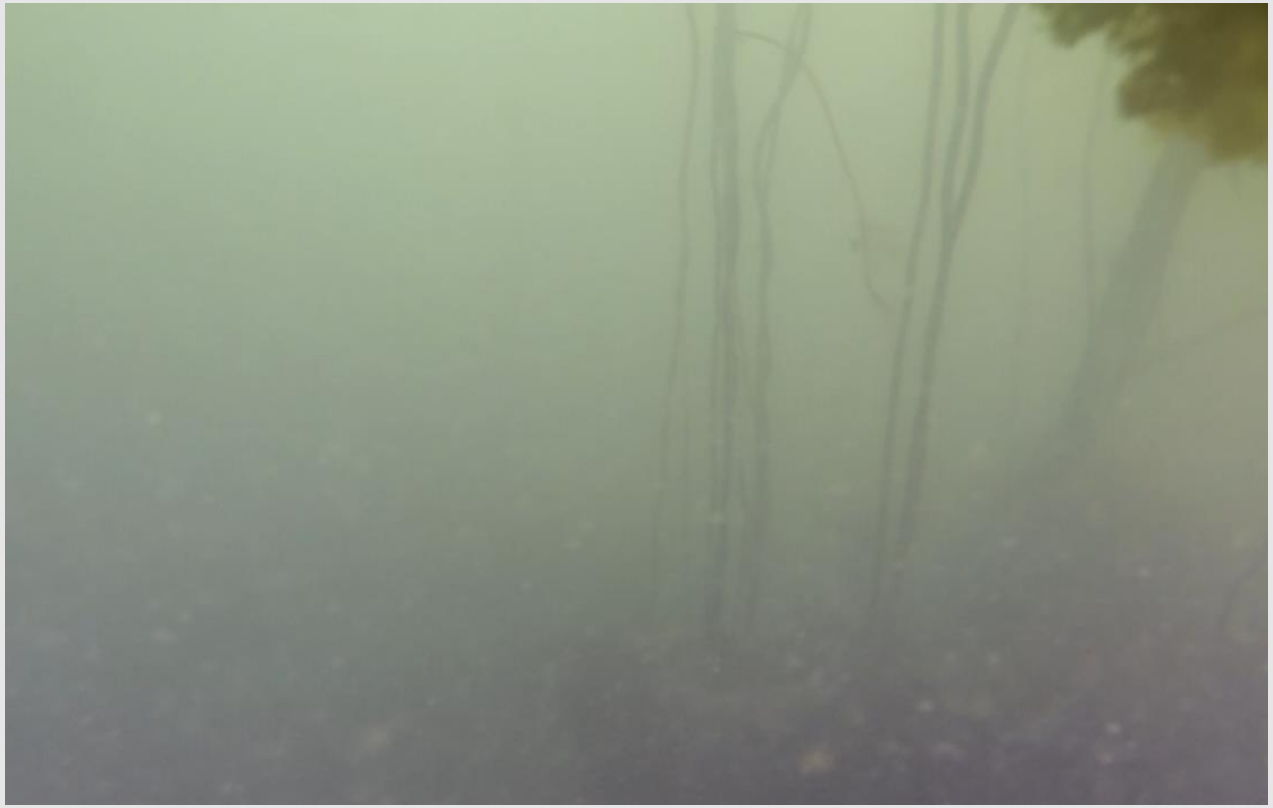
Cover (Vg_COV and Enc_COV)

Vegetated

nd

Cover

Undetermined

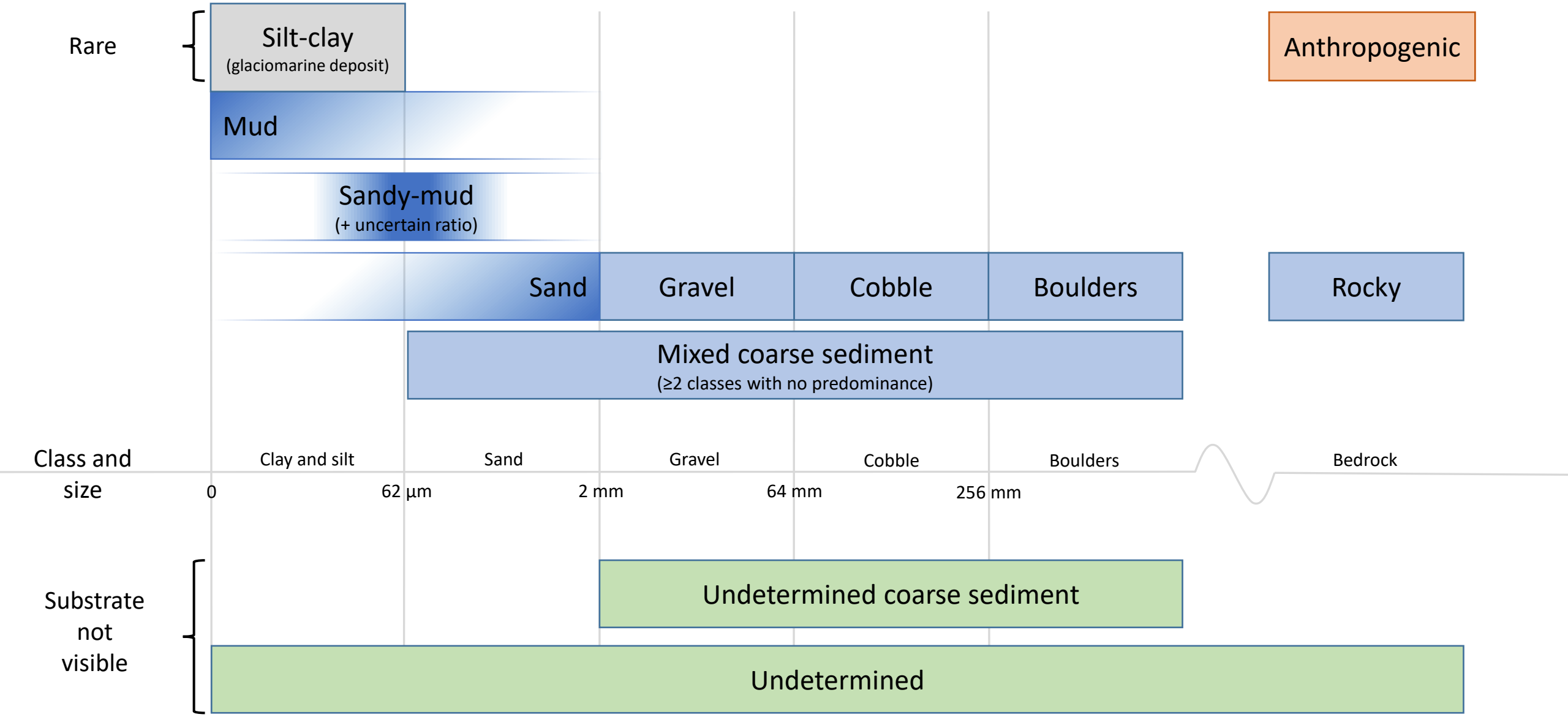


The percentage of vegetation cover cannot be determined. Often used in cases of zero visibility.

Cover (Vg_COV and Enc_COV)

Undetermined

SUBSTRATE


Rare
Silt-clay
(glaciomarine deposit)
Anthropogenic
Mud
Sandy-mud
(+ uncertain ratio)
Sand
Gravel
Cobble
Boulders
Rocky
Mixed coarse sediment
(≥2 classes with no predominance)
Class and size
Clay and silt
Sand
Gravel
Cobble
Boulders
Bedrock
0
62 µm
2 mm
64 mm
256 mm
Substrate not visible
Undetermined coarse sediment
Undetermined

siag

Substrate

Silt-clay

1. Very fine sediment with a **hard** and grey appearance; rare
2. Glaciomarine clay associated with a quaternary deposit
3. Flag the video for validation by the PIER mapping team

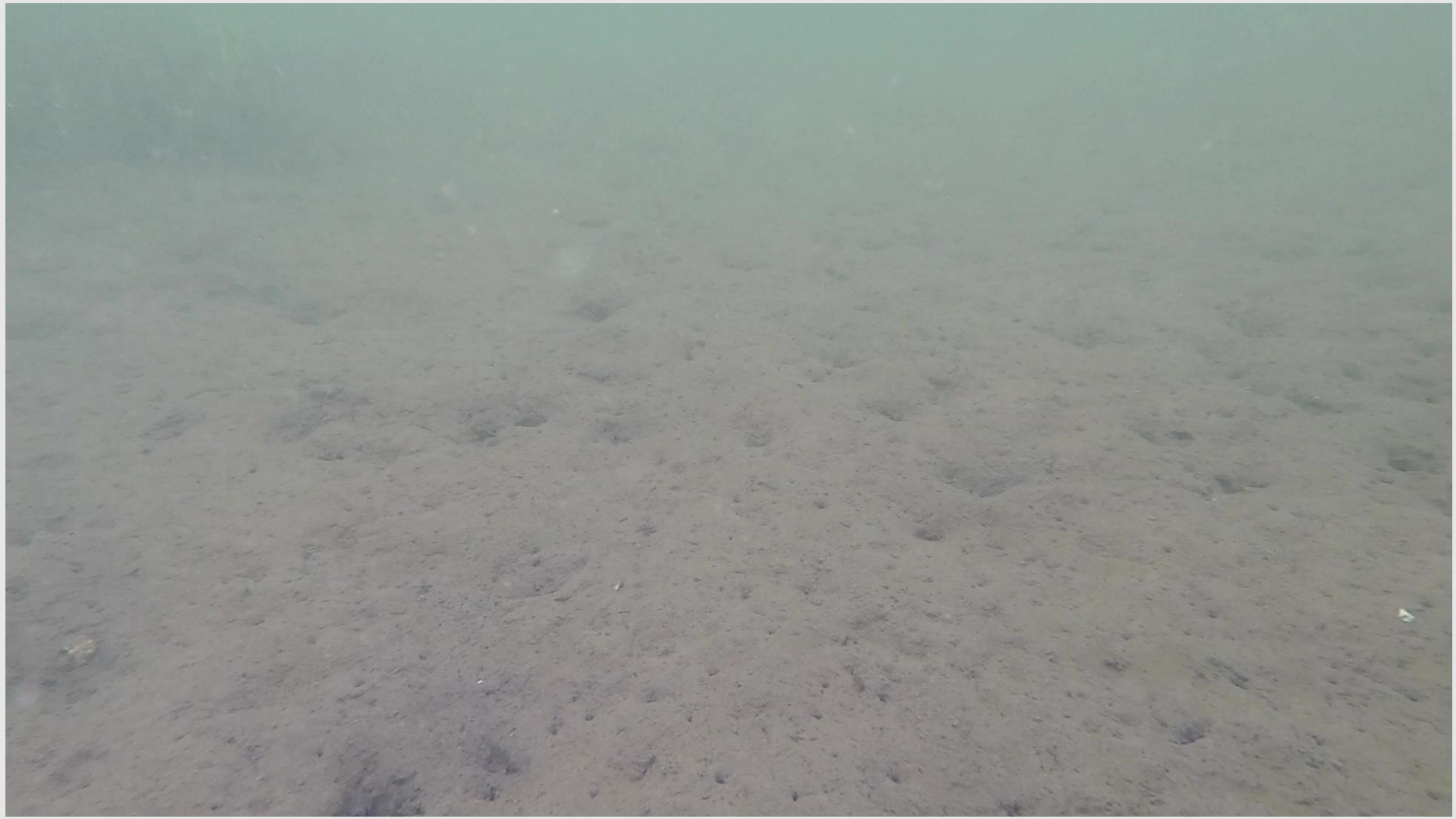
Substrate (SUBSTRAT)

Silt-clay

va

Substrate

Mud



1. Fine sediment consisting mostly of clay and silt particles (≈75 to 100%)
2. May contain a small proportion (≈0 to 25%) of sand particles and organic matter

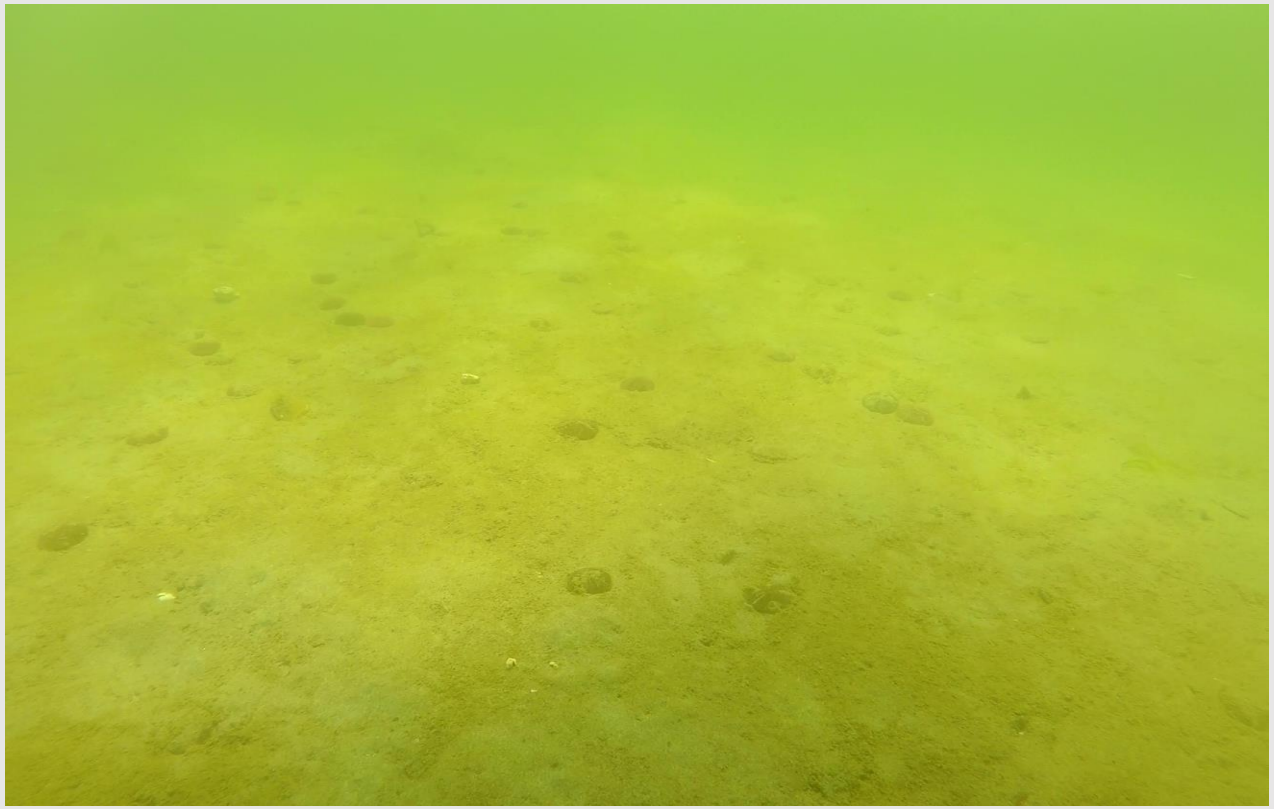
Substrate (SUBSTRAT)

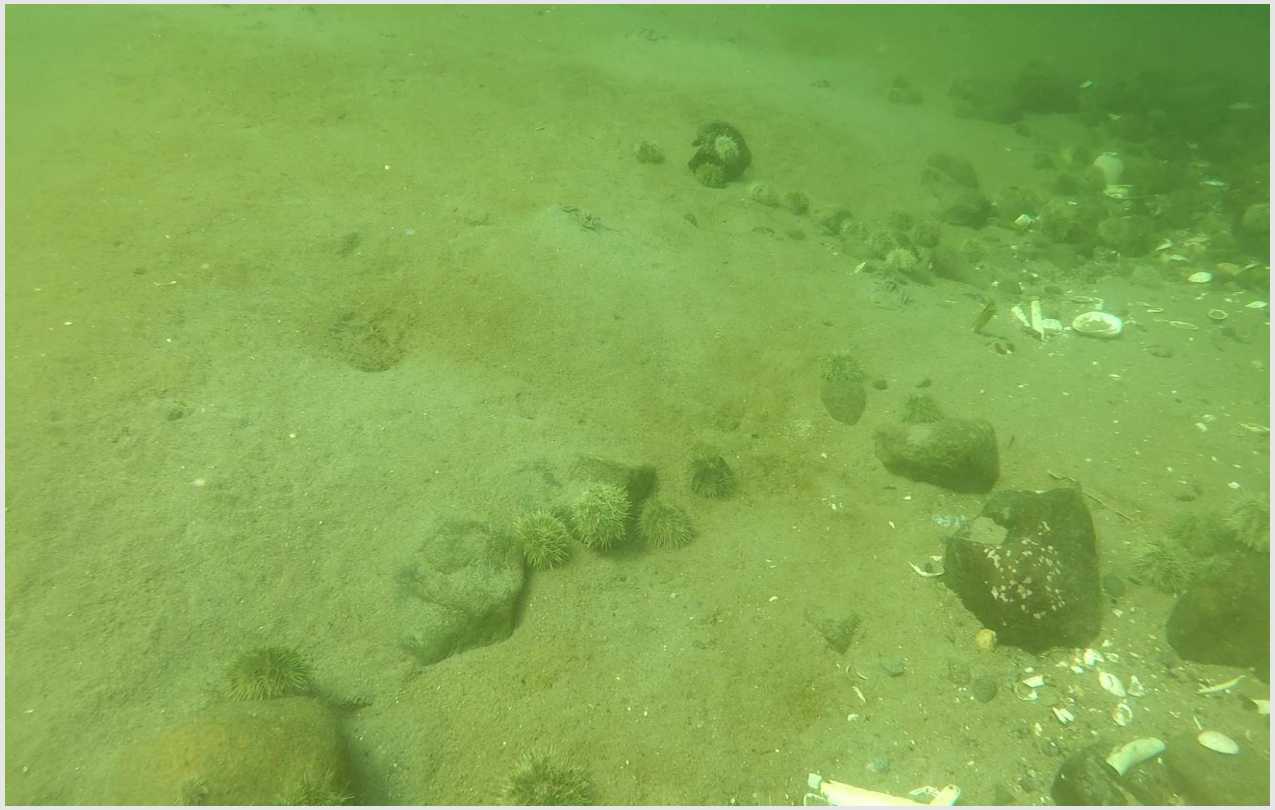
Mud

sva

Substrate

Sandy-mud





1. Fine sediment consisting of a mixture of clay/silt particles (≈ 25 to 75%) and sand (≈ 25 to 75%), with no predominance
2. Similar to "mud" but with a higher composition of sand particles
3. **Use this description when unable to differentiate between proportions of clay/silt and sand particles (i.e. when in doubt)**

Substrate (SUBSTRAT)

Sandy-mud

S

Substrate

Sand

1. Sediment consisting mostly of sand particles (≈ 75 to 100%)
2. May contain some (≈ 0 to 25%) clay and silt particles

Substrate (SUBSTRAT)

Sand

Substrate

g Gravel

1. Coarse sediment with an approximate diameter of **2 to 64 mm**
2. Determine the size relative to organisms (e.g. sea urchins are generally ≤ 80 mm)

Substrate (SUBSTRAT)

Gravel

Substrate

ga

Cobble

1. Coarse sediment with an approximate diameter of **64 to 256 mm**
2. Determine the size relative to organisms (e.g. sea urchins are generally ≤ 80 mm)

Substrate (SUBSTRAT)

Cobble

bl

Substrate

Boulders

1. Coarse sediment with a diameter of **256 mm or more**
2. For riprap or fill, see "anthropogenic"

Substrate (SUBSTRAT)

Boulders

Substrate

r Rocky

The observable surface is hard **and** does not seem to be separated into boulders (bedrock).

Substrate (SUBSTRAT)

Rocky

mig

Substrate

Mixed coarse sediment

- Presence of at least two size classes of coarse sediment (sand, gravel, cobble, boulders) **and impossible to determine which is dominant**
- When there is significant vegetation cover limiting substrate observation, see "undetermined coarse sediment"

Substrate (SUBSTRAT)

Mixed coarse sediment

sgnd

Substrate

Undetermined coarse sediment

1. **The view of the substrate is partially obstructed by algae, but clues, such as relief features (boulders), indicate that it cannot be bedrock**
2. The presence of algae indicates that it cannot be soft fine sediment
3. By deduction, the substrate is composed of coarse sediment (gravel, cobble or boulders)
4. When unable to eliminate the possibility of bedrock, use "UD"

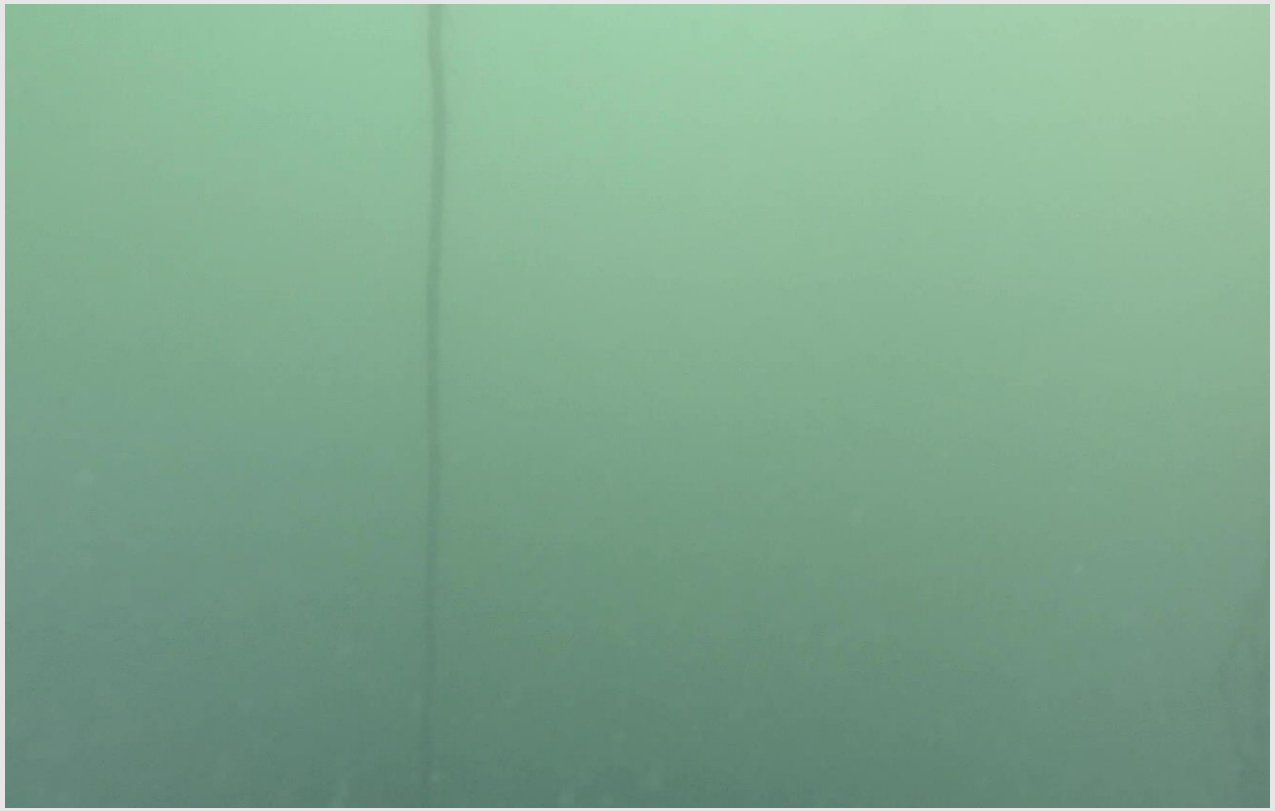
Substrate (SUBSTRAT)

Undetermined coarse sediment

nd

Substrate

Undetermined



1. Impossible to determine substrate
2. If lack of visibility is due to dense algae cover, check whether "undetermined coarse sediment" applies

Substrate (SUBSTRAT)

UD

ant

Substrate

Anthropogenic

1. Presence of an artificial feature (e.g. riprap or fill); rare
2. For riprap, do not indicate "boulders," but rather "**anthropogenic**" and specify that it is riprap in the COMM_VID column. Likewise for fill.

Substrate (SUBSTRAT)

Anthropogenic

VEGETATION

SHAPE		COLOUR: Red Brown	COLOUR: Green
Delicate filamentous		ABJK	
Thick filamentous	Unbranched	C	J
	Branched	D	K
Flattened or foliated filamentous		E	
Tubular or baglike		F	L

Information on shapes and colours			
SHAPE		COLOUR: Red Brown	COLOUR: Green
Striplike		G	
Membranous or bladelike		H	L
Encrusting		I	
Aquatic plants			
Colonial microalgae			
Other			

SHAPES AND COLOURS

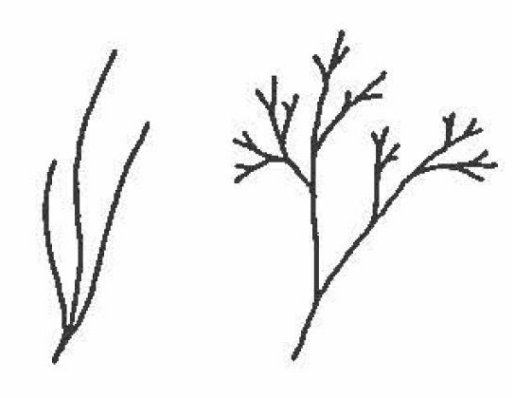
The system for classifying algae by shape and colour has been adapted from the system described by R. Leclerc (1987) in **Guide d'identification des algues marines de l'estuaire du Saint-Laurent [Guide to Identifying Marine Algae in the St. Lawrence Estuary]**. The letters assigned to each shape and colour combination are the same for easy reference.

The illustrations of the general shapes of algae presented in the following pages of the visual dictionary are reproduced from Leclerc (1987).

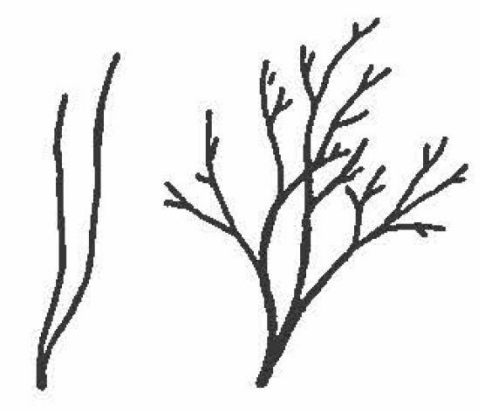
Reference:

Leclerc, R., 1987. Guide d’identification des algues marines de l’estuaire du Saint-Laurent. Groupe d’animation en sciences naturelles du Québec inc., Saint-Romuald. 180 p.

SHAPES



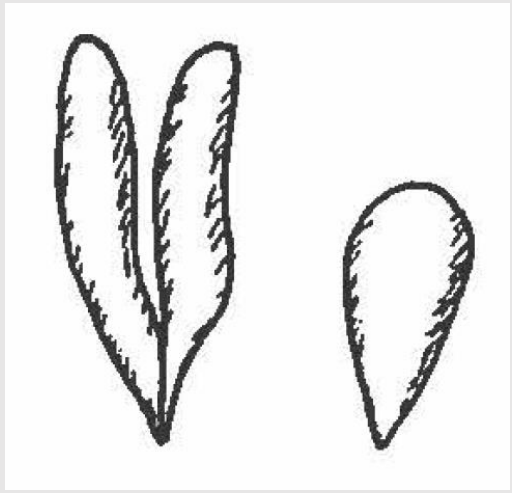
Delicate filamentous algae are as thin as or thinner than hair.



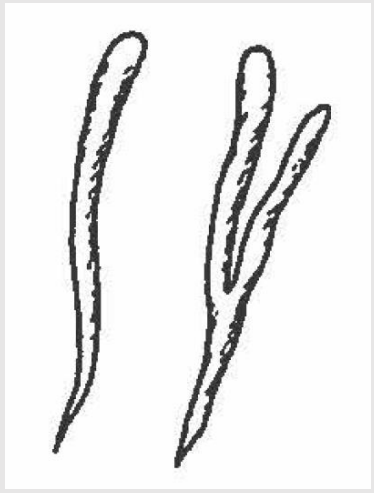
Thick filamentous algae are thicker than hair.

Flattened or foliated algae are flattened or leaf-shaped (at least at the tip).

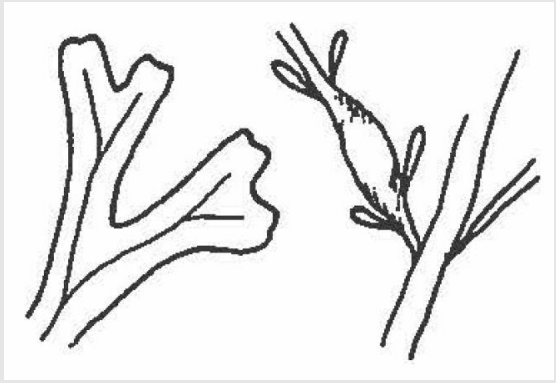
SHAPES



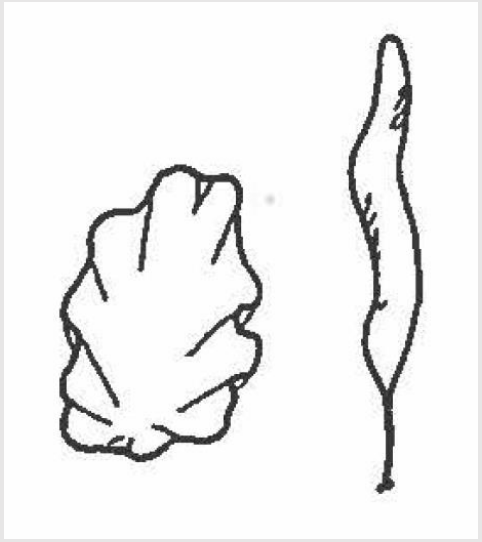
Baglike algae are oval-shaped and thin-walled.



Tubular algae are tube-shaped from the base of the holdfast.



Striplike algae are shaped in branched strips and have the texture of leather.



Membranous algae are in the shape of sessile membranes (fixed to the substrate by the margin, no stipe).

Bladelike algae have a flattened shape and are longer than they are wide.

COLOURS

It is often difficult to distinguish between brownish-red and brown shades, especially in video analysis. For that reason, Leclerc (1987) placed these two groups together and suggested that the colour criterion be used only to differentiate between particular species.

Beware of dead algae. They may lose their brown or red colour and appear to have greenish, orange or golden patches.

When the colour is uncertain, it is unlikely to be green algae.

ABJK

Shape

Filamentous

Branching

Colour

COLOUR	ORDER	FAMILY	SPECIES
Brown	Ectocarpales		
Delicate branched filamentous red algae			
Green	Cladophorales	Cladophoraceae	*Chaetomorpha* sp.
Delicate (or thick) branched filamentous green algae			
Delicate filamentous algae			
Colonial microalgae			

Shape and colour (Vg_MORPH)

Unidentified filamentous algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

B

Shape

Delicate filamentous

Branching

Branched

Colour

Red / brown

LOW CONFIDENCE

Genus and species identification can be difficult for **delicate branched filamentous brown algae**. In that case, these algae can be identified as part of the **Ectocarpales** order if they have the following characteristics:

- The group (brown/red/green) must be clearly visible
- Delicate **branched** filamentous brown algae
- Erect and loose filaments
- Main axes difficult to identify
- Densely branched from the base

Note: Could be ***Ectocarpus siliculosus*** or ***Pylaiella littoralis***

May be confused with colonial diatoms,
see delicate filamentous algae and thick branched filamentous algae colonized by delicate filamentous algae.

Shape and colour (Vg_MORPH)

Delicate branched filamentous brown algae

Vg_TYPE

Ectocarpales

Species or genus (Vg_TAXO)

B

Shape
Delicate filamentous

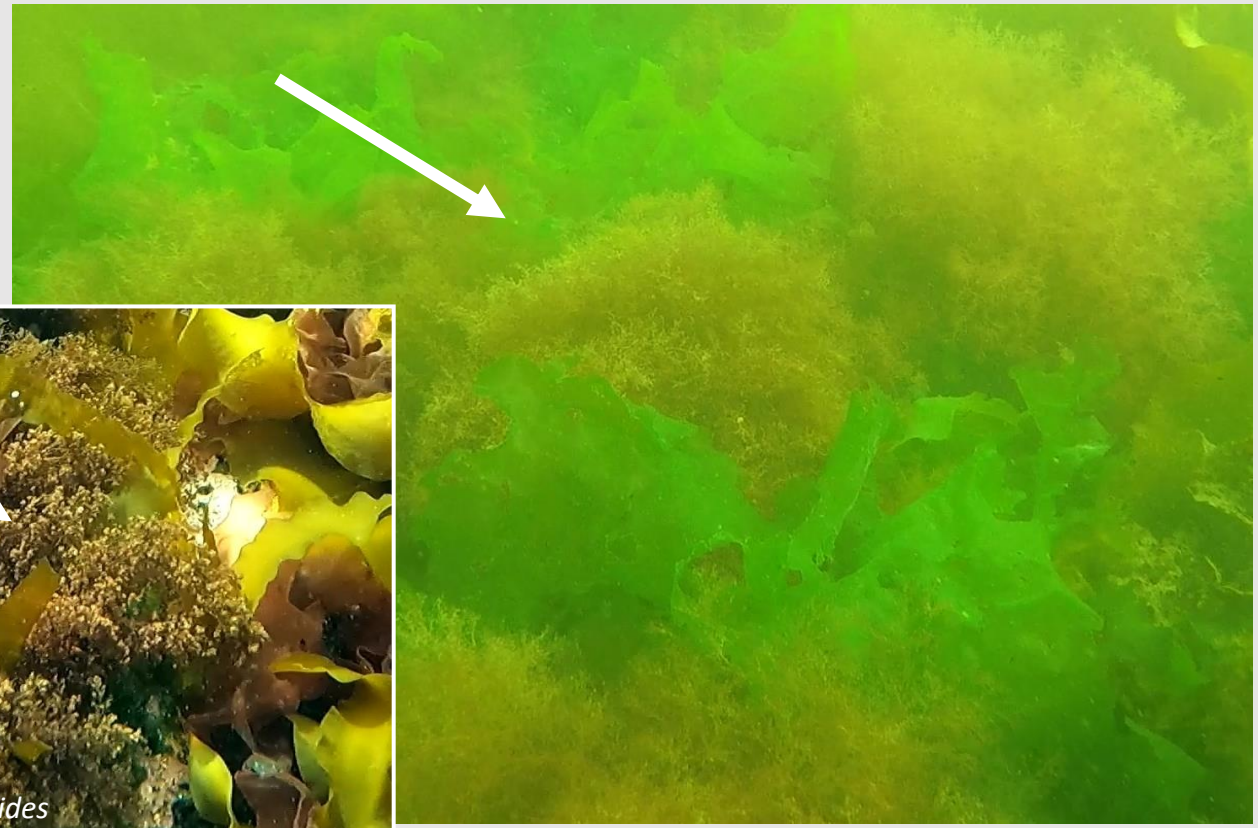
Branching
Branched

Colour
Red / brown

Genus and species identification can be difficult for **delicate branched filamentous red algae**. In that case, these algae can be identified by shape/colour if they have the following characteristics:

- The group (brown/red/green) must be clearly visible
- Delicate **branched** filamentous red algae

May be confused with colonial diatoms, see delicate filamentous algae.



Shape and colour (Vg_MORPH)
Delicate branched filamentous red algae

Vg_TYPE
Unidentified algae

Species or genus (Vg_TAXO)

J

Shape

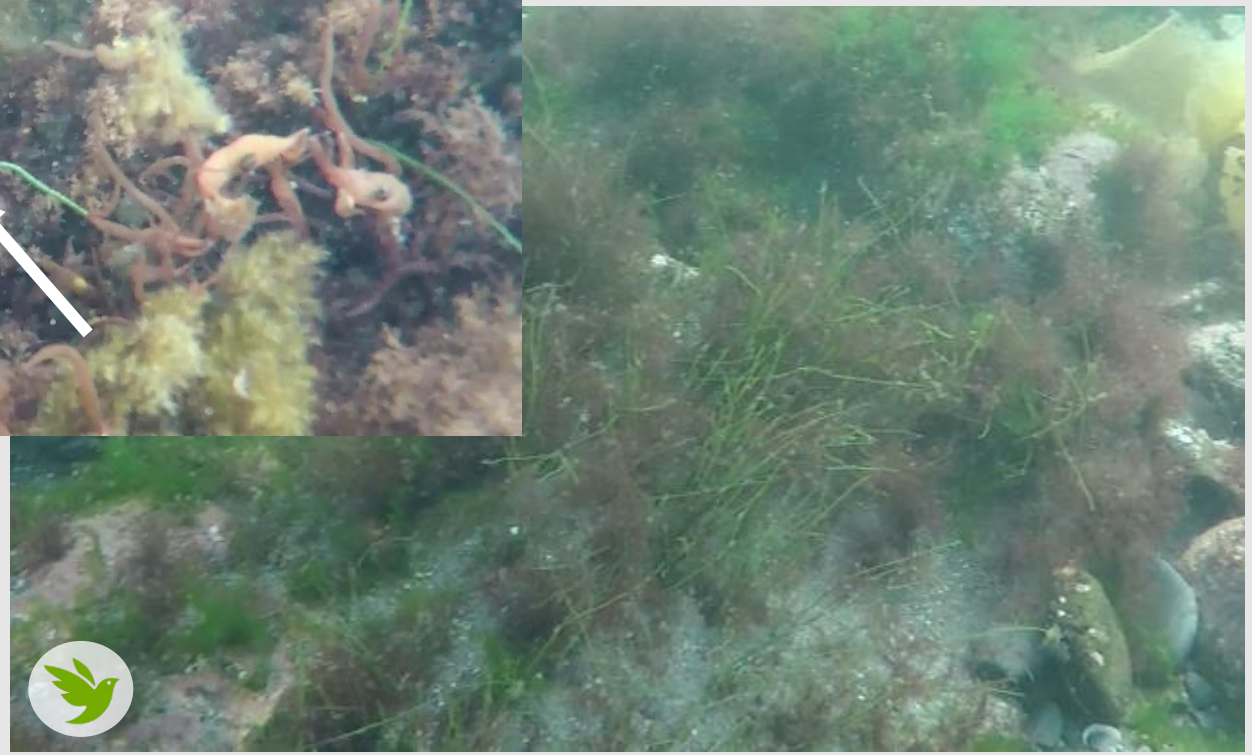
Thick filamentous

Branching

Unbranched

Colour

Green



1. Description developed for *Chaetomorpha melagonium,* but could include other species in this genus
2. Uniserial (unbranched), long and straight filaments attached to the base
3. 2 to 30 cm in length
4. Although filaments may appear delicate, they are considered thick (about as thick as a paper clip)

Shape and colour (Vg_MORPH)

Thick unbranched filamentous green algae

Vg_TYPE

Cladophoraceae

Species or genus (Vg_TAXO)

***Chaetomorpha* sp.**

K

Shape

Delicate filamentous

Branching

Branched

Colour

Green

Genus and species identification can be difficult for **delicate branched filamentous green algae**. In that case, these algae can be identified by shape/colour if they have the following characteristics:

- The group (brown/red/green) must be clearly visible
- **Branched** filamentous green algae. Even species considered thick by Leclerc (1987) are considered delicate for our purposes.

Could be confused with colonial diatoms,
see delicate filamentous algae.

Shape and colour (Vg_MORPH)

Delicate branched filamentous green algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

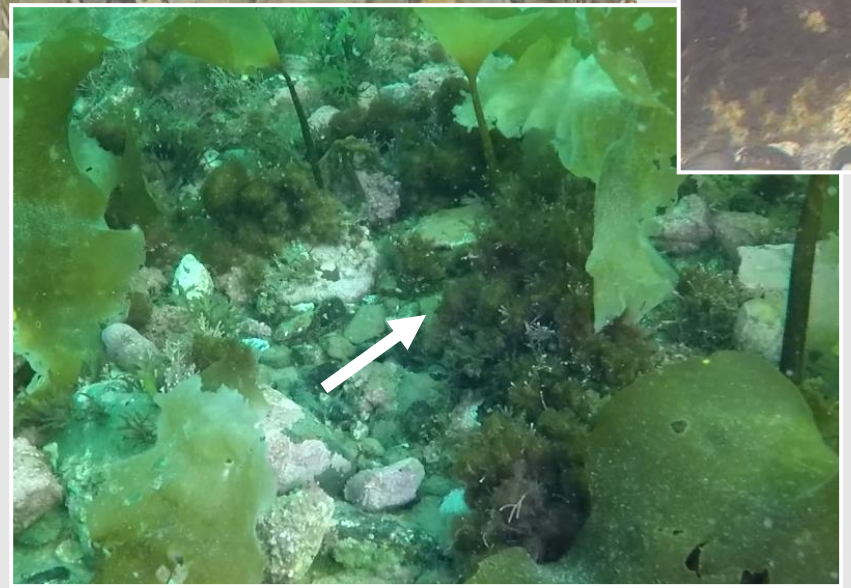
ABJK

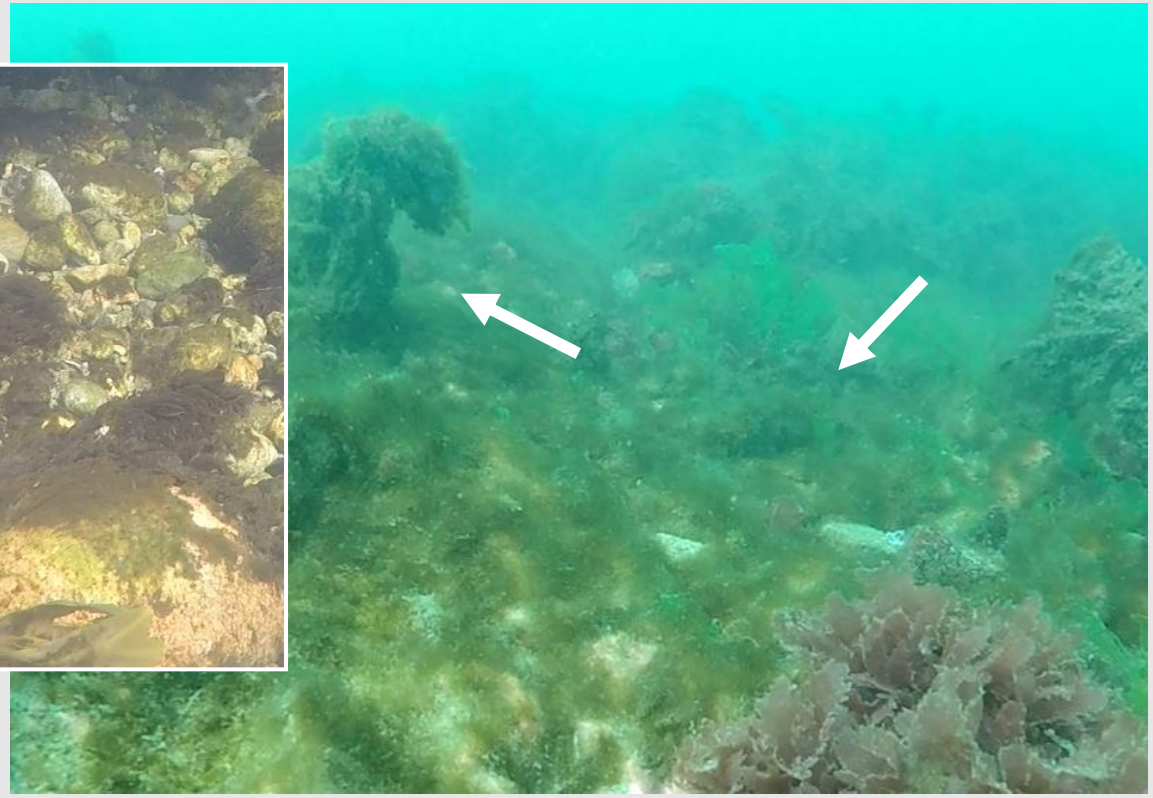
Shape

Delicate filamentous

Branching

Colour





1. Unbranched or branched
2. May include algae that form tufts or mats on the substrate (e.g. *Ulothrix* sp.) and other delicate filamentous macroalgae that cannot be identified (e.g. brown, red, green)
3. Could be confused with colonial microalgae
4. If it is definitely microalgae, see colonial microalgae

Shape and colour (Vg_MORPH)

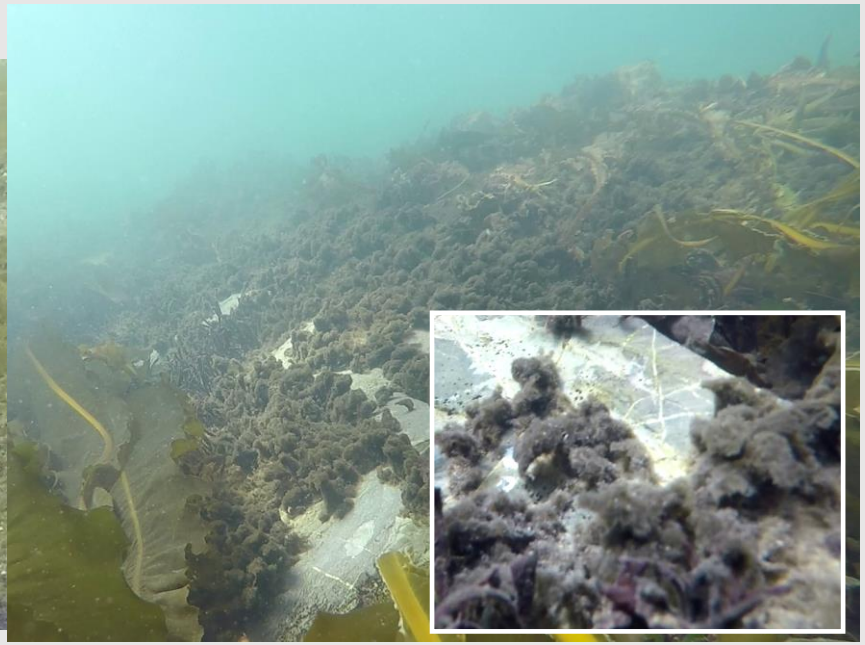
Delicate filamentous algae

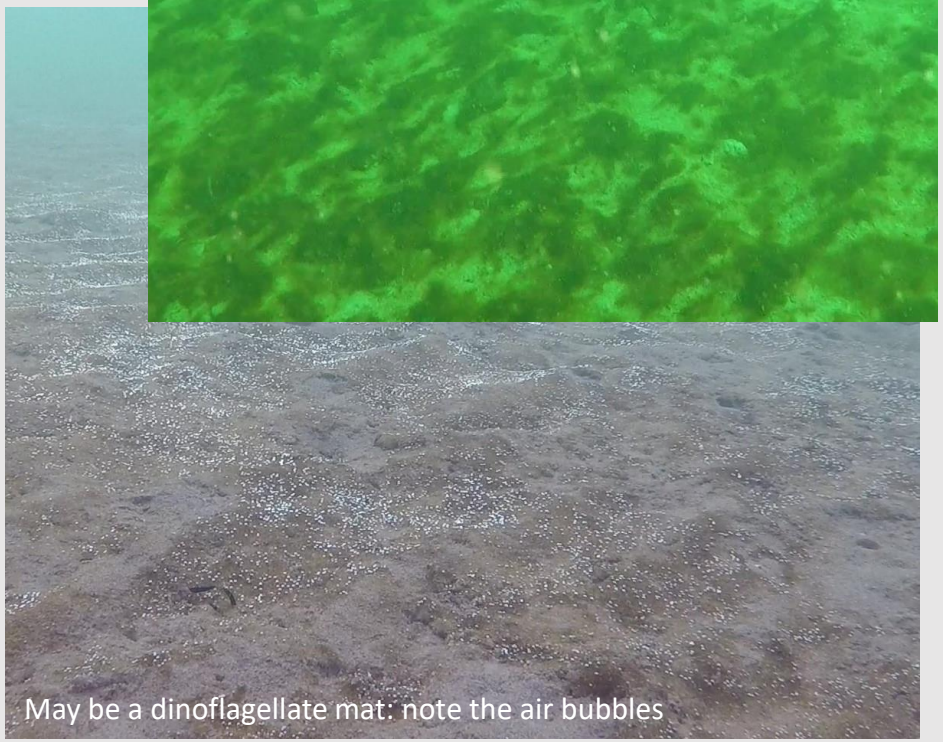
Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

Colonial microalgae





May be a dinoflagellate mat: note the air bubbles

1. Filamentous (brown/green) structure that does not have the appearance of macroalgae (e.g. lacks an axis and/or does not appear to be attached by a holdfast or appears to be a veil that covers the canopy)
2. Could be diatoms, dinoflagellates or cyanobacteria
3. Could be confused with delicate filamentous macroalgae; in that case, see delicate filamentous algae
4. This observation is only noted in Vg_NOTES

Vg_NOTES

Colonial microalgae

C

Shape

Thick filamentous

Branching

Unbranched

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Brown	Laminariales	Halosiphonaceae	*Halosiphon tomentosus*
	Tilopteridales	Chordaceae	*Chorda* sp.

Note: We assume that all thick unbranched filamentous algae in the study area are brown (Phaeophyceae)

Shape and colour (Vg_MORPH)

Thick unbranched filamentous brown algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

C

Shape

Thick filamentous

Branching

Unbranched

Colour

Red / brown

1. **Thalli covered with dense golden hairs** (up to 6–20 mm)
2. **Thalli often curved or lying on the substrate**
3. Up to 1 m in length (but reported up to 5–8 m)
4. May be confused with *Chorda* sp. When in doubt, enter **"unidentified algae" for Vg_MORPH AND Vg_TYPE**

Shape and colour (Vg_MORPH)

Thick unbranched filamentous brown algae

Vg_TYPE

Halosiphonaceae

Species or genus (Vg_TAXO)

Halosiphon tomentosus

C

Shape

Thick filamentous

Branching

Unbranched

Colour

Red / brown

1. Thalli sometimes covered with **transparent and very delicate hairs**
2. **Hollow thalli filled with air make the algae float vertically**
3. 0.5 to 5 metres in length (but reported up to 5–8 m)
4. May be confused with *Halosiphon tomentosus*. When in doubt, enter **"unidentified algae"** for **Vg_MORPH** AND **Vg_TYPE**
5. May be confused with stipes of *Alaria esculenta* when grazed by sea urchins or Scytosiphonaceae

Shape and colour (Vg_MORPH)

Thick unbranched filamentous brown algae

Vg_TYPE

Chordaceae

Species or genus (Vg_TAXO)

***Chorda* sp.**

D

Shape

Thick filamentous

Branching

Branched

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Brown	Desmarestiales	Desmarestiaceae	*Desmarestia* sp.
	Ectocarpales	Chordariaceae	*Chordaria* sp.
Red	Ahnfeltiales	Ahnfeltiaceae	*Ahnfeltia* sp.
	Gigartinales	Polyidaceae	*Polyides rotunda*
	Palmariales	Palmariaceae	*Devaleraea ramentacea*

Shape and colour (Vg_MORPH)

Thick branched filamentous algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

D

Shape

Thick filamentous

Branching

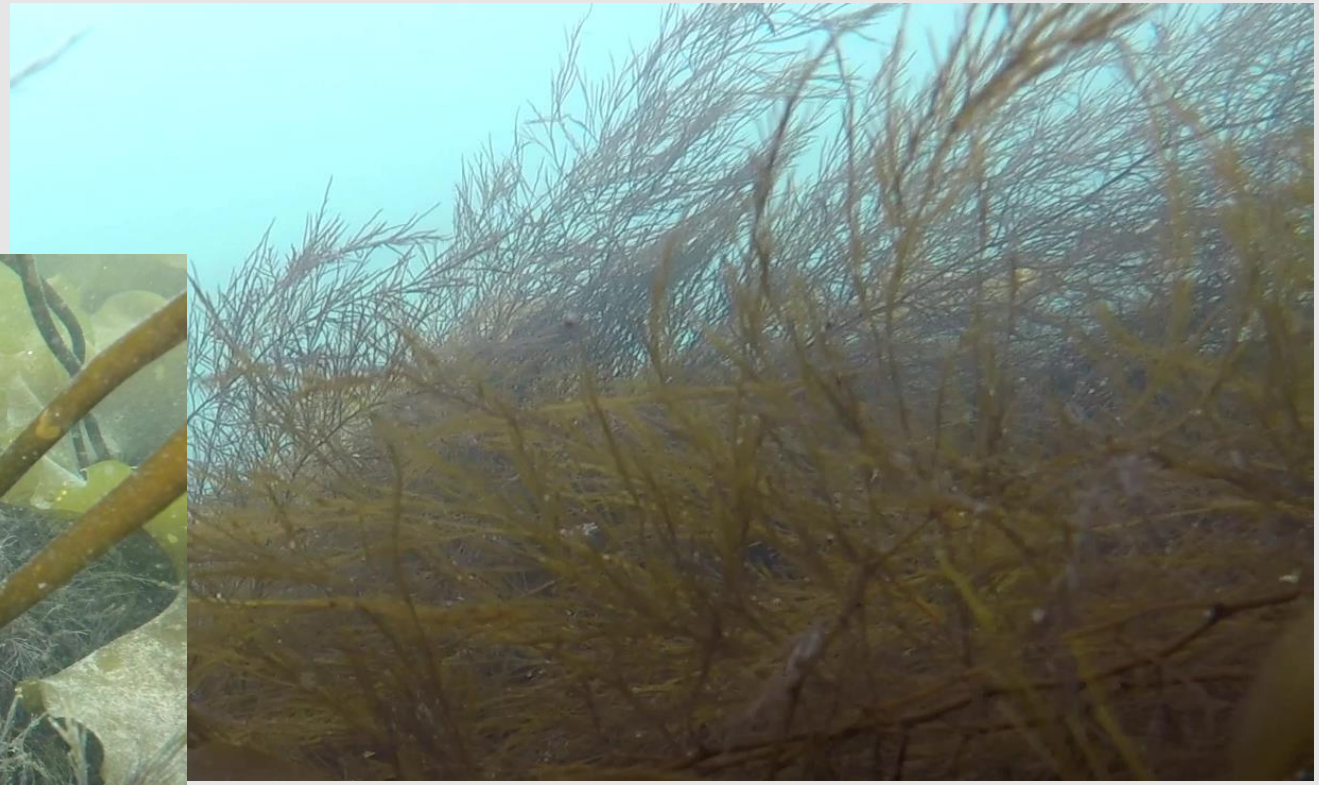
Branched

Colour

Red / brown

Genus and species identification can be difficult for **thick branched filamentous brown algae**. In that case, these algae can be identified as part of the ***Desmarestia*** genus if they have the following characteristics:

- Thick branched filamentous brown algae
- Bushy with a ponytail appearance
- Sturdy main axes that are difficult to differentiate
- Between 0.3 and 2 m long
- May be ***D. aculeata*** or ***D. viridis*** (more difficult to differentiate)



Shape and colour (Vg_MORPH)

Thick branched filamentous brown algae

Vg_TYPE

Desmarestiaceae

Species or genus (Vg_TAXO)

***Desmarestia* sp.**

D

Shape

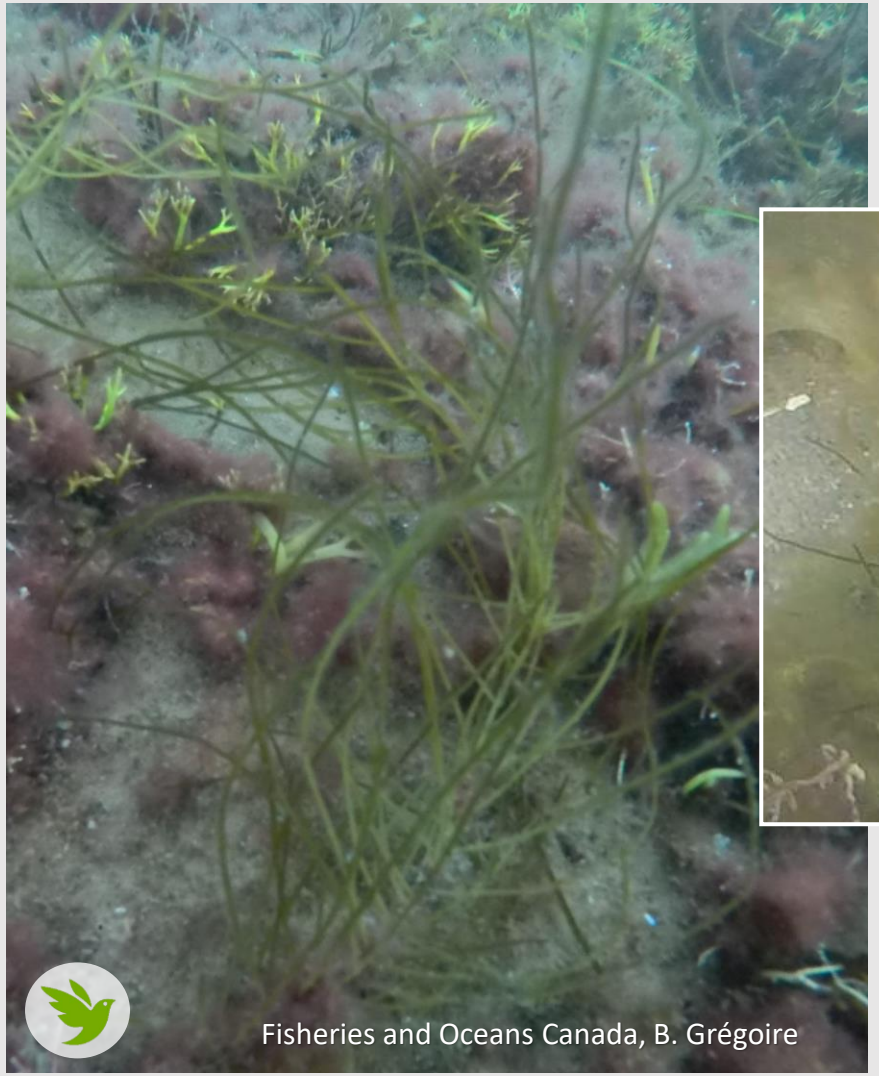
Thick filamentous

Branching

Branched

Colour

Red / brown



1. Threadlike algae made up of a primary axis that is exceeded in length by bare secondary branches
2. Fragile algae that sinks (lies flat) easily in a light current
3. Up to 70 cm

Shape and colour (Vg_MORPH)

Thick branched filamentous brown algae

Vg_TYPE

Chordariaceae

Species or genus (Vg_TAXO)

***Chordaria* sp.**

D

Shape

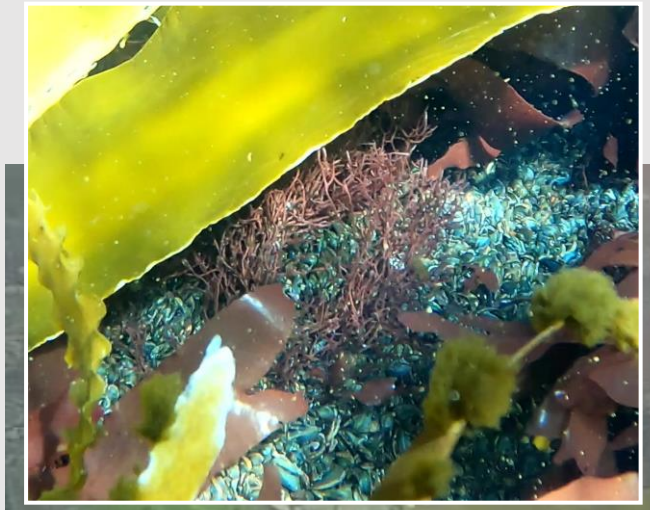
Thick filamentous

Branching

Branched

Colour

Red / brown



1. Densely branched thallus , stiff branches, cylindrical, thin (under 1 mm), dark red to green (may fade)
2. **Irregular branching, often at 90° to the main axis**
3. Between 6 and 20 cm long

Shape and colour (Vg_MORPH)

Thick branched filamentous red algae

Vg_TYPE

Ahnfeltiaceae

Species or genus (Vg_TAXO)

***Ahnfeltia* sp.**

D

Shape

Thick filamentous

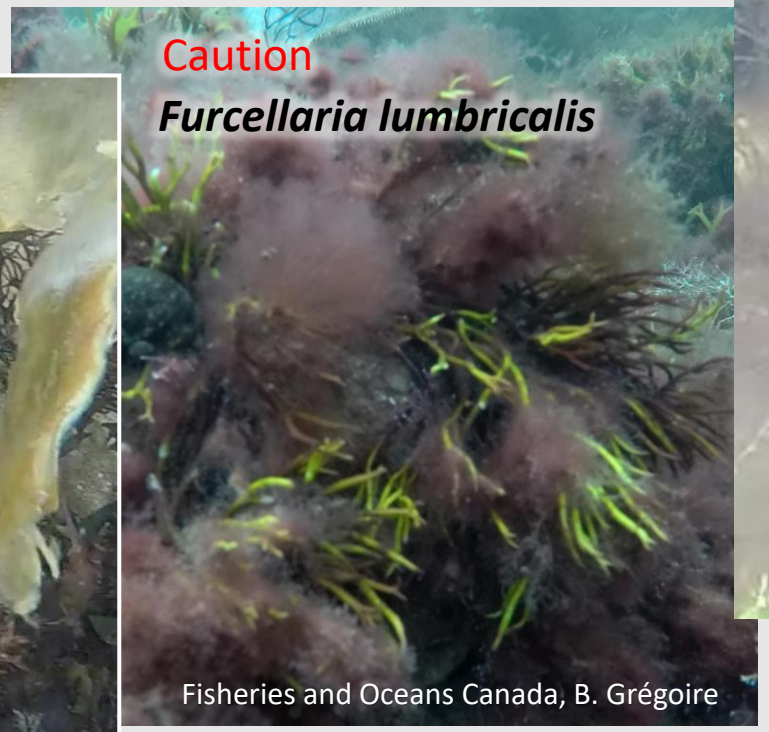
Branching

Branched

Colour

Red / brown

LOW CONFIDENCE



1. Black bushy algae with a rubbery texture
2. **Dichotomous branching, rather narrow bifurcation angle**
3. Uniformly cylindrical filaments
4. 8 to 20 cm
5. **Impossible to differentiate (in video) from *Furcellaria lumbricalis* (sGSL)**

Shape and colour (Vg_MORPH)

Thick branched filamentous red algae

Vg_TYPE

Polyidaceae

Species or genus (Vg_TAXO)

Polyides rotunda

D

Shape

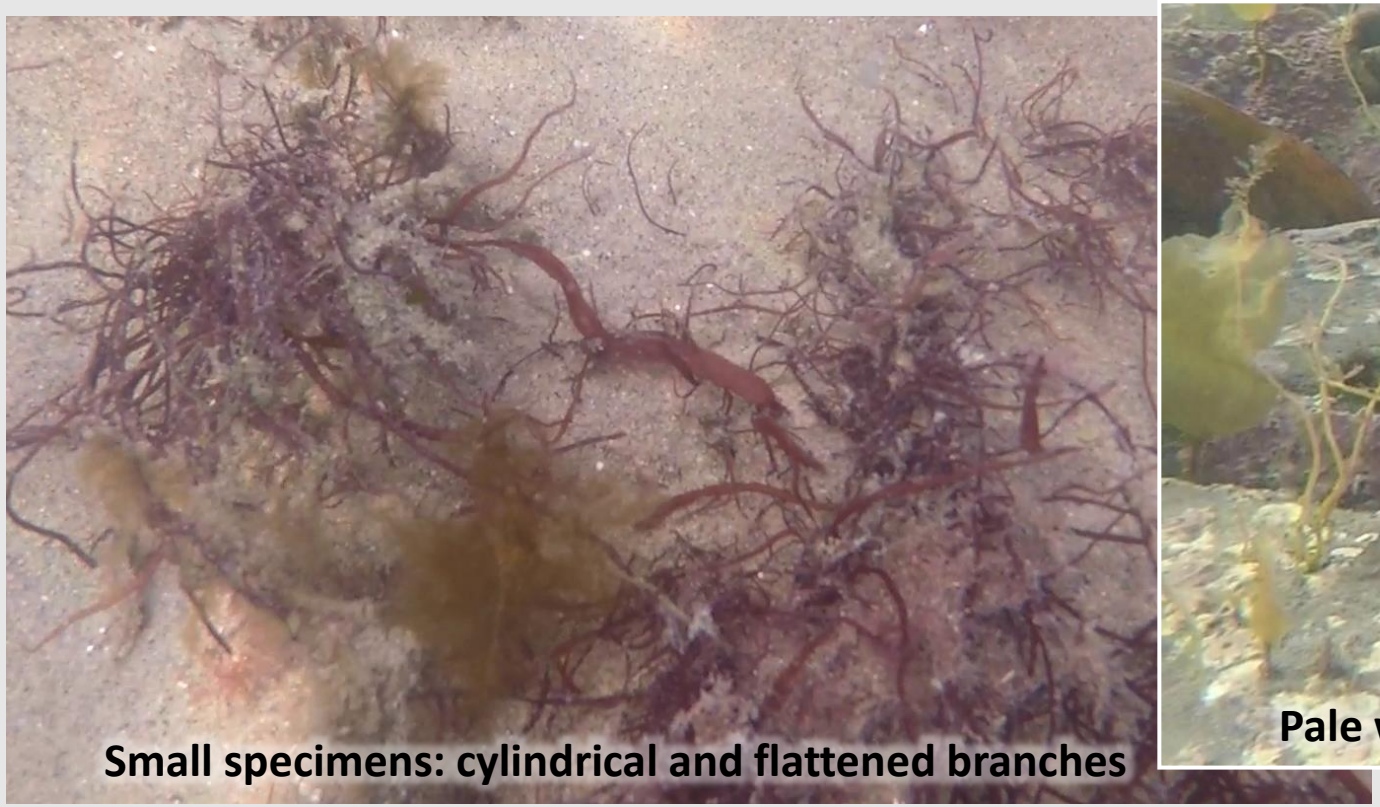
Thick filamentous

Branching

Branched

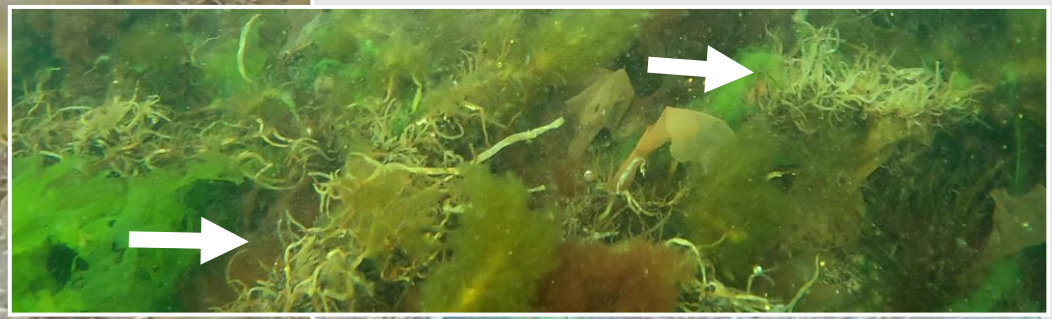
Colour

Red / brown



Small specimens: cylindrical and flattened branches

Pale with few branches



Frond of a large specimen: foxtail habit

1. Cylindrical, tubular or flattened axis and branches, sometimes all three shapes on the same specimen
2. Foxtail habit (shape varies)
3. Up to 40 cm
4. See also tubular or baglike shape for the same species

Shape and colour (Vg_MORPH)

Thick branched filamentous red algae

Vg_TYPE

Palmariaceae

Species or genus (Vg_TAXO)

Devaleraea ramentacea *(filamentous)*

E

Shape

Flattened or foliated filamentous

Branching

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Red	Ceramiales	Ptiloteae	
		Delesseriaceae	*Phycodrys* sp.
	Corallinales	Corallinaceae	*Corallina officinalis*
	Gigartinales	Gigartinaceae	*Chondrus crispus*
		Phyllophoraceae	

Note: We assume that all flattened or foliated filamentous algae in the study area are red (Rhodophyta).

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

E

Shape

Flattened or foliated filamentous

Branching

Colour

Red / brown

1. Bushy algae with tight, flattened and opposite branching, dentate lower margin
2. Up to 15 cm in length
3. May be confused with Sertulariidae

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Ptiloteae

Species or genus (Vg_TAXO)

E

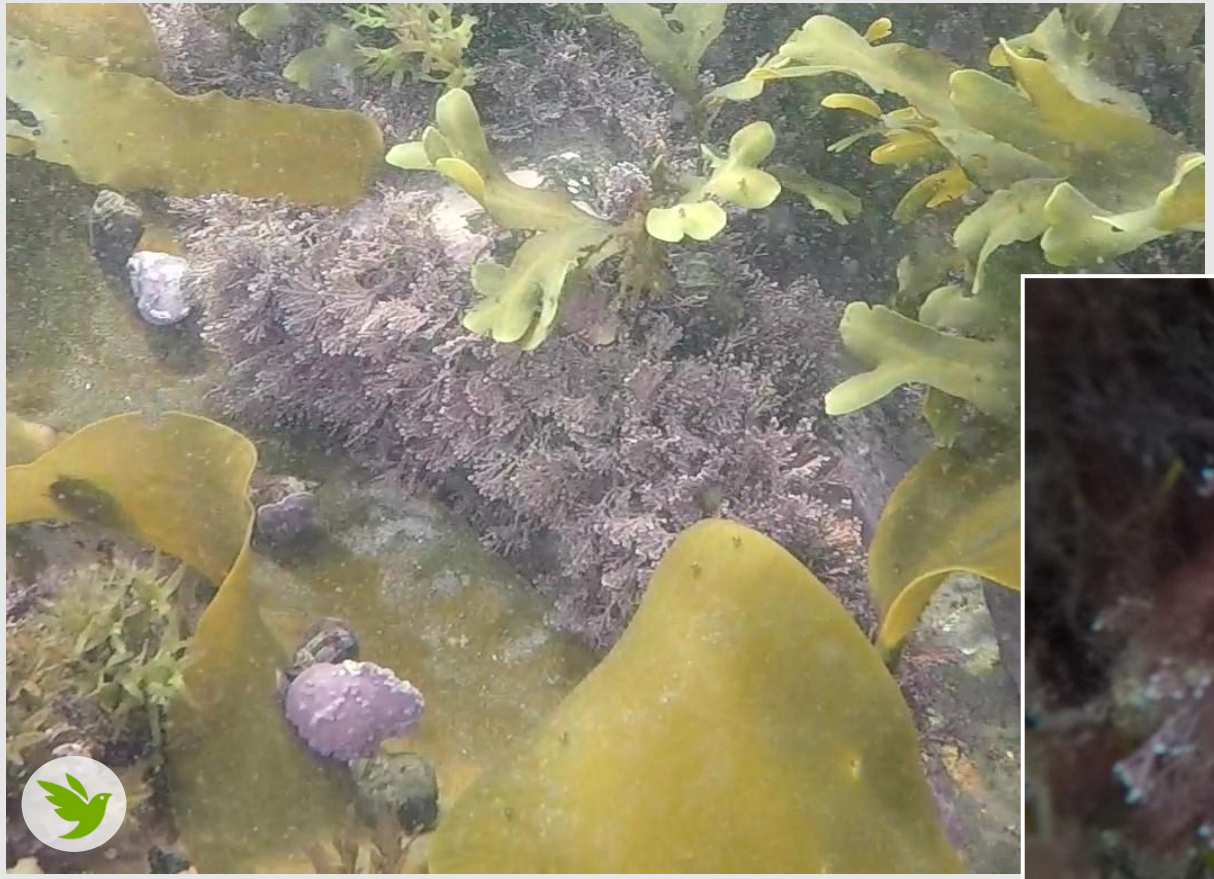
Shape

Flattened or foliated filamentous

Branching

Colour

Red / brown



Fisheries and Oceans Canada, B. Grégoire

1. Calcareous thallus made of jointed segments
2. Branches arranged on each side of the central axis (feather-like appearance), pink with whitish apex
3. Up to 10 cm in length

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Corallinaceae

Species or genus (Vg_TAXO)

Corallina officinalis

E

Shape

Flattened or foliated filamentous

Branching

Colour

Red / brown

Genus and species identification can be difficult for **flattened or foliated filamentous red algae**. In that case, these algae can be identified as part of the **Ceramiales** order if they have the following characteristics:

- Flattened or foliated branched filamentous red algae
- Short stipe, rarely visible, soft texture
- Branches shorter at the ends than at the base

Note: Mainly used when impossible to differentiate between ***Membranoptera* sp.**, ***Odonthalia* sp., ptiloteae, *Antithamnion* sp.** *(classified as delicate branched filamentous red algae,* according to Rachel [1987])

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Ceramiales
(flattened or foliated filamentous)

Species or genus (Vg_TAXO)

E

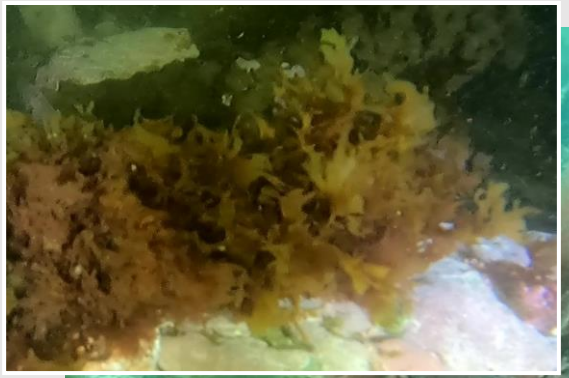
Shape

Flattened or foliated filamentous

Branching

Colour

Red / brown



Pale, visible veins

1. Short stipe, irregular branching
2. Oval/lanceolate or deeply lobed blade. Sinuate to dentate margin and large veins.
3. Oak leaf-like fronds
4. Can reach up to 20 cm
5. May be confused with *Chondrus crispus*

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Delesseriaceae

Species or genus (Vg_TAXO)

***Phycodrys* sp.**

E

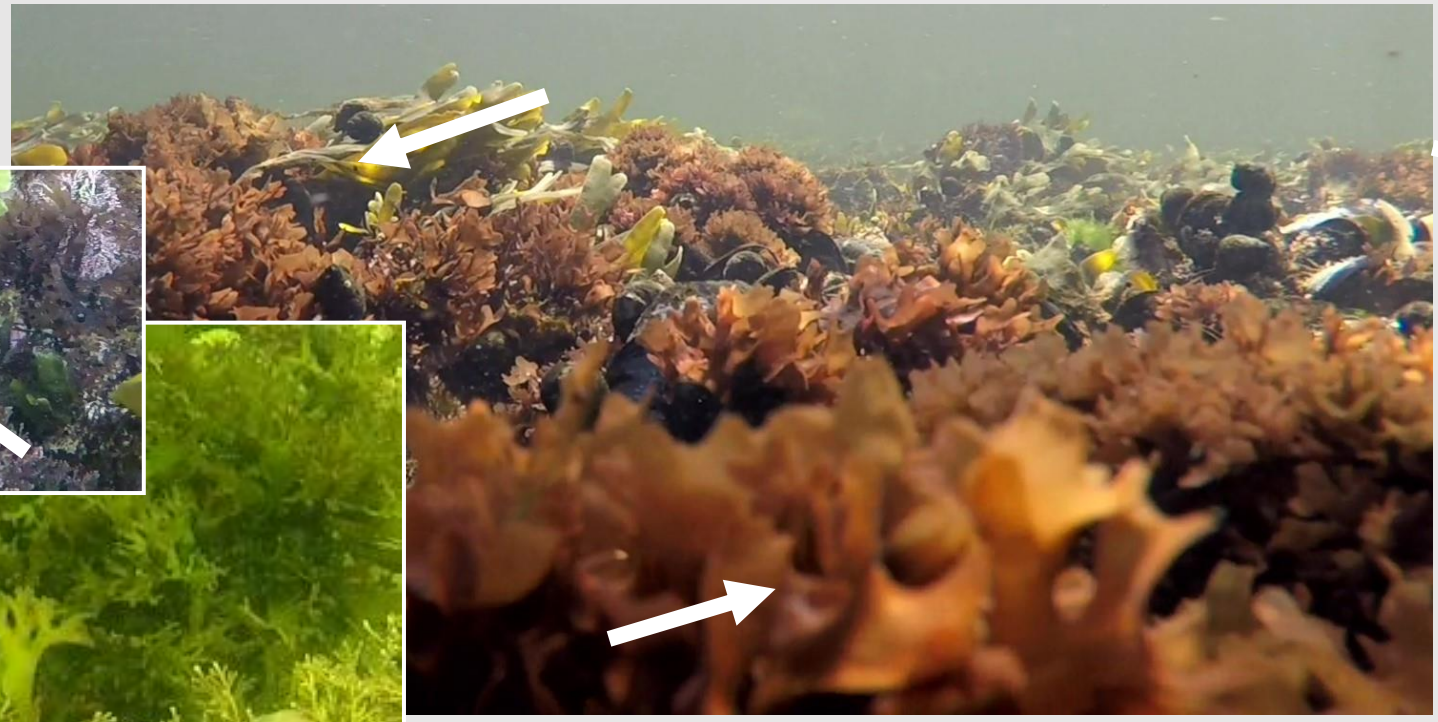
Shape

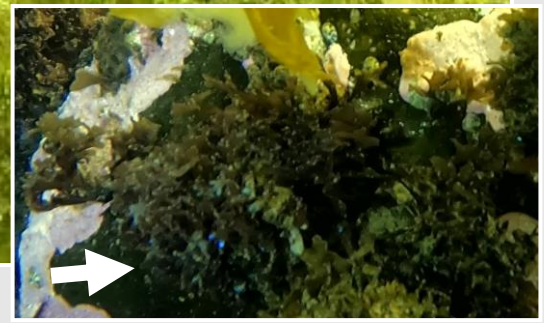
Flattened or foliated filamentous

Branching

Colour

Red / brown





1. Bushy cartilaginous algae with dichotomous branching
2. Numerous and dense terminal branches
3. Tips can be green to red (sometimes iridescent), **shape and colour** vary widely
4. 8 to 15 cm in length
5. May be confused with *Mastocarpus stellatus*, *Fredericqua deveauniensis*, *Phycodrys* sp. or phyllophoraceae

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Gigartinaceae

Species or genus (Vg_TAXO)

Chondrus crispus

E

Shape

Flattened or foliated filamentous

Branching

Colour

Red / brown

LOW CONFIDENCE

Genus and species identification can be difficult for **flattened or foliated filamentous red algae**.

In that case, these algae can be identified as part of the **Phyllophoraceae** family if they have the following characteristics:

- Flattened or foliated filamentous red algae
- Bushy with dichotomous branching
- Cylindrical to membranous branches
- **No midrib (midrib = *Phycodrys* sp.)**
- Firm texture
- Dark red, almost black in colour
- Regularly colonized by Spirorbinae

Note: **May be confused with thin strips of *Phycodrys* sp.** and *Chondrus crispus*.
Mainly used for ***Phyllophora* sp. *Gymnogongrus* sp.** and ***Coccotylus* sp**.

Shape and colour (Vg_MORPH)

Flattened or foliated filamentous red algae

Vg_TYPE

Phyllophoraceae

Species or genus (Vg_TAXO)

F

Shape

Tubular or baglike

Branching

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Red	Ectocarpales	Scytosiphonaceae	
Red	Palmariales	Palmariaceae	*Devaleraea ramentacea*

Shape and colour (Vg_MORPH)

Unidentified tubular or baglike algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

F

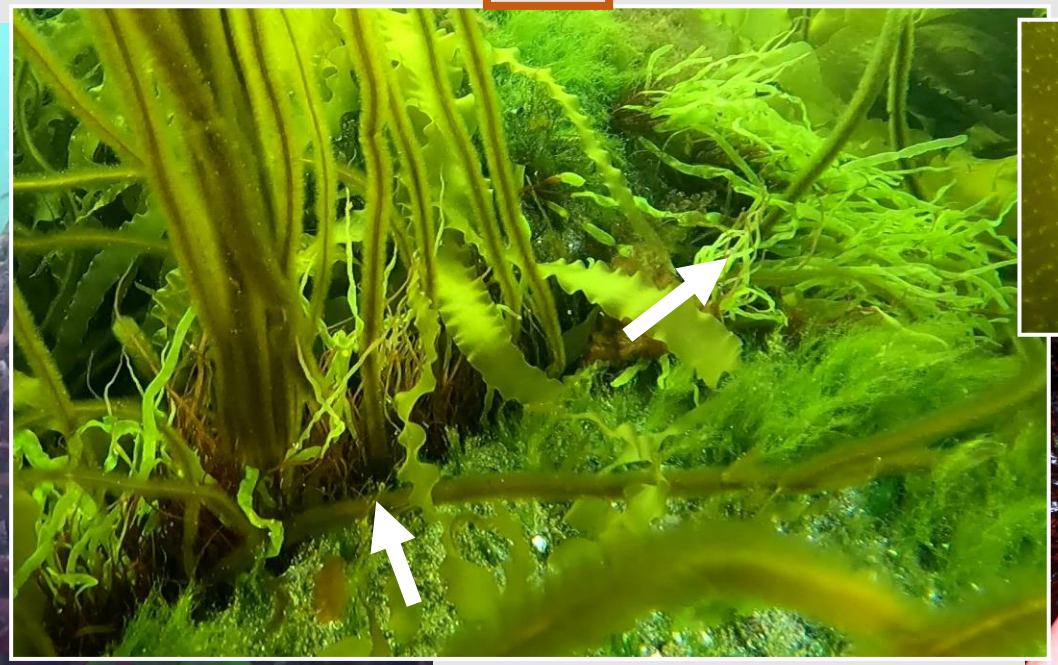
Shape

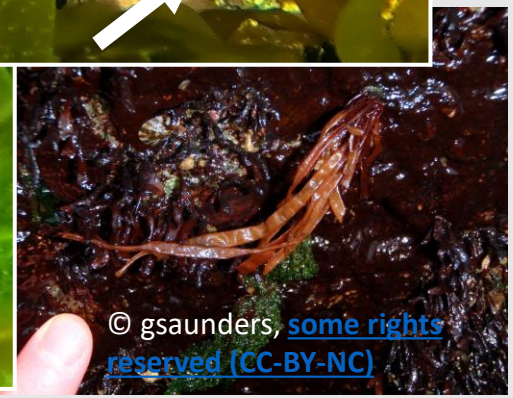
Tubular or baglike

Branching

Colour

Red / brown





1. Tubular shape in young specimens, changing to flattened or cylindrical shape at maturity (shape is highly variable), up to 40 cm
2. The tip of the frond may appear green, but the base remains red
3. See also thick branched filamentous shape for the same species

Shape and colour (Vg_MORPH)

Tubular or baglike red algae

Vg_TYPE

Palmariaceae

Species or genus (Vg_TAXO)

Devaleraea ramentacea *(tubular)*

F

Shape

Tubular or baglike

Branching

Colour

Red / brown

1. Gregarious plant with tubular fronds (thick filaments) or flattened unbranched fronds that are hollow and have no hairs
2. Fronds may show constrictions at maturity
3. 0.3 to 1.0 cm wide and up to 50 cm long
4. May be confused with *Chorda* sp., *Zostera marina* and membranous or bladelike brown algae (small).

Shape and colour (Vg_MORPH)

Tubular or baglike brown algae

Vg_TYPE

Scytosiphonaceae (tubular)

Species or genus (Vg_TAXO)

G

Shape

Striplike

Branching

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Brown	Fucales	Fucaceae	*Ascophyllum nodosum*
			Fucus distichus subsp. *edentatus*
			Fucus distichus subsp. *evanescens*
			Fucus serratus
			Fucus spiralis
			Fucus vesiculosus
			Fucus sp.

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

G

Shape

Striplike

Branching

Colour

Red / brown

1. Strips with no midrib, interrupted by (single) air bladders
2. Oval receptacles on short pedicels at the tip of branchlets

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

Ascophyllum nodosum

G

Shape

Striplike

Branching

Colour

Red / brown

1. Forked, pointed and elongated receptacles
2. **Receptacles 4 to 10 times longer than wide**
3. When in doubt, indicate *Fucus* sp.

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

Fucus distichus* subsp. *edentatus

G

Shape

Striplike

Branching

Colour

Red / brown

1. Thallus divided into broad bands with an evanescent midrib at the top
2. Wide and short receptacles
3. **Receptacles 1 to 2 times longer than wide**
4. **No air bladders**
5. May be confused with *Fucus spiralis*
6. When in doubt, indicate *Fucus sp.*

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

Fucus distichus subsp. evanescens

G

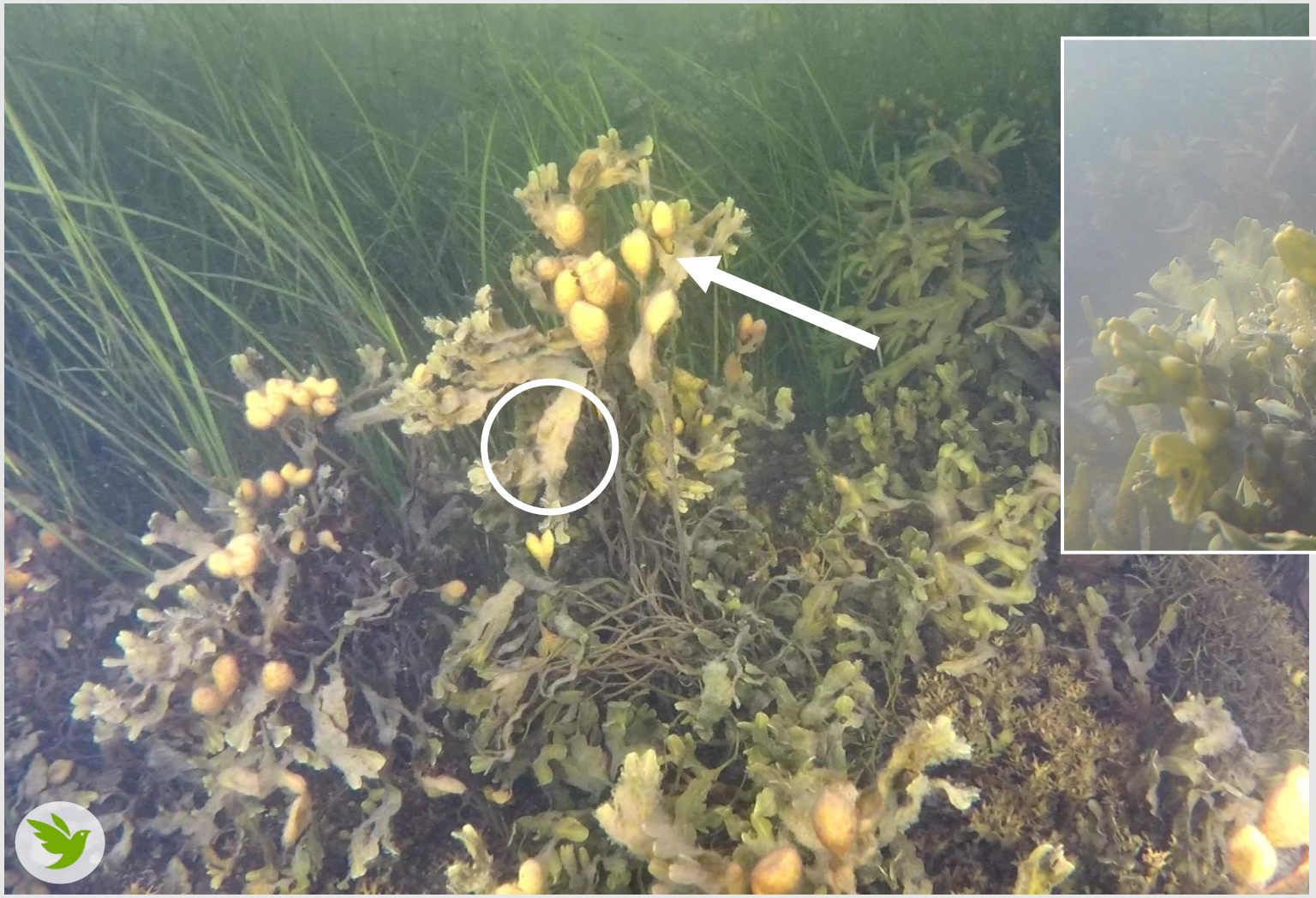
Shape

Striplike

Branching

Colour

Red / brown



1. Spherical **air bladders** grouped in pairs, one on either side of the midrib
2. **Globular receptacles**
3. 30 to 90 cm in length
4. May be confused with *Fucus spiralis*
5. When in doubt, indicate *Fucus* sp.

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

Fucus vesiculosus

G

Shape

Striplike

Branching

Colour

Red / brown

1. Narrow, **sometimes spirally coiled** bands (strips)
2. **No air bladders**
3. **Globular receptacles** surrounded by a ridge
4. **Small *Fucus*** (15–30 cm)
5. Generally located very high up in the midlittoral zone
6. Ridge and lack of bladders may not be noticed, **can be confused** with *F. vesiculosis* and *F. distichus* subsp. *Evanescens*; when in doubt, indicate *Fucus* sp.

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

Fucus spiralis

G

Shape

Striplike

Branching

Colour

Red / brown

1. Strips with dentate margins
2. No air bladders
3. Receptacles are not swollen and appear as rough sections at the tips of fronds
4. Between 40 and 70 cm in length

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

Fucus serratus

G

Shape

Striplike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **striplike brown algae**.

In that case, these algae can be identified as part of the ***Fucus*** genus if they have the following characteristics:

- Striplike brown algae
- Dichotomous branching
- Presence of receptacles (usually)
- Presence of a relatively visible midrib

Note: Mainly used when the specimen corresponds to the ***Fucus*** genus, but when species cannot be identified.

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

***Fucus* sp.**

G

Shape

Striplike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **striplike brown algae**.

In that case, these algae can be identified as part of the ***Fucaceae*** family if they have the following characteristics:

- Striplike brown algae
- Dichotomous branching
- Presence of receptacles (usually)

Note: Could be ***Ascophyllum nodosum*** or part of the ***Fucus*** genus

Shape and colour (Vg_MORPH)

Striplike brown algae

Vg_TYPE

Fucaceae

Species or genus (Vg_TAXO)

H

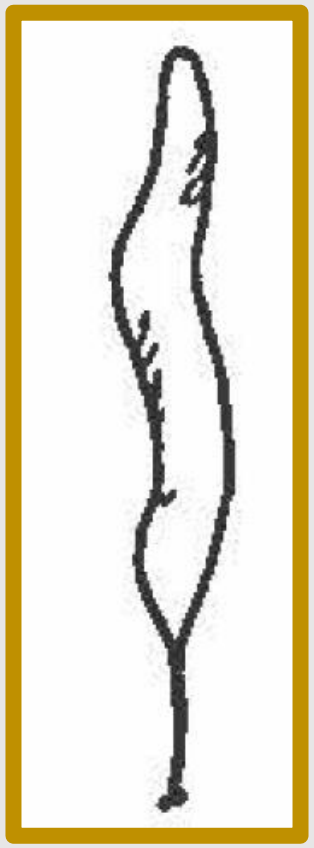
Shape

Membranous or bladelike

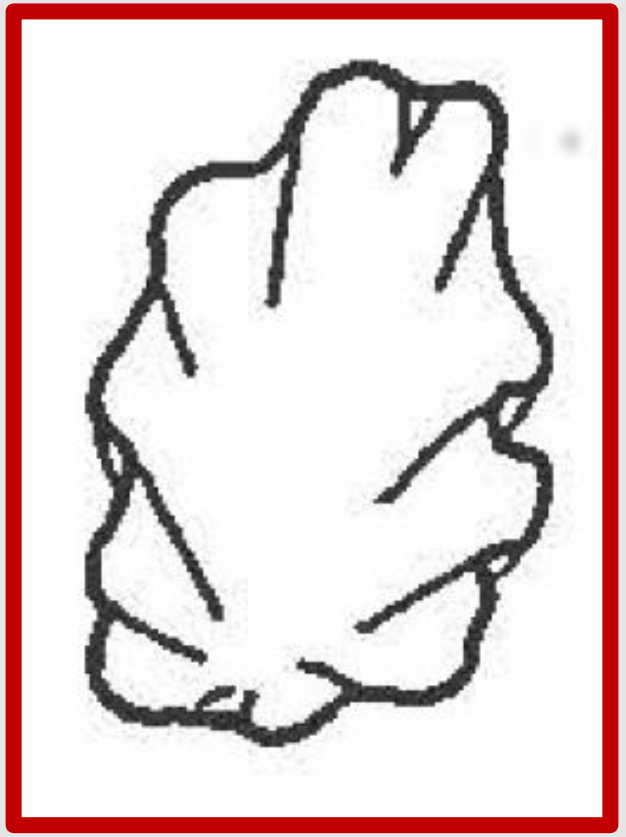
Branching

Colour

Red / brown



Bladelike



Membranous

Shape and colour (Vg_MORPH)

Unidentified membranous or bladelike algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Brown	Membranous or bladelike brown algae (small)		
	Laminariales	Agaraceae	*Agarum clathratum*
		Alariaceae	*Alaria esculenta*
		Laminariaceae	*Laminaria digitata*
			Saccharina latissima
			Saccharina longicruris
	Tilopteridales	Phyllariaceae	*Saccorhiza dermatodea*

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

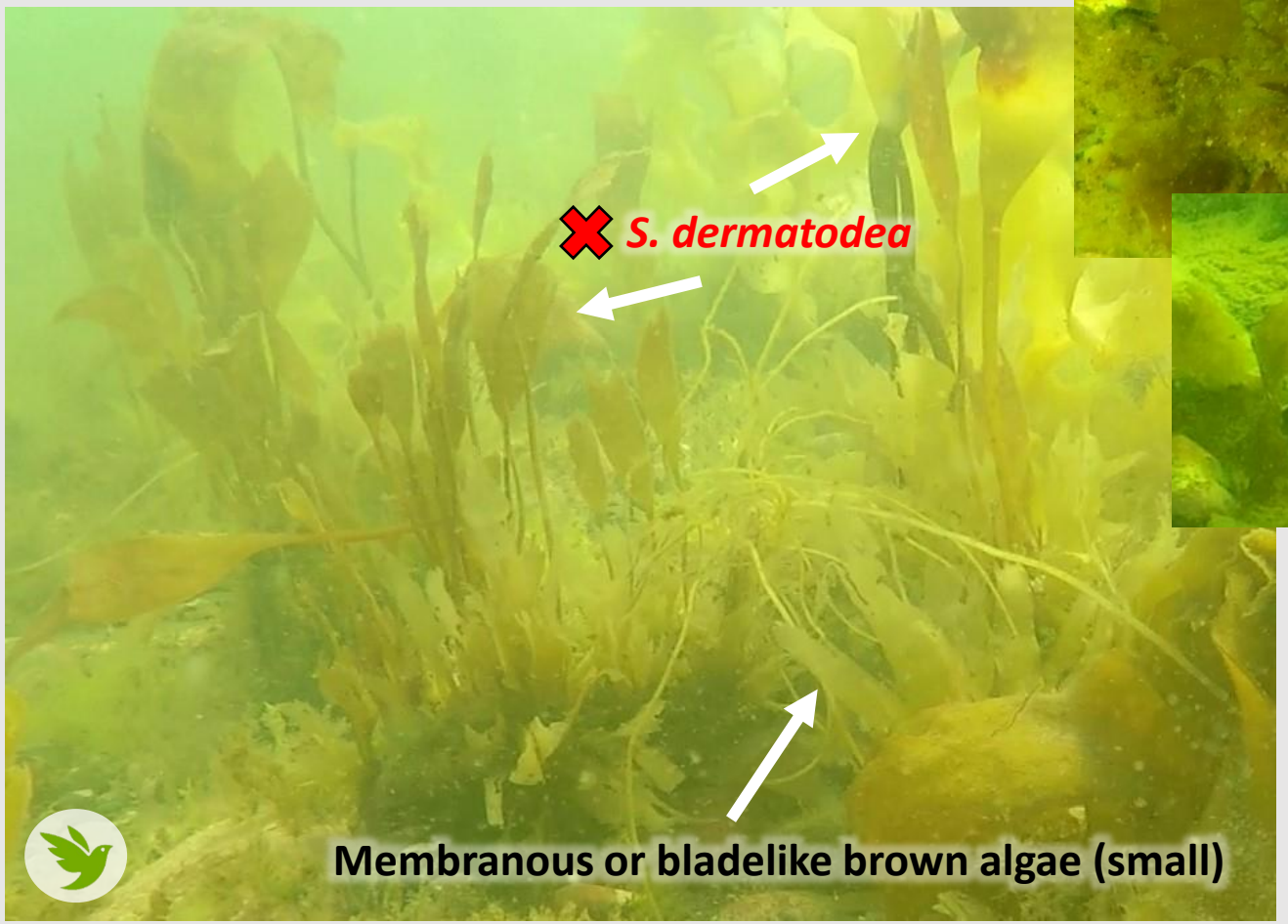
Shape

Membranous or bladelike

Branching

Colour

Red / brown



1. Stipe not easily visible and no midrib, discoid holdfast, often gregarious
2. Up to 45 cm long; thin or even translucent
3. Straight or irregularly scalloped margins
4. May be confused with kelp seedlings (thicker and tougher blade, long stipe), Bangiaceae and Scytosiphonaceae

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae (small)

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

1. Blade riddled with holes

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Agaraceae

Species or genus (Vg_TAXO)

Agarum clathratum

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

1. Midrib visible across entire length
2. Pleated blade
3. Sporophylls sometimes visible at the base of the stipe
4. When sea urchins are abundant, grazing can reduce the blade to the midrib, see *Chorda* sp.

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Alariaceae

Species or genus (Vg_TAXO)

Alaria esculenta

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

1. Broad, dark brown blade divided into several strips; rhizoid holdfast
2. Stipe is short and **flattened at the top**
3. Blade may be mistaken for a frayed specimen of *Saccorhiza dermatodea*
4. When in doubt, indicate shape/colour only

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariaceae

Species or genus (Vg_TAXO)

Laminaria digitata

H

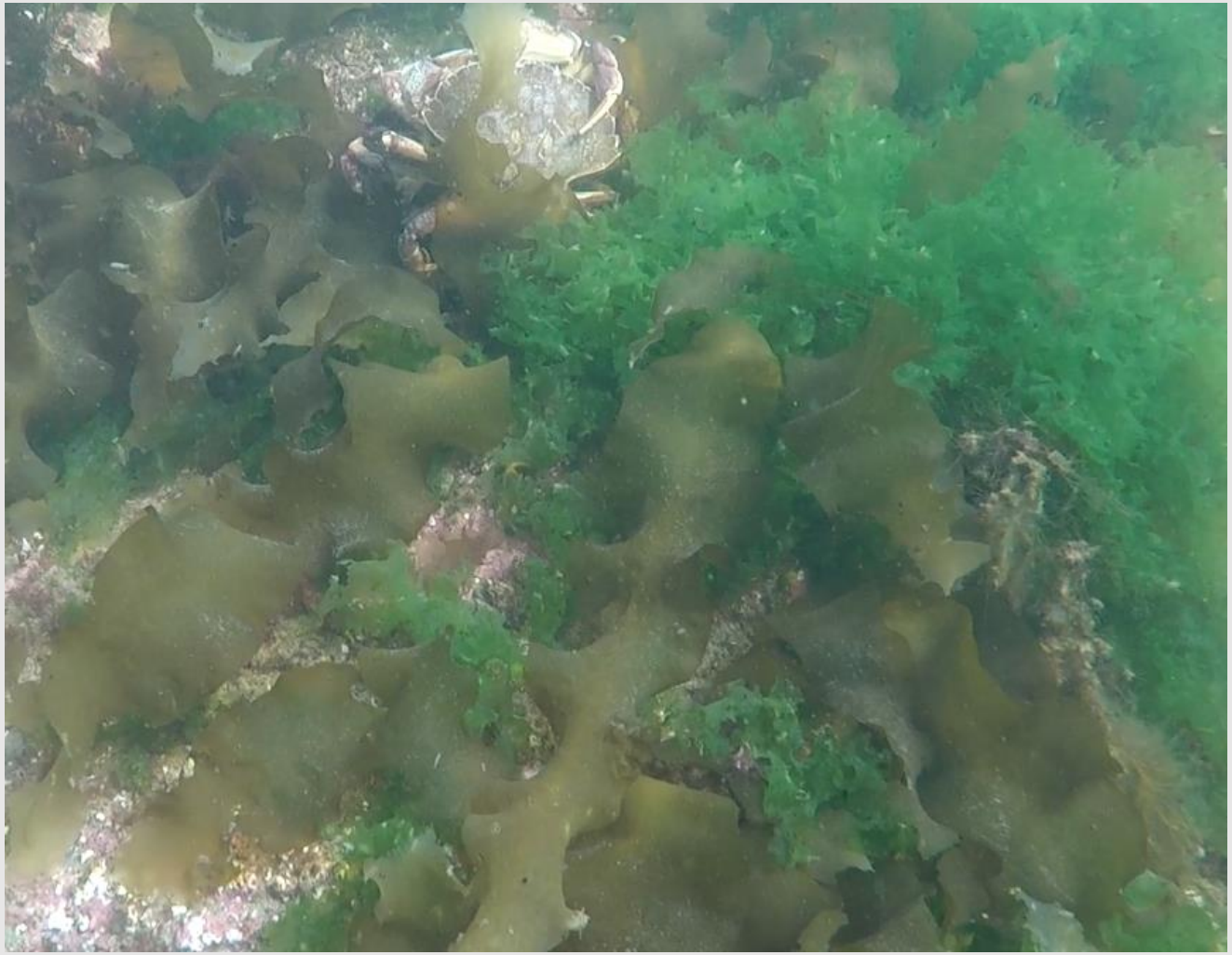
Shape

Membranous or bladelike

Branching

Colour

Red / brown



1. Frond texture is variable (smooth or wrinkled); narrow or scalloped margins, no midrib, rhizoid holdfast
2. Similar to *S. longicruris*, but shorter frond and stipe
3. May be confused with young specimens of *S. longicruris*; when in doubt, indicate *Saccharina latissima*

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariaceae

Species or genus (Vg_TAXO)

Saccharina latissima

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

1. Long cylindrical stipe, swollen towards the top but often narrower before the frond, rhizoid holdfast
2. Thick blade in the centre, with little or no scalloping at the margin (similar to lasagna noodles)
3. Very long algae (up to 12 m)
4. Similar to *S. latissima*, but longer frond and stipe

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariaceae

Species or genus (Vg_TAXO)

Saccharina longicruris

H

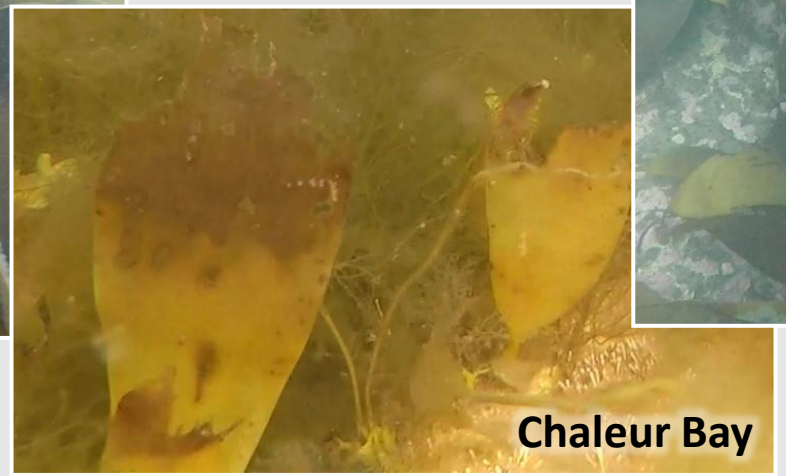
Shape

Membranous or bladelike

Branching

Colour

Red / brown



1. **Flat stipe** measuring 15 to 60 cm in length
2. Wide and flat blade
3. As the plant ages, the blade of this species splits like *Laminaria digitata*
4. **Discoid holdfast**
5. May have **tufts of hair**

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Phyllariaceae

Species or genus (Vg_TAXO)

Saccorhiza dermatodea

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **membranous or bladelike brown algae**.

In that case, these algae can be identified as part of the **Laminariaceae** family if they have the following characteristics:

- Membranous or bladelike brown algae
- Blade is wide, flat, smooth or wrinkled; margins are slightly scalloped or not at all
- No visible midrib along the entire length of the blade
- Laminariales have holdfasts composed of rhizoids

Note: Could be the genus ***Saccharina***, ***Laminaria*** or ***Hedophyllum*** (*H. nigripes* is impossible to differentiate from *Laminaria digitata* and *Saccharina latissima*)

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariaceae

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **membranous or bladelike brown algae**.

In that case, these algae can be identified as part of the **Laminariales** order if they have the following characteristics:

- Membranous or bladelike brown algae
- Blade is wide, flat, smooth or wrinkled; margins are slightly scalloped or not at all
- Impossible to confirm whether the stipe is cylindrical or flat
- Impossible to confirm whether midrib is present
- Laminariales have holdfasts composed of rhizoids

Note: Could be the genus ***Saccharina***, ***Laminaria***, ***Hedophyllum***, ***Alaria*** or ***Agarum***

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariales

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Red	Bangiales	Bangiaceae	
	Palmariales	Palmariaceae	*Palmaria palmata*

Shape and colour (Vg_MORPH)

Membranous or bladelike red algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **membranous or bladelike red algae**. In that case, these algae can be identified as part of the **Bangiaceae** family if they have the following characteristics:

- Red/purple algae with a thin (translucent) unlobed membrane that varies in shape
- Sessile (no stipe, attached to the substrate by the margin)
- Often observed through Ulvaceae
- See Figures 1–11 of *Mols-Mortensen et al.* (2012) for examples of Bangiaceae shapes and colours
- Blades may be confused with some membranous or bladelike brown algae (small)

Shape and colour (Vg_MORPH)

Membranous or bladelike red algae

Vg_TYPE

Bangiaceae

Species or genus (Vg_TAXO)

H

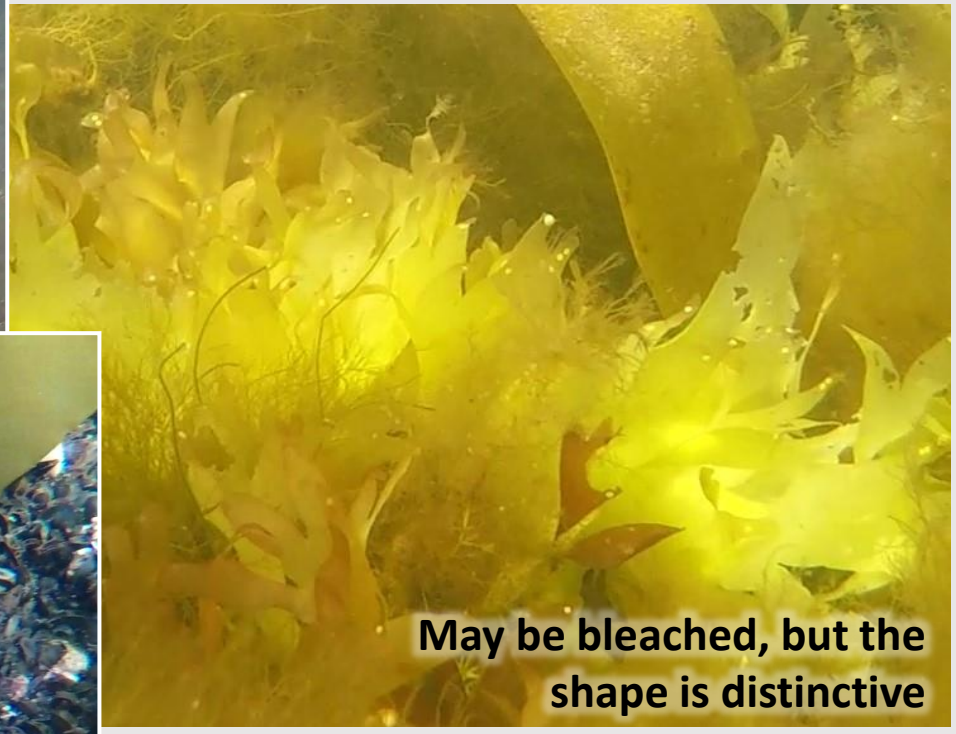
Shape

Membranous or bladelike

Branching

Colour

Red / brown



May be bleached, but the shape is distinctive

1. Red-purple algae that is thick and leathery, very short stipe
2. Frond gradually extends outward (like a palm leaf), then splits into elongated lobes

Shape and colour (Vg_MORPH)

Membranous or bladelike red algae

Vg_TYPE

Palmariaceae

Species or genus (Vg_TAXO)

Palmaria palmata

I

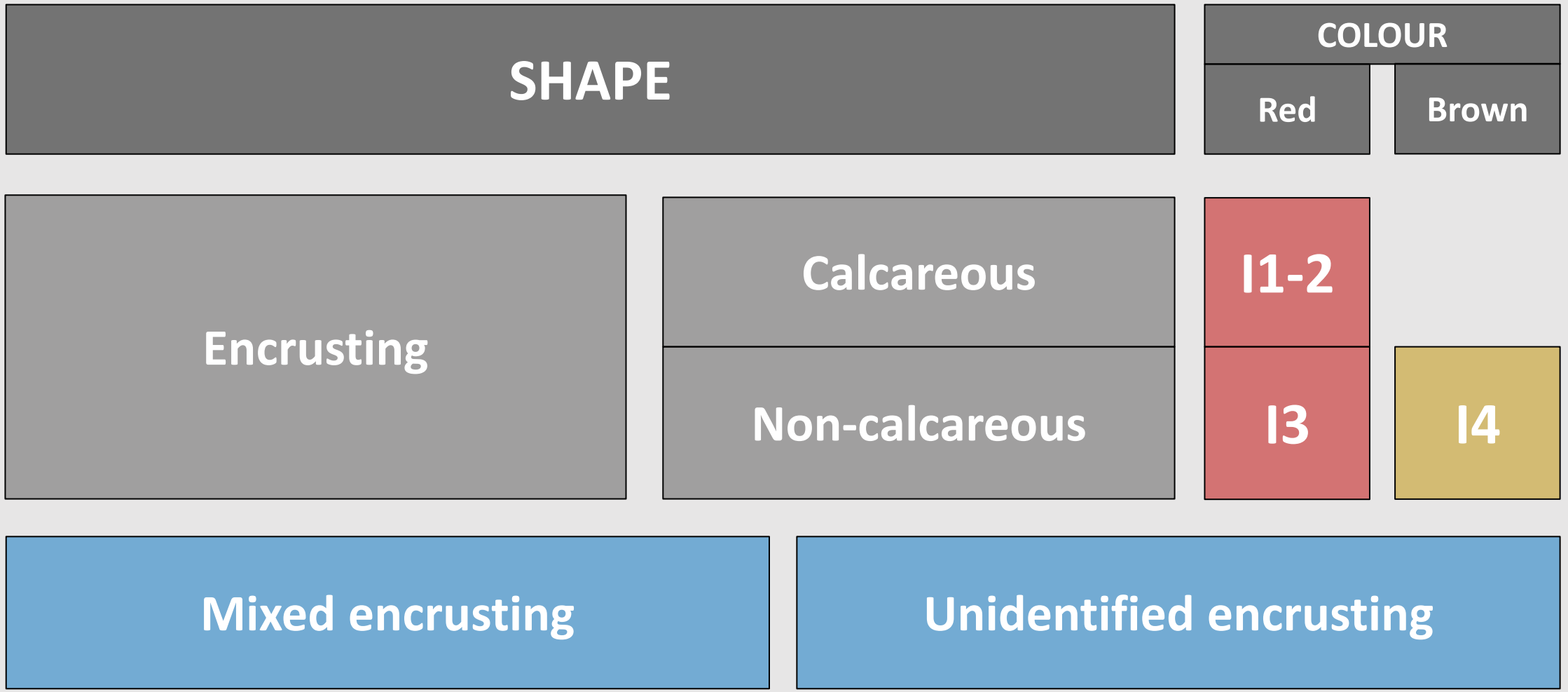
Shape

Encrusting

Branching

Colour

Red / brown



Shape and colour (Enc_MORPH)

Unidentified encrusting algae

I1

Shape

Encrusting

Branching

Calcareous

Colour

Red / brown

COLOUR	ORDER	FAMILY	SPECIES
Red	Corallinales	Red calcareous encrusting algae	
		Rhodolith beds (red calcareous encrusting algae)	

Shape and colour (Enc_MORPH)

Red calcareous encrusting algae

I1

Shape

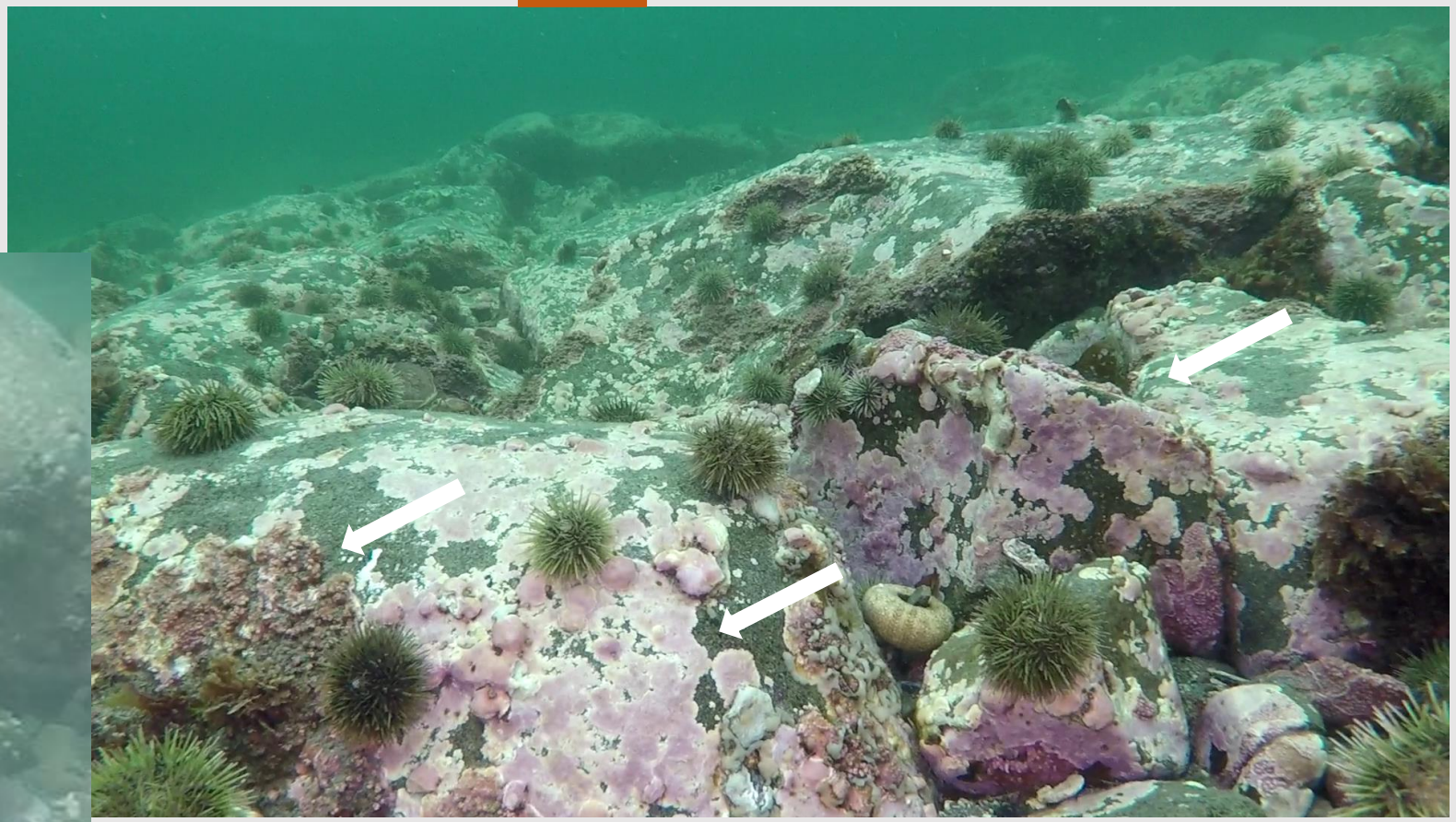
Encrusting

Encrustation

Calcareous

Colour

Red / brown



1. Calcareous pink or reddish crust (white when dead)
2. Smooth or covered with protuberances

Shape and colour (Enc_MORPH)

Red calcareous encrusting algae

I2

Shape

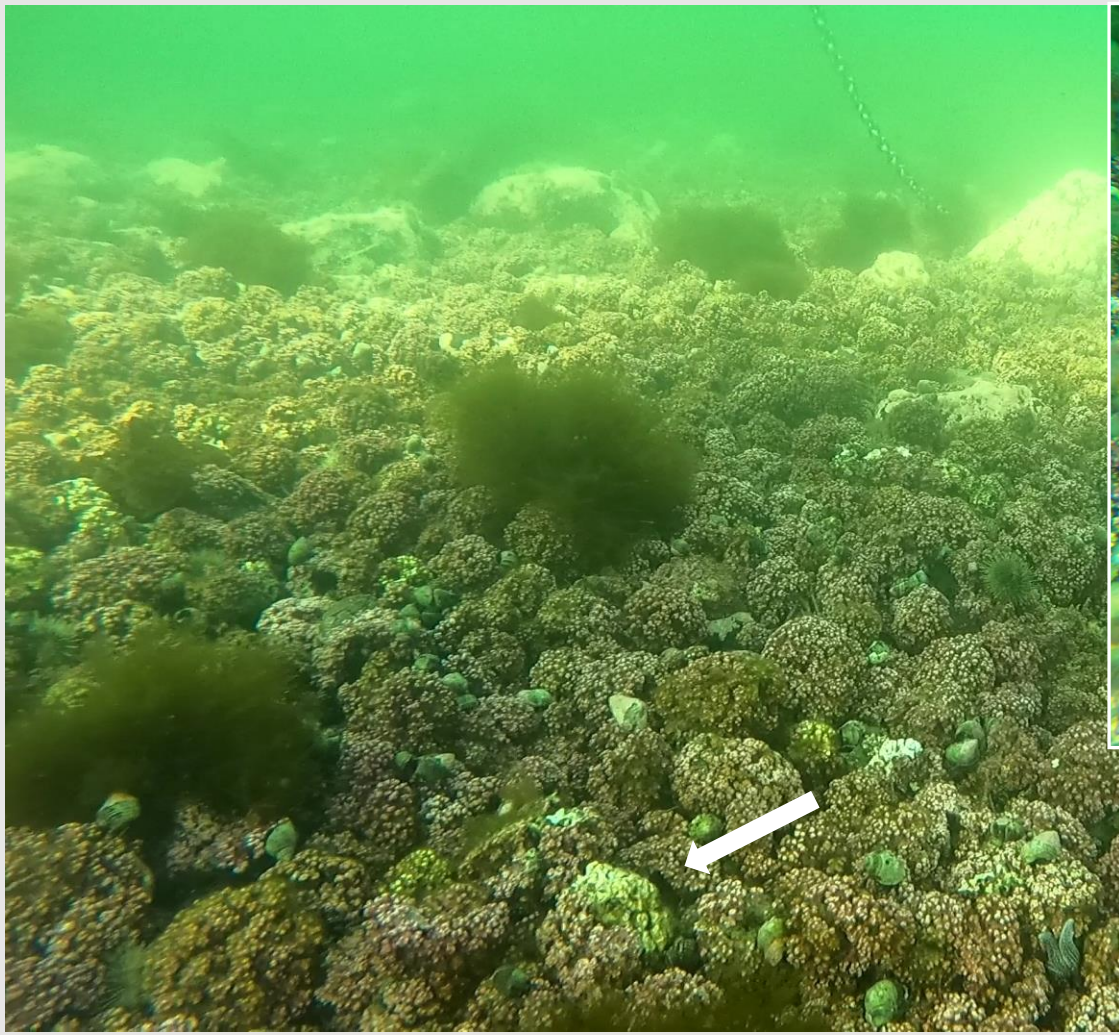
Encrusting

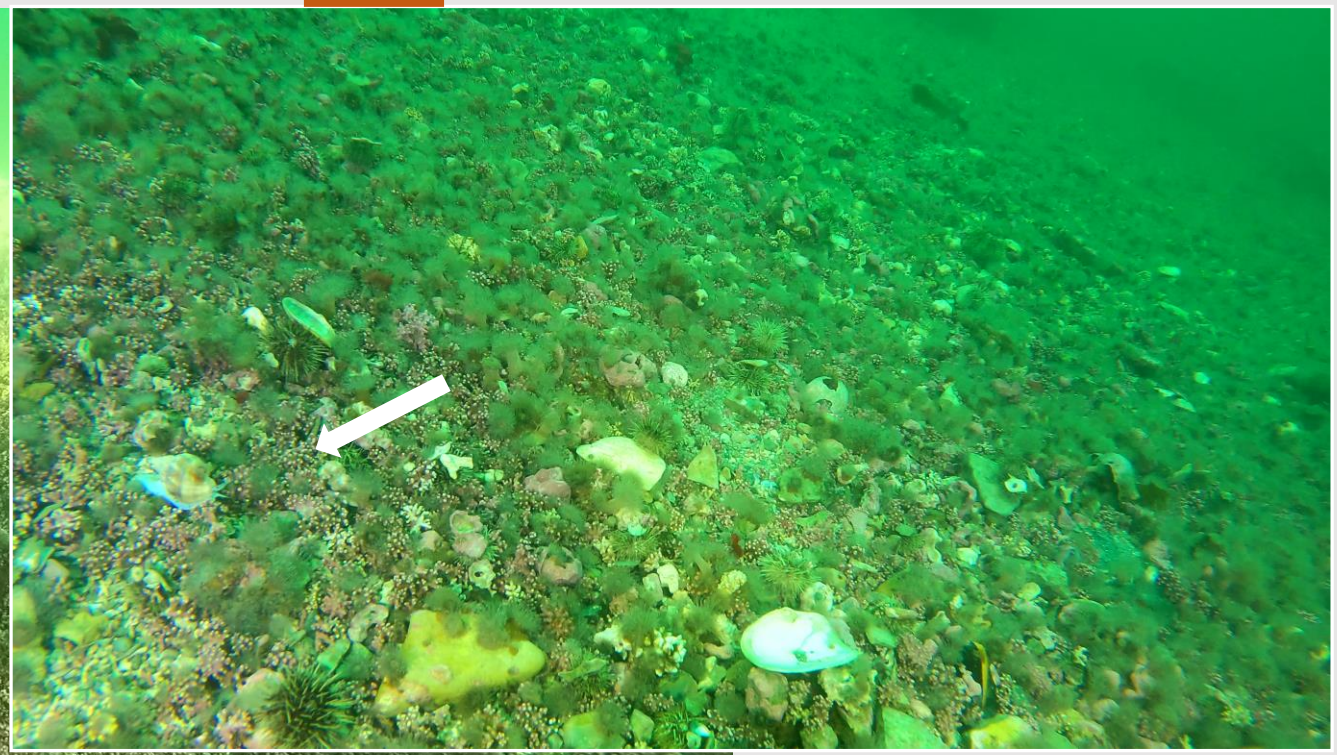
Encrustation

Calcareous

Colour

Red / brown





1. Bed of detached nodules composed of red calcareous encrusting algae

Shape and colour (Enc_MORPH)

Rhodolith beds (red calcareous encrusting algae)

I3

Shape

Encrusting

Encrustation

Non-calcareous

Colour

Red / brown

1. Non-calcareous red crust
2. Red colour on shady sides but more yellow on sunny spots
3. Looks like a stain on the rock

Shape and colour (Enc_MORPH)

Red non-calcareous encrusting algae

I4

Shape

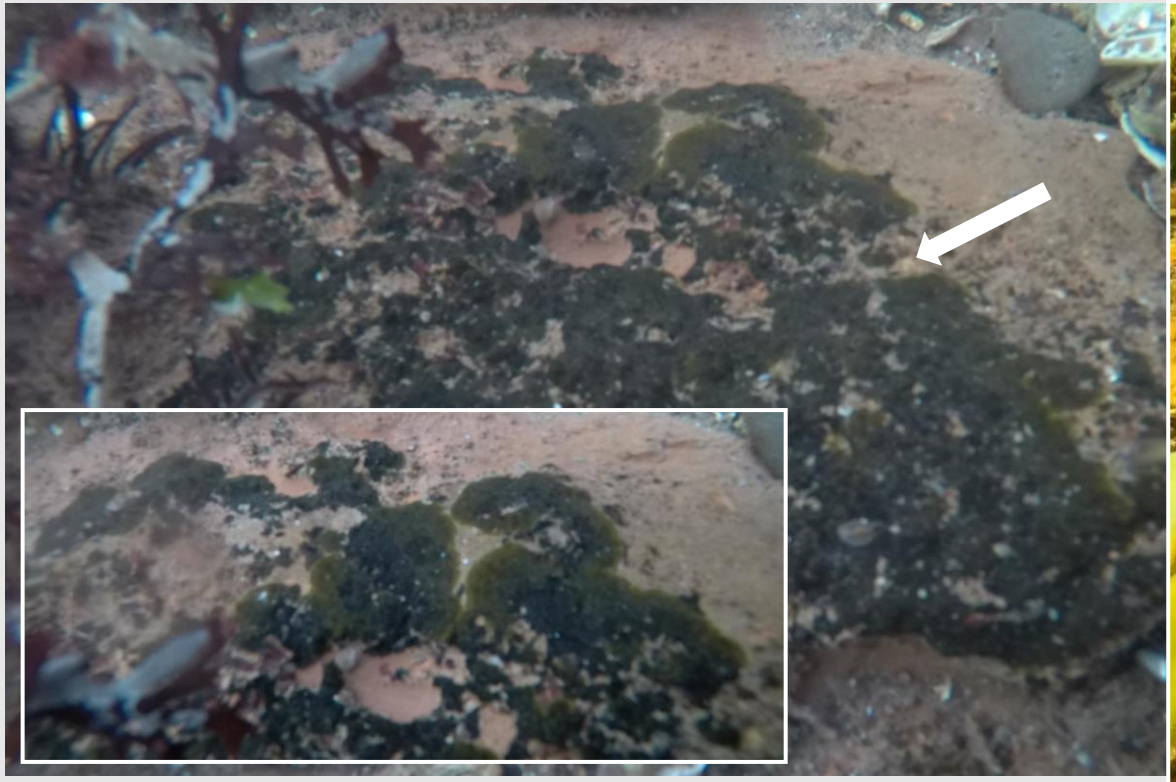
Encrusting

Encrustation

Non-calcareous

Colour

Red / brown



1. Yellowish-brown, olive or blackish-brown crust
2. In the form of rounded lobes or discs that eventually join to form a relatively continuous crust

Shape and colour (Enc_MORPH)

Brown encrusting algae

I

Shape

Encrusting

Encrustation

Non-calcareous

Colour

Red / brown

If there is a combination of shapes/colours of encrusting algae present **with no dominance**.

Shape and colour (Enc_MORPH)

Mixed encrusting algae

I

Shape

Encrusting

Encrustation

Non-calcareous

Colour

Red / brown

Encrusting algae can be difficult to identify by shape/colour. In that case, these algae can be identified as **unidentified encrusting algae.**

Shape and colour (Enc_MORPH)

Unidentified encrusting algae

Shape

L

Tubular or baglike / membranous or bladelike

Branching

Colour

Green

COLOUR	ORDER	FAMILY	SPECIES

Membranous or bladelike green algae

Tubular or baglike green algae

Non-filamentous green algae

Shape and colour (Vg_MORPH)

Unidentified green algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

Shape

L Tubular or baglike / membranous or bladelike

Branching

Colour

Green

Genus and species identification can be difficult for **membranous or bladelike green algae**. In that case, these algae can be identified by shape/colour if they have the following characteristics:

- The group (brown/red/green) must be clearly visible
- Membranous or bladelike green algae
- Thin, sessile frond (no stipe)
- Lobed, lanceolate or rounded membrane
- May be wavy

Shape and colour (Vg_MORPH)

Membranous or bladelike green algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

Shape

L

Branching

Colour

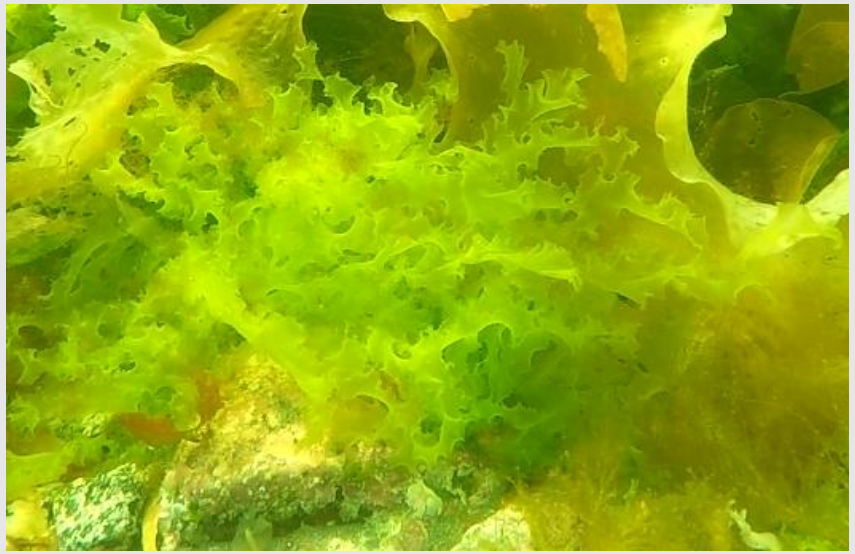
Tubular or baglike / membranous or bladelike

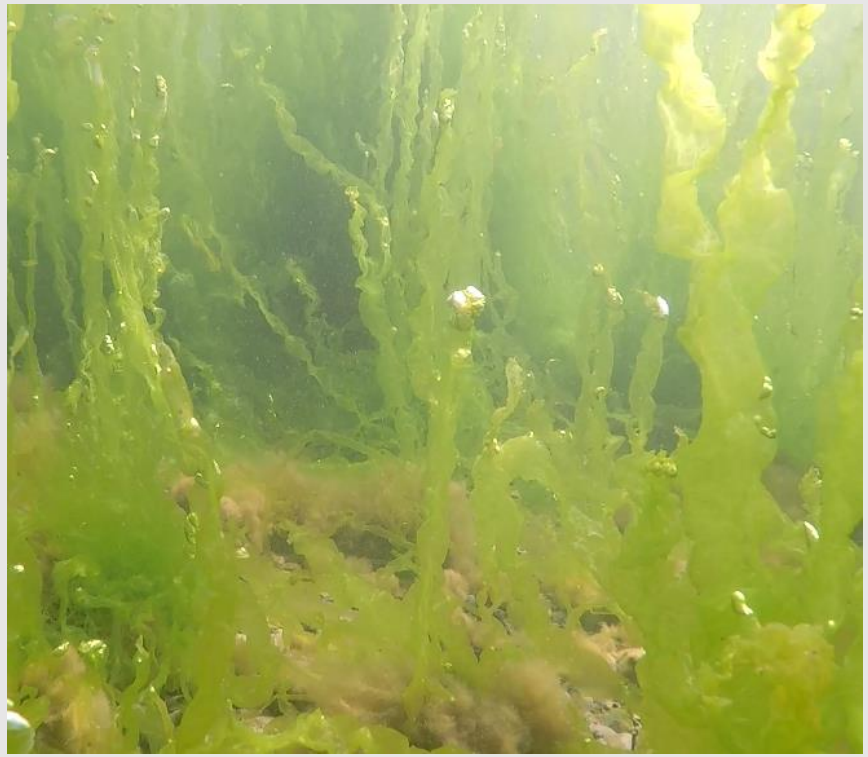
Green

Genus and species identification can be difficult for **tubular or baglike green algae**.

In that case, these algae can be identified by shape/colour if they have the following characteristics:

- The group (brown/red/green) must be clearly visible
- Tubular or baglike green algae





Shape and colour (Vg_MORPH)

Tubular or baglike green algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

Shape

L

Tubular or baglike / membranous or bladelike

Branching

Colour

Green

Tubular or baglike green algae and **membranous or bladelike green algae** can be difficult to differentiate.

In that case, these algae can be identified using the shape/colour of **non-filamentous green algae** if they have the following characteristics:

- The group (brown/red/green) must be clearly visible
- Not filamentous

Shape and colour (Vg_MORPH)

Non-filamentous green algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

M

Shape

Aquatic plants

Branching

Colour

Green

	ORDER	FAMILY	SPECIES
Aquatic plants	Alismatales	Zosteraceae	*Zostera marina*

Shape and colour (Vg_MORPH)

Vg_TYPE

Species or genus (Vg_TAXO)

M

Shape

Aquatic plants

Branching

Colour

Green

Shape and colour (Vg_MORPH)

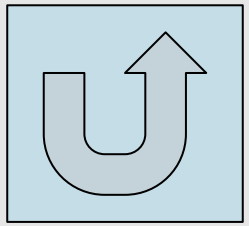
Vg_TYPE

Eelgrass

Species or genus (Vg_TAXO)

Zostera marina

Other

SHAPE	COLOUR	
	Identified	Unidentified
Identified		al1
Unidentified	al2	al3

Algae and mixed vegetation

Non-vegetated

Undetermined

Shape and colour (Vg_MORPH)

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

al1

Shape

Filamentous

Branching

Colour

Unidentified

Algae can sometimes be difficult to identify, especially when visibility is poor.

Use **unidentified filamentous algae** when the shape is filamentous, but the size of the filaments (delicate or thick) and the group (colour) are unknown.

Shape and colour (Vg_MORPH)

Unidentified filamentous algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

al1

Shape

Membranous or bladelike

Branching

Colour

Unidentified

Algae can sometimes be difficult to identify, especially when visibility is poor.

Use **unidentified membranous or bladelike algae** when the shape is membranous or bladed, but the group (colour) is unknown.

Shape and colour (Vg_MORPH)

Unidentified membranous or bladelike algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

al1

Shape

Tubular or baglike

Branching

Colour

Unidentified

Algae can sometimes be difficult to identify, especially when visibility is poor.

Use **unidentified tubular or baglike algae** when the shape is tubular or baglike, but the group (colour) is unknown.

Shape and colour (Vg_MORPH)

Unidentified tubular or baglike algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

al2

Shape

Unidentified

Branching

Colour

Green

Green algae can sometimes be difficult to identify, but if the image quality is good, their colour can still be distinctive.

Before choosing this descriptor (rarely or not used), see tubular or baglike/membranous or bladelike green algae, delicate branched filamentous green algae and thick unbranched filamentous green algae.

Shape and colour (Vg_MORPH)

Unidentified green algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

al3

Shape

Unidentified

Branching

Colour

Unidentified

Algae can sometimes be difficult to identify, especially when visibility is poor.

Unidentified algae is always used for Vg_TYPE when algae is only identified using shape/colour (Vg_MORPH).

Leave Vg_MORPH **blank** when the shape is not identifiable, but it is possible to confirm the presence of algae.

Shape and colour (Vg_MORPH)

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

alm

Shape

Branching

Colour

When there is a large mixture of algae (more than four types, each occupying less than 25% of total plant cover).

Shape and colour (Vg_MORPH)

Vg_TYPE

Mixed algae

Species or genus (Vg_TAXO)

alm

Shape

Branching

Colour

When there is a large mixture of vascular plants and algae (more than four types, each occupying less than 25% of total plant cover).

Shape and colour (Vg_MORPH)

Vg_TYPE

Mixed vegetation

Species or genus (Vg_TAXO)

nv

Only used in Vg1_TYPE when Vg_COV is "non-vegetated" (0–1%)

1. Use "UD" when it cannot be determined whether or not plants are present
2. Must enter "UD" in a single Vg(1-4)_TYPE when Vg_COV is "UD":
   a. Enter in Vg1_TYPE when no algae can be identified; or
   b. in Vg2-4_TYPE after the last plant that was inputted

ANIMALS

Arthropoda

Crangonidae, Amphipoda, Mysida

Crab & lobster

Mollusca

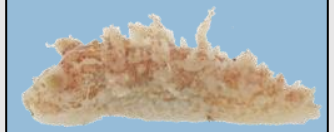
Bivalvia & Brachiopoda*

Gastropoda & Polyplacophora

Endobenthos

Annelida

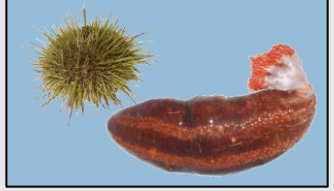
Nudibranchia



Echinodermata

Asteroidea & Ophiuroidea

Echinoidea & Holothuroidea



Cnidaria, Ctenophora & Ascidiacea

Pelagic

Sessile

Fish

Demospongiae

Encrusting animals

Other

Endobenthos

Small sediment tubes

Thumbnail photos were produced by Fisheries and Oceans Canada, C. Nozères.

*Brachiopoda ≠ Mollusca

Morphological group

Crabs & Lobsters

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Arthropoda	Malacostraca	Decapoda	Cancridae	*Cancer irroratus*
			Carcinidae	*Carcinus maenas*
			Nephropidae	*Homarus americanus*
			Oregoniidae	*Hyas* sp.
			Paguridae	*Pagurus* sp.

Phylum

Arthropoda

Class

Malacostraca

Order

Decapoda

Family

Cancridae

Animal (sp_ANIML)

Cancer irroratus **(Rock crab)**

Phylum
Arthropoda

Class
Malacostraca

Order
Decapoda

Family
Carcinidae

Fisheries and Oceans Canada, C. Nozères

Only observed in Chaleur Bay (rare invasive species in the study area [coastal Quebec, excluding the Magdalen Islands])

Animal (sp_ANIML)

Carcinus maenas **(Green crab)**

Phylum
Arthropoda

Class
Malacostraca

Order
Decapoda

Family
Oregoniidae

Hyas araneus and *Hyas aleuticus* (formerly *Hyas coarctatus*)

Animal (sp_ANIML)

***Hyas* sp.**

(Toad crab)

Phylum
Arthropoda

Class
Malacostraca

Order
Decapoda

Family
Paguridae

1. Uses a gastropod shell
2. May be mistaken for *Buccinum undatum*

Animal (sp_ANIML)

Pagurus sp. **(Hermit crab)**

Phylum	Class	Order	Family
Arthropoda	Malacostraca	Decapoda	Nephropidae

Animal (sp_ANIML)

Homarus americanus **(Lobster)**

Morphological group

Crangonidae, Amphipoda & Mysida

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Arthropoda	Malacostraca	Amphipoda	Caprellidae	
		Isopoda	Idoteidae	*Idotea sp.*
		Decapoda	Crangonidae	*Crangon septemspinosa*
			Caridea	
		Mysida	Mysidae	

Phylum

Arthropoda

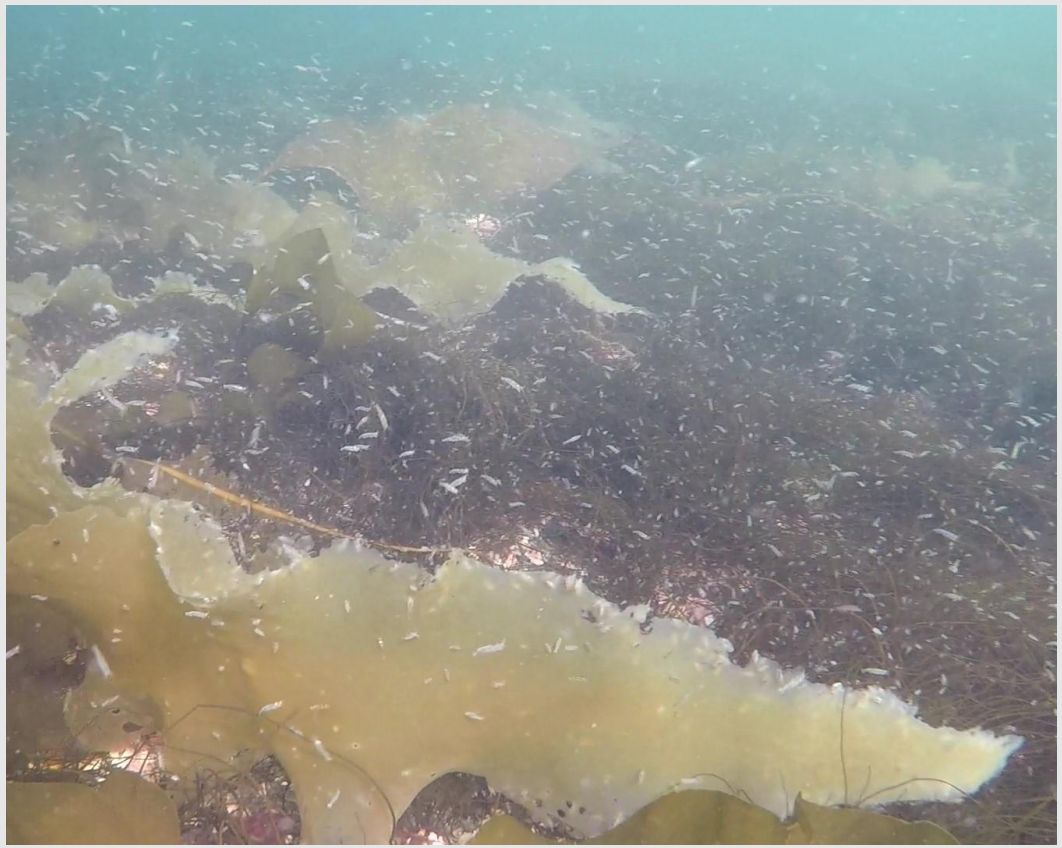
Class

Malacostraca

Order

Amphipoda

Family



Includes Gammaridae (gammarids: laterally compressed body with the appearance of a curved shrimp)

Animal (sp_ANIML)

Amphipoda **(Amphipod)**

Phylum
Arthropoda

Class
Malacostraca

Order
Isopoda

Family
Idoteidae

- Can be of different colours and patterns
- Probably *Idotea balthica* but could be *Idotea phosphorea* if smaller.

Animal (sp_ANIML)

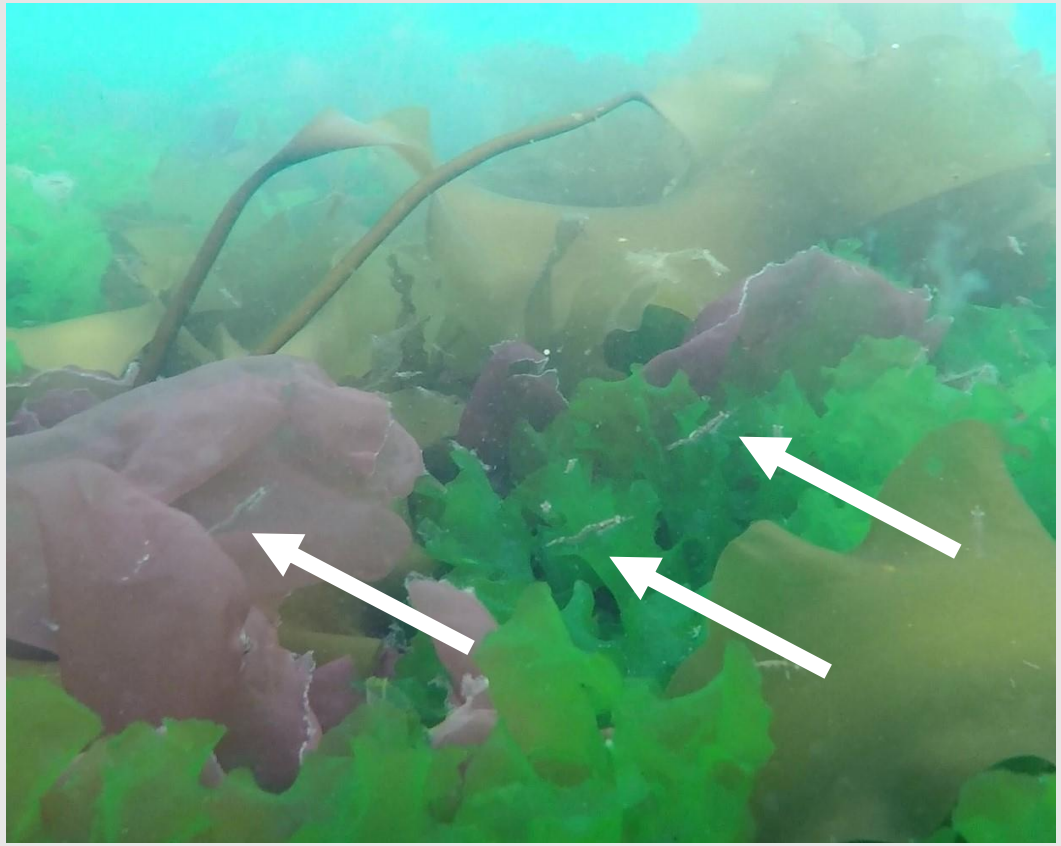
***Idotea* sp.** ()

Phylum
Arthropoda

Class
Malacostraca

Order
Mysida

Family
Mysidae



1. Elongated but bent shape
2. White-grey cephalothorax
3. Often in groups

Animal (sp_ANIML)

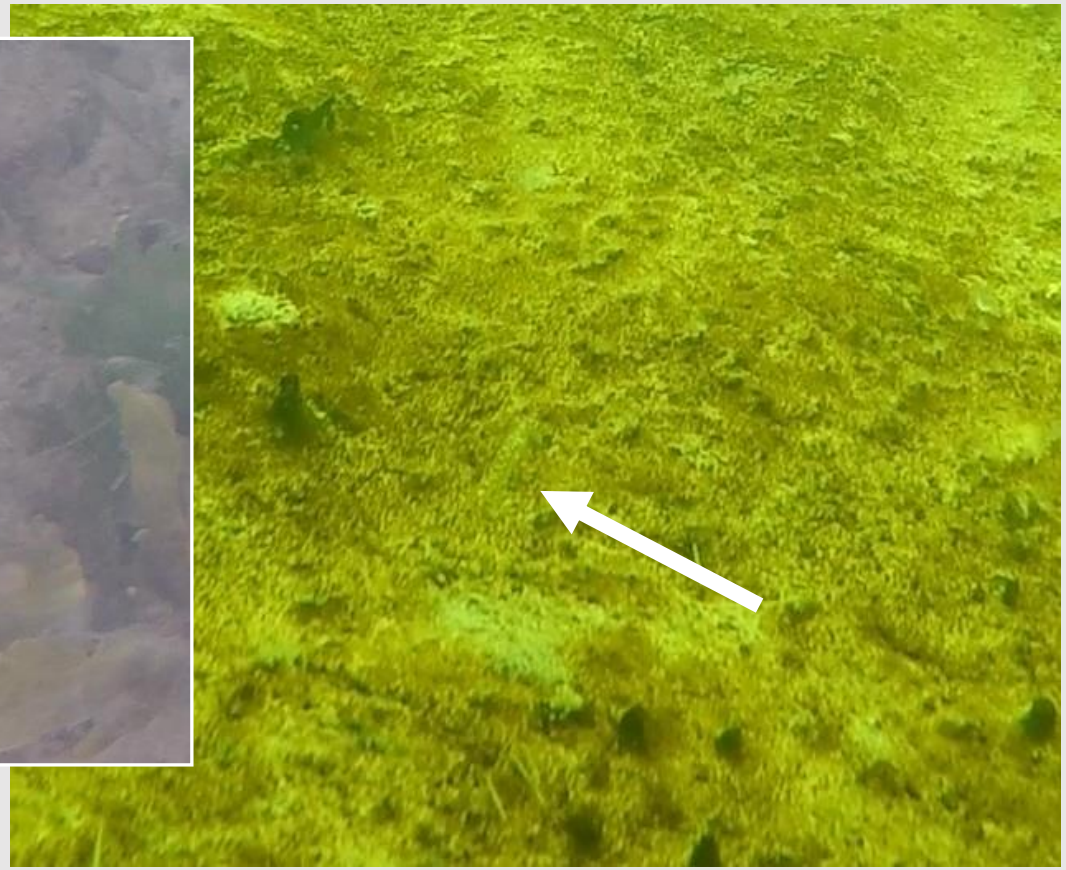
Mysidae **(Mysids)**

Phylum
Arthropoda

Class
Malacostraca

Order
Decapoda

Family
Crangonidae



1. Grey-green colour
2. Highly camouflaged and often buried

Animal (sp_ANIML)

Crangon septemspinosa **(Sand shrimp)**

Phylum

Arthropoda

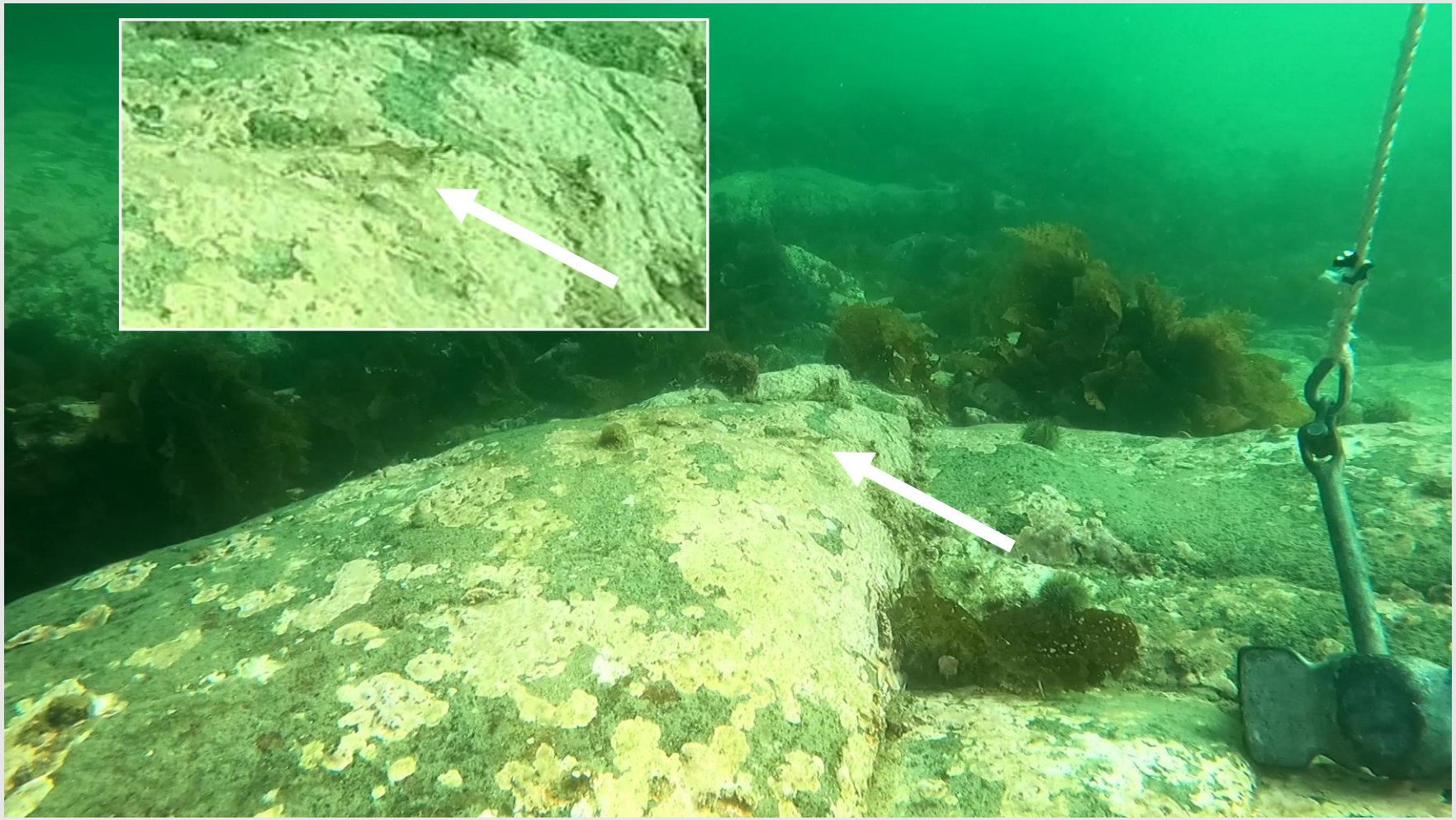
Class

Malacostraca

Order

Decapoda

Family



Families Pandalidae and Thoridae

Animal (sp_ANIML)

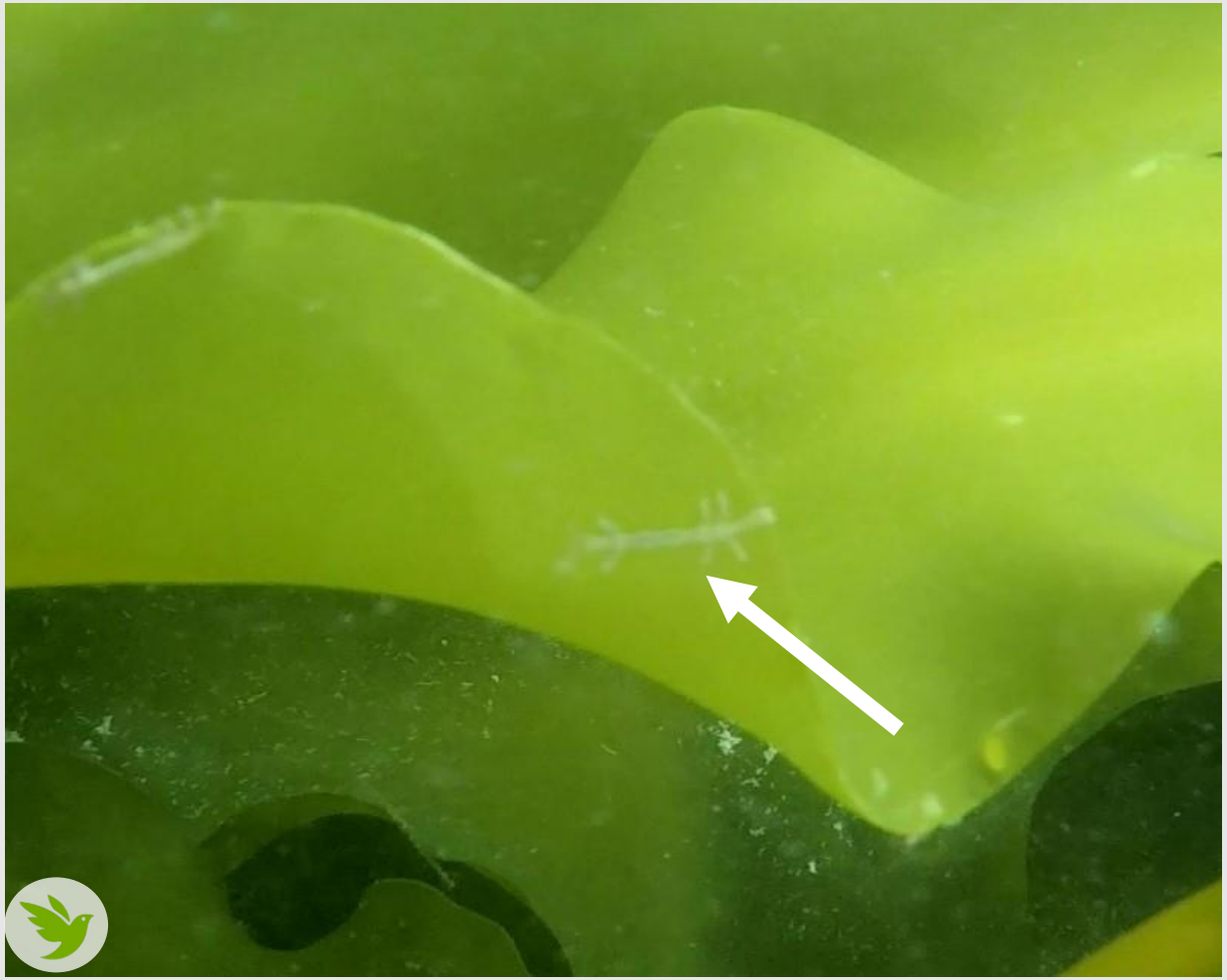
Caridea **(Shrimp)**

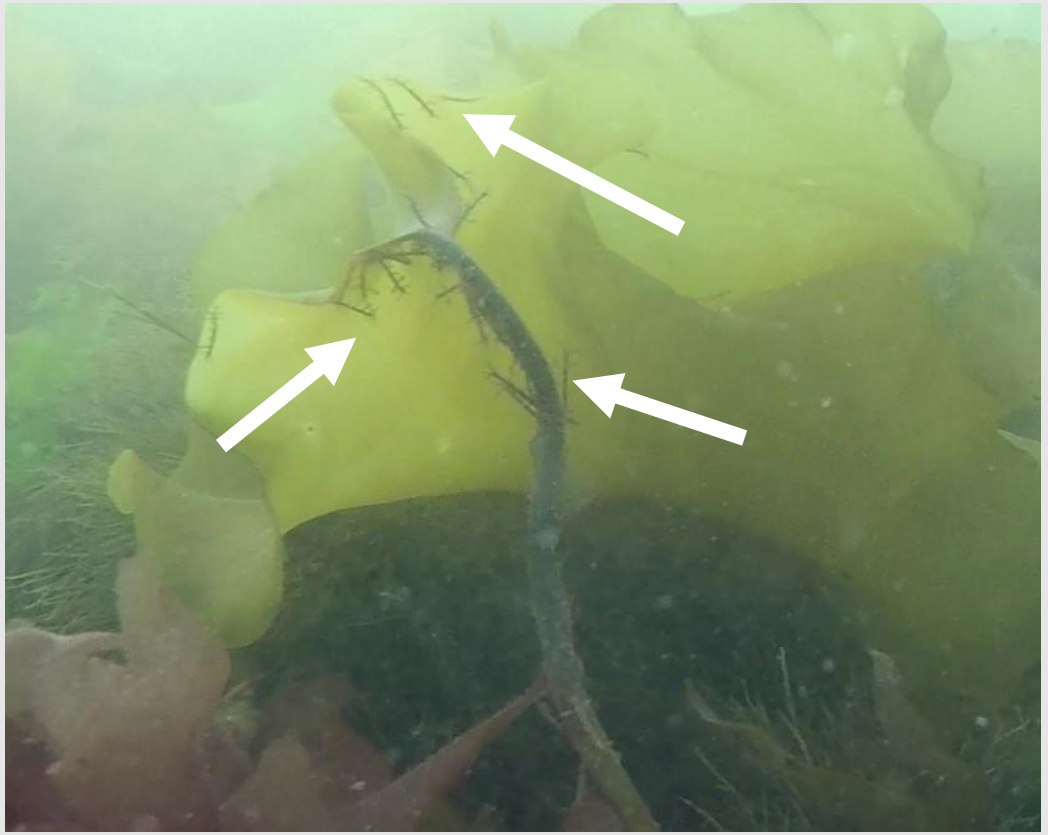
Phylum
Arthropoda

Class
Malacostraca

Order
Amphipoda

Family
Caprellidae





1. Threadlike body
2. 19 to 54 mm in length
3. Stationary (does not swim)

Animal (sp_ANIML)

Caprellidae (Skeleton shrimp)

Morphological group

Asteroidea & Ophiuroidea

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Echinodermata	Asteroidea	Forcipulatida	Asteriidae	*Asterias rubens*
				Leptasterias polaris
		Spinulosida	Echinasteridae	*Henricia* sp.
		Valvatida	Solasteridae	*Crossaster papposus*
		Valvatida		*Solaster endeca*
	Ophiuroidea	Ophiurida	Ophiopholidae	*Ophiopholis aculeata*

Phylum
Echinodermata

Class
Asteroidea

Order
Forcipulatida

Family
Asteriidae

Large five-armed sea star

Animal (sp_ANIML)

Asterias rubens

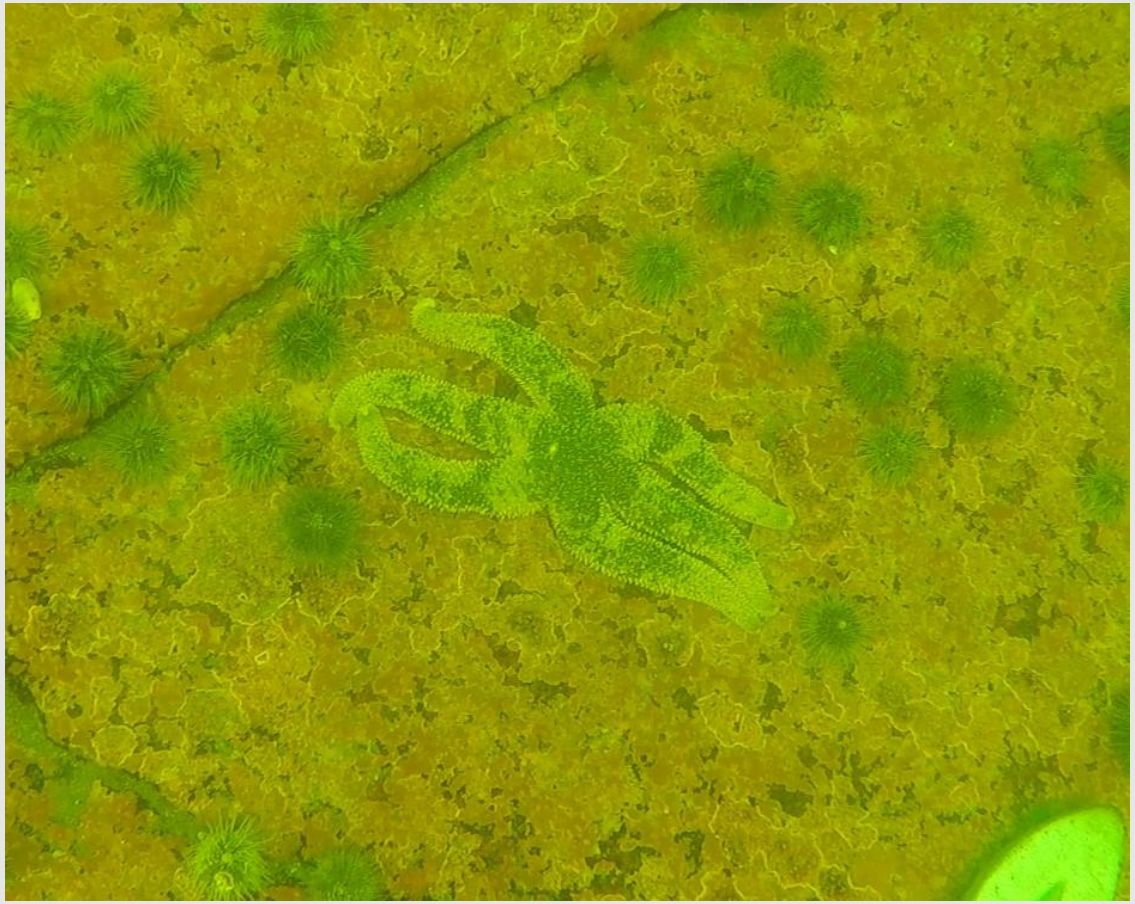
(Common sea star)

Phylum
Echinodermata

Class
Asteroidea

Order
Forcipulatida

Family
Asteriidae



Large six-armed sea star

Animal (sp_ANIML)

Leptasterias polaris **(Polar sea star)**

Phylum
Echinodermata

Class
Asteroidea

Order
Spinulosida

Family
Echinasteridae

1. Five elongated arms, often thin but sometimes swollen
2. Smooth and soft appearance, no obvious spines

Animal (sp_ANIML)

***Henricia* sp.**

(Armpit blood star)

Phylum
Echinodermata

Class
Asteroidea

Order
Valvatida

Family
Solasteridae

Animal (sp_ANIML)

Crossaster papposus **(Common sunstar)**

Phylum	Class	Order	Family
Echinodermata	Asteroidea	Valvatida	Solasteridae

Animal (sp_ANIML)

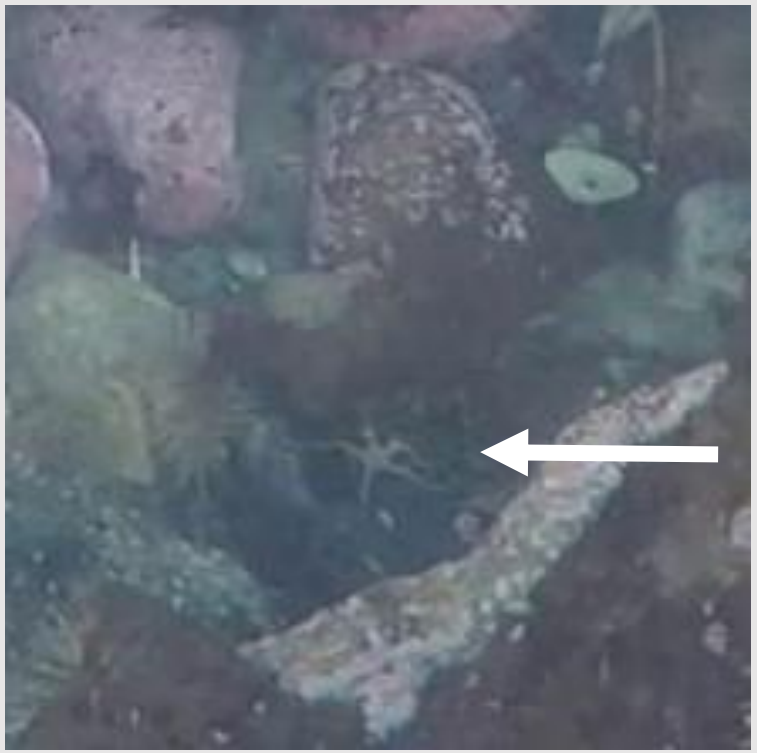
Solaster endeca **(Purple sunstar)**

Phylum
Echinodermata

Class
Ophiuroidea

Order
Ophiurida

Family
Ophiopholidae



Animal (sp_ANIML)

Ophiopholis aculeata **(Daisy brittle star)**

Phylum
Echinodermata

Class
Asteroidea

Order

Family

This taxon includes small specimens whose genus cannot be identified (*Henricia* sp., *Asterias rubens*, *Leptasterias* sp. including *Leptasterias groenlandicus* [small, yellow-green and five-armed, not six], *Stephanasterias albula*, etc.)

Animal (sp_ANIML)

Asteroidea **(Sea star)**

Morphological group

Echinoidea & Holothuroidea

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Echinodermata	Echinoidea	Camarodonta	Strongylocentrotidae	*Strongylocentrotus droebachiensis*
		Clypeasteroida	Echinarachniidae	*Echinarachnius parma*
	Holothuroidea	Dendrochirotida	Cucumariidae	*Cucumaria frondosa*
			Psolidae	*Psolus fabricii*
				Psolus phantapus

Phylum	Class	Order	Family
Echinodermata	**Echinoidea**	**Camarodonta**	**Strongylocentrotidae**

A second species (*S. pallidus* = pale sea urchin) can occur at depths of more than 7 m or if the water temperature is very cold (e.g. Lower North Shore).

Animal (sp_ANIML)

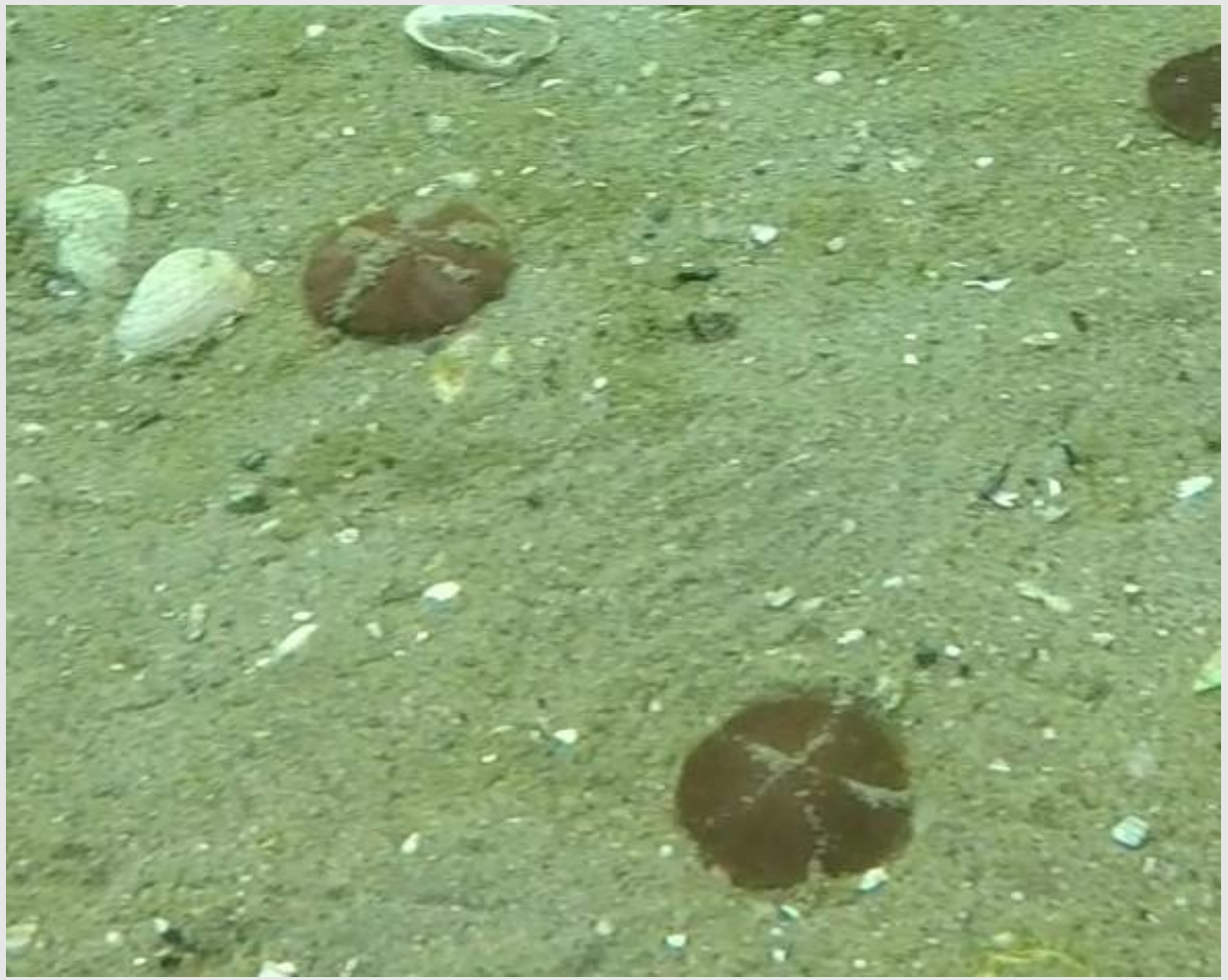
Strongylocentrotus droebachiensis **(Green sea urchin)**

Phylum
Echinodermata

Class
Echinoidea

Order
Clypeasteroida

Family
Echinarachniidae



Animal (sp_ANIML)

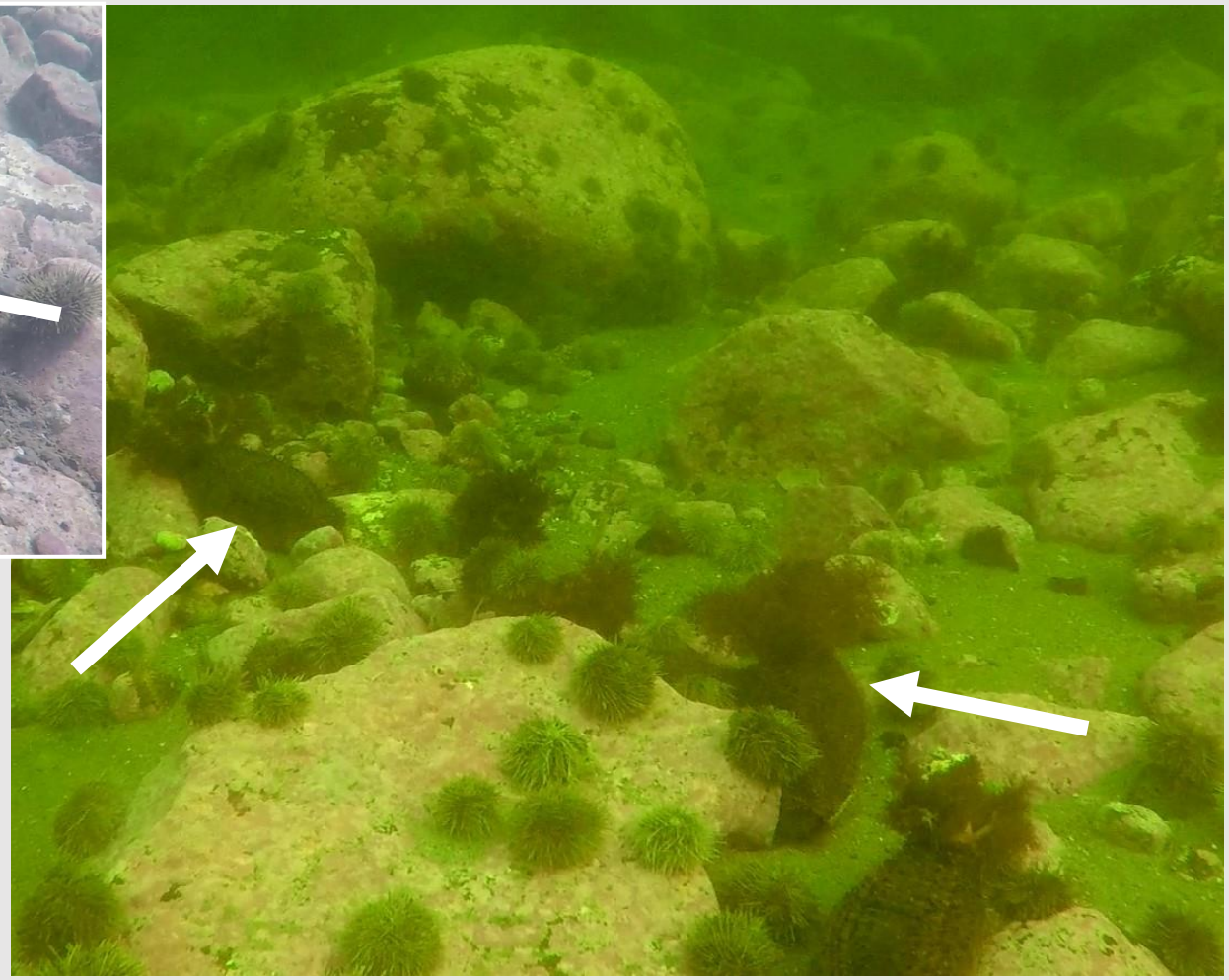
Echinarachnius parma **(Common sand dollar)**

Phylum
Echinodermata

Class
Holothuroidea

Order
Dendrochirotida

Family
Cucumariidae



Animal (sp_ANIML)

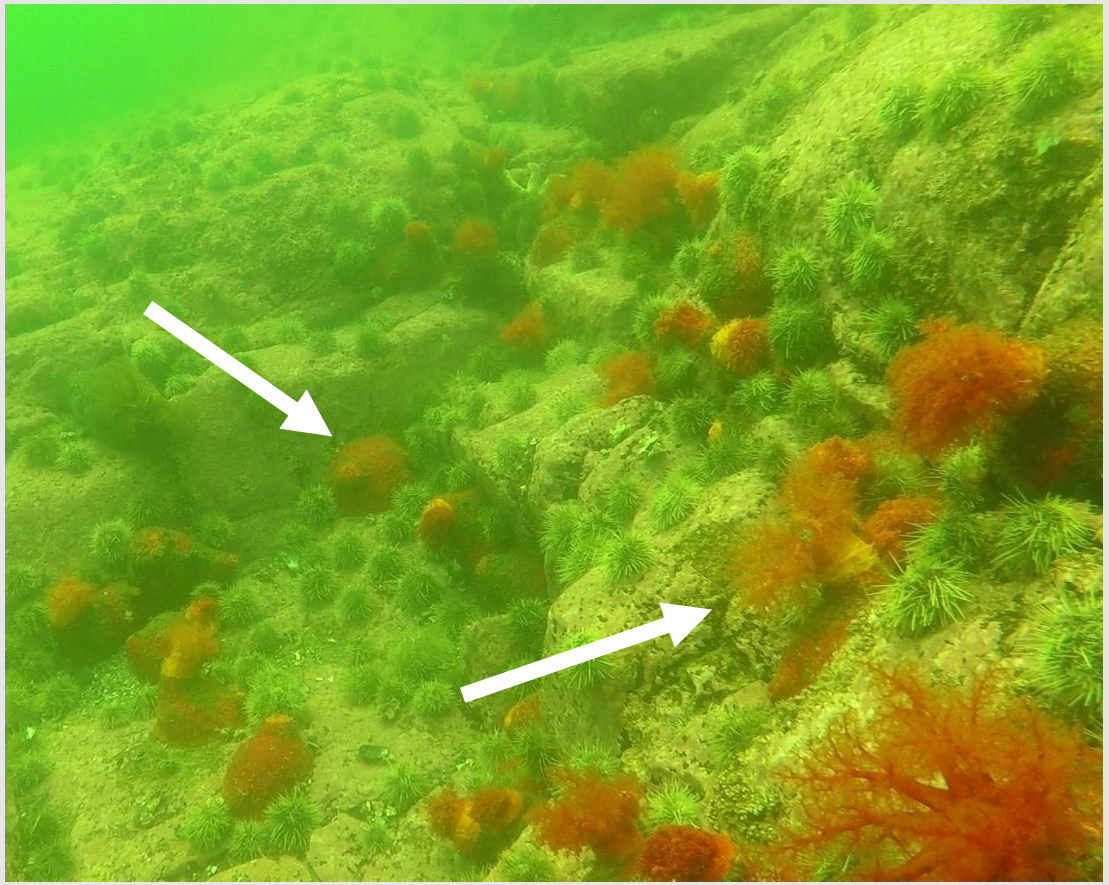
Cucumaria frondosa **(Sea cucumber)**

Phylum
Echinodermata

Class
Holothuroidea

Order
Dendrochirotida

Family
Psolidae



May be confused with the contracted shape of *Gersemia rubiformis*

Animal (sp_ANIML)

Psolus fabricii **(Scarlet psolus)**

Phylum	Class	Order	Family
Echinodermata	Holothuroidea	Dendrochirotida	Psolidae

1. Buried body, white tentacles with orange spots
2. Could be confused with other species (e.g. *Ekmania bathii, Pentamera calcifera*)

Animal (sp_ANIML)

Psolus phantapus **(Brown psolus)**

Morphological group

Bivalvia & Brachiopoda

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Brachiopoda	Rhynchonellata	Terebratulida	Cancellothyrididae	*Terebratulina septentrionalis*
Mollusca	Bivalvia	Adapedonta	Pharidae	*Ensis leei*
		Myida	Myidae	*Mya arenaria*
				Mya sp.
			Pholadidae	*Zirphaea crispata*
		Mytilida	Mytilidae	*Mytilus* sp.
		Pectinida	Pectinidae	*Chlamys islandica*
				Placopecten magellanicus
		Venerida	Mesodesmatidae	*Mesodesma arctatum*
		Endobenthos		

Animal (sp_ANIML)

Phylum

Mollusca

Class

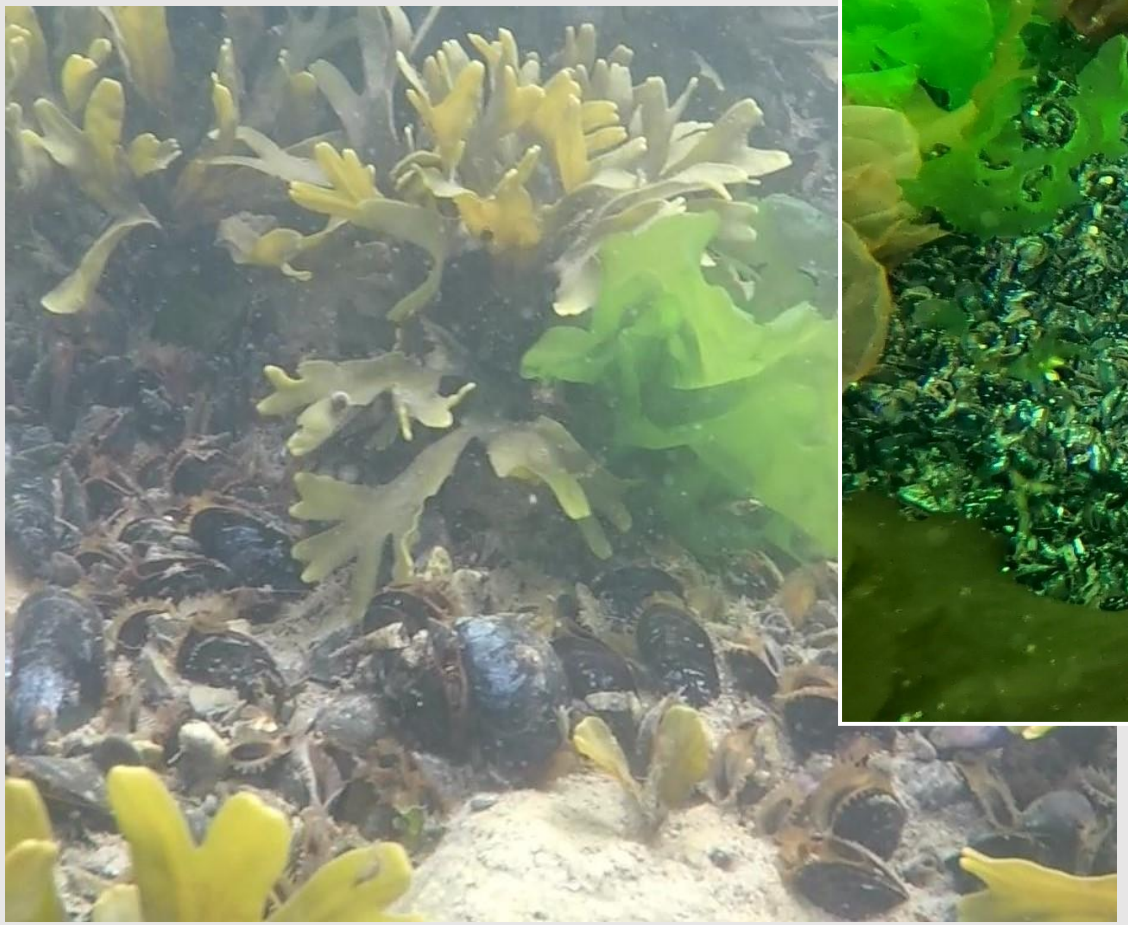
Bivalvia

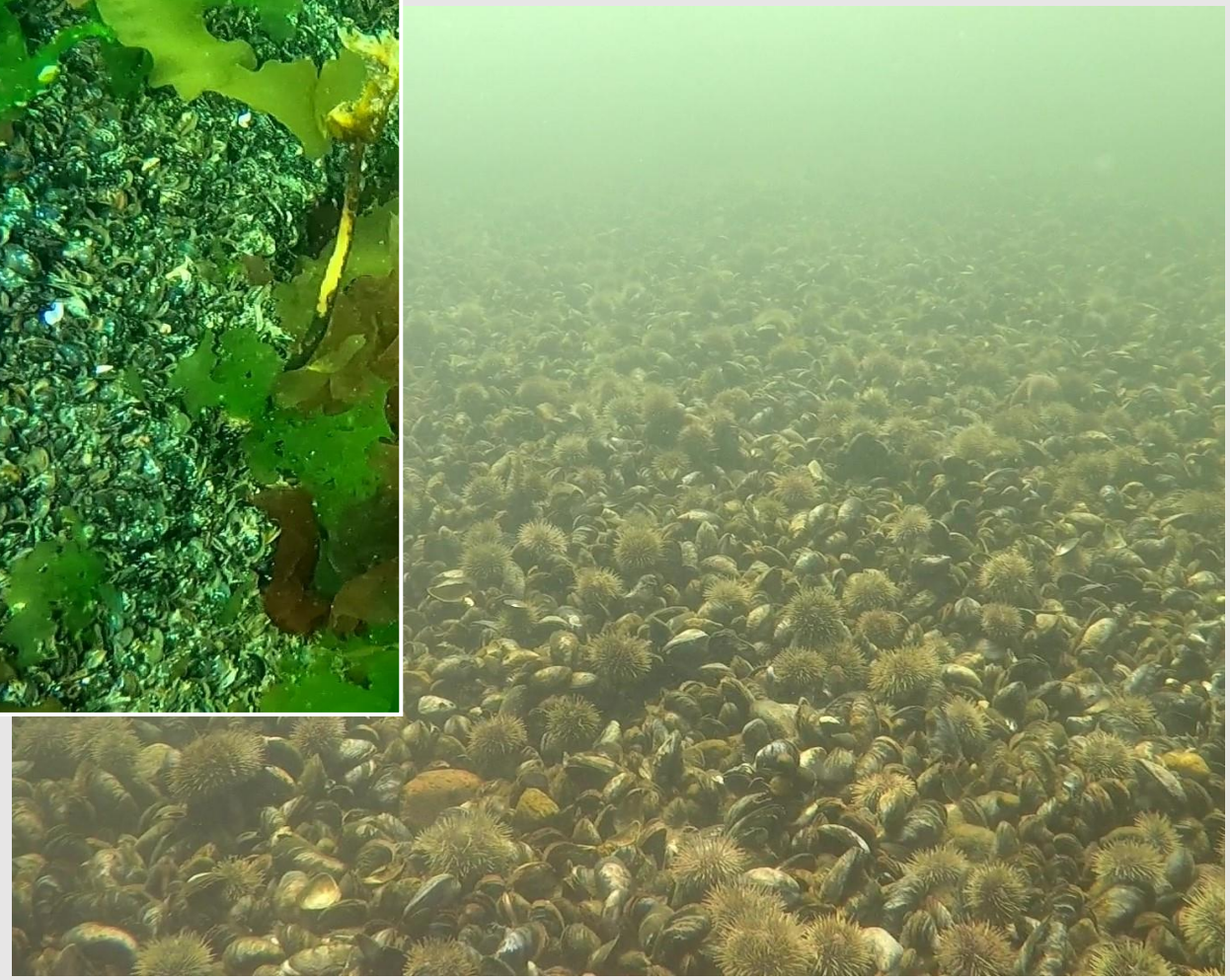
Order

Mytilida

Family

Mytilidae





Species complex (*Mytilus edulis/trossulus*)

Animal (sp_ANIML)

***Mytilus* sp.**

(Mussel)

Phylum

Brachiopoda

Class

Rhynchonellata

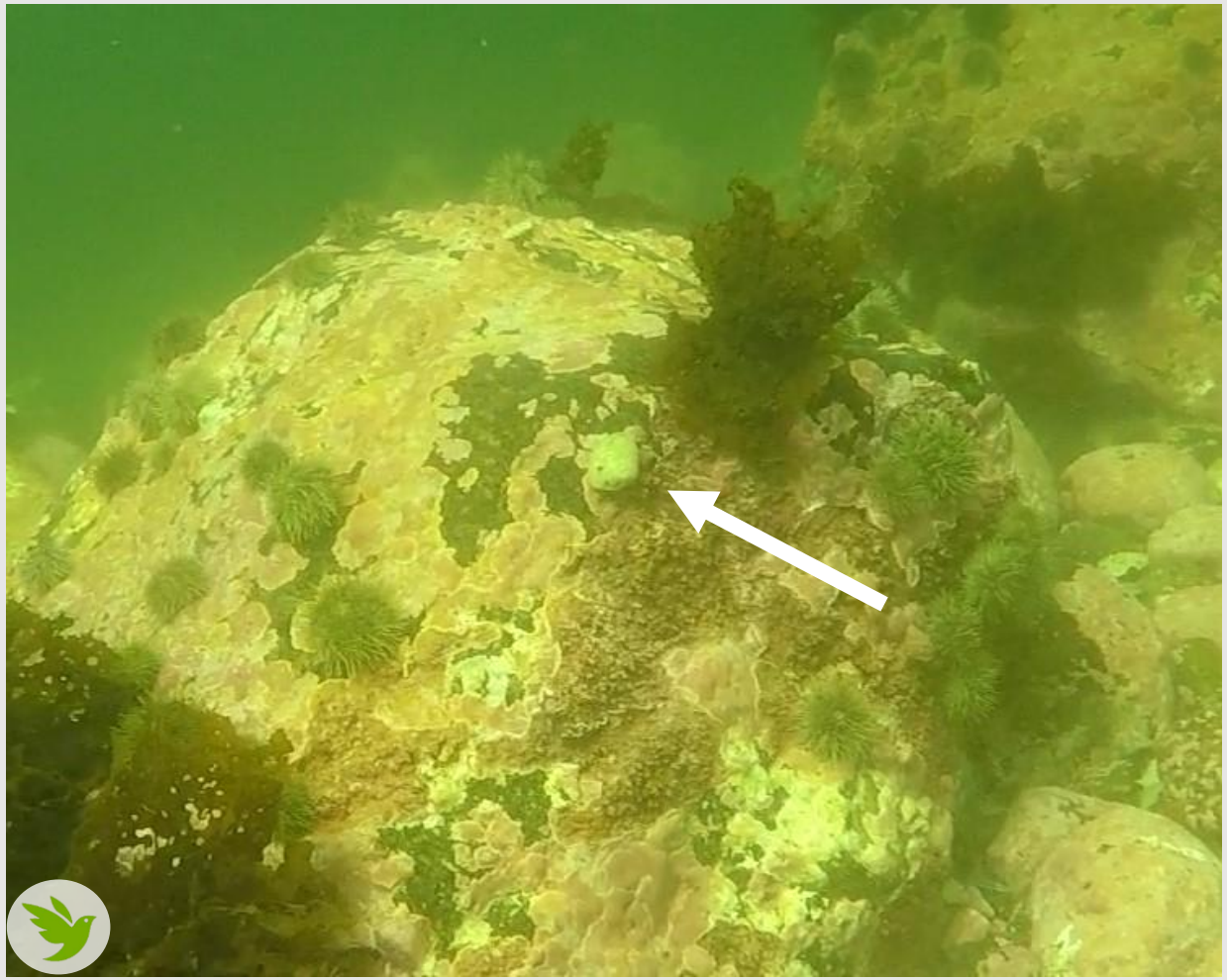
Order

Terebratulida

Family

Cancellothyrididae

LOW CONFIDENCE



Animal (sp_ANIML)

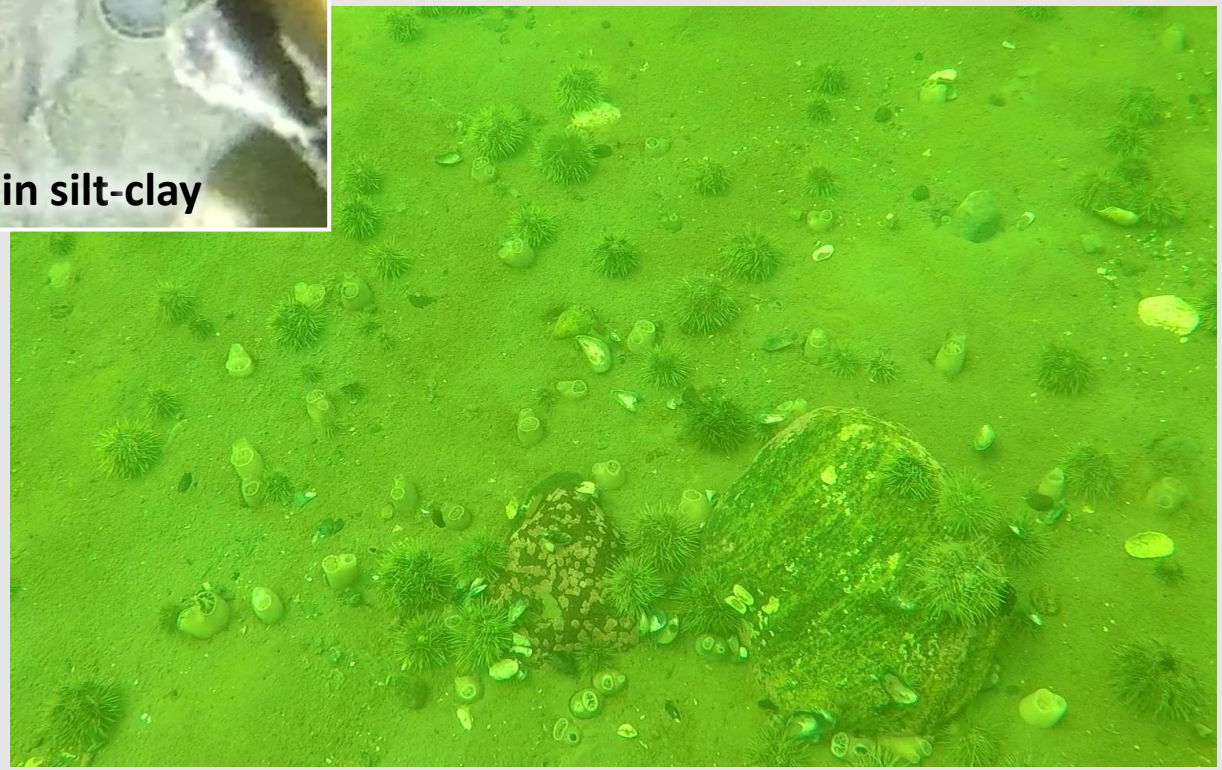
Terebratulina septentrionalis **(Northern lamp shell)**

Phylum
Mollusca

Class
Bivalvia

Order
Myida

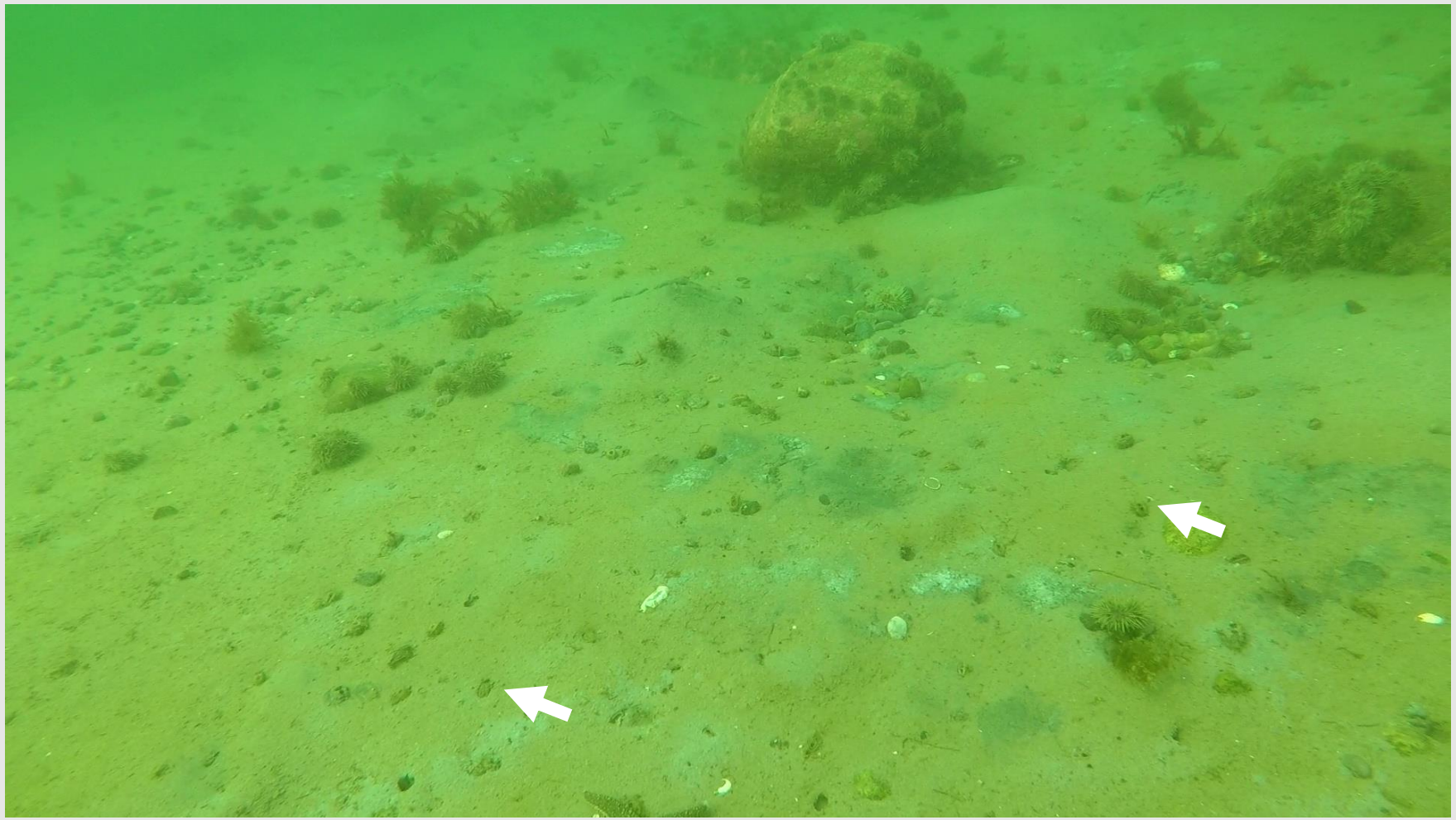
Family
Pholadidae



Animal (sp_ANIML)

Zirfaea crispata **(Atlantic great piddock)**

Phylum	Class	Order	Family
Mollusca	**Bivalvia**	**Myida**	**Myidae**



1. Siphons open on an **oval, flat terminal surface**
2. Siphons are surrounded by a ring of tentacles at the point of separation
3. The sheath surrounding the siphons sometimes protrudes out of the sediment (visible)
4. **Brownish sheath with incremental lines**
5. When in doubt, indicate Bivalvia

Animal (sp_ANIML)

***Mya* sp.** **(Soft-shell clam)**

Phylum

Mollusca

Class

Bivalvia

Order

Venerida

Family

Mesodesmatidae

Animal (sp_ANIML)

Mesodesma arctatum

(Compressed clam)

Phylum

Mollusca

Class

Bivalvia

Order

Family

1. Observation of siphon(s) (buried organism)
2. When siphons are not visible, indicate endobenthos

Animal (sp_ANIML)

Bivalvia **(Bivalve)**

Phylum

Mollusca

Class

Bivalvia

Order

Myida

Family

Myidae

Animal (sp_ANIML)

Mya arenaria **(Soft-shell clam)**

Phylum

Mollusca

Class

Bivalvia

Order

Adapedonta

Family

Pharidae

Animal (sp_ANIML)

Ensis leei **(Atlantic jackknife clam)**

Phylum	Class	Order	Family
Mollusca	**Bivalvia**	**Pectinida**	**Pectinidae**

Animal (sp_ANIML)

Chlamys islandica **(Iceland scallop)**

Phylum

Mollusca

Class

Bivalvia

Order

Pectinida

Family

Pectinidae

Animal (sp_ANIML)

Placopecten magellanicus **(Sea scallop)**

Phylum

Mollusca

Class

Bivalvia

Order

Pectinida

Family

Pectinidae

Use this taxon when the species cannot be identified.

Animal (sp_ANIML)

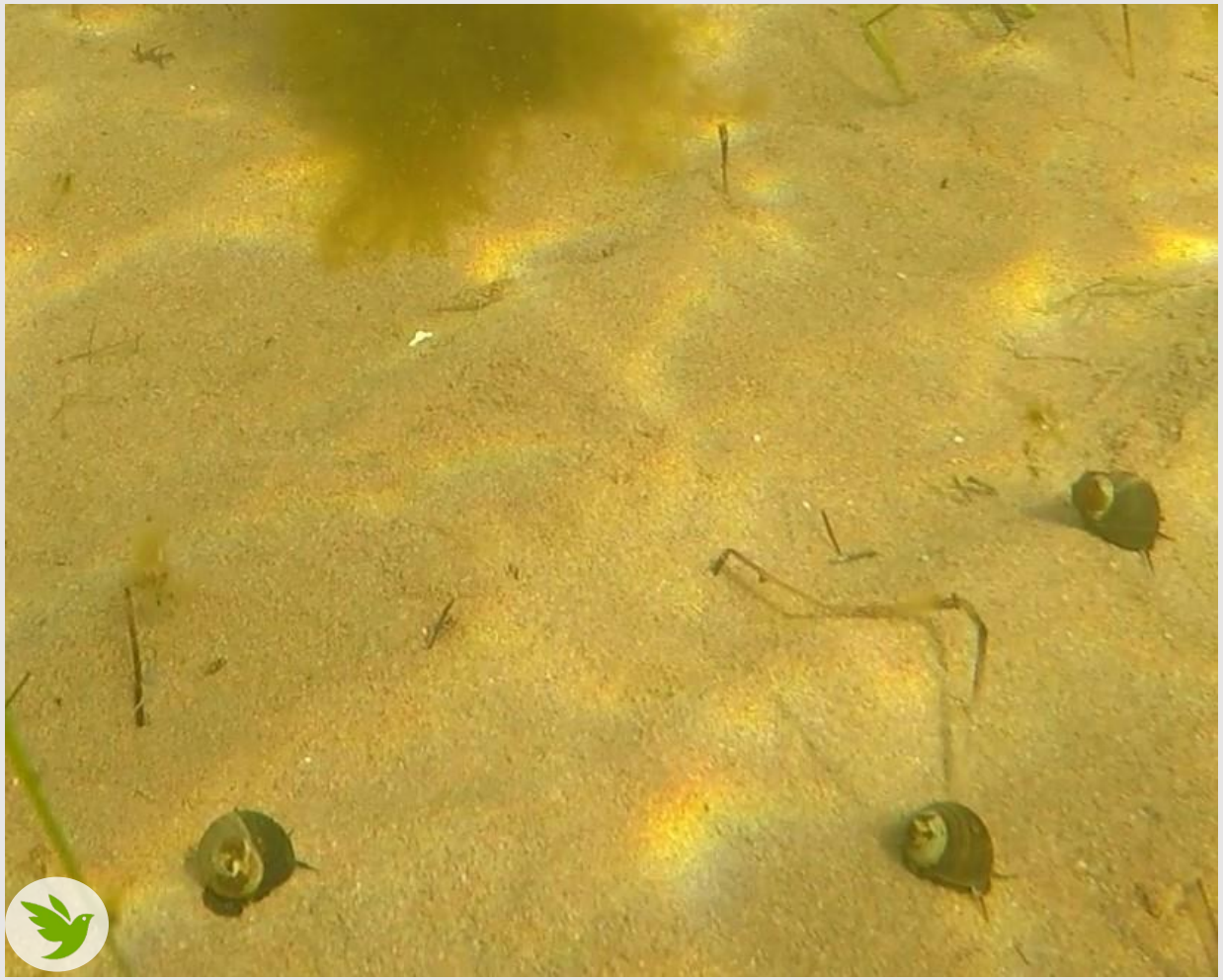
Pectinidae **(Scallop)**

Morphological group

Gastropoda & Polyplacophora

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Mollusca	Gastropoda	Littorinimorpha	Aporrhaidae	*Arrhoges occidentalis*
			Littorinidae	*Littorina* sp.
			Naticidae	*Euspira heros*
		Neogastropoda	Buccinidae	
			Muricidae	*Nucella lapillus*
			Lottidae	*Testudinalia testudinalis*
	Polyplacophora	Chitonida	Tonicellidae	

Phylum	Class	Order	Family
Mollusca	Gastropoda	Littorinimorpha	Littorina

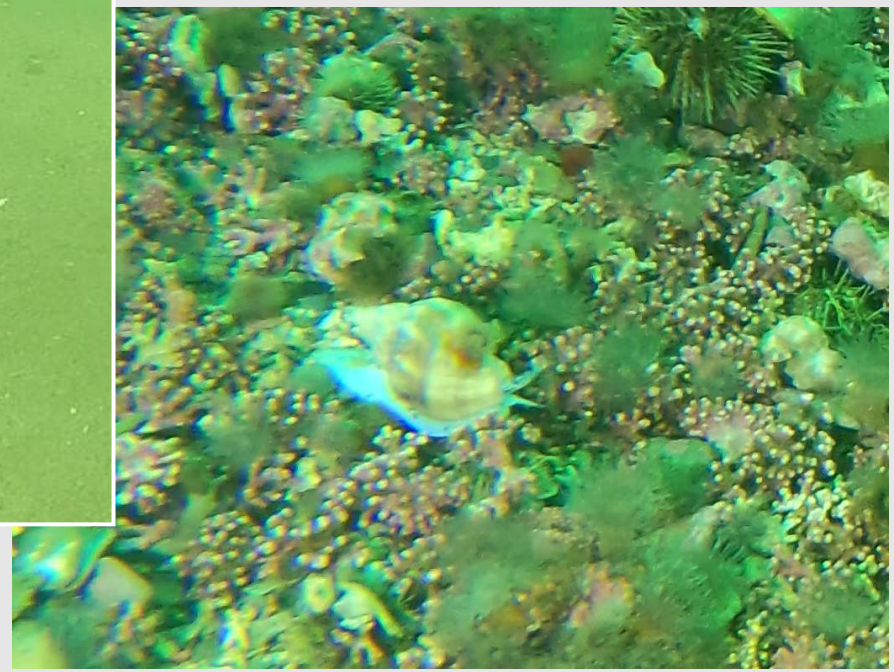


Maximum size of 40 mm

Animal (sp_ANIML)

***Littorina* sp.** **(Periwinkle)**

Phylum	Class	Order	Family
Mollusca	Gastropoda	Neogastropoda	Buccinidae

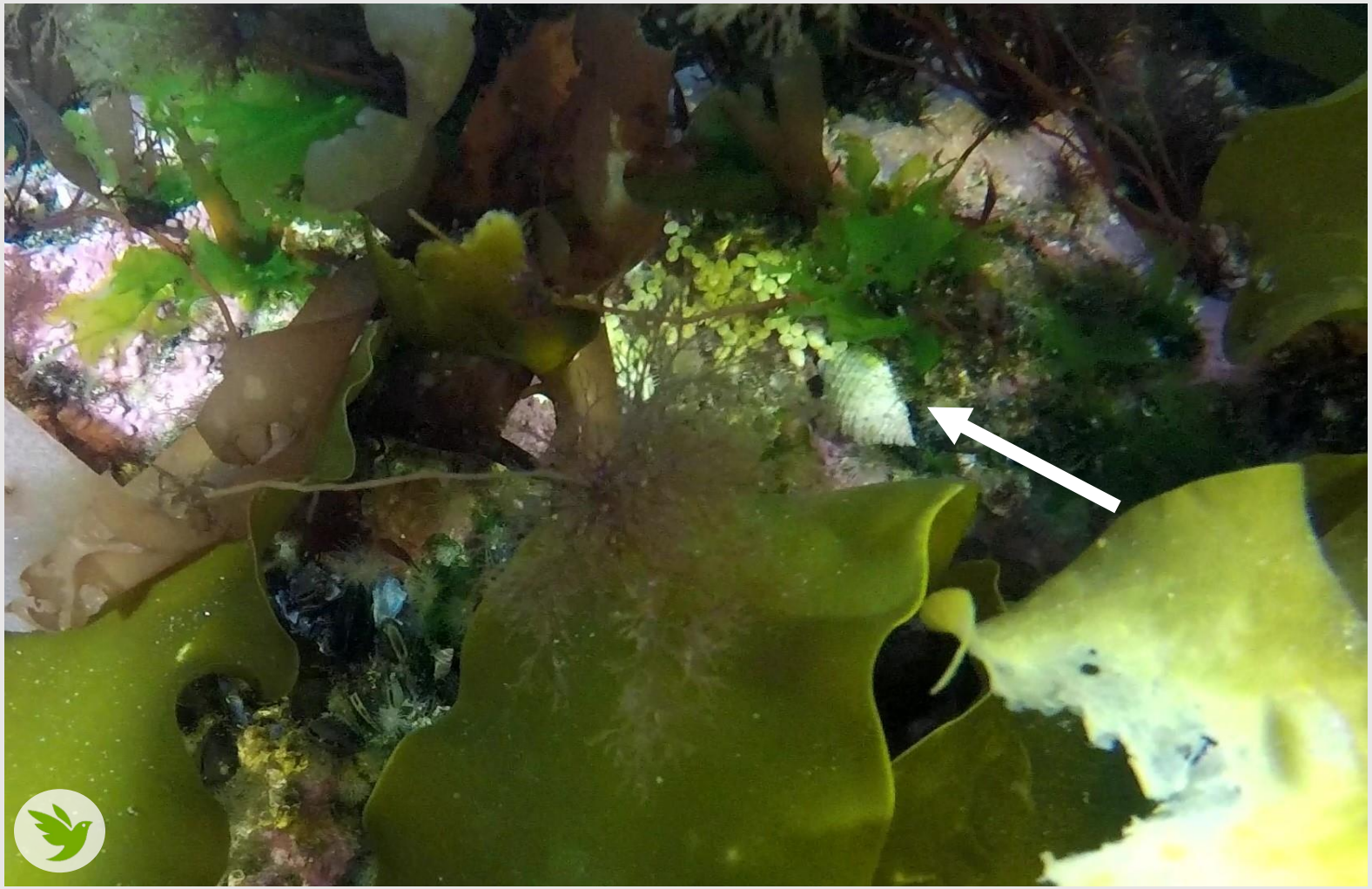


1. Can reach up to 11 cm in size
2. Mostly *Buccinum undatum,* but could be mistaken for *Plicifusus kroyeri*
3. Buccinidae shells may be used by *Pagurus* sp.

Animal (sp_ANIML)

Buccinidae **(Whelk)**

Phylum	Class	Order	Family
Mollusca	Gastropoda	Neogastropoda	Muricidae



The identification of the specimen in this photo was made easier by the presence of eggs.

Animal (sp_ANIML)

Nucella lapillus **(Atlantic dogwinkle)**

Phylum
Mollusca

Class
Gastropoda

Order
Littorinimorpha

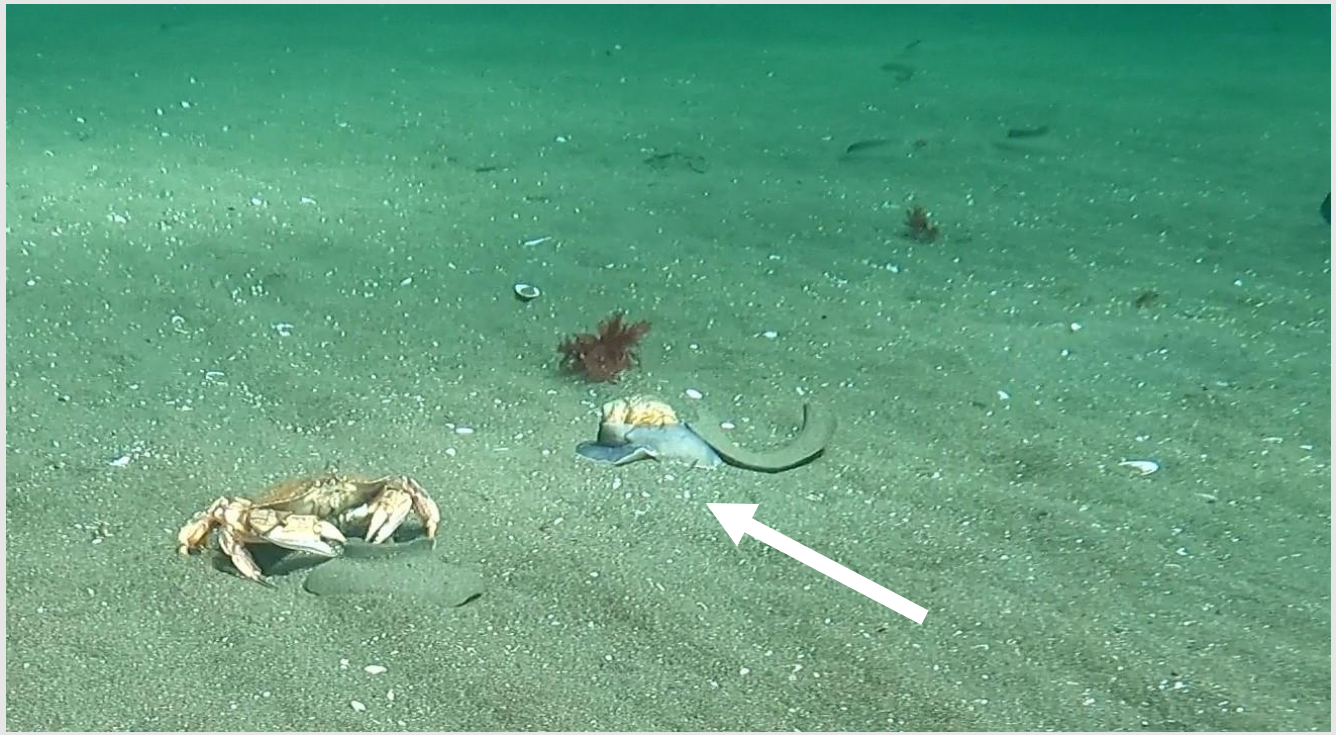
Family
Aporrhaidae

1. Shell with eight or nine coils
2. Shell more elongated than *Buccinum*, with a large lip
3. 50 to 65 mm in length

Animal (sp_ANIML)

Arrhoges occidentalis **(American pelican's-foot)**

Phylum	Class	Order	Family
Mollusca	**Gastropoda**	**Littorinimorpha**	**Naticidae**



1. **Large** gastropod, very round, spherical
2. Very large greyish foot that protrudes from the shell
3. If the organism is small, it could be another species of Naticidae (*E. pallida* or *Cryptonatica affinis*).

Animal (sp_ANIML)

Euspira heros **(Northern moon snail)**

Phylum	Class	Order	Family
Mollusca	**Gastropoda**	**Littorinimorpha**	**Naticidae**

1. **Small** gastropod, very round, spherical
2. Very large greyish foot that protrudes from the shell
3. If the organism is large, it is *Euspira heros*.

Animal (sp_ANIML)

Naticidae **(Moon snails)**

Phylum

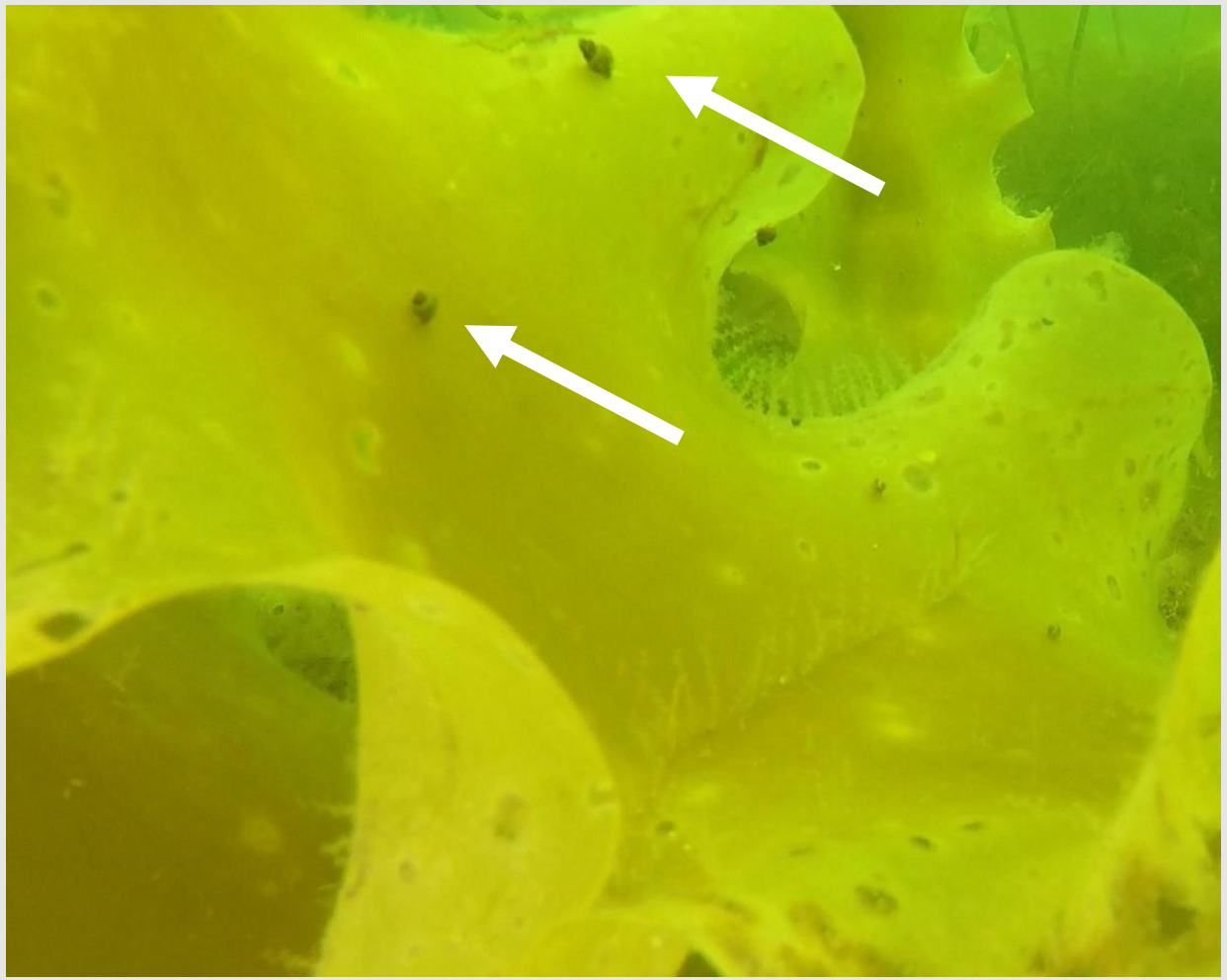
Mollusca

Class

Gastropoda

Order

Family



Taxon that includes unidentifiable gastropods and small specimens

Animal (sp_ANIML)

Gastropoda **(Gastropod)**

Phylum

Mollusca

Class

Gastropoda

Order

Family

Lottidae

Animal (sp_ANIML)

Testudinalia testudinalis **(Limpet)**

Phylum
Mollusca

Class
Polyplacophora

Order
Chitonida

Family
Tonicellidae

Includes red and marbled (dark) chitons: *Tonicella marmorea* and *Boreochiton ruber.* Also includes *Stenosemus alba* if white (Ischnochitonidae)

Animal (sp_ANIML)

Tonicellidae **(Chiton)**

Morphological group

Nudibranchia

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Mollusca	Gastropoda	Nudibranchia	Dendronotidae	*Dendronotus* sp.

Phylum

Mollusca

Class

Gastropoda

Order

Nudibranchia

Family

Dendronotidae

Animal (sp_ANIML)

***Dendronotus* sp.**

(Bushy-backed nudibranch)

Morphological group

Cnidaria, Ctenophora & Ascidiacea (sessile)

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Chordata	Ascidiacea	Stolidobranchia	Pyuridae	*Halocynthia pyriformis*
Cnidaria	Anthozoa	Actiniaria	Actiniidae	*Aulactinia stella*
			Actinostolidae	*Stomphia coccinea*
			Halcampidae	*Halcampa duodecimcirrata*
			Metridiidae	*Metridium senile*
		Alcyonacea	Nephtheidae	*Gersemia rubiformis*
	Hydrozoa	Leptothecata	Sertulariidae	
		Stolidobranchia	Tubulariidae	
	Staurozoa	Stauromedusae		

Phylum
Chordata

Class
Ascidiacea

Order
Stolidobranchia

Family
Pyuridae

Animal (sp_ANIML)

Halocynthia pyriformis **(Sea peach)**

Phylum

Chordata

Class

Ascidiacea

Order

Family

Animal (sp_ANIML)

Ascidiacea **(Sea squirt)**

Phylum	Class	Order	Family
Cnidaria	**Anthozoa**	**Actiniaria**	**Actiniidae**

1. May be confused with *Stomphia coccinea*. When in doubt, indicate "Actiniaria."
2. 100 mm in diameter
3. Relatively short and thick tentacles

Animal (sp_ANIML)

Actiniidae **(Sea anemones)**

Phylum
Cnidaria

Class
Anthozoa

Order
Actiniaria

Family
Actinostolidae

1. May be confused with Actiniidae.
   When in doubt, indicate "Actiniaria."
2. 70 mm in diameter
3. Longer tentacles than Actiniidae

Animal (sp_ANIML)

Stomphia coccinea **(Spotted sea anemone)**

Phylum	Class	Order	Family
Cnidaria	Anthozoa	Actiniaria	Actiniidae

When in doubt, indicate "Actiniaria"

Animal (sp_ANIML)

Aulactinia stella **(Silver-spotted sea anemone)**

Phylum	Class	Order	Family
Cnidaria	Anthozoa	Actiniaria	Halcampidae

1. Small burrowing anemone
2. Leaves a distinctive mark in the sand when its tentacles are retracted
3. Observed on sandy bottoms in the presence of colonial microalgae

Animal (sp_ANIML)

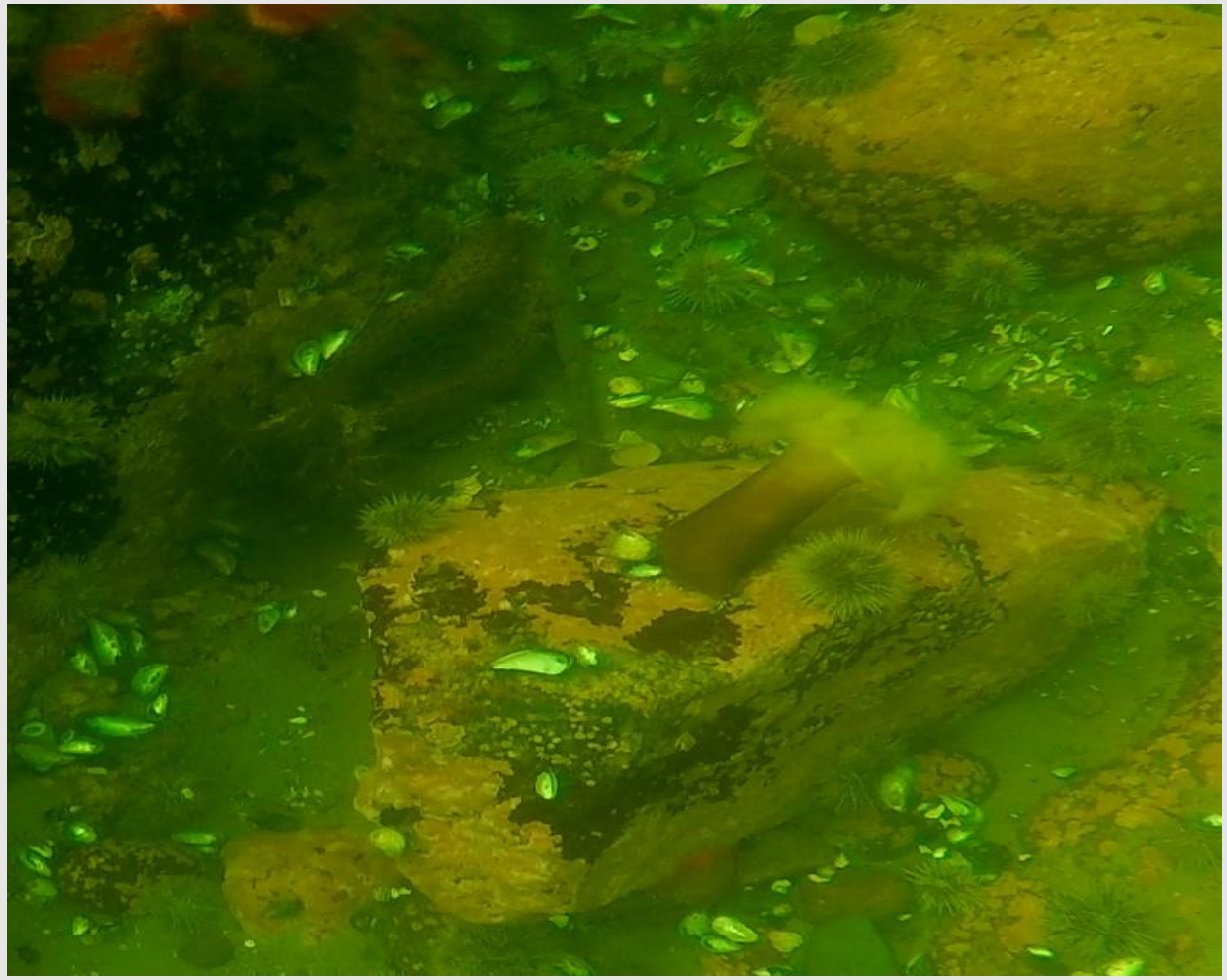
Halcampa duodecimcirrata **(Twelve-tentacled burrowing anemone)**

Phylum
Cnidaria

Class
Anthozoa

Order
Actiniaria

Family
Metridiidae



Animal (sp_ANIML)

Metridium senile

(Clonal plumose anemone)

Phylum
Cnidaria

Class
Anthozoa

Order
Actiniaria

Family

Taxon used for *Hormathia* (nodular sea anemones) or when more precise identification is not possible

Animal (sp_ANIML)

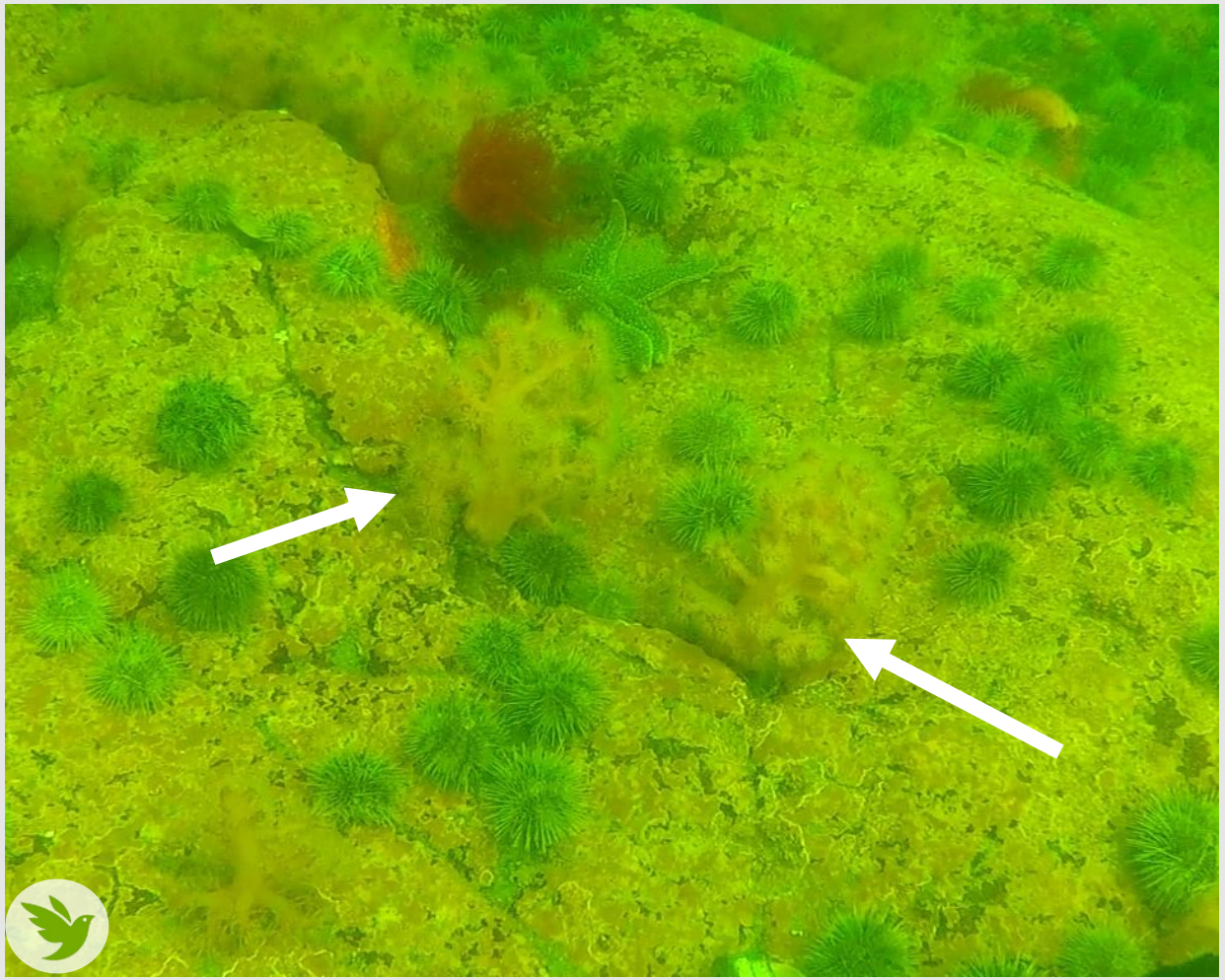
Actiniaria **(Anemone)**

Phylum
Cnidaria

Class
Anthozoa

Order
Alcyonacea

Family
Nephtheidae



1. The organism's contracted shape can be distinguished from *Psolus fabricii* by its knobby appearance
2. Indicate Nephtheidae if uncertain

Animal (sp_ANIML)

Gersemia rubiformis **(Sea strawberry)**

Phylum	Class	Order	Family
Cnidaria	**Anthozoa**	**Alcyonacea**	**Nephtheidae**

Taxon used for a species other than *Gersemia rubiformis*, e.g. *Drifa glomerata*, or when more precise identification is not possible

Animal (sp_ANIML)

Nephtheidae **(Carnation coral)**

Phylum

Cnidaria

Class

Staurozoa

Order

Stauromedusae

Family

Animal (sp_ANIML)

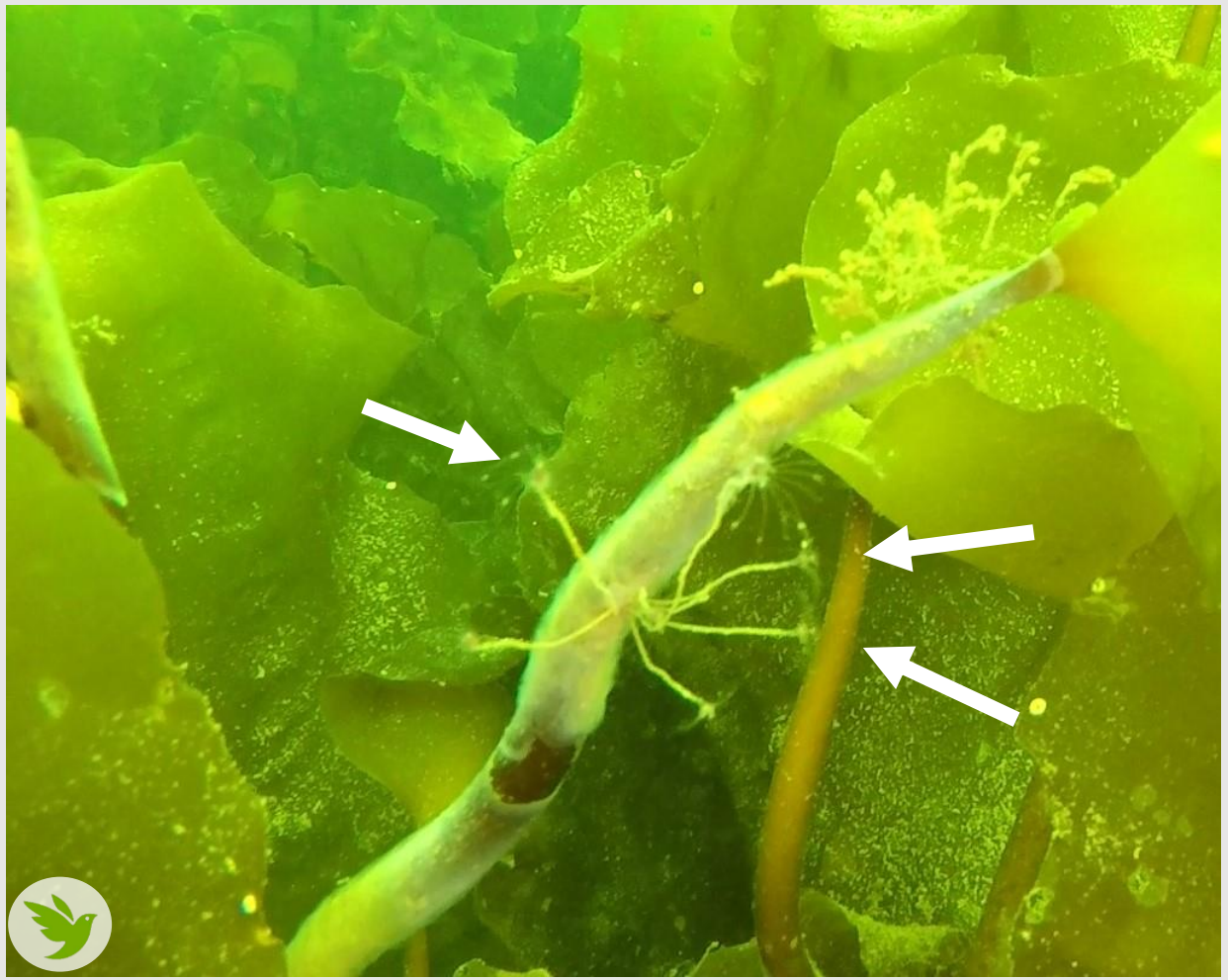
Stauromedusae **(Stalked jellyfish)**

Phylum
Cnidaria

Class
Hydrozoa

Order
Anthoathecata

Family
Tubulariidae



Animal (sp_ANIML)

Tubulariidae **(Tubulariids)**

Phylum

Cnidaria

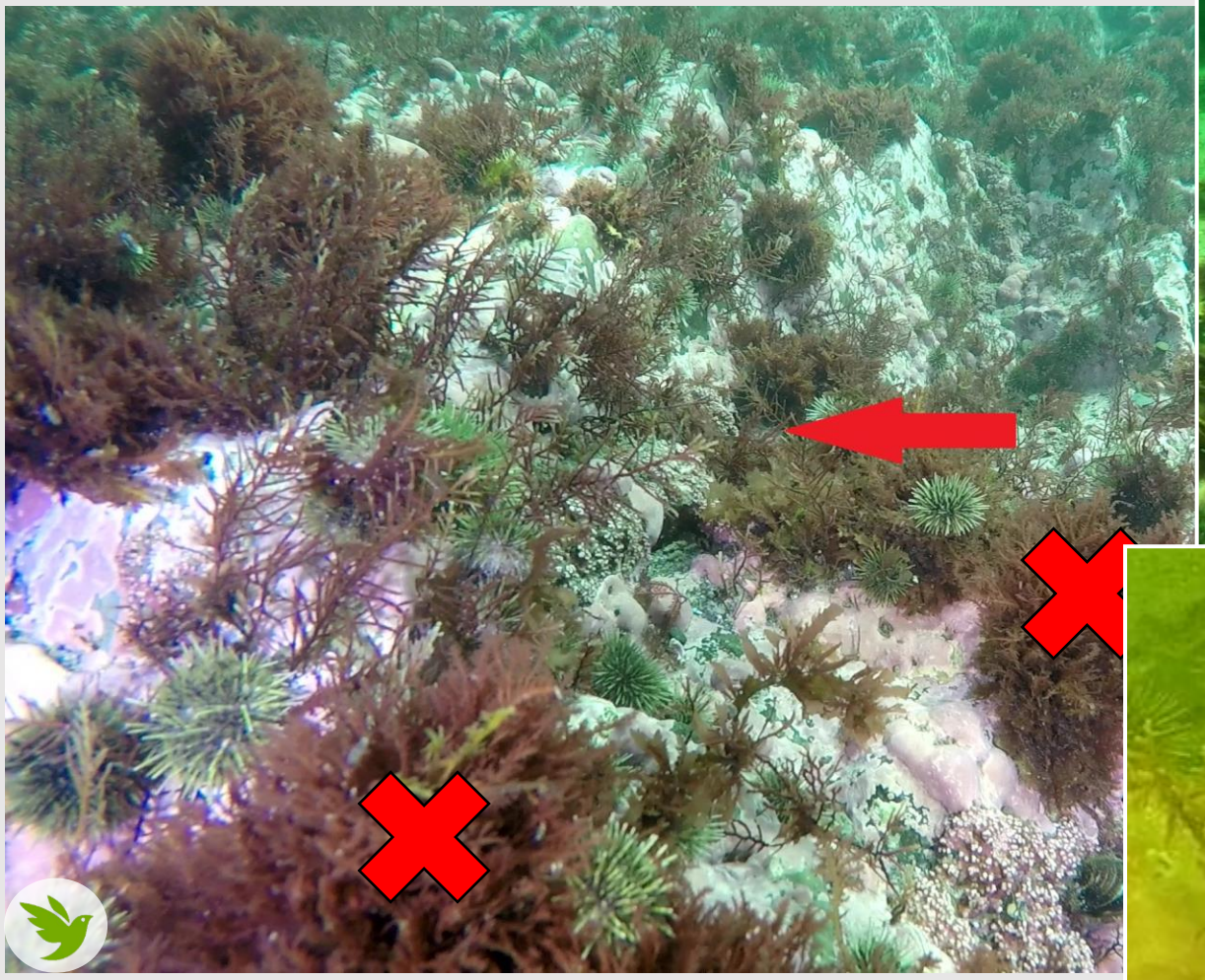
Class

Hydrozoa

Order

Leptothecata

Family



1. Confused with Ptilotea and possibly *Corallina officinalis*

Animal (sp_ANIML)

Sertulariidae

(Sertulariids)

Phylum

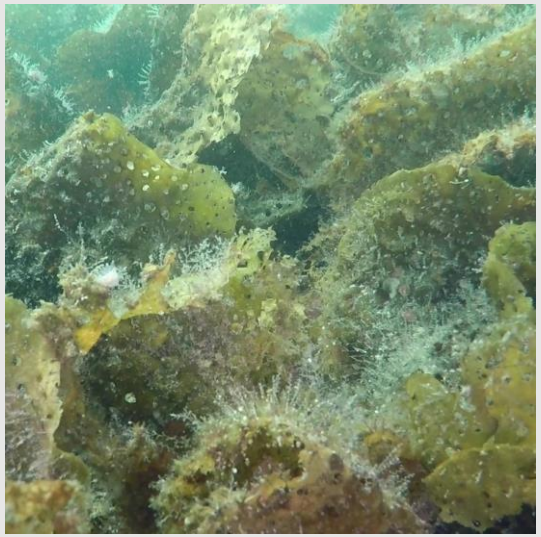
Cnidaria

Class

Hydrozoa

Order

Family



1. Highly diversified group
2. Generally colonial
3. Some erect shapes could be mistaken for bryozoans, delicate filamentous algae or hairs from some species of algae
4. This category excludes hydroid medusa and Tubulariidae

Animal (sp_ANIML)

Hydrozoa

Morphological group

Cnidaria, Ctenophora & Ascidiacea (pelagic)

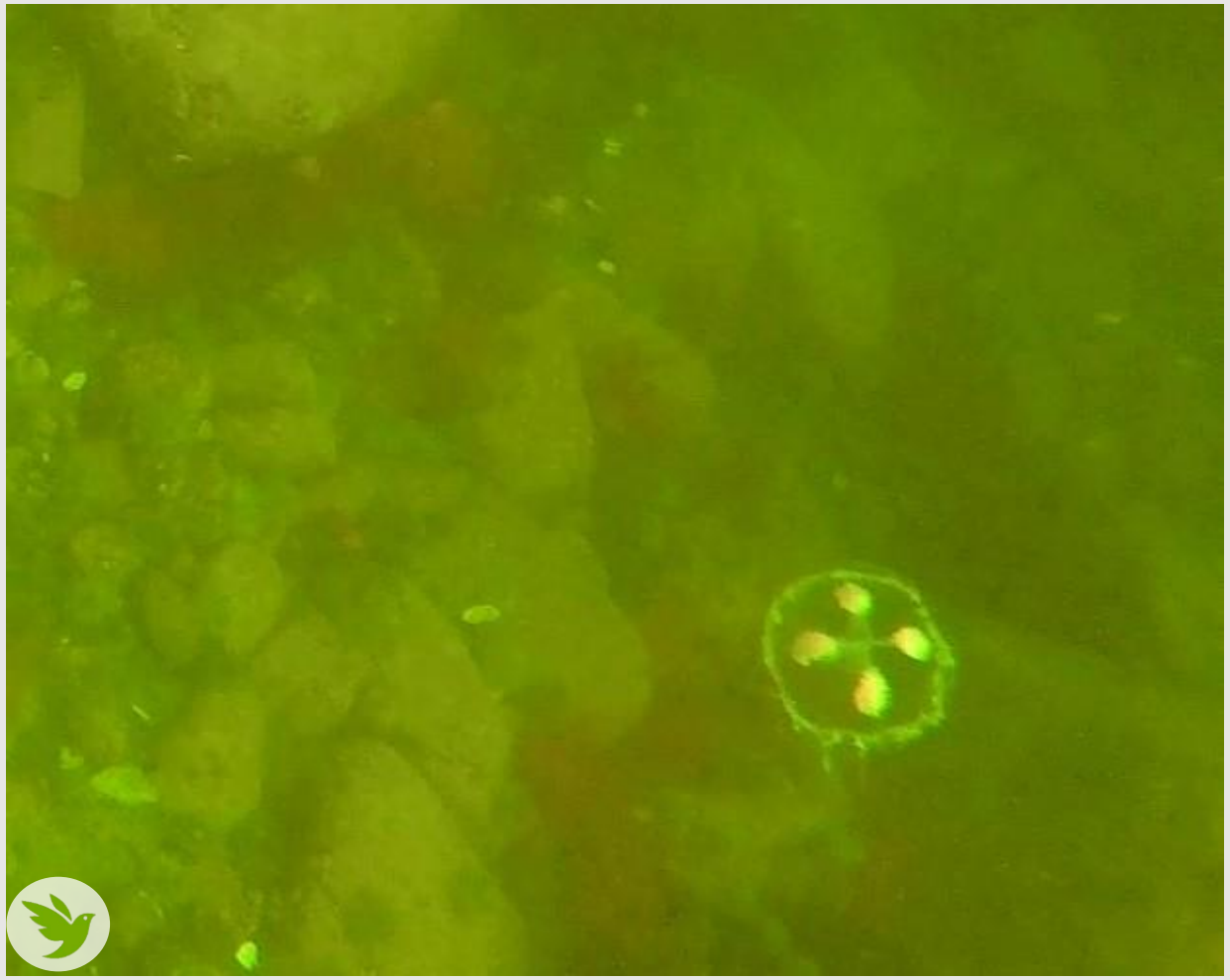
PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Cnidaria	Hydrozoa	Anthoathecata	Pandeidae	*Catablema vesicarium*
		Leptothecata	Laodiceidae	*Ptychogena lactea*
				Staurostoma mertensii
	Scyphozoa	Semaeostomeae	Cyaneidae	*Cyanea* sp.
	Scyphozoa	Semaeostomeae	Ulmaridae	*Aurelia* sp.
Ctenophora				

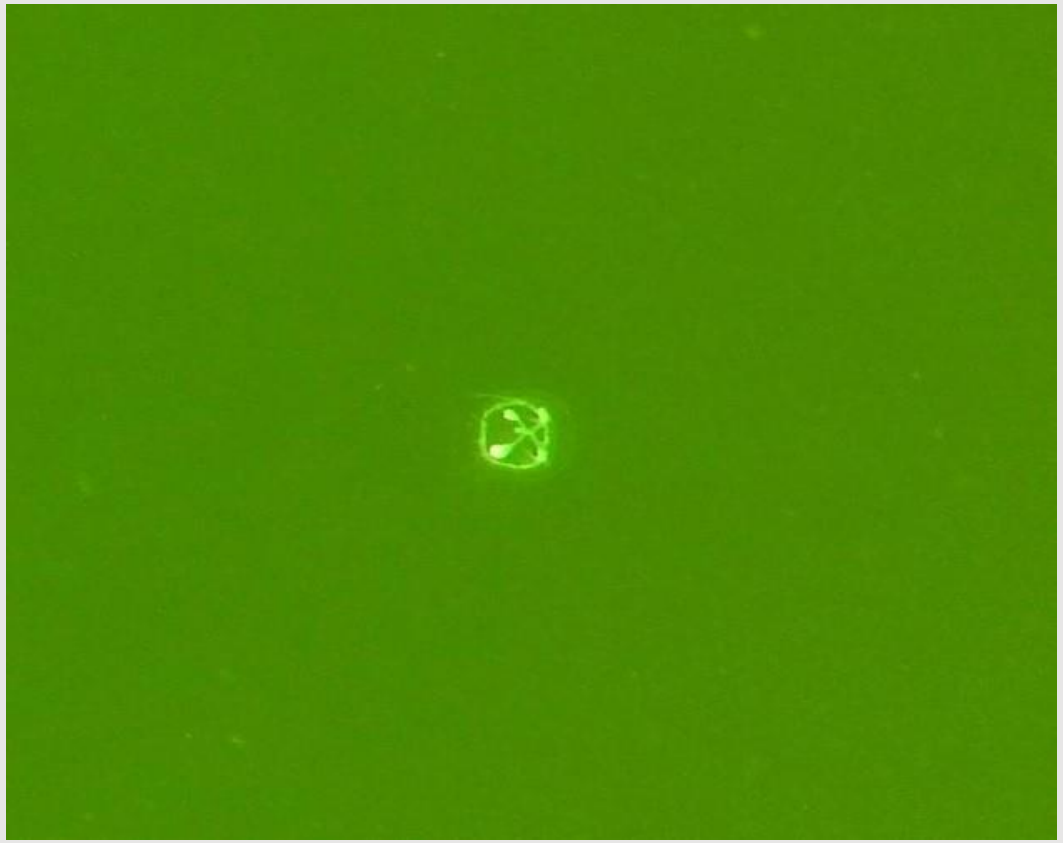
Phylum
Cnidaria

Class
Hydrozoa

Order
Leptothecata

Family
Laodiceidae





Four cross-shaped gonad masses distinguish *Ptychogena lactea* from *Staurostoma mertensii*.

Animal (sp_ANIML)

Ptychogena lactea

Phylum
Cnidaria

Class
Hydrozoa

Order
Leptothecata

Family
Laodiceidae

Thin gastric cross distinguishes it from *Ptychogena lacteal.*

Animal (sp_ANIML)

Staurostoma mertensii **(Whitecross jellyfish)**

Phylum
Cnidaria

Class
Scyphozoa

Order
Semaeostomeae

Family
Ulmaridae

Animal (sp_ANIML)

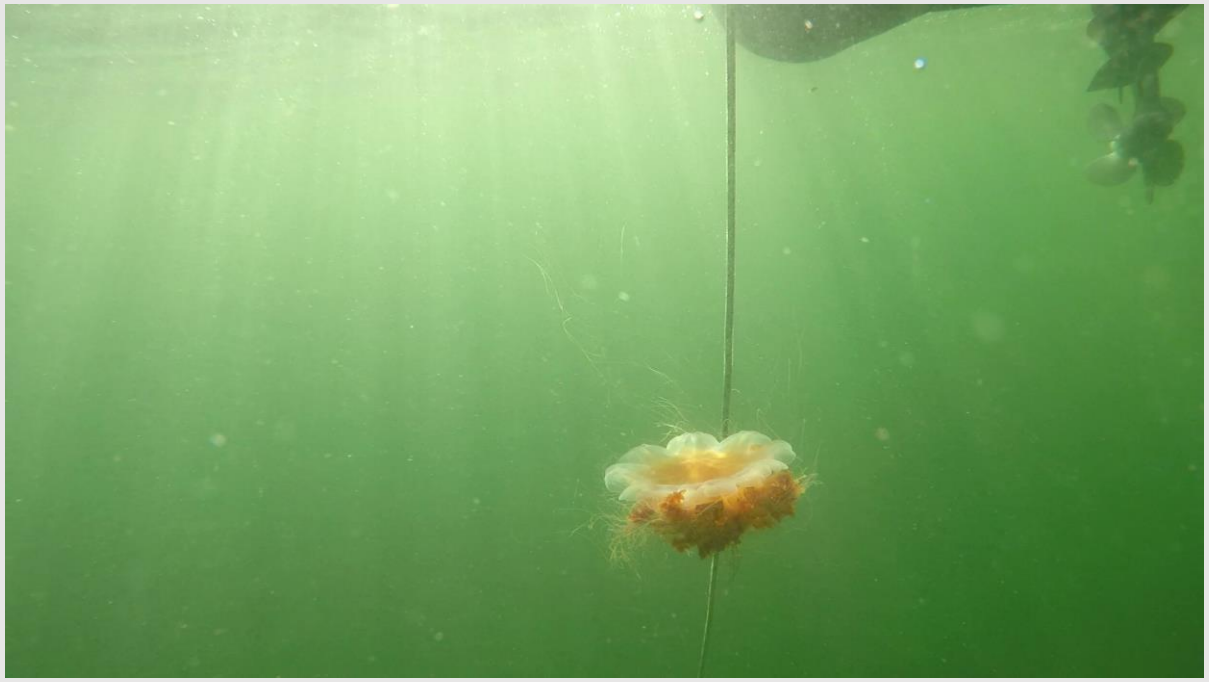
***Aurelia* sp.** **(Moon jellyfish)**

Phylum
Cnidaria

Class
Scyphozoa

Order
Semaeostomeae

Family
Cyaneidae



Animal (sp_ANIML)

***Cyanea* sp.**

(Lion's mane jellyfish)

Phylum

Cnidaria

Class

Hydrozoa

Order

Anthoathecata

Family

Pandeidae

Animal (sp_ANIML)

Catablema vesicarium

Cnidaria

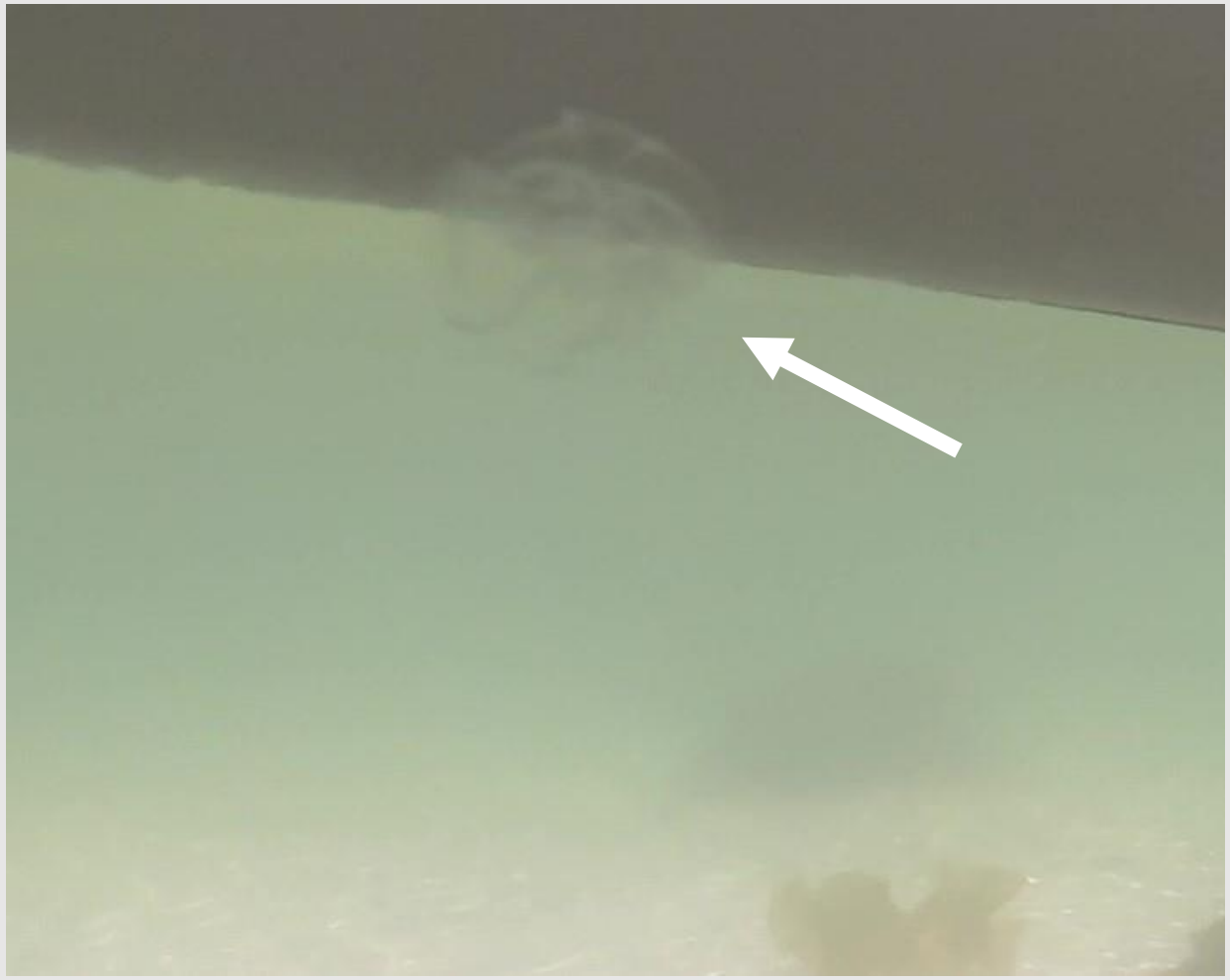
It contracts like a jellyfish, but it is difficult to specify a lower taxonomic level.

Animal (sp_ANIML)

Cnidaria (Cnidarians)

Phylum Class Order Family

Ctenophora



Animal (sp_ANIML)

Ctenophora (Ctenophorans)

Morphological group

Annelida

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Annelida	Clitellata	Hirudinea		
	Polychaeta	Echiuroidea	Bonelliidae	*Pseudobonellia iraidii*
		Sabellida	Sabellidae	*Myxicola* sp.
		Terebellida	Terebellidae	
			Arenicolidae	*Arenicola marina*

Endobenthos

Phylum

Annelida

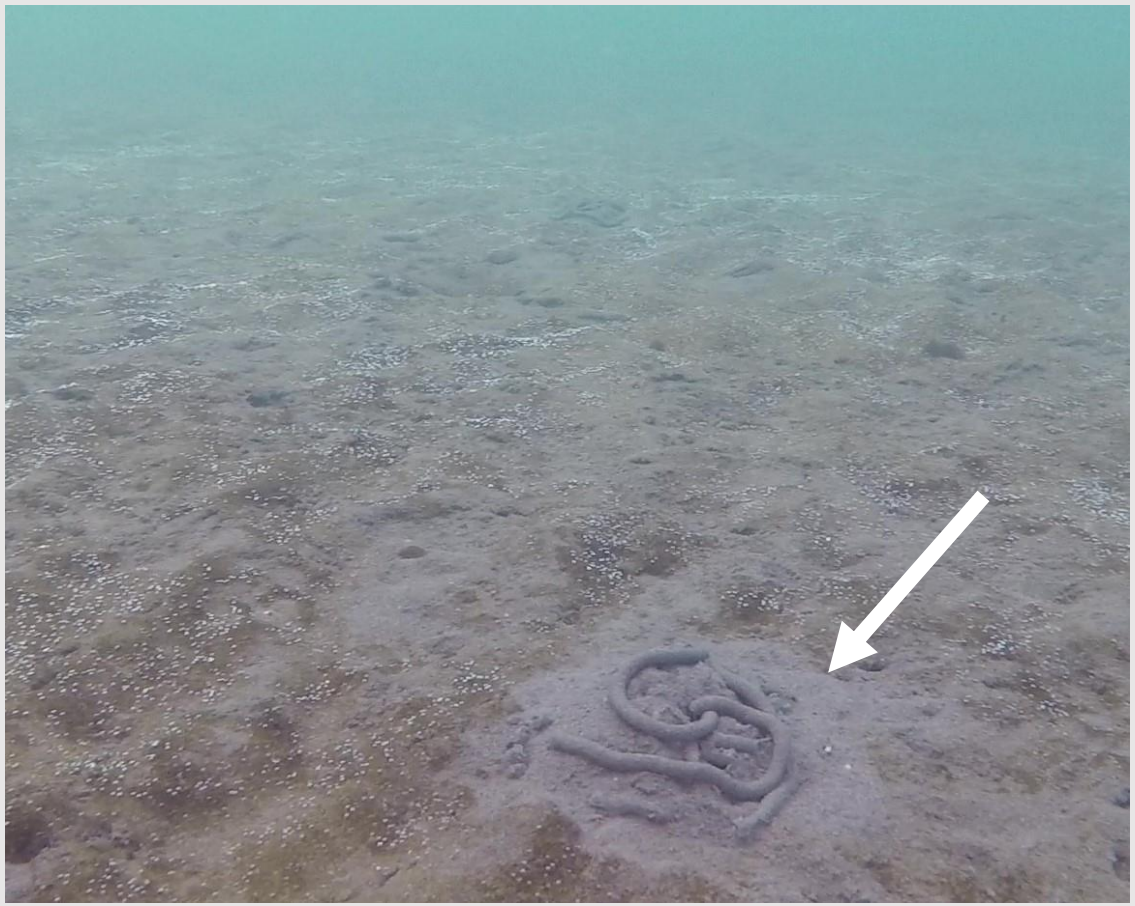
Class

Polychaeta

Order

Family

Arenicolidae



Observation of excrement

Animal (sp_ANIML)

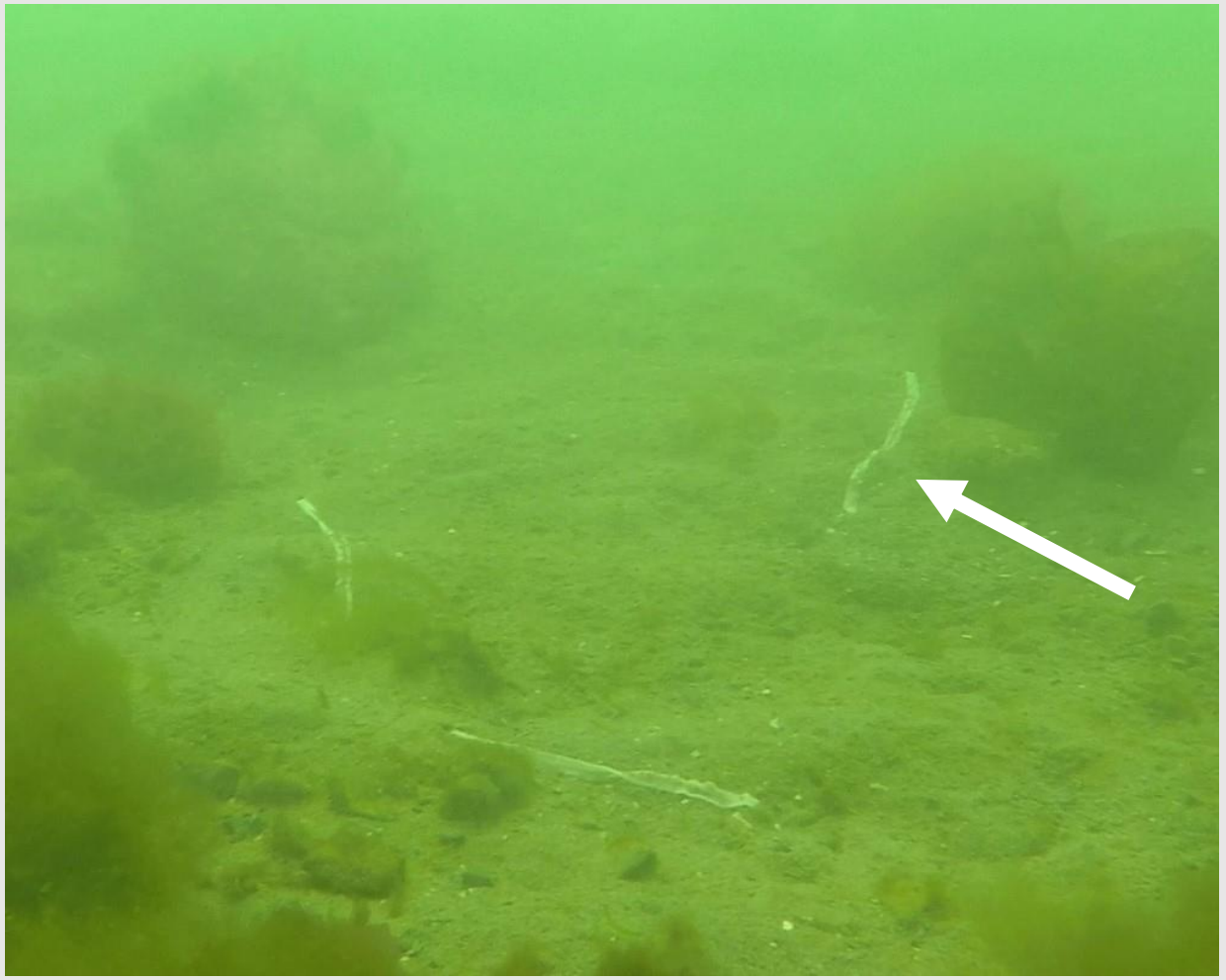
Arenicola marina **(Lugworm)**

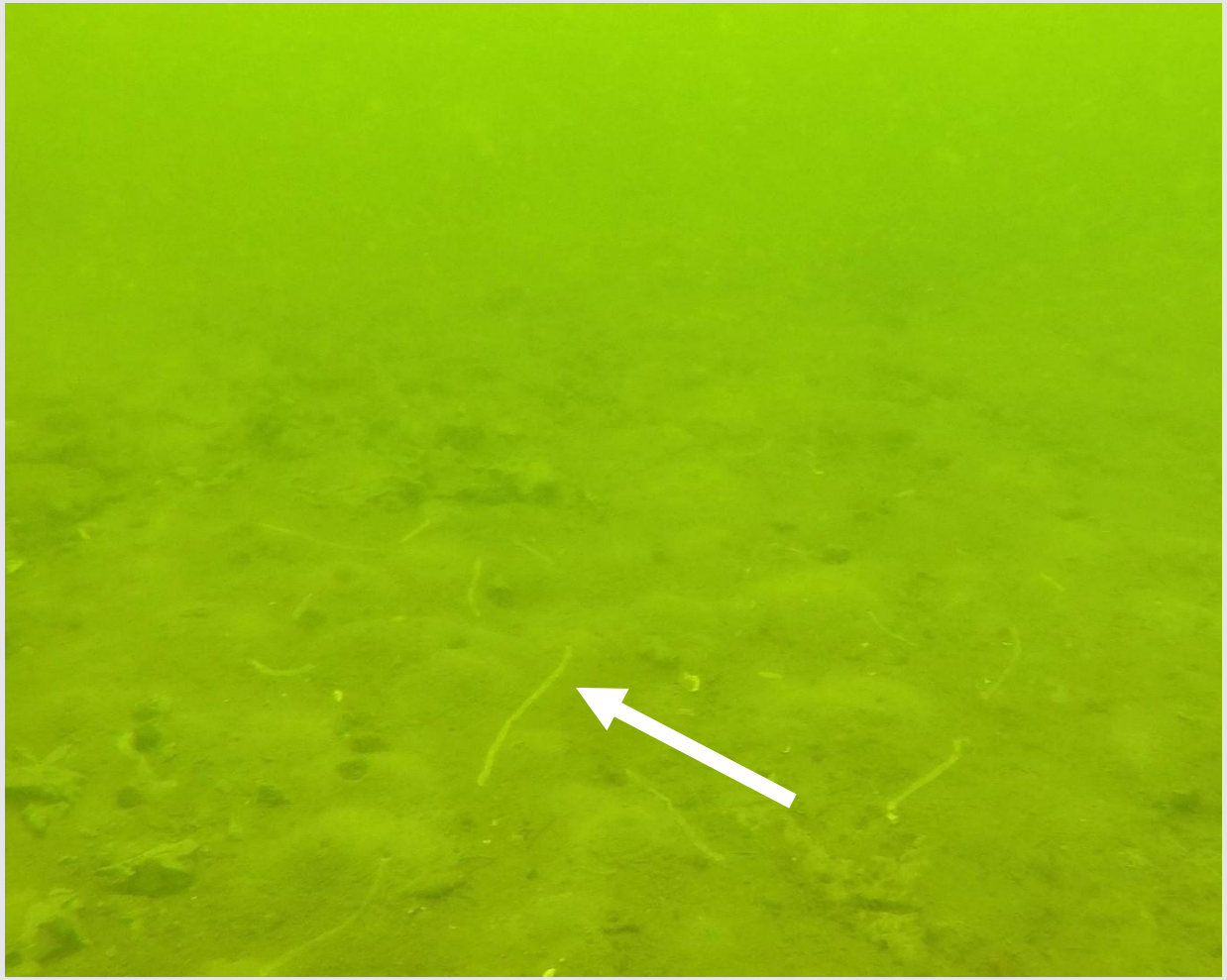
Phylum
Annelida

Class
Polychaeta

Order
Echiuroidea

Family
Bonelliidae





Animal (sp_ANIML)

Pseudobonellia iraidii **(Spoon worm)**

Phylum

Annelida

Class

Polychaeta

Order

Terebellida

Family

Terebellidae

Animal (sp_ANIML)

Terebellidae (Terebellids)

Phylum

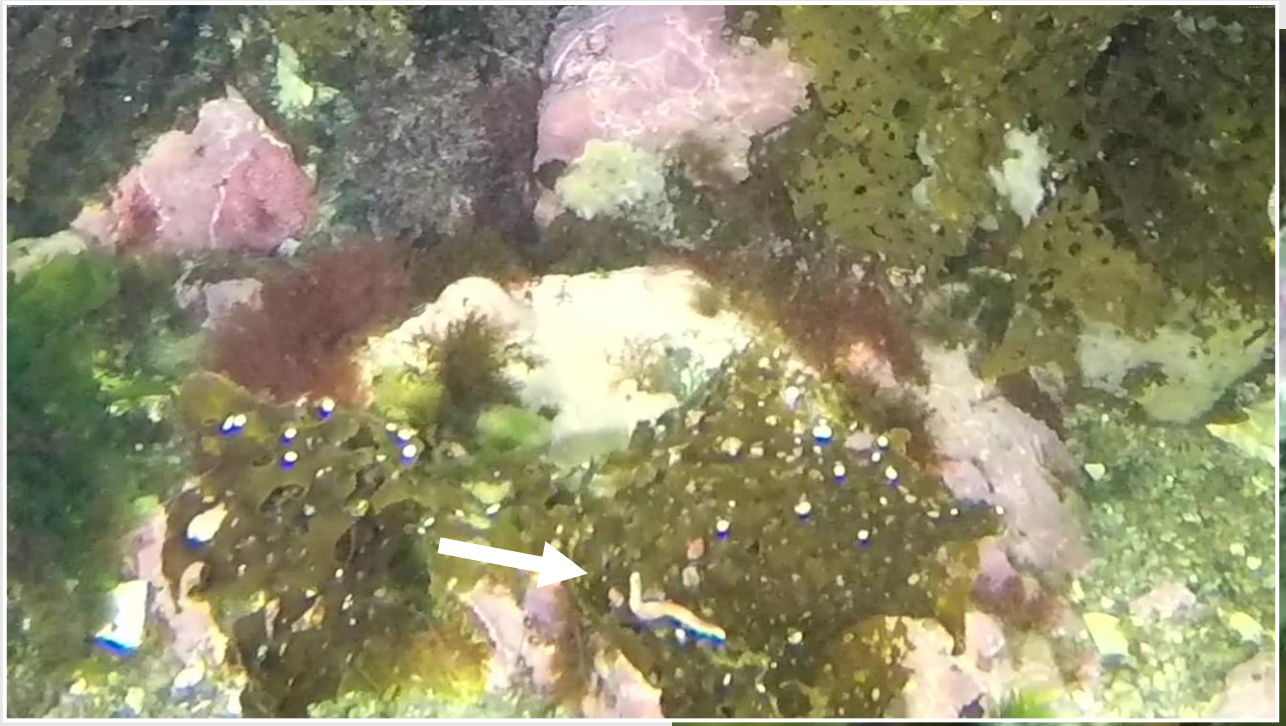
Annelida

Class

Clitellata

Subclass

Hirudinea



Animal (sp_ANIML)

Hirudinea **(Hirudinids)**

Phylum
Annelida

Class
Polychaeta

Order
Sabellida

Family
Sabellidae

Animal (sp_ANIML)

***Myxicola* sp.** **(Slime tube worm)**

Phylum

Annelida

Class

Polychaeta

Order

Family

Animal (sp_ANIML)

Polychaeta

Polychaetes

Morphological group

Fish

PHYLUM	CLASS	ORDER	FAMILY	*SPECIES*
Chordata	Actinopterygii	Eupercaria incertae sedis	Moronidae	*Morone saxatalis*
		Gadiformes	Gadidae	*Gadus* sp.
		Perciformes	Ammodytidae	*Ammodytes* sp.
			Labridae	*Tautogolabrus adspersus*
			Pholidae	*Pholis gunnellus*
			Stichaeidae	*Stichaeus punctatus*
			Zoarcidae	*Zoarces americanus*
		Pleuronectiformes	Pleuronectidae	
		Scombriformes	Scombridae	*Scomber scombrus*
		Scorpaeniformes	Cottidae	
			Cyclopteridae	*Cyclopterus lumpus*
			Liparidae	

Actinopterygii

Animal (sp_ANIML)

Phylum

Chordata

Class

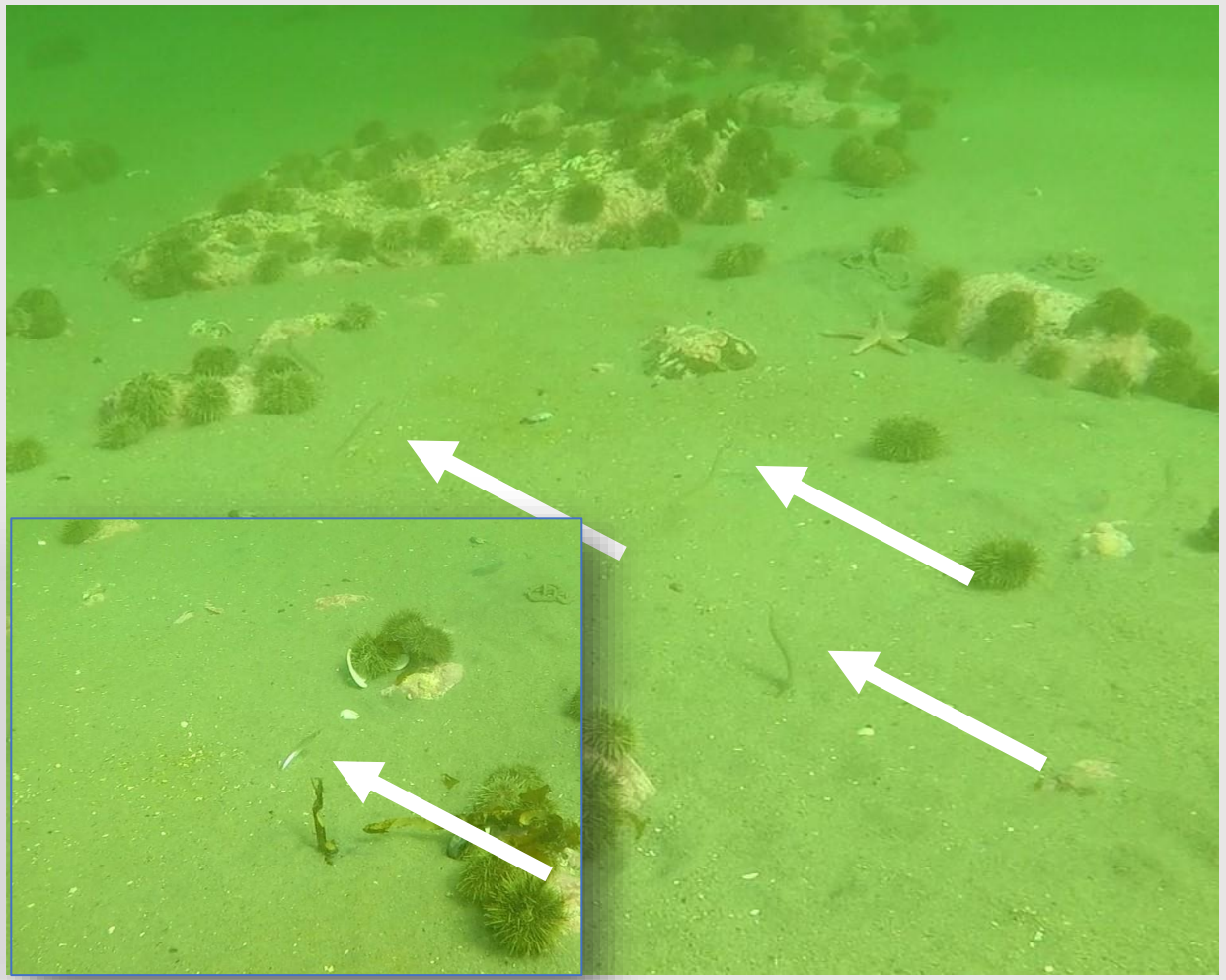
Actinopterygii

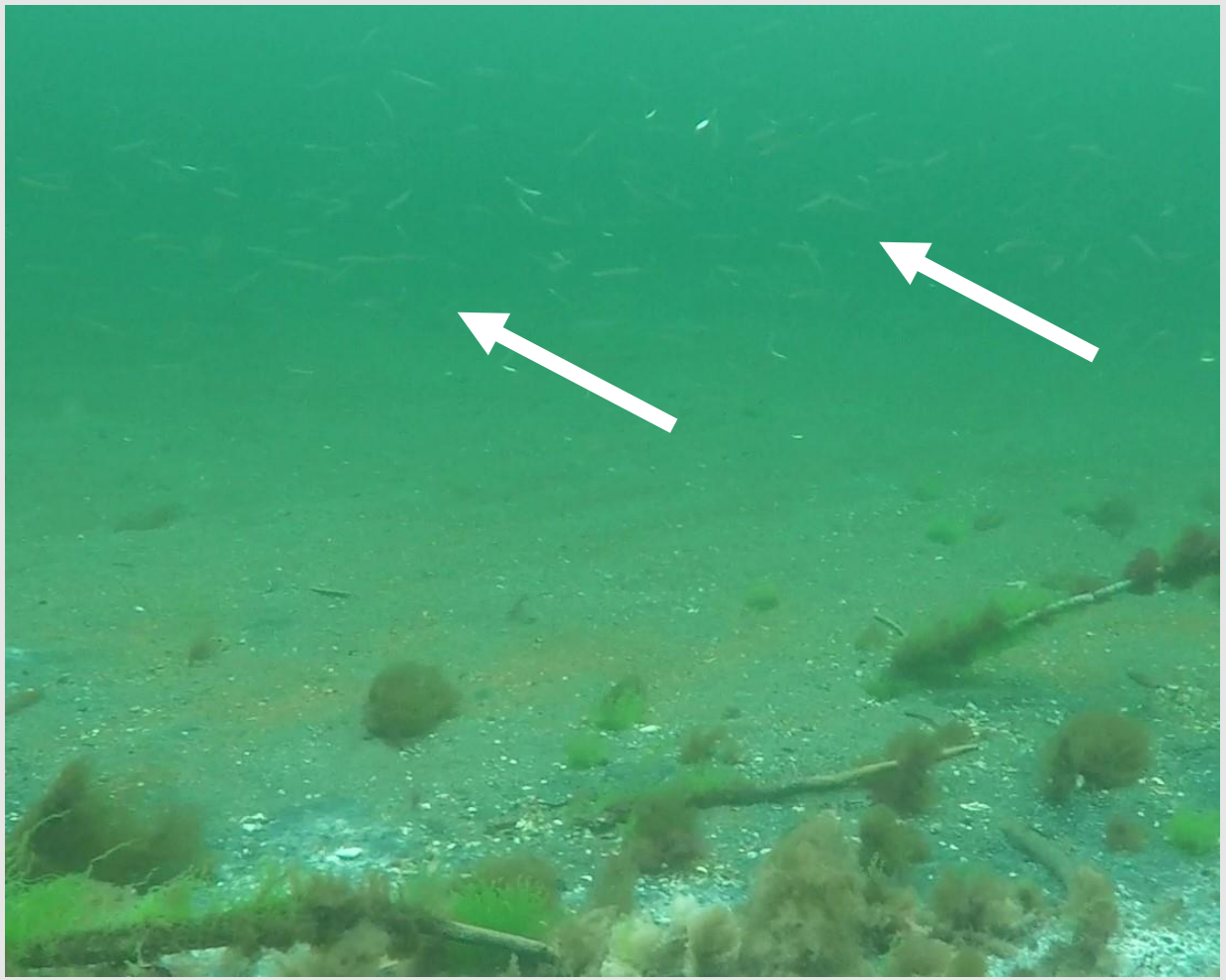
Order

Perciformes

Family

Ammodytidae





Animal (sp_ANIML)

Ammodytes

(Sand lance)

Phylum

Chordata

Class

Actinopterygii

Order

Gadiformes

Family

Gadidae

Animal (sp_ANIML)

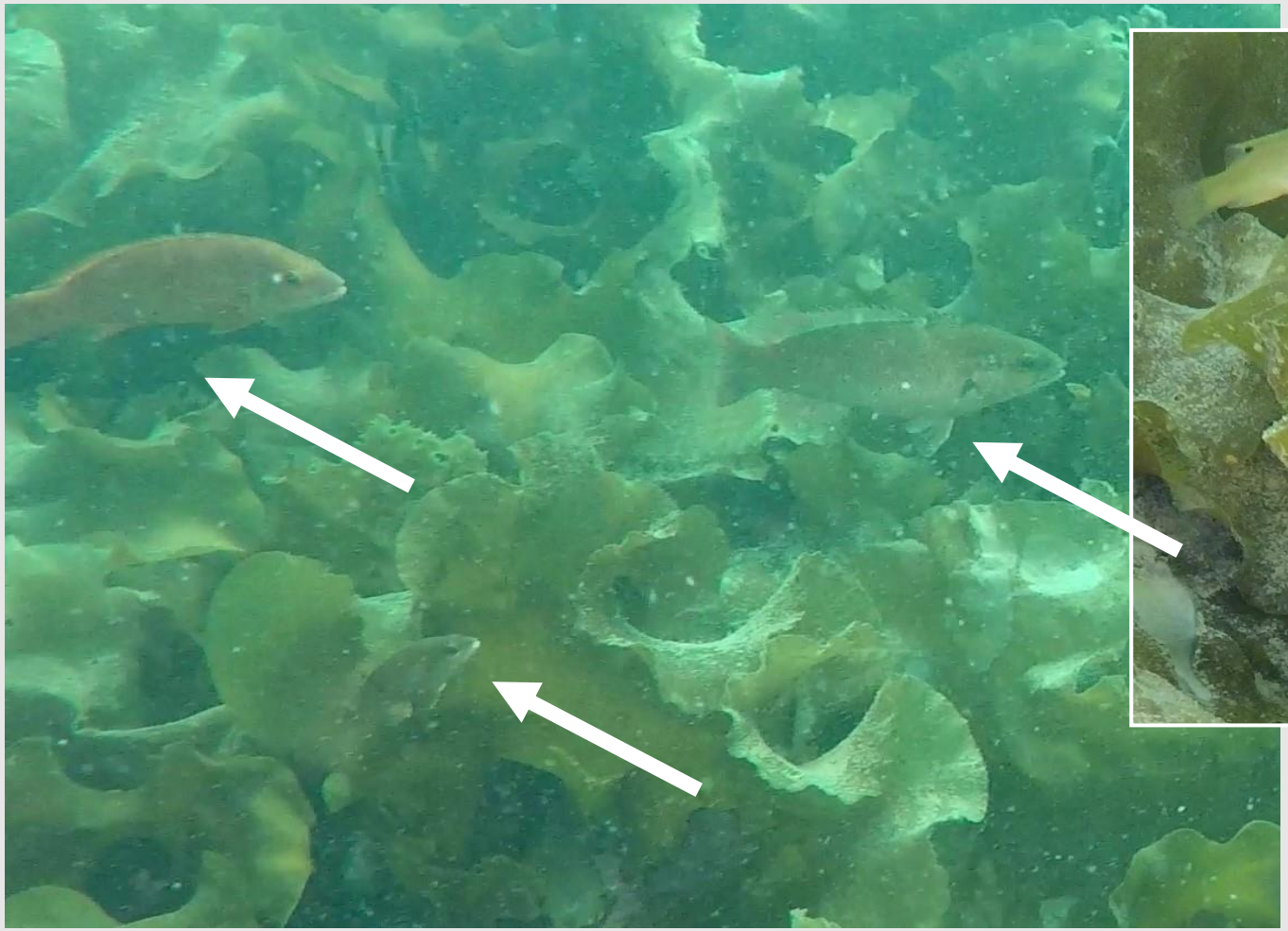
***Gadus* sp.** **(Cod)**

Phylum
Chordata

Class
Actinopterygii

Order
Perciformes

Family
Labridae



Animal (sp_ANIML)

Tautogolabrus adspersus **(Cunner)**

Phylum
Chordata

Class
Actinopterygii

Order
Perciformes

Family
Labridae

Animal (sp_ANIML)

Stichaeus punctatus **(Arctic shanny)**

Phylum

Chordata

Class

Actinopterygii

Order

Perciformes

Family

Pholidae

Animal (sp_ANIML)

Pholis gunnellus **(Rock gunnel)**

Phylum
Chordata

Class
Actinopterygii

Order
Perciformes

Family
Zoarcidae

1. Large upper lip (not a wolffish)
2. Yellow pectoral fins and fin border (not an eelpout)
3. Dark body (eelpout and wolffish are also dark)

Animal (sp_ANIML)

Zoarces americanus **(Ocean pout)**

Phylum	Class	Order	Family
Chordata	**Actinopterygii**	**Pleuronectiformes**	**Pleuronectidae**

Pseudopleuronectes americanus (Winter flounder)

Animal (sp_ANIML)

Pleuronectidae **(Flatfish)**

Phylum

Chordata

Class

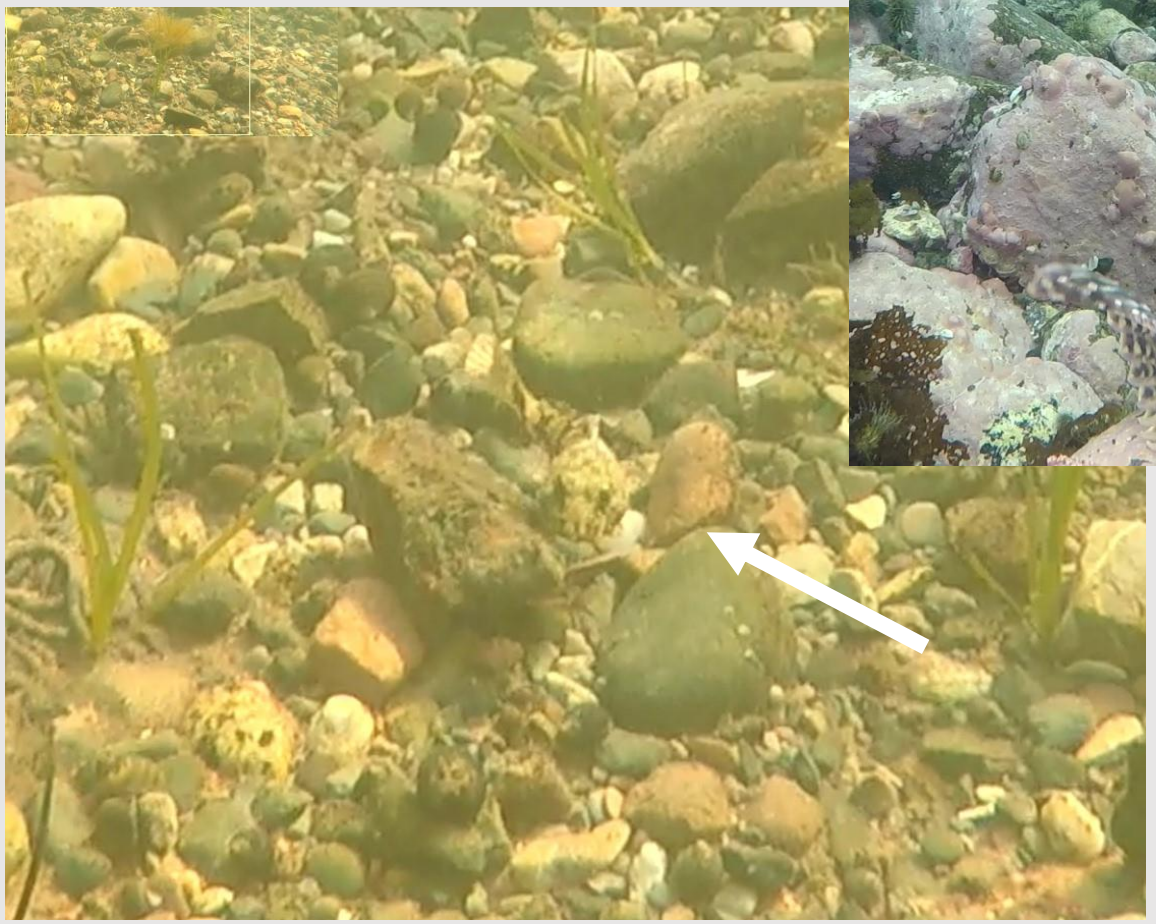
Actinopterygii

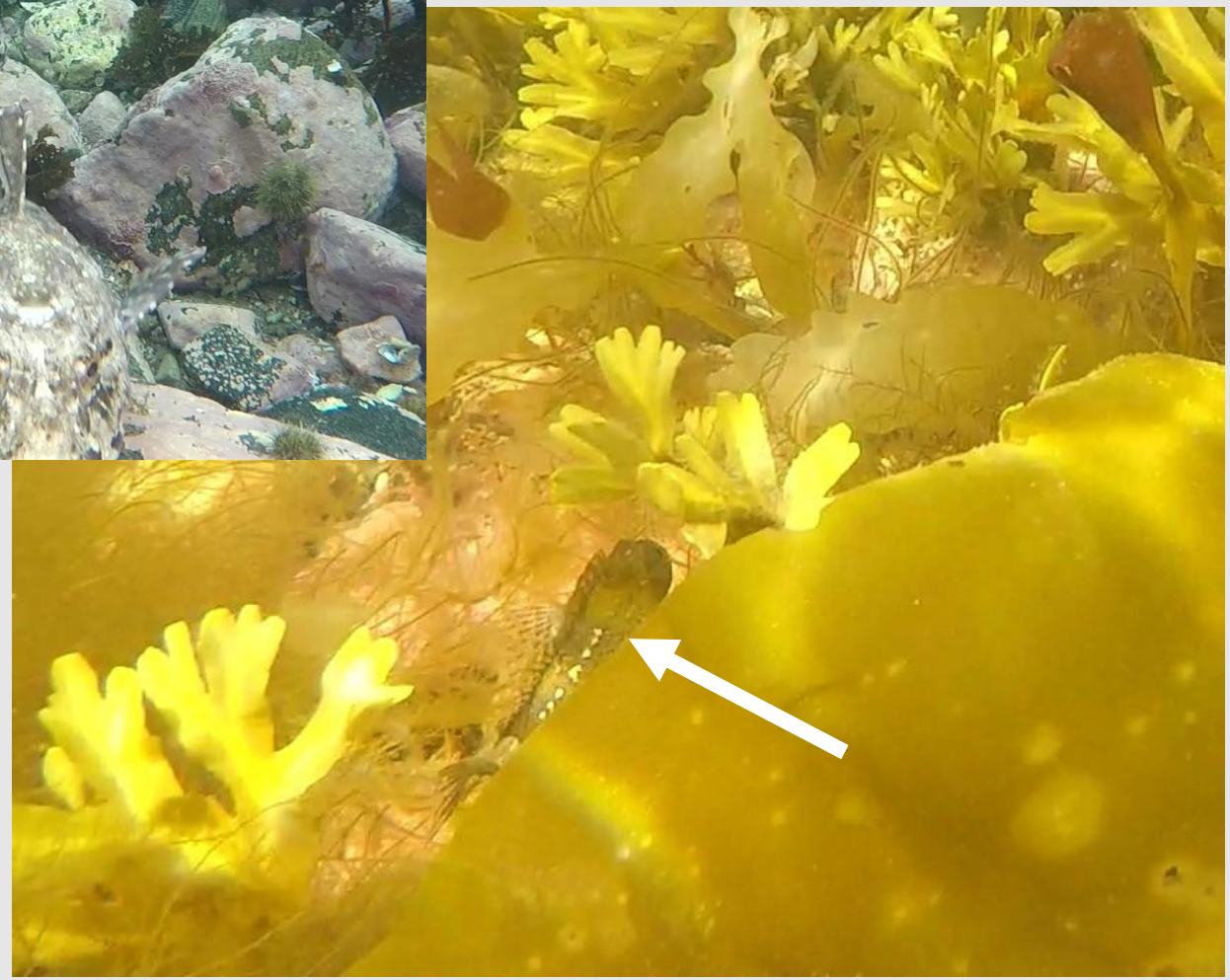
Order

Scorpaeniformes

Family

Cottidae





Primarily *Myoxocephalus* sp.

Animal (sp_ANIML)

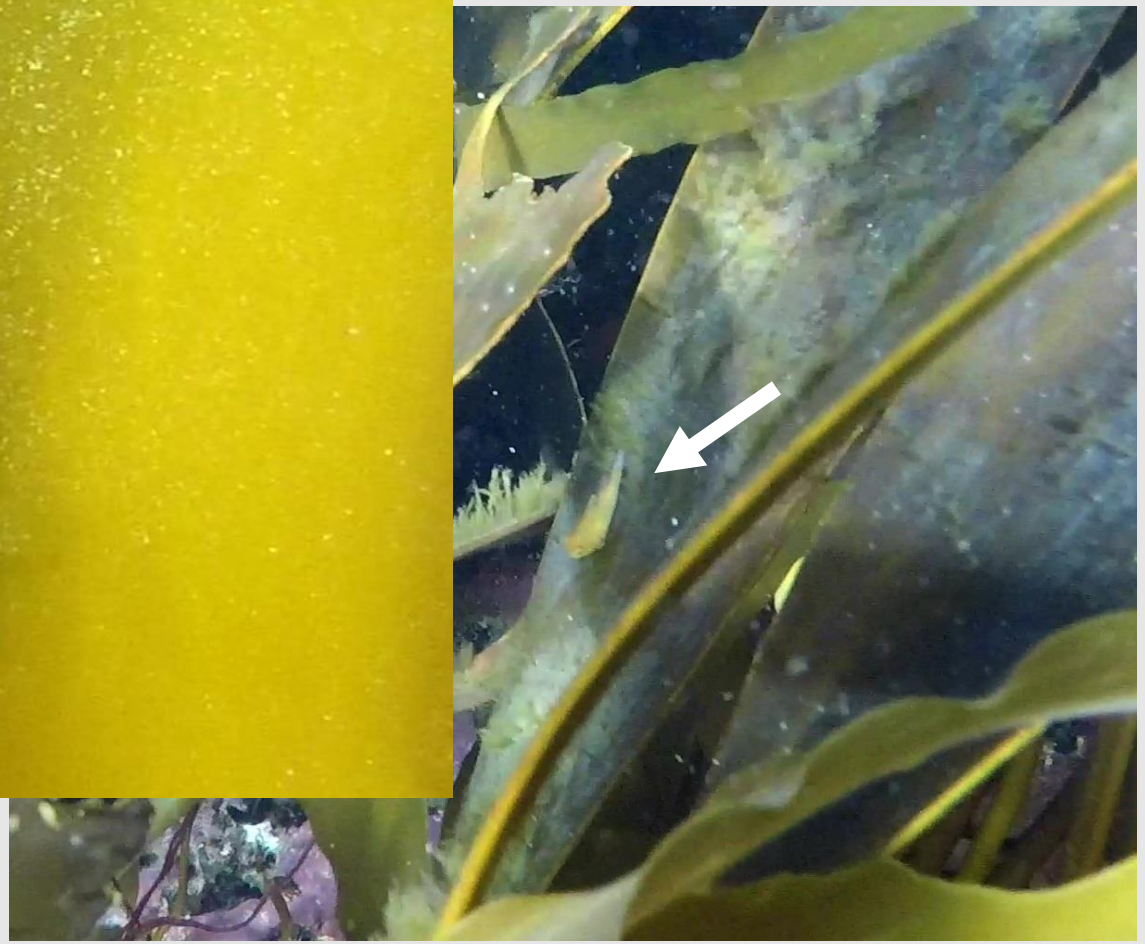
Cottidae **(Sculpin)**

Phylum
Chordata

Class
Actinopterygii

Order
Scorpaeniformes

Family
Cyclopteridae



1. Brownish juvenile, may be greenish when more mature
2. Can stick to bladelike algae using a ventral sucker
3. May be confused with *Liparis* sp.

Animal (sp_ANIML)

Cyclopterus lumpus **(Lumpfish)**

Phylum
Chordata

Class
Actinopterygii

Order
Scorpaeniformes

Family
Liparidae

May be confused with juveniles of *Cyclopterus lumpus*

Animal (sp_ANIML)

***Liparis* sp.** **(Snailfish)**

Phylum	Class	Order	Family
Chordata	Actinopterygii	Eupercaria incertae sedis	Moronidae

Animal (sp_ANIML)

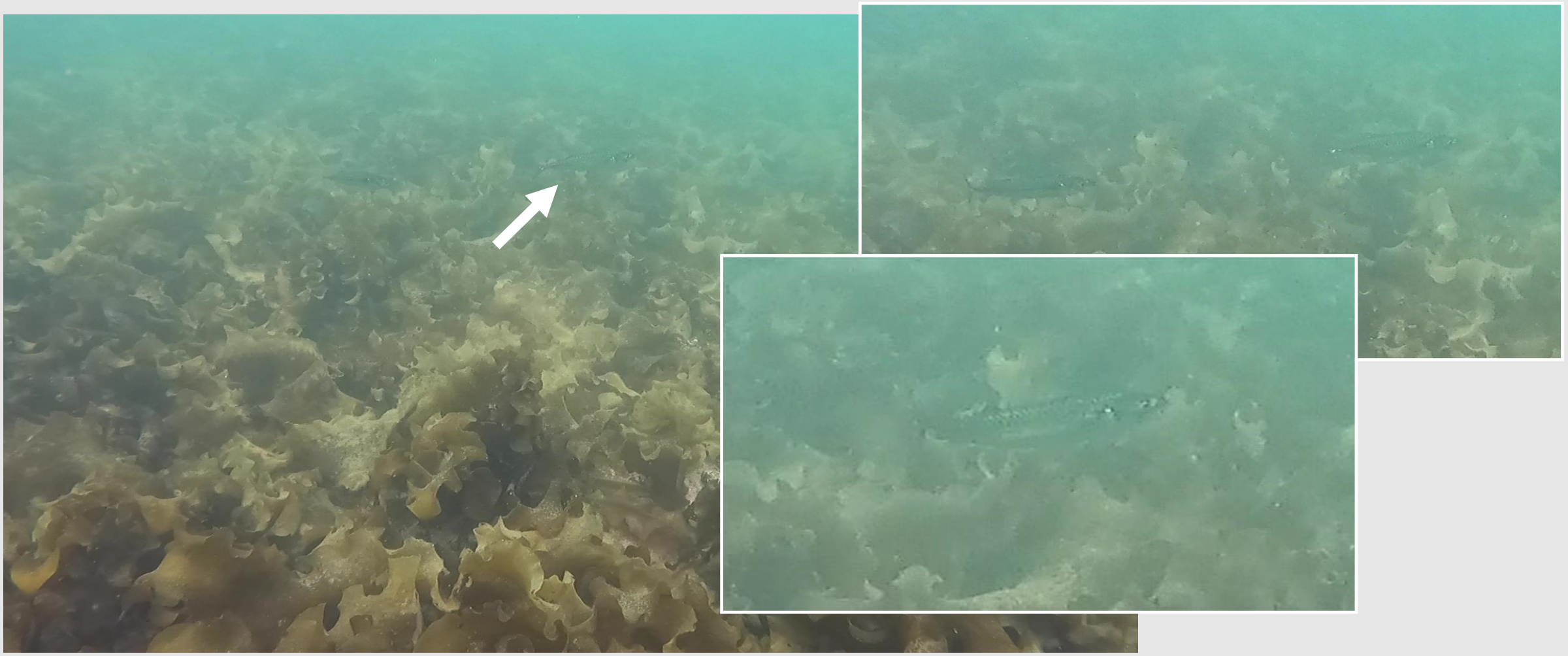
Morone saxatilis **(Striped bass)**

Phylum
Chordata

Class
Actinopterygii

Order
Scombriformes

Family
Scombridae



Animal (sp_ANIML)

Scomber scombrus **(Atlantic mackerel)**

Phylum

Chordata

Class

Actinopterygii

Order

Family

1. Ray-finned fishes whose identification is doubtful
2. In this case, details on the organism can be included in the “notes" cell of the animal entry form. E.g. "Could be capelin, smelt or herring"

Animal (sp_ANIML)

Actinopterygii **(Ray-finned fishes)**

Morphological group

Demospongiae and encrusting animals

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Annelida	Polychaeta	Sabellida	Serpulidae	Spirorbinae
Arthropoda	Hexanauplia	Sessilia	Balanoidea	
Encrusting Bryozoa				
Chordata	Ascidiacea	Stolidobranchia	Styelidae	*Botrylloides violaceus*
Porifera	Demospongiae	Haplosclerida	Chalinidae	*Haliclona oculata*
	Demospongiae	Suberitida	Halichondriidae	*Halichondria sitiens*
	Encrusting morphotype in Demospongiae			
	Demospongiae			

Phylum

Arthropoda

Class

Hexanauplia

Order

Sessilia

Family

Animal (sp_ANIML)

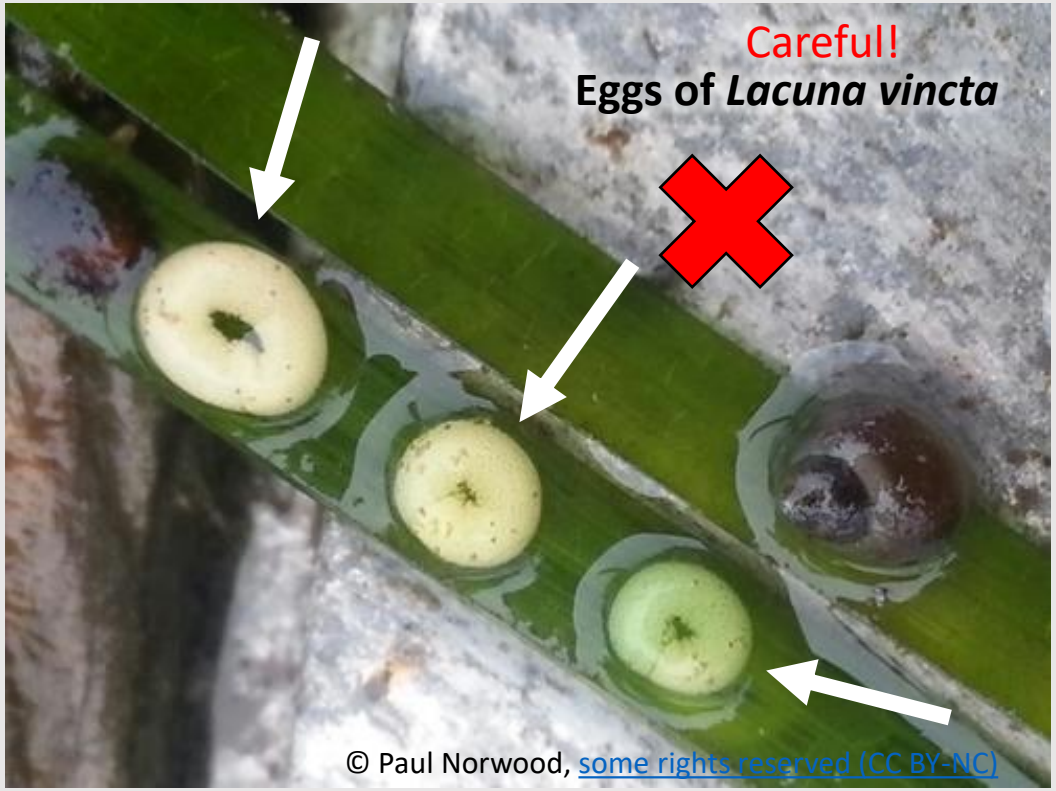
Balanoidea **(Barnacle)**

Phylum
Annelida

Class
Polychaeta

Order
Sabellida

Family
Serpulidae



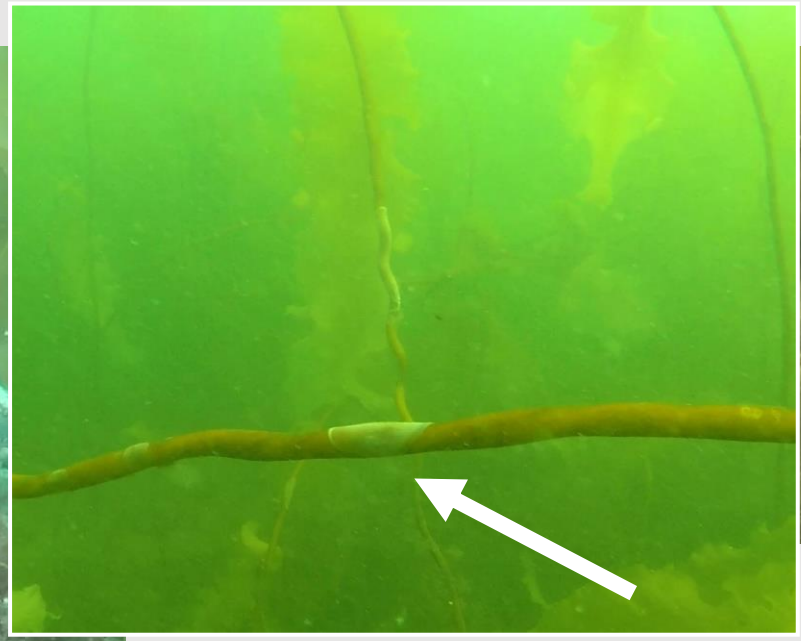
1. Small spirals of various sizes, random distribution
2. May be mistaken for the eggs of *Lacuna vincta* (uniform doughnut-shaped eggs laid in small clusters on kelp)

Animal (sp_ANIML)

Spirorbinae **(Northern cod worm)**

Phylum | Class | Order | Family

Bryozoa



1. Be careful not to confuse with gastropod grazing injuries or sections of dead algae cells
2. *Membranipora* sp. has a thin, lace-like appearance

Animal (sp_ANIML)

Encrusting Bryozoa

(Encrusting bryozoans)

Phylum	Class	Order	Family
Chordata	Ascidiacea	Stolidobranchia	Styelidae

1. Often associated with *Zostera marina*
2. May be confused with Demospongiae

Animal (sp_ANIML)

Botrylloides violaceus **(Violet tunicate)**

Phylum

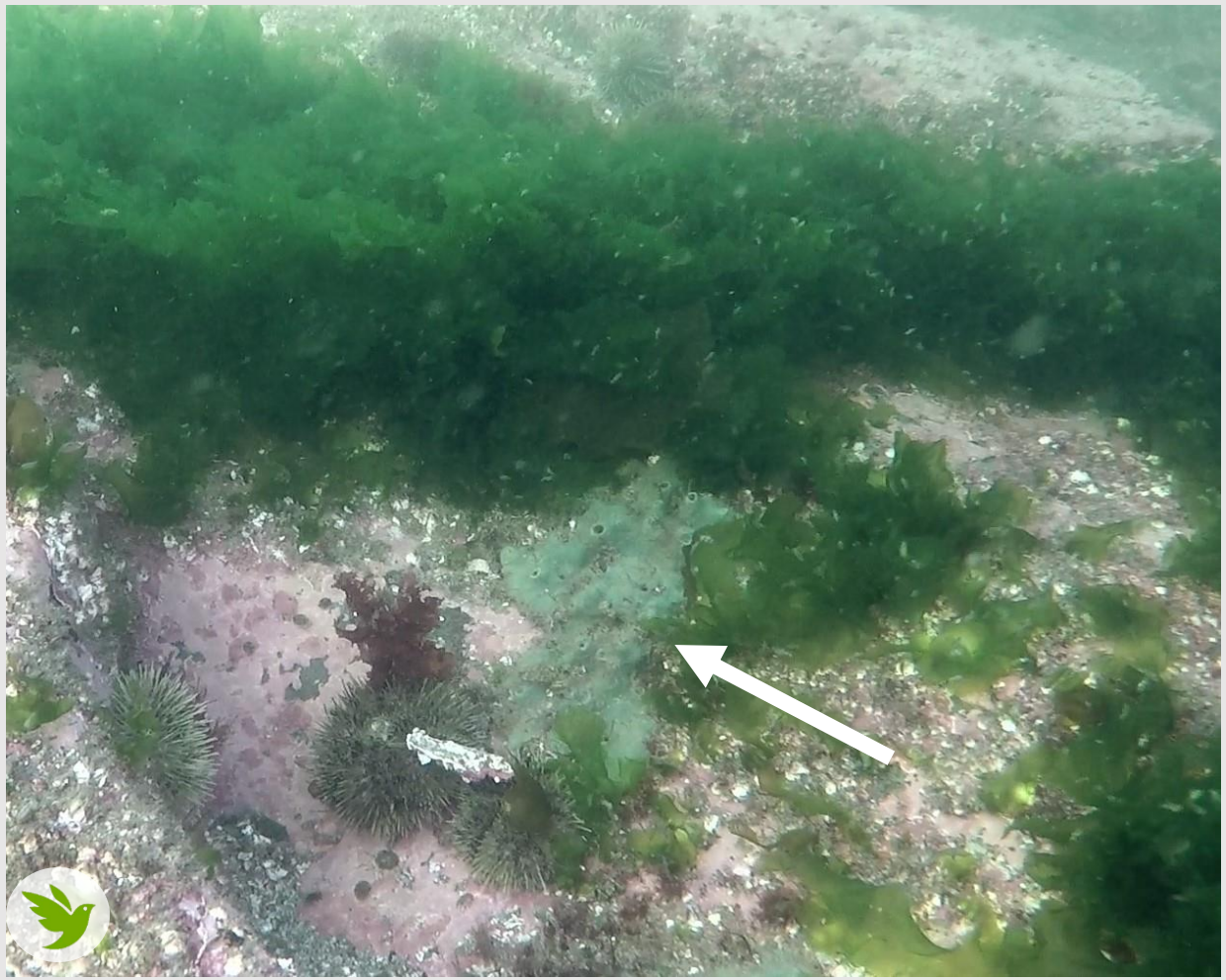
Porifera

Class

Demospongiae

Order

Family



1. If the sponge is not encrusting, indicate Demospongiae
2. Probably *Halichondria panicea*

Animal (sp_ANIML)

Encrusting morphotype in Demospongiae

(Encrusting sponge)

Phylum	Class	Order	Family
Porifera	Demospongiae	Haplosclerida	Chalinidae

Animal (sp_ANIML)

Haliclona oculata **(Mermaid's glove)**

Phylum
Porifera

Class
Demospongiae

Order
Suberitida

Family
Halichondriidae

Animal (sp_ANIML)

Halichondria sitiens

(Legion-nubbed horny sponge)

Phylum

Porifera

Class

Demospongiae

Order

Family

Use when the morphotype or taxon cannot be identified

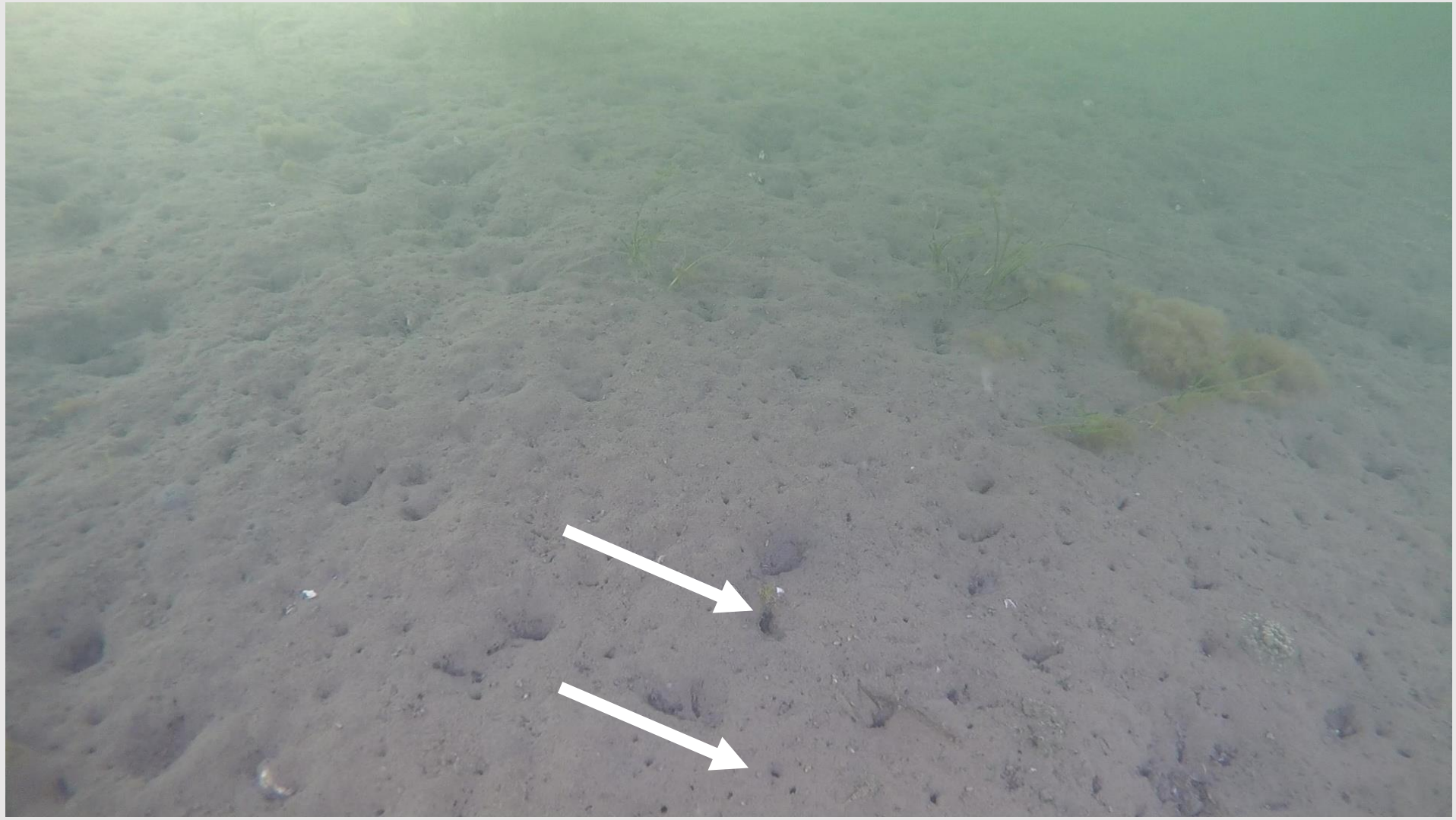
Animal (sp_ANIML)

Demospongiae **(Sponge)**

Other

Endobenthos

Small sediment tubes



1. Observation of small holes in a fine substrate produced by unidentified endobenthic organisms
2. Could be Bivalvia or Polycheta

Animal (sp_ANIML)

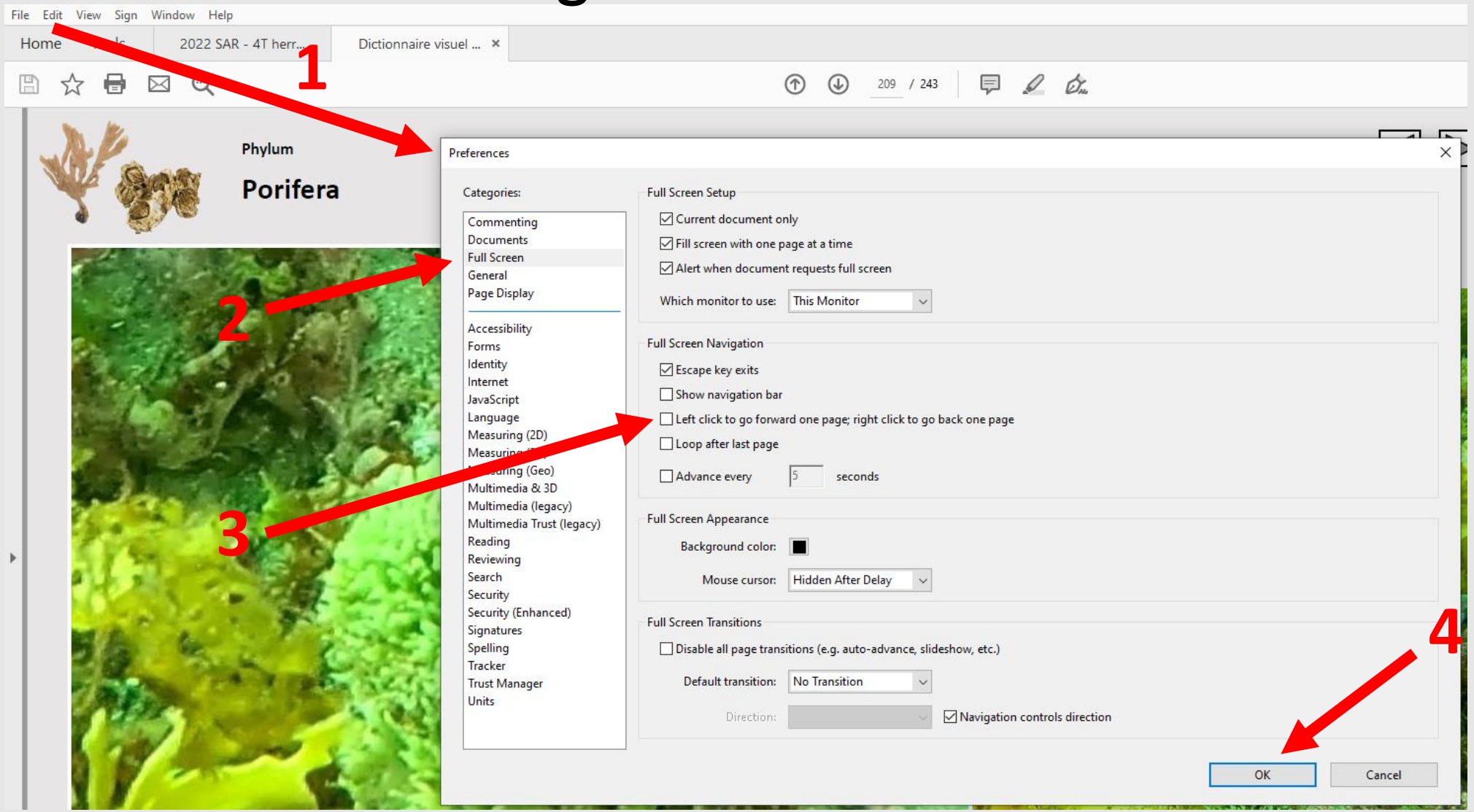
Endobenthos

1. Small sediment tubes on a hard surface (rock)
2. Possibly produced by amphipods

Animal (sp_ANIML)

Small sediment tubes

TUTORIAL: Viewing with Acrobat Reader DC



5

Click here

To optimize the use of full screen mode in Adobe Acrobat Reader DC, go to **Edit-Preferences-Full Screen** and **uncheck** the basic option “Left click to go forward one page; right click to go back one page.”

TUTORIAL

- To continue the tutorial, click on the right arrow in the navigation menu.
- You can exit this tutorial now by clicking on the "Home" button.

This dictionary was developed to:

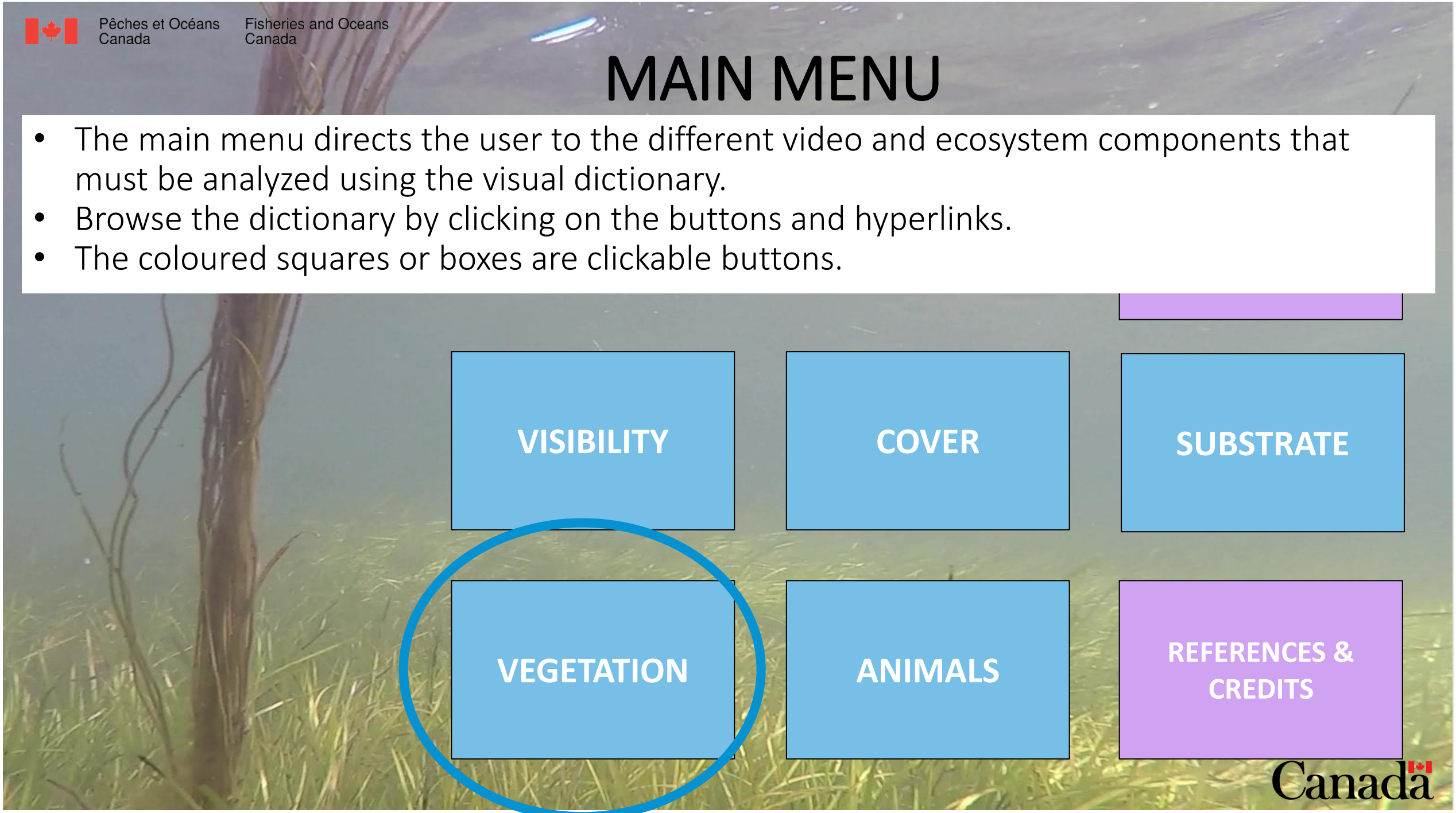
1. Standardize the descriptor(s) selected by Planning for Integrated Environmental Response (PIER) project analysts to represent observed ecosystem components.
2. Facilitate the identification of organisms (both plant and animal) through a bank of screenshots from videos produced by PIER.

This tutorial guides you through how to use this tool. **To go forward, click on the buttons and links indicated by the arrows or blue circles.**

Pêches et Océans Canada | Fisheries and Oceans Canada

MAIN MENU

- The main menu directs the user to the different video and ecosystem components that must be analyzed using the visual dictionary.
- Browse the dictionary by clicking on the buttons and hyperlinks.
- The coloured squares or boxes are clickable buttons.



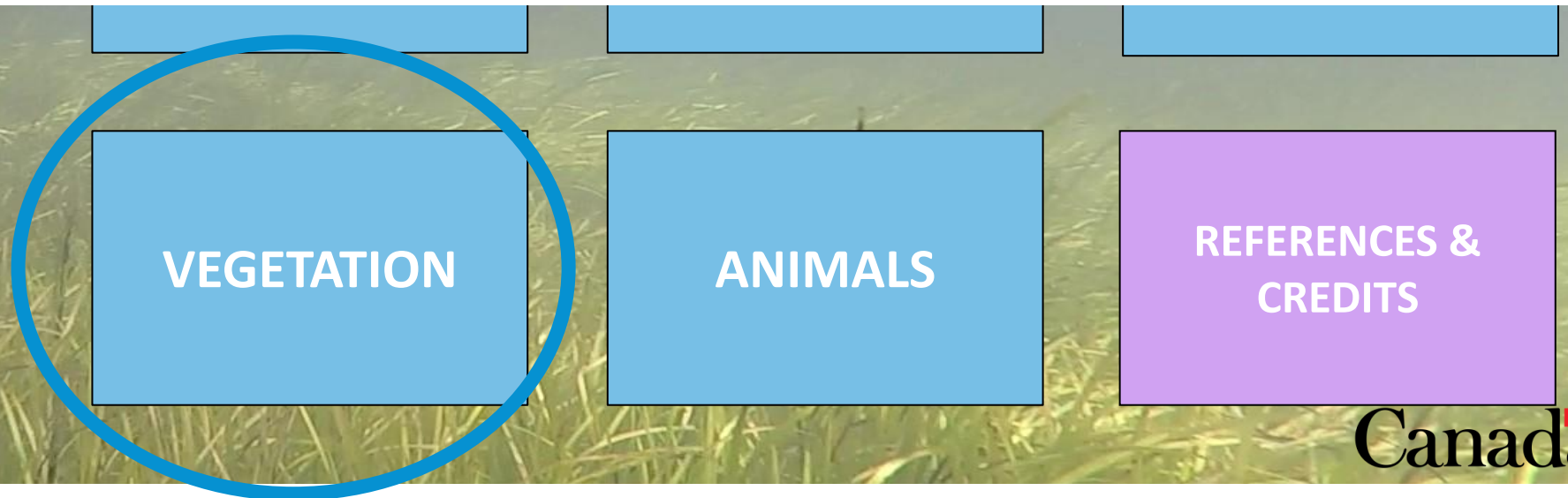
Canada

Pêches et Océans Canada | Fisheries and Oceans Canada

MAIN MENU

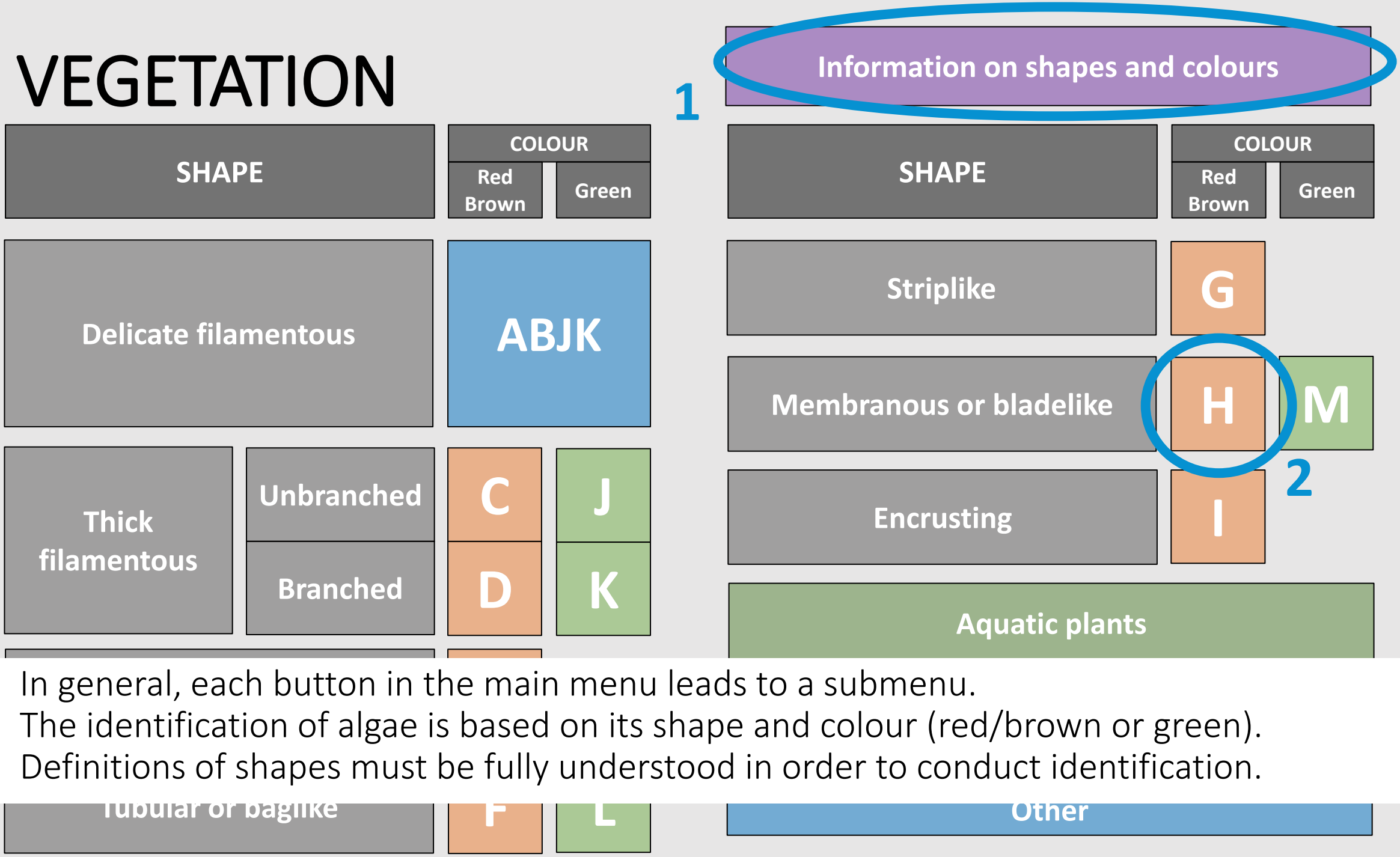
- Main types of clickable buttons. The following colours generally indicate:

Blue	One or more objects of interest to characterize (substrate, animal, etc.)
Pink	Additional information
Green	Green algae (Chlorophytya) or aquatic plant
Orange	Red/brown algae (Phaeophyceae or Rhodophyta)
Brown	Brown algae
Red	Red algae
Grey	Non-clickable squares, used to organize the information on the page



Canada

VEGETATION



- In general, each button in the main menu leads to a submenu.
- The identification of algae is based on its shape and colour (red/brown or green).
- Definitions of shapes must be fully understood in order to conduct identification.

SHAPES AND COLOURS

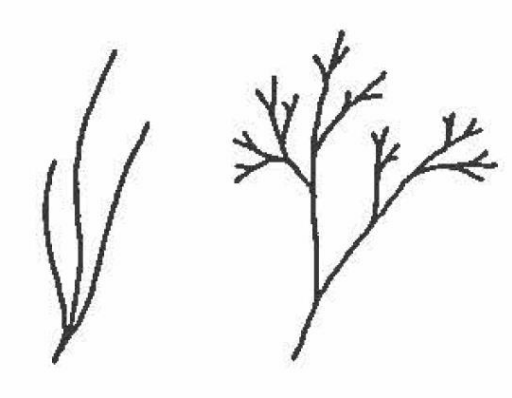
The system for classifying algae by shape and colour has been adapted from the system described by R. Leclerc (1987) in Guide d'identification des algues marines de l'estuaire du Saint-Laurent [Guide to Identifying Marine Algae in the St. Lawrence Estuary]. The letters assigned to each shape and colour combination are the same for easy reference.

The illustrations of the general shapes of algae presented in the pages of the visual dictionary are reproduced from Leclerc (1987).

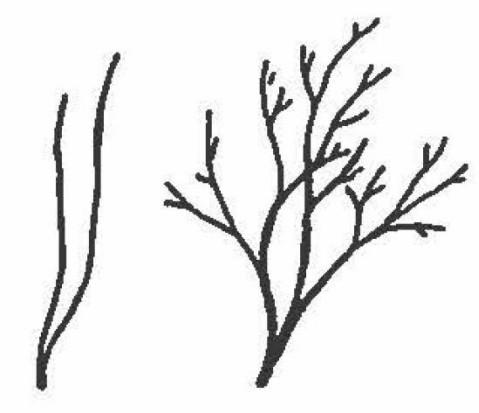
Reference:

Leclerc, R., 1987. Guide d’identification des algues marines de l’estuaire du Saint-Laurent. Groupe d’animation en sciences naturelles du Québec inc., Saint-Romuald. 180 p.

SHAPES



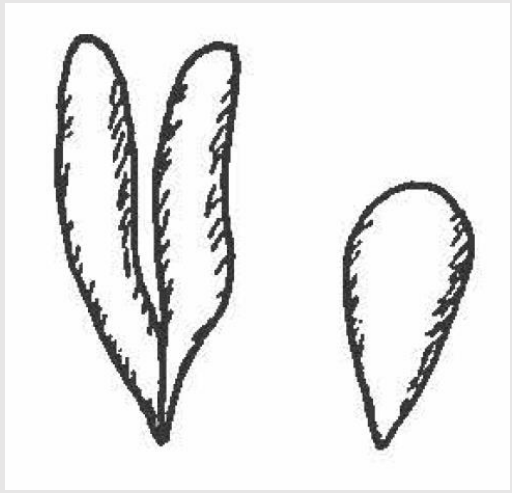
Delicate filamentous algae are as thin as or thinner than hair.



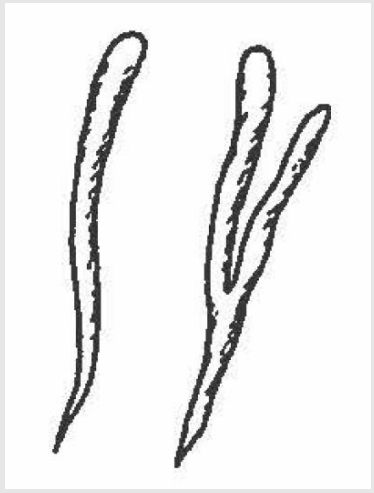
Thick filamentous algae are thicker than hair.

Flattened or foliated algae are flattened or leaf-shaped (at least at the tip).

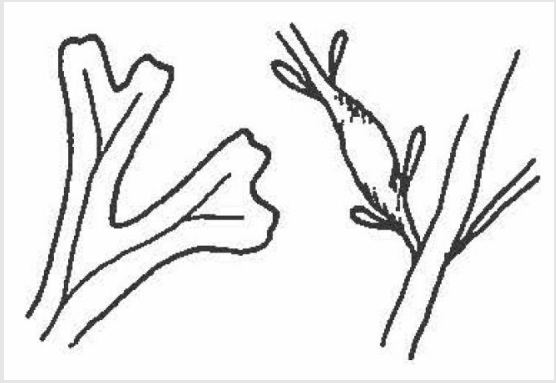
SHAPES



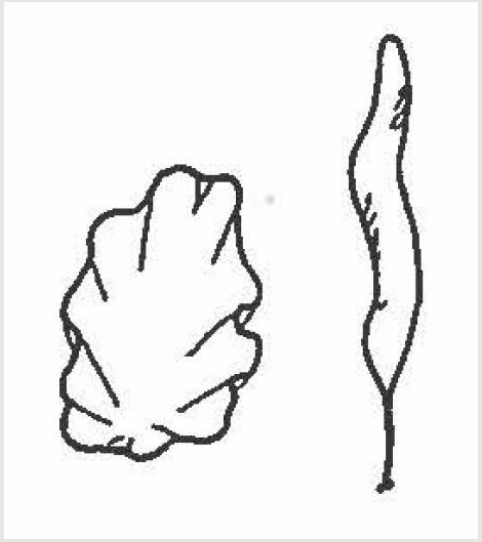
Baglike algae are oval-shaped and thin-walled.



Tubular algae are tube-shaped from the base of the holdfast.



Striplike algae are shaped in branched strips and have the texture of leather.



Membranous algae are in the shape of sessile membranes (fixed to the substrate by the margin, no stipe).

Bladelike algae have a flattened shape and are longer than they are wide.

COLOURS

It is often difficult to distinguish between brownish-red and brown shades, especially in video analysis. For that reason, Leclerc (1987) placed these two groups together and suggested that the colour criterion be used only to differentiate between particular species.

Beware of dead algae. They may lose their brown or red colour and appear to have greenish, orange or golden patches.

When the colour is uncertain, it is unlikely to be green algae.

1

H

Shape

Membranous or bladelike

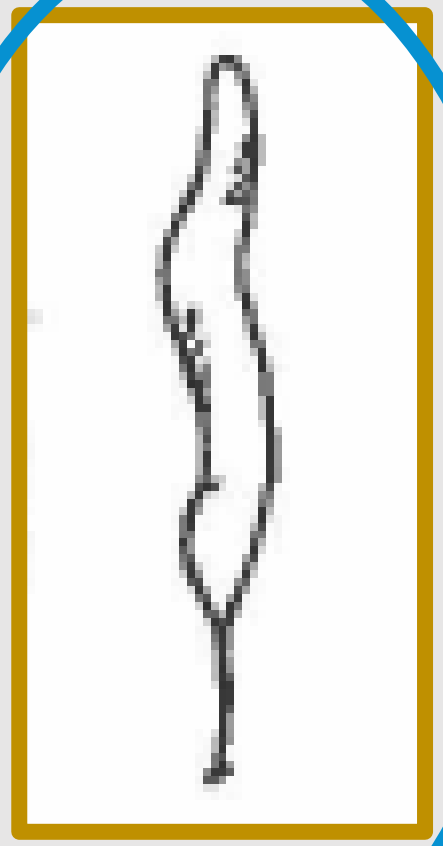
Branching

Colour

Red / brown

Click on this button to continue the tutorial

3



Bladelike

1. The elements presented at the top of the page represent the information selected by the user that led the user to the desired page.
2. The white section at the bottom of the page shows the combination of Vg_MORPH, Vg_TYPE, and Vg_TAXO attributes assigned to the plant for PIER mapping purposes. If the identification stops at the page in question, **only the description in the box must be entered by the analyst in the appropriate "végétal" field of the entry tool.**
3. In some cases, an intermediary identification page asks the user to make additional choices depending on the shape of the observed organism.

2

Shape and colour (Vg_MORPH)

Unidentified membranous or bladelike algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

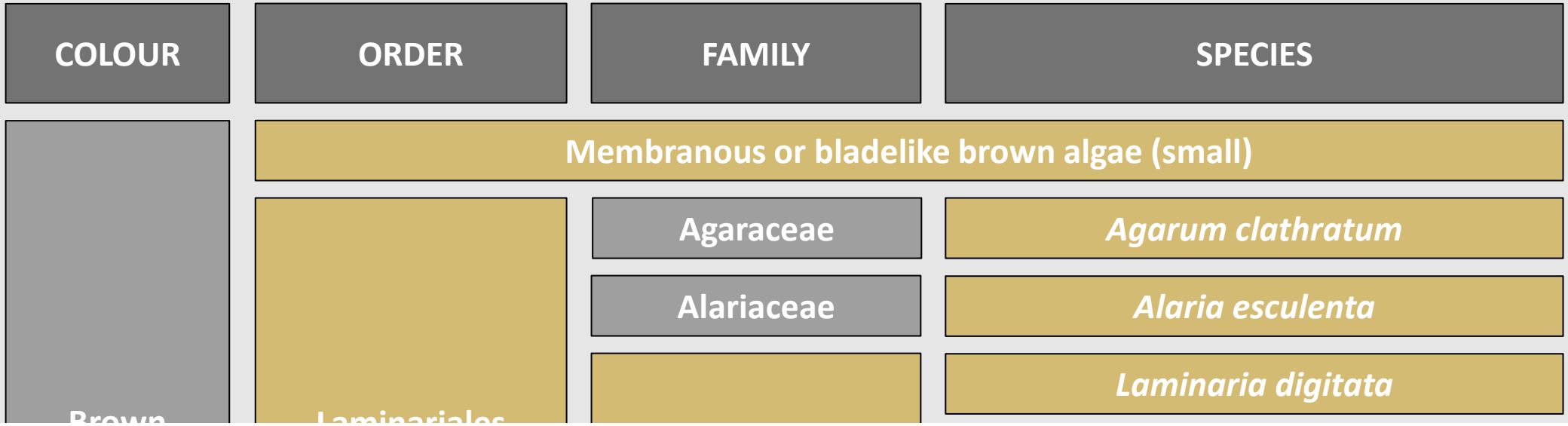
Shape

Membranous or bladelike

Branching

Colour

Red / brown



- This intermediary identification page presents all the taxa that can be entered by the analyst. Only the coloured buttons are clickable.
- Access the taxon page directly by clicking on its coloured button or browse all taxa in the group using the arrows at the top right.
- Explore the available (brown) buttons in this section of the tutorial BEFORE continuing by clicking on the red NEXT button.

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

Shape

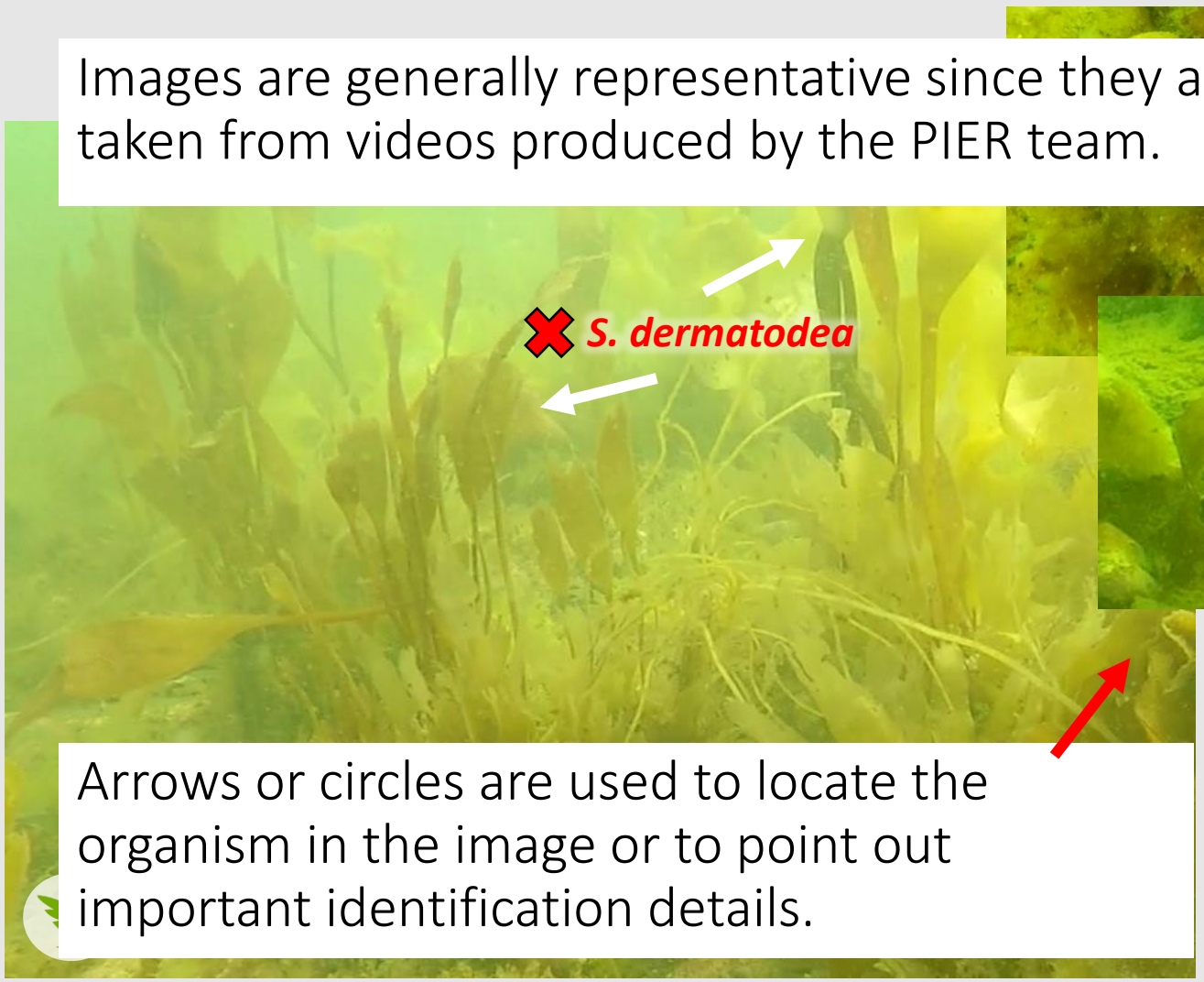
Membranous or bladelike

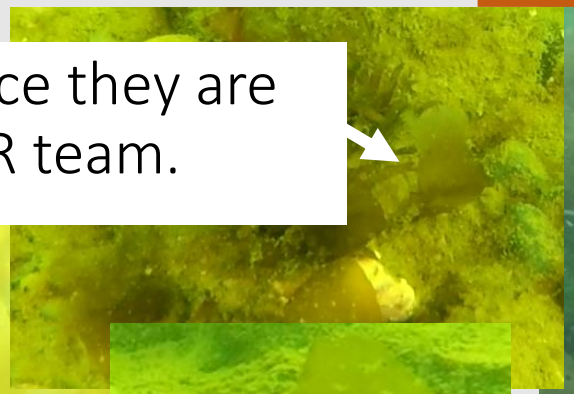
Branching

Colour

Red / brown

Images are generally representative since they are taken from videos produced by the PIER team.





Arrows or circles are used to locate the organism in the image or to point out important identification details.

1. Stipe not easily visible and no midrib, discoid holdfast, often gregarious
2. Up to 45 cm long; thin or even translucent
3. Straight or irregularly scalloped margins
4. May be confused with kelp seedlings (thicker and tougher blade, long stipe), Bangiaceae and Scytosiphonaceae

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae (small)

Vg_TYPE

Unidentified algae

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

The white section at the bottom of the page shows the combination of Vg_MORPH, Vg_TYPE, and Vg_TAXO attributes assigned to the plant for PIER mapping purposes. If the identification stops at the page in question, **only the description in the box must be entered by the analyst in the appropriate "végétal" field of the entry tool.**

1. Blade riddled with holes

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Agaraceae

Species or genus (Vg_TAXO)

Agarum clathratum

H

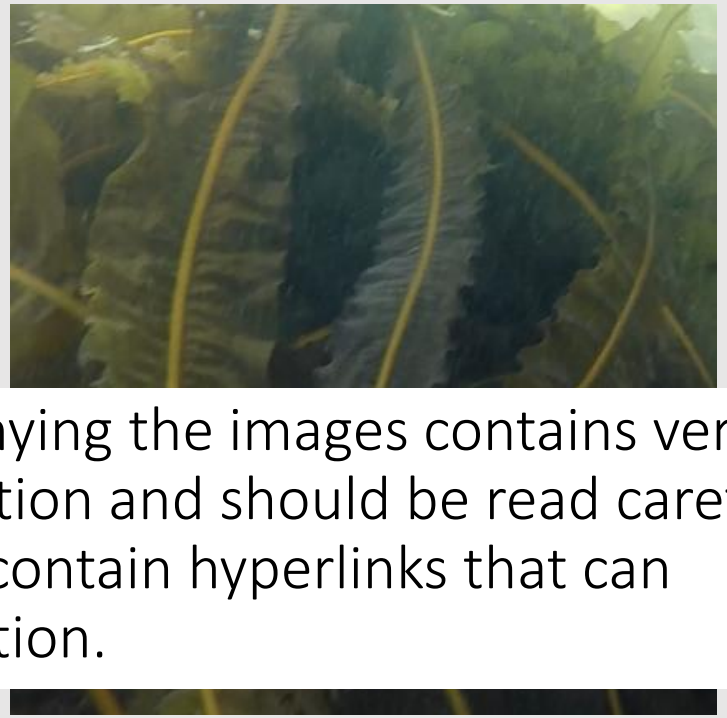
Shape

Membranous or bladelike

Branching

Colour

Red / brown



The text accompanying the images contains very important information and should be read carefully. The text may also contain hyperlinks that can facilitate identification.

1. Midrib visible across entire length
2. Pleated blade
3. Sporophylls at the base of the stipe
4. When sea urchins are abundant, grazing can reduce the blade to the midrib, see *Chorda filum*

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Alariaceae

Species or genus (Vg_TAXO)

Alaria esculenta

H

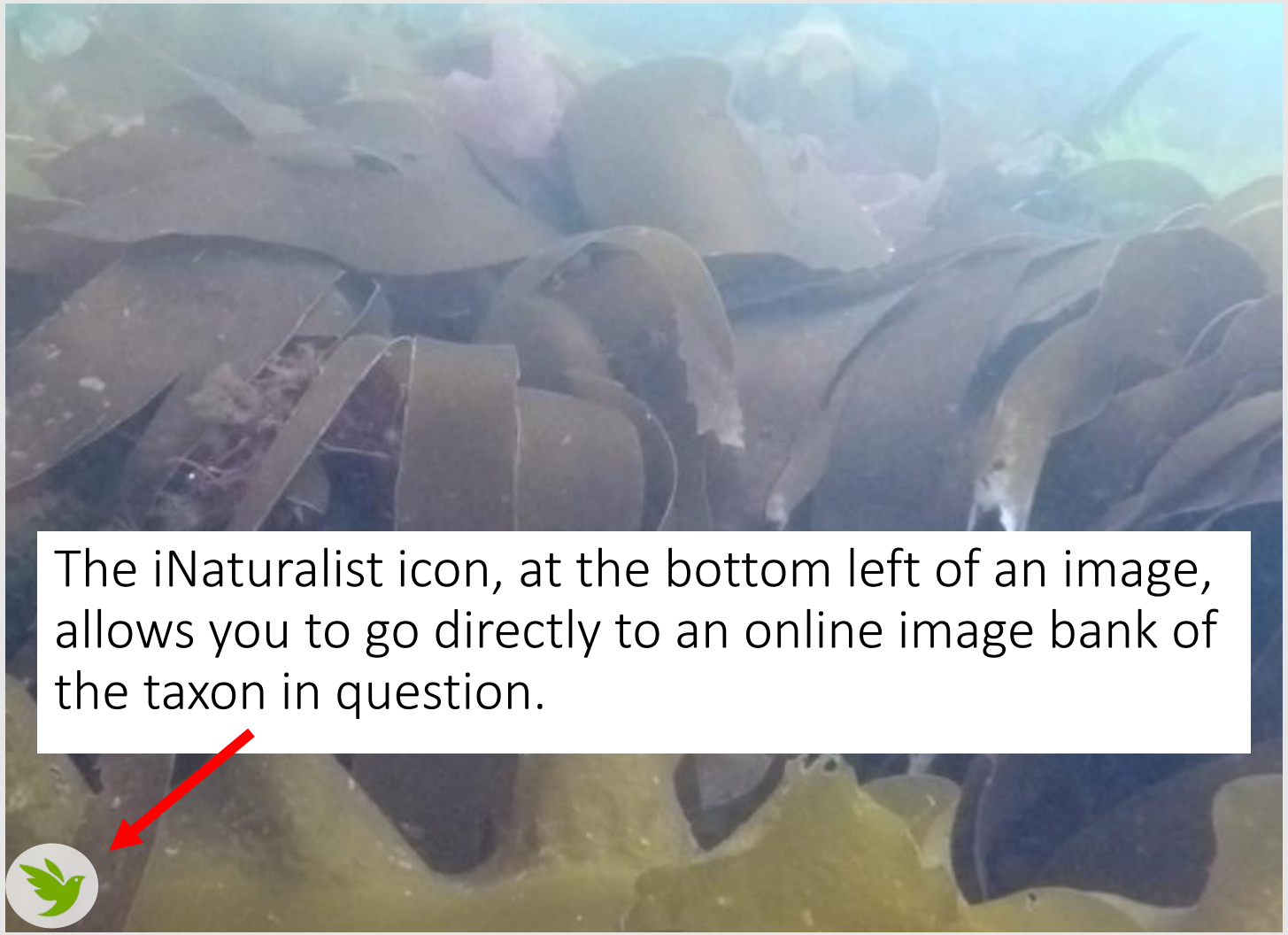
Shape

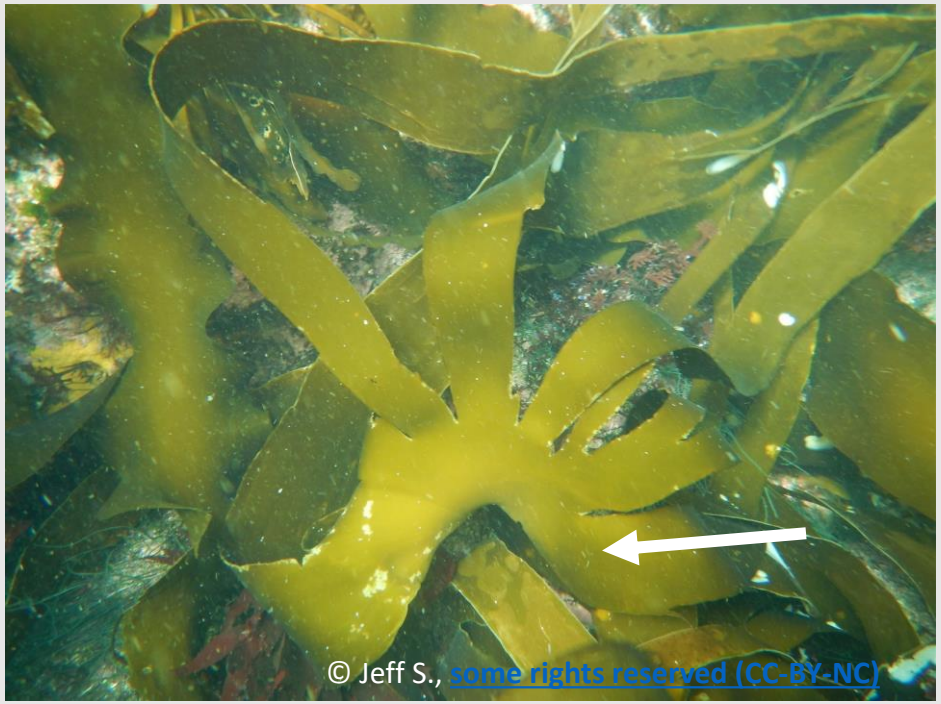
Membranous or bladelike

Branching

Colour

Red / brown





1. Wide, dark brown blade divided into several strips
2. Stipe is short and flattened at the top
3. Blade may be mistaken for a frayed specimen of *Saccorhiza dermatodea*
4. When in doubt, indicate shape/colour only

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariaceae

Species or genus (Vg_TAXO)

Laminaria digitata

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **membranous or bladelike brown algae**.

In that case, these algae can be identified as part of the **Laminariaceae** family if they have the following characteristics:

- Membranous or bladelike brown algae
- Blade is wide, flat, smooth or wrinkled; margins are slightly scalloped or not at all
- No visible midrib along the entire length of the blade

Note: Could be the genus ***Saccharina*** or ***Laminaria***.

Higher taxon pages provide input options to be used when the species or genus (Vg_TAXO) cannot be identified.

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariaceae

Species or genus (Vg_TAXO)

H

Shape

Membranous or bladelike

Branching

Colour

Red / brown

Genus and species identification can be difficult for **membranous or bladelike brown algae**.

In that case, these algae can be identified as part of the **Laminariales** order if they have the following characteristics:

- Membranous or bladelike brown algae
- Blade is wide, flat, smooth or wrinkled; margins are slightly scalloped or not at all
- Impossible to confirm whether the stipe is cylindrical or flat
- Impossible to confirm whether midrib is present

Note: Could be the genus ***Saccharina***, ***Laminaria***, ***Alaria*** or ***Saccorhiza***.

Shape and colour (Vg_MORPH)

Membranous or bladelike brown algae

Vg_TYPE

Laminariales

Species or genus (Vg_TAXO)

MAIN MENU

- The other sections (components) of the dictionary are accessible through the main menu. You can return to it at any time by clicking on the  button (except during this tutorial).
- We will now do a quick overview of the key elements of the other sections: simply click on the page to browse this last section of the tutorial.

VISIBILITY

COVER

SUBSTRATE

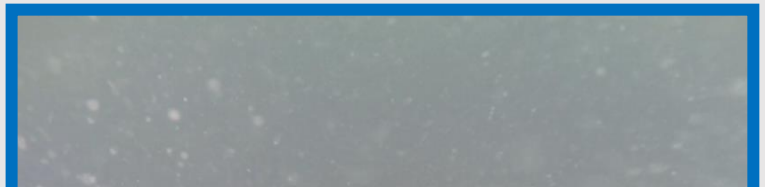
VEGETATION

ANIMALS

REFERENCES & CREDITS

VISIBILITY

Evaluation of visibility, mainly influenced by suspended particles (turbidity) and phytoplankton.

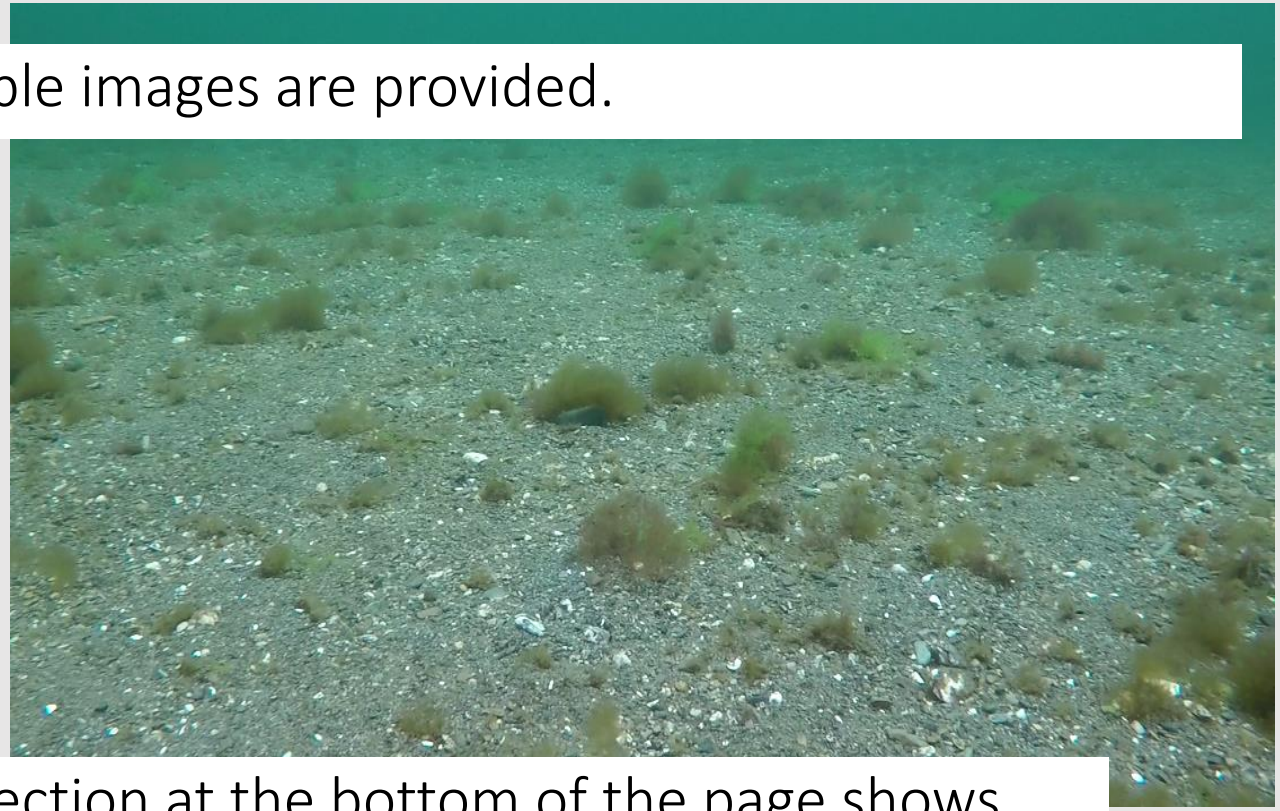


Each image in this VISIBILITY submenu is a clickable button that leads to a detailed page of the description in question.

Visibility

1 Excellent visibility

A description of the level of visibility and example images are provided.



No particles or phytoplankton.
The image is clear over a long distance from the camera. Characterization is made easier.

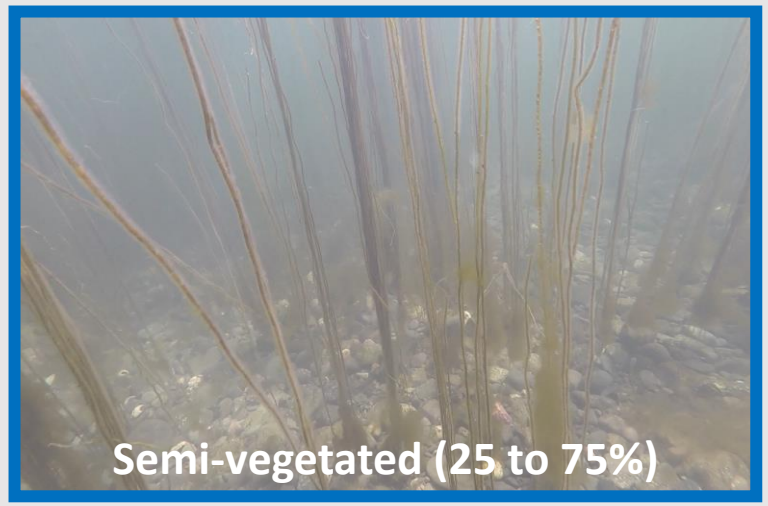
The white section at the bottom of the page shows the description that must be entered in the “indice de visibilité" field of the entry tool.

Visibility (VISIB)

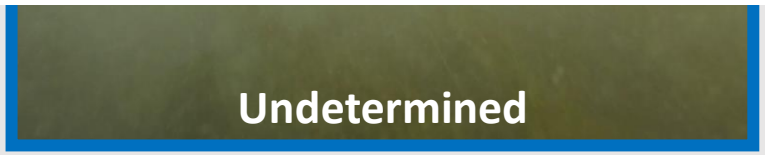
Excellent visibility

COVER

Estimated cover of erect vegetation (Vg_COV) and encrusting algae (Enc_COV)



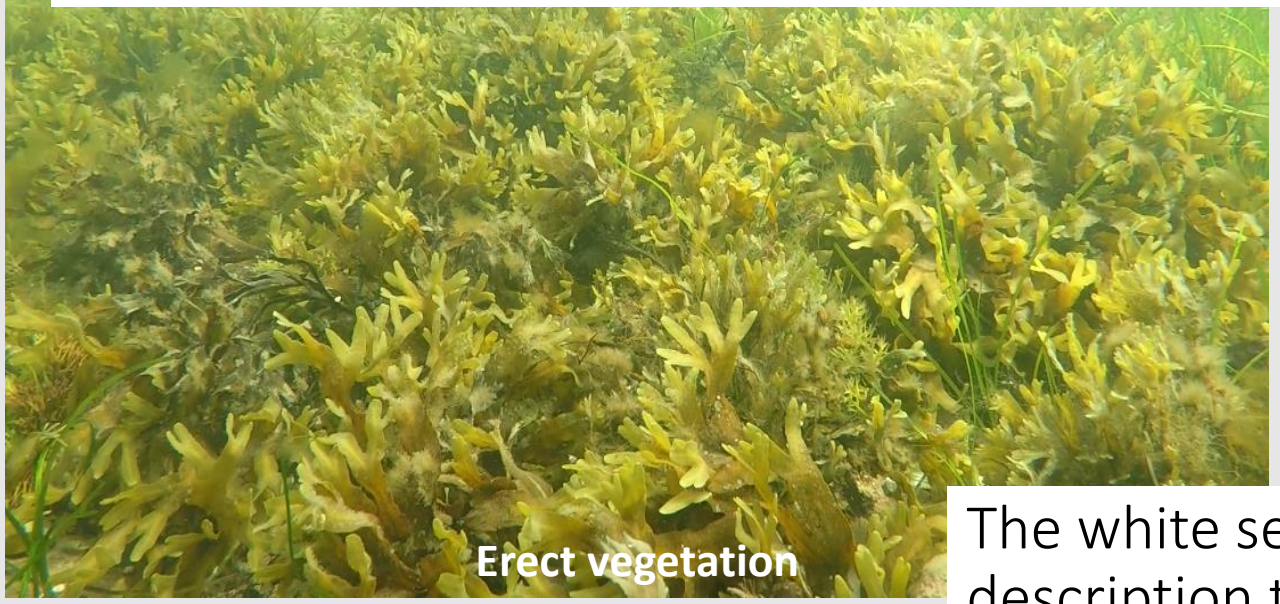
Each image in this COVER submenu is a clickable button that leads to a detailed page of the description in question.



Cover

V Vegetated

Here we have a description of coverage rate, example images of habitats composed of erect plants and encrusting algae, as well as the corresponding description.



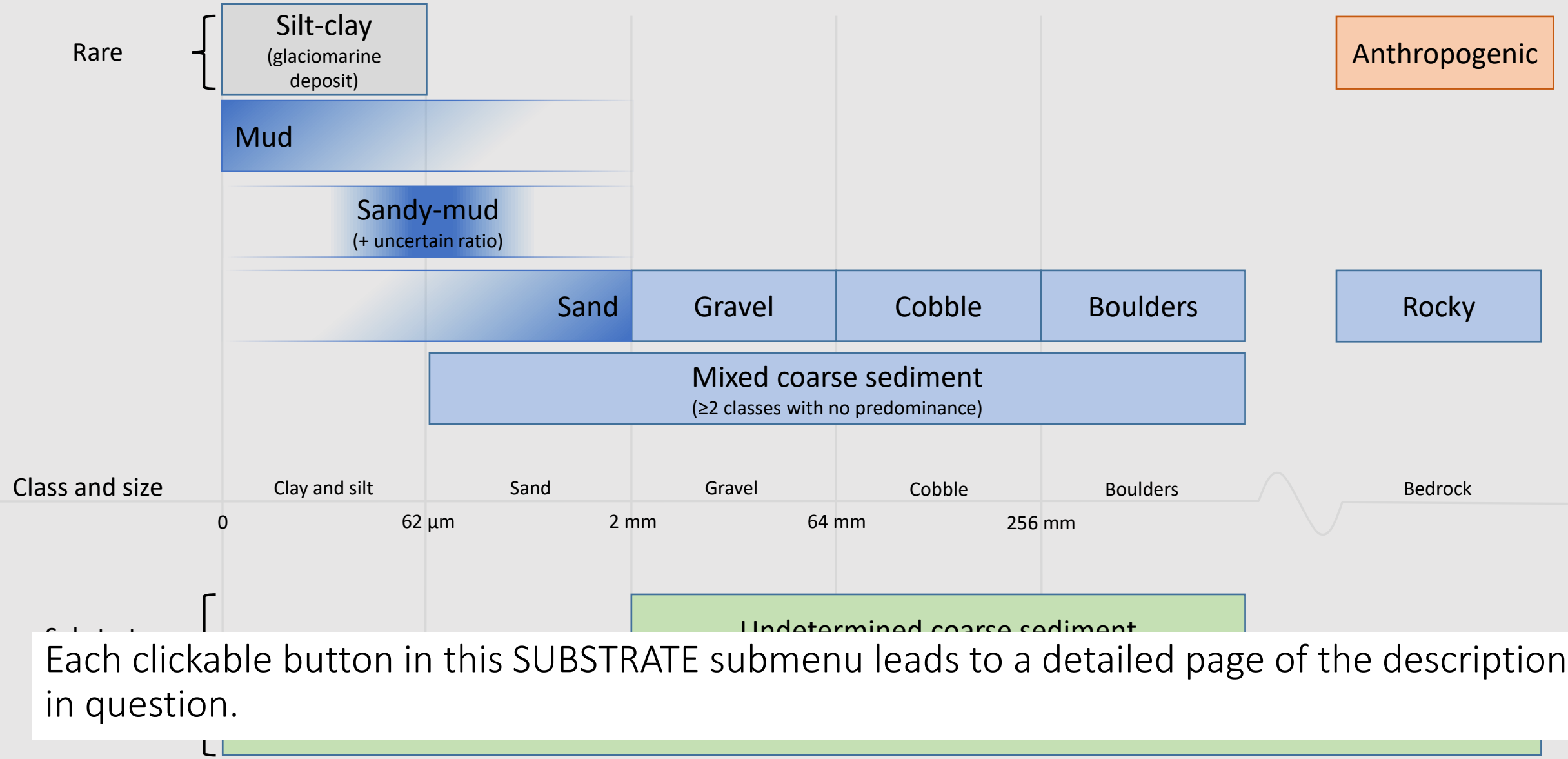
Vegetation cover between 75 and 100%.

The white section at the bottom of the page shows the description that should be entered into the “couverture de végétaux érigés" and “couverture d’algues encroutantes" fields of the entry tool.

Cover (Vg_COV and Enc_COV)

Vegetated

SUBSTRATE

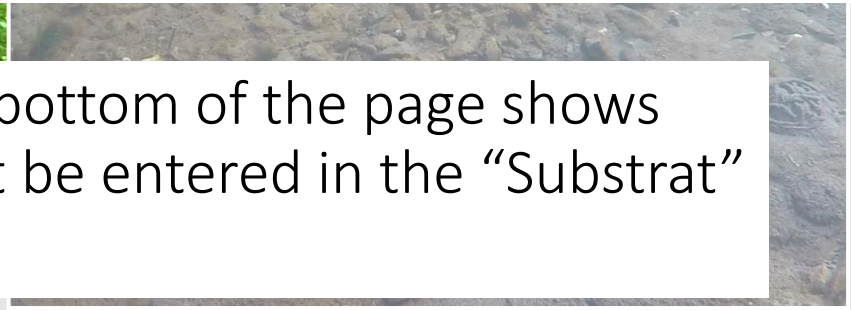


Each clickable button in this SUBSTRATE submenu leads to a detailed page of the description in question.

Substrate

g Gravel

1. Coarse sediment with an approximate diameter of **2 to 64 mm**
2. Determine the size relative to organisms (e.g. sea urchins are generally ≤ 80 mm)



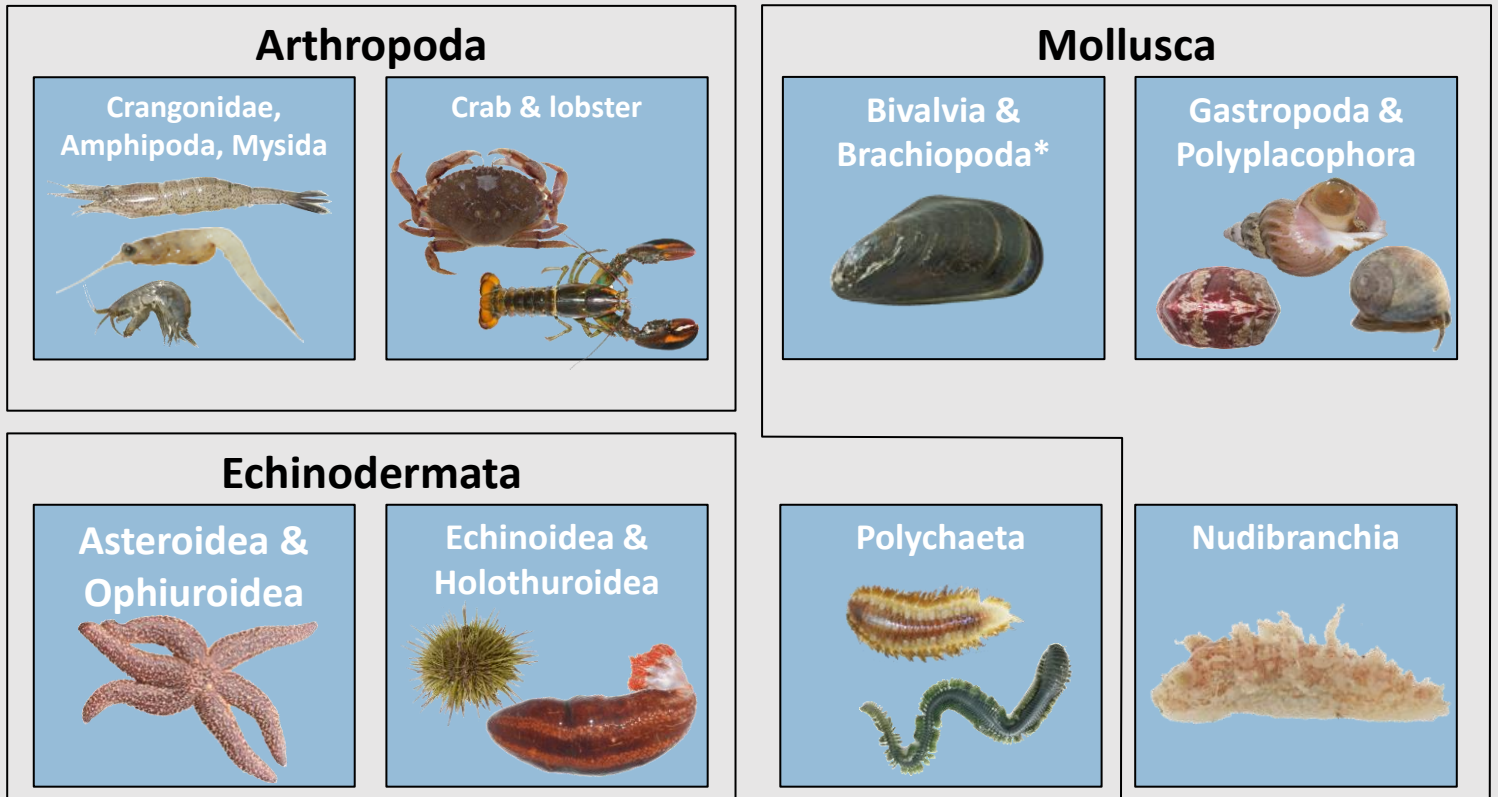
A description of the substrate and example image are provided.

The white section at the bottom of the page shows the description that must be entered in the “Substrat” field of the entry tool.

Substrate (SUBSTRAT)

Gravel

ANIMALS



- Animals are divided into groups by their morphology and/or taxonomic group.
- Each button features a few images of example organisms and scientific or common names to guide the analyst.
- It is recommended that you familiarize yourself with all the pages in this section before proceeding with analysis. As was the case for vegetation, each button of this submenu is clickable and leads to an intermediary identification page.

Morphological group

Crabs & Lobsters

PHYLUM	CLASS	ORDER	FAMILY	SPECIES
Arthropoda	Malacostraca	Decapoda	Cancridae	*Cancer irroratus*
			Carcinidae	*Carcinus maenas*
			Nephropidae	*Homarus americanus*
			Oregoniidae	*Hyas* sp.
			Paguridae	*Pagurus* sp.

- This intermediary identification page presents all the taxa of the group that can be entered by the analyst. The blue buttons are clickable.
- You can go directly to the taxon page by clicking on its coloured button or browse all taxa in the group using the arrows at the top right.

Phylum	Class	Order	Family
Arthropoda	**Malacostraca**	**Decapoda**	**Cancridae**

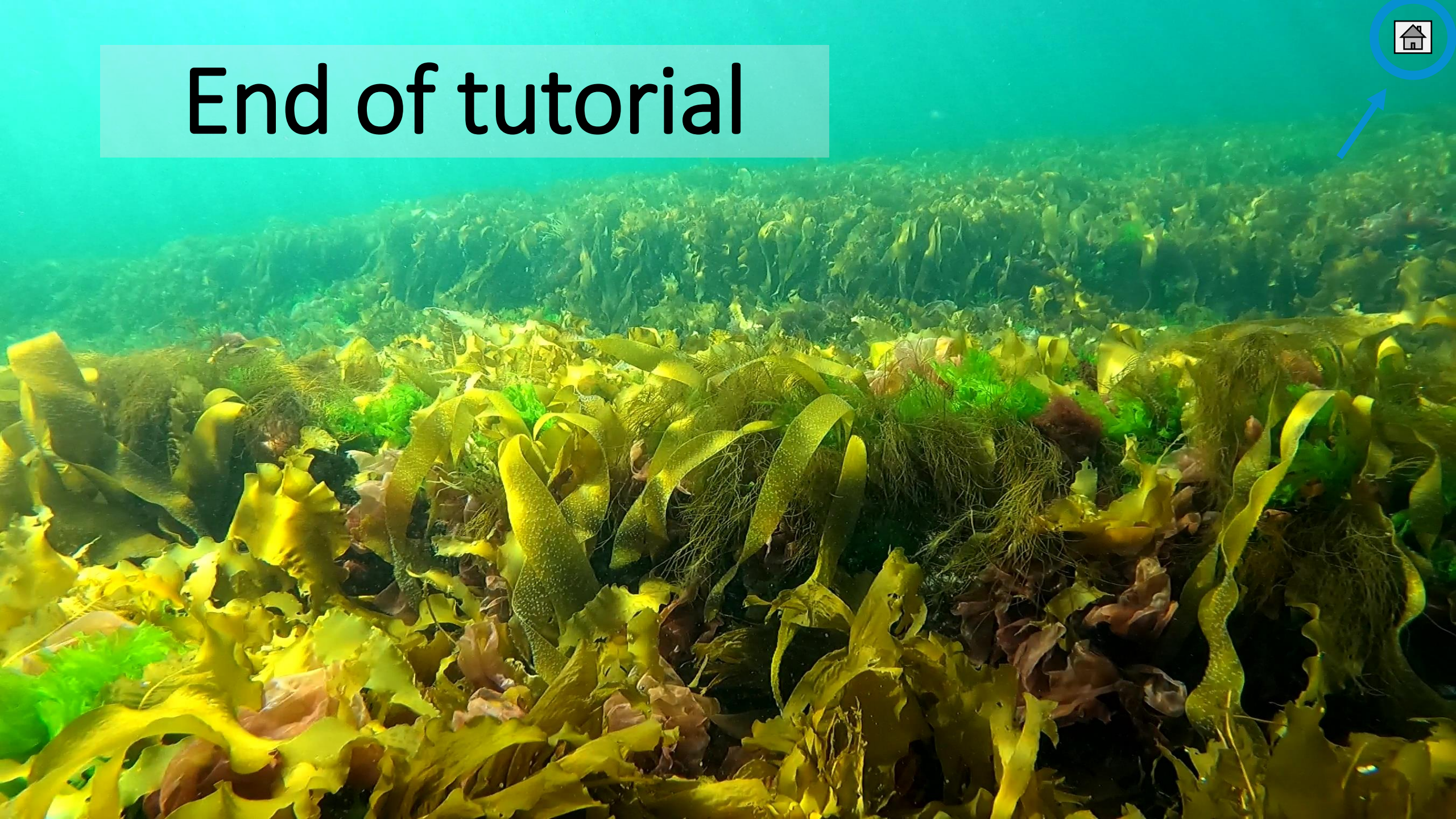
The ANIMALS taxon pages are structured using logic similar to that used for VEGETATION. They include the taxonomic tree at the top of the page, a short descriptive text, example images and an iNaturalist button.

The white section at the bottom of the page shows the description that must be entered in the “Animaux” field of the entry tool.

Animal (sp_ANIML)

Cancer irroratus **(Rock crab)**

End of tutorial



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CREDITS

- This visual dictionary was produced by Benjamin Grégoire (DFO) with contributions from Anaïs Tétreault (DFO) and Louis-Philippe Caron. Claude Nozères (DFO) contributed to the "Animals" section.
- Stéphanie Caron (DFO) and Louis-Philippe Caron (DFO) developed a preliminary reference guide that served as inspiration for this dictionary.
- Christine Desjardins, head of the PIER project, contributed to developing the concept.
- Louis-David Pitre (DFO) and Jean-Daniel Tourangeau-Larivière (DFO) also contributed to the dictionary by observing new organisms during the analysis of underwater images for the project.
- Ludovic Jolicoeur (UQAR) was consulted on the “Vegetation" section.