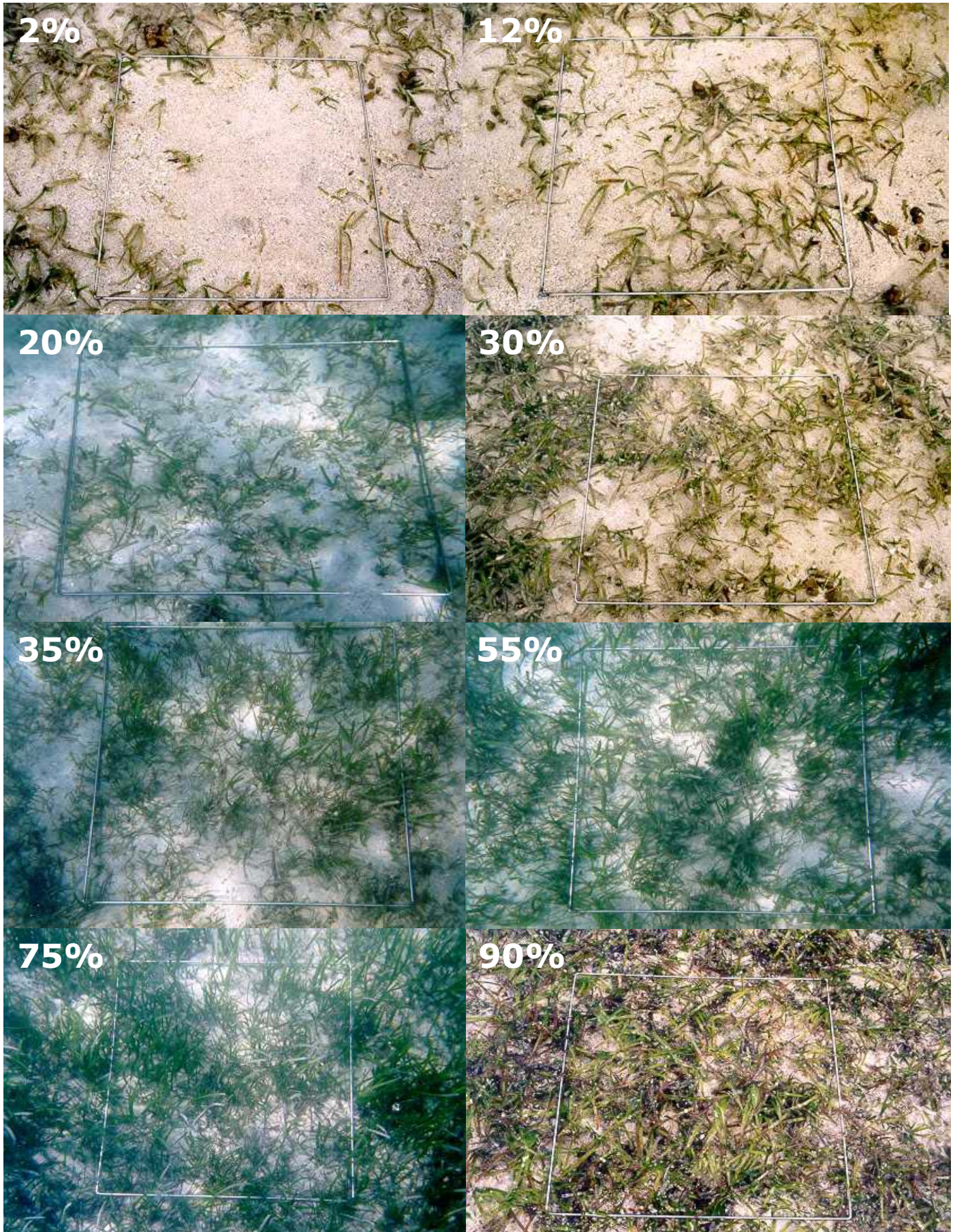


# Percent cover standards



# SEAGRASS SPECIES CODES



**Zc** *Zostera capricorni*

- 5 longitudinal veins
- Cross veins
- Leaf grows straight from rhizome ie no shoot



**Hu** *Halodule uninervis*

- trident leaf tip
- 1 central vein
- Usually pale rhizome, with clean black leaf scars

**Si** *Syringodium isoetifolium*

- Cylindrical in cross section
- leaf tip tapers to a point
- Leaves 7-30cm long



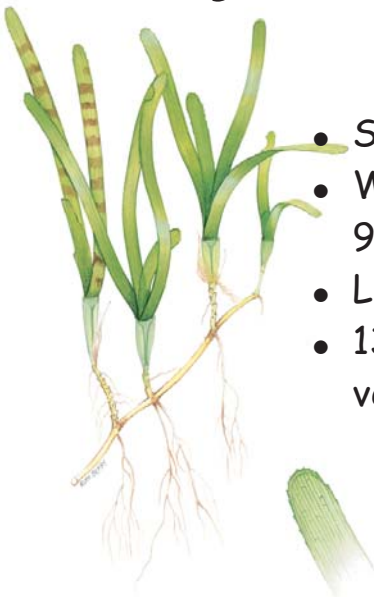
**Th** *Thalassia hemprichii*

- Short black bars of tannin cells on leaf
- Thick rhizome with scars between shoots
- "Sickle" shaped leaves
- Leaves 10-40 cm long



**Cs** *Cymodocea serrulata*

- Serrated leaf tip
- Wide leaf blade (5-9mm wide)
- Leaves 6-15cm long
- 13-17 longitudinal veins



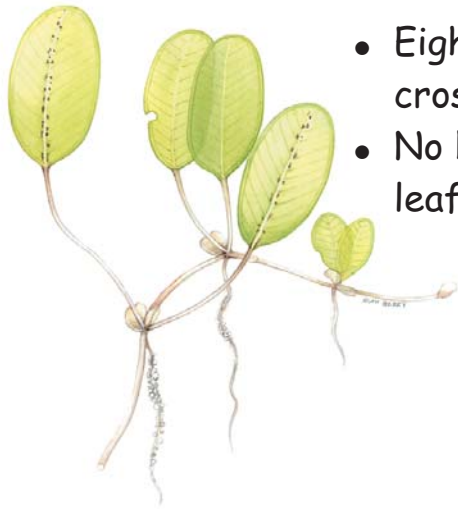
**Cr** *Cymodocea rotundata*

- Rounded leaf tip
- Narrow leaf blade (2-4mm wide)
- Leaves 7-15 cm long
- 9-15 longitudinal veins
- Well developed leaf sheath



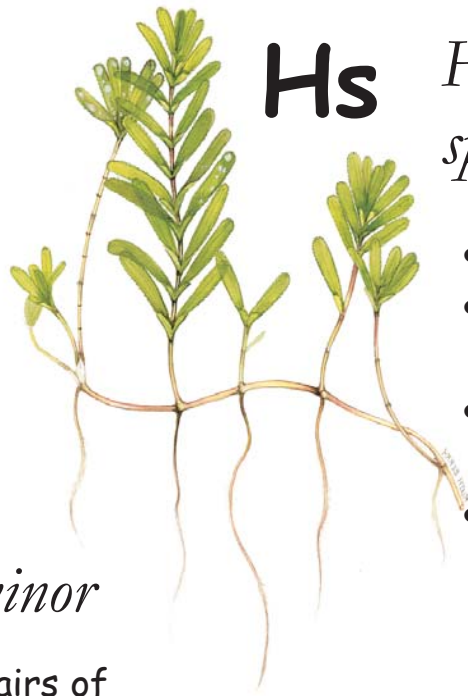
# SEAGRASS SPECIES CODES

## Ho *Halophila ovalis*



- Eight or more cross veins
- No hairs on leaf surface

## Hs *Halophila spinulosa*



- Fern like
- Leaves arranged in opposite pairs
- Erect shoot up to 15cm long
- Found at subtidal depths

## Hm *Halophila minor*



- Less than 8 pairs of cross veins
- Small oval leaf blade

## Ht

### *Halophila tricostata*



- Leaves with 3 veins
- 2-3 leaves at each node
- Leaves "whorl" around stem
- Found at subtidal depths
- Erect shoots 8-18cm long

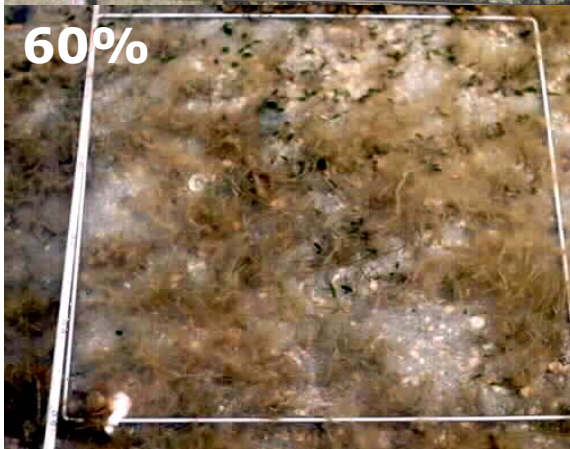
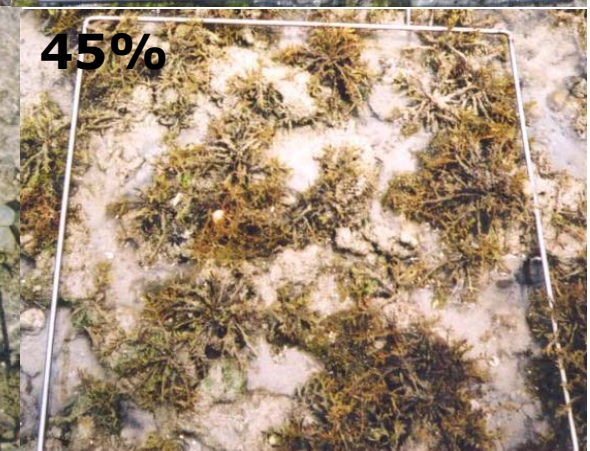
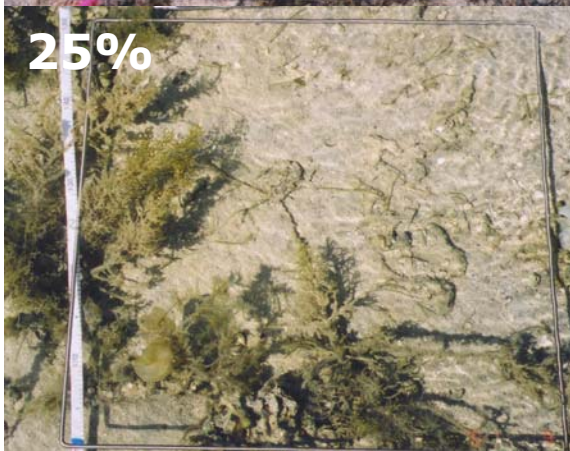
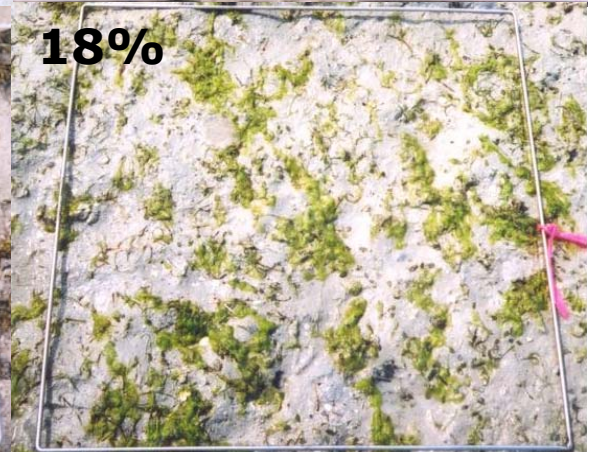
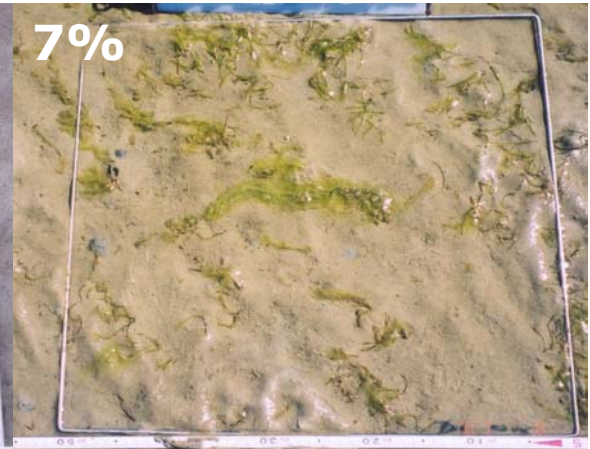
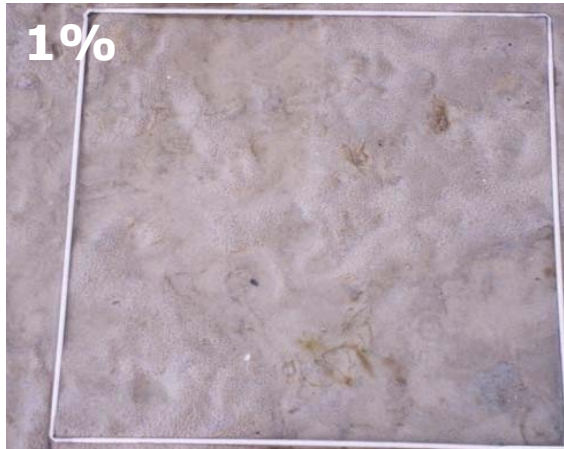
## Hd

### *Halophila decipiens*



- Small oval leaf blade 1-2.5cm long
- 6-8 cross veins
- Leaf hairs on both sides
- Found at subtidal depths

# Algal percent cover standards





# Seagrass-Watch Monitoring Methods: Summary

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Once you have established a monitoring site, you will need:

## *Necessary equipment and materials*

- ❑ 3x 50metre fibreglass measuring tapes
- ❑ 6x 50cm plastic tent pegs
- ❑ compass
- ❑ 1x standard (50cm x 50cm) quadrat
- ❑ Magnifying glass
- ❑ 3x Monitoring datasheets
- ❑ Clipboard, pencils & 30 cm ruler
- ❑ Camera & film
- ❑ Quadrat photo labeller
- ❑ Percent cover standard sheet
- ❑ Seagrass identification sheets

## Quarterly sampling

Within the 50m by 50m site, lay out the three 50 transects parallel to each other, 25m apart and perpendicular to shore (see site layout). Within each of the quadrats placed for sampling, complete the following steps:

### *Step 1. Take a Photograph of the quadrat*

- Photographs are usually taken at the 5m, 25m and 45m quadrats along each transect, or of quadrats of particular interest. First place the photo quadrat labeller beside the quadrat with the correct code on it.
- Take the photograph from an angle as **vertical** as possible, which includes the entire quadrat frame, quadrat label and tape measure. Try to avoid having any shadows or patches of reflection off any water in the field of view. Check the photo taken box on the datasheet for that quadrat.

### *Step 2. Describe sediment composition*

- To assess the sediment, dig your fingers into the top centimetre of the substrate and feel the texture. Describe the sediment, by noting the grain size in order of dominance (e.g., Sand, Fine sand, Fine sand/Mud).

### *Step 3. Estimate seagrass percent cover*

- Estimate the total % cover of seagrass within the quadrat – use the percent cover photo standards as a guide.

### *Step 4. Estimate seagrass species composition*

- Identify the species of seagrass within the quadrat and determine the percent contribution of each species to the cover (must total 100%). Use seagrass species identification keys provided.

***Step 5. Measure canopy height***

- Measure canopy height of the seagrass ignoring the tallest 20% of leaves. Measure from the sediment to the leaf tip of at least 3 shoots.

***Step 7. Estimate algae percent cover***

- Estimate % cover of algae in the quadrat. Algae are seaweeds that may cover or overlie the seagrass blades. Use “*Algal percentage cover photo guide*”.

***Step 8. Estimate epiphyte percent cover***

- Epiphytes are algae attached to seagrass blades and often give the blade a furry appearance. First estimate how much of the blade surface is covered, and then how many of the blades in the quadrat are covered (e.g., if 20% of the blades are each 50% covered by epiphytes, then quadrat epiphyte cover is 10%).

***Step 9. Describe other features and ID/count of macrofauna***

- Note and count any other features which may be of interest (eg. number of shellfish, sea cucumbers, sea urchins, evidence of turtle feeding).

***Step 10. Take a voucher seagrass specimen if required***

- Seagrass samples should be placed inside a labelled plastic bag with seawater and a waterproof label. Select a representative specimen of the species and ensure that you have all the plant part including the rhizomes and roots. Collect plants with fruits and flowers structures if possible.

## **At completion of monitoring**

***Step 1. Check data sheets are filled in fully.***

- Ensure that your name, the date and site/quadrat details are clearly recorded on the datasheet. Also record the number of other observers assisting.

***Step 2. Remove equipment from site***

- Remove all tent pegs and roll up the tape measures. If the tape measures are covered in sand or mud, roll them back up in water.

***Step 3. Wash & pack gear***

- Rinse all tapes, pegs and quadrats with freshwater and let them dry.
- Review supplies for next quarterly sampling and request new materials
- Store gear for next quarterly sampling

***Step 4. Press any voucher seagrass specimens if collected***

- The voucher specimen should be pressed as soon as possible after collection. Do not refrigerate longer than 2 days, press the sample as soon as possible.
- Allow to dry in a dry/warm/dark place for a minimum of two weeks. For best results, replace the newspaper after 2-3 days.

***Step 5. Submit all data***

- Mail original datasheets, photos and herbarium sheets

<p><b>Seagrass-Watch Northern Fisheries Centre PO Box 5396 Cairns QLD 4870 AUSTRALIA</b></p>
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# SEAGRASS-WATCH MONITORING

ONE OF THESE SHEETS IS TO BE FILLED OUT FOR EACH TRANSECT YOU SURVEY

START of transect (GPS reading)

Latitude: ..... ° ..... 'S Longitude: ..... ° ..... 'E

OBSERVER: Sandy Tail DATE: 17 / 4 / 02  
 LOCATION: Burrum Heads  
 SITE no.: BH1 TRANSECT no.: 2  
 Start TIME: 3:02 pm End TIME: 3:34 pm

Quadrat (metres from transect origin)	Sediment (eg. mud/sand/shell)	Comments (eg 10x gastropods, 4x crab holes, dugong feeding trails, herbarium specimen taken)	Seagrass coverage (%)	Canopy height (cm)	% Seagrass species composition (must total 100%)			
					ZC	HU	HO	% Algae cover
1 (0m)	S	Sea cucumber x4	40	55, 4, 7	70	30	5	80
2 (5m)	S	Shellfish x3	35	7, 6, 3	50	50	10	80
3 (10m)	S/m	-	15	8, 6, 5	70	20	13	80
4 (15m)	S/m	-	10	15, 3, 5	50	50	17	80
5 (20m)	S	Sea cucumber x2 Snail x1	5	6, 5, 5	95	5	12	60
6 (25m)	S	-	36	7, 7, 5	90	5	2	50
7 (30m)	S	-	48	8, 6, 8	40	60	2	10
8 (35m)	S/m/Sh	Hermit crab x3	60	9, 8, 6	60	20	25	5
9 (40m)	S/m/Sh	Turtle cropping	0.7	10, 6, 6	70	30	32	0
10 (45m)	S/m	Dugong feeding trail	40	7, 6, 8	80	15	8	0
11 (50m)	S/m	Worm holes	25	12, 5, 8	90	10	38	5

END of transect (GPS reading)

Latitude: ..... ° ..... 'S Longitude: ..... ° ..... 'E