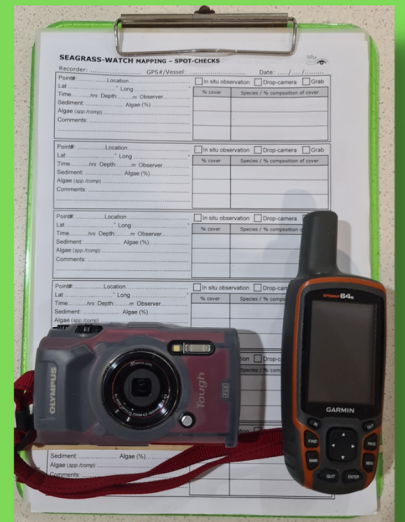




SEAGRASS-WATCH INTERTIDAL SPOT-CHECK

Quick guide to collecting intertidal field validation data for seagrass mapping





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Disclaimer

Information contained in this manual is provided as general advice only. For application to specific circumstances, please contact Seagrass-Watch HQ.

Seagrass-Watch HQ, has taken all reasonable steps to ensure the information contained in this publication is accurate at the time of publication. Readers should ensure that they make appropriate enquires to determine whether new information is available on the particular subject matter.

This manual is designed to offer information on how to monitor seagrass resources to stakeholders and participants of the Global Seagrass Observing Network, for seagrass conservation.

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ABOUT SEAGRASS-WATCH



Mission

Raise awareness on the condition and trend of nearshore seagrass ecosystems, provide an early warning of major coastal environment changes and to protect the valuable seagrass meadows along our coasts

About

Seagrass-Watch is a not for profit, which established the Global Seagrass Observing Network in 1998. The network is currently working across 26 countries, monitoring the status and trends in seagrass condition.

Seagrass-Watch is one of the largest long-term seagrass observing programs globally and is highly recognised for its scientific rigour.

Participants are from a wide variety of backgrounds. All share a common interest in marine conservation and

Participants are associated with universities & research institutions, government (local & state) or non-government organisations.

Research

Seagrass-Watch has a strong scientific underpinning with an emphasis on consistent data collection, recording and reporting. Scientific, statistical, data management, data interpretation and logistic support underpins all monitoring efforts.

Aims

Seagrass-Watch raises awareness on seagrass ecosystems globally. The Program involves collaboration/partnerships between scientists, community and data users (environment management agencies).

Participants

Seagrass-Watch partners scientists with citizens, as people involved in the program develop a deep sense of custodianship and understanding of their local marine environments that reaches throughout the wider community.



WHAT ARE SPOT-CHECKS

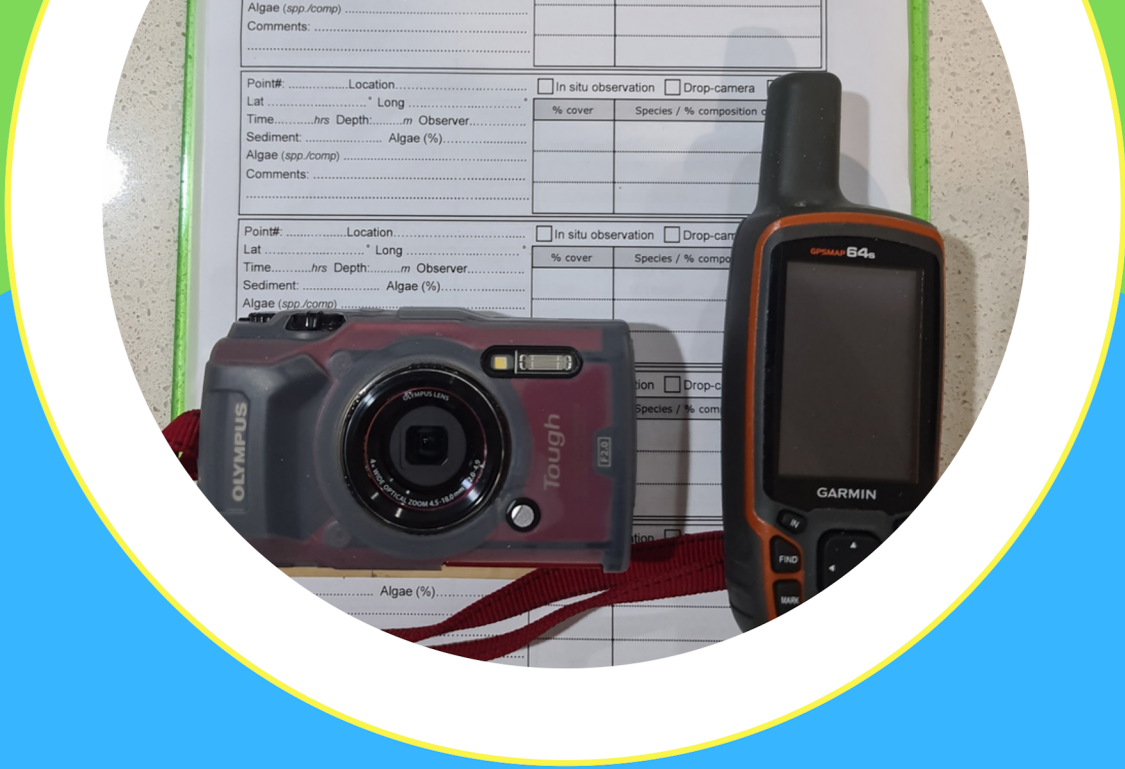


Spot-checks are where the field validation is conducted at a specific point in the Area Of Interest and observations of benthic variables are measured in situ or post hoc.

Field measures can be collected using photoquadrats, quadrat observations or sampler observations. Spot-checks can be conducted: in person by foot, diving (free or SCUBA), or drone; remotely using drop camera, ROV; or via a sampler, such as a grab, rake, sled.



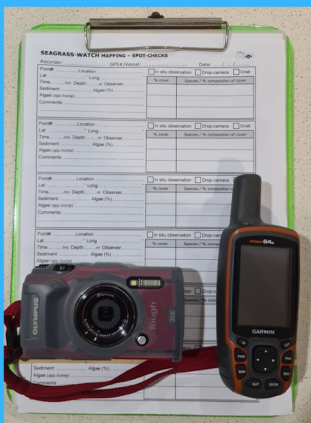
This guide will detail in situ observer (including photoquadrats) spot-checks to collect intertidal field validation data for seagrass mapping



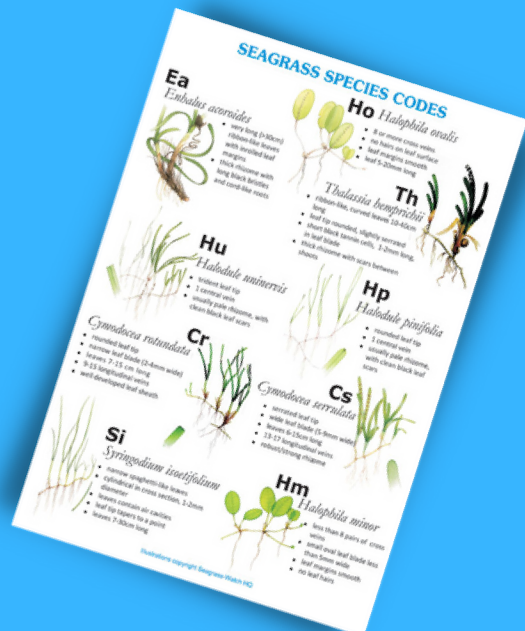
EQUIPMENT NEEDED



To conduct intertidal spot-checks, you will need the following equipment:



- Clipboard with datasheets and pencils
- Hand held portable GPS unit
- Underwater camera (with built-in GPS function)
- Percent cover & species guides
- 0.25m2 quadrat





PRE-FIELD CHECKS



Area of interest

First, identify an Area of Interest (AOI), within a location, to do your spot-checks This also determines the scale of the exercise.



Tides

Check the tides for AOI to help you plan when is the easiest time to do the mapping, e.g., spring low is best for intertidal meadows.



Decide on strategy

Observations can be conducted by foot or drone, if large distances are to be covered in the tidal window (generally 2-4 hours)



Number of spot-checks

You will need to conduct as many spot-checks as possible per day within your AOI

STEPS TO FOLLOW

1

Area of Interest

First, define the extent of the Area of Interest (AOI). This also determines the scale of the exercise.

If the mapping approach is field-based, then the simplest procedure is to conduct field mapping using spot-checks and boundary tracking.

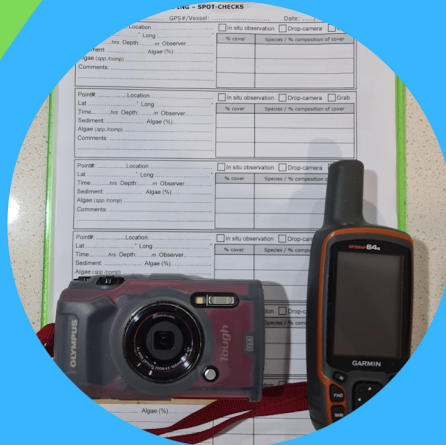
****You will need to conduct as many spot-checks as possible per day within your AOI**



2

Record your data

Ensure you have all the necessary equipment to conduct your intertidal spot-checks.



Fill in details:

1. When you have reached a mapping point, before conducting the spot-check, first record the following details on the mapping datasheet:

- name of the observer,
- location (e.g., name of bay),
- date and time

SEAGRASS-WATCH MAPPING - SPOT-CHECKS			
Recorder: John Citizen	GPS#/Vessel: Garmin 2	Date: 15/12/20	
Point#	Location	<input type="checkbox"/> In situ observation	<input type="checkbox"/> Drop-camera <input type="checkbox"/> Grab
Lat	Long	% cover	Species / % composition of cover
Time	hrs Depth: m Observer		
Sediment	Algae (%)		
Algae (app.comp)			
Comments			



2. Record the GPS waypoint position of the point.

SEAGRASS-WATCH MAPPING - SPOT-CHECKS			
Recorder: John Citizen	GPS#/Vessel: Garmin 2	Date: 15/12/20	
Point#: 036	Location: Yule Point	<input checked="" type="checkbox"/> In situ observation	<input type="checkbox"/> Drop-camera <input type="checkbox"/> Grab
Lat 16.383926 S	Long: 145.558607 E	% cover	Species / % composition of cover
Time 1013 hrs Depth: 0 m Observer: John			

Fill in point data on the datasheet.

- time
- depth
- Observer etc

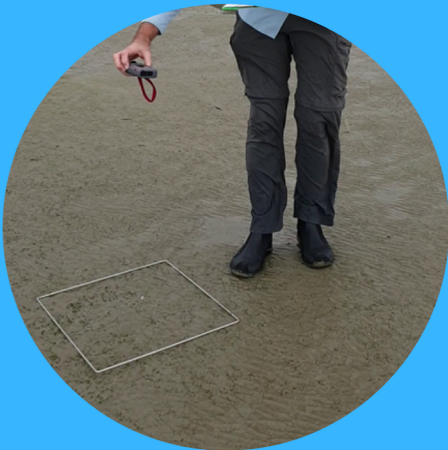
A point can vary in size depending on the extent of the region being mapped. In most cases a point can be defined as an area encompassing a 3m radius

3 Take a geotagged photoquadrat

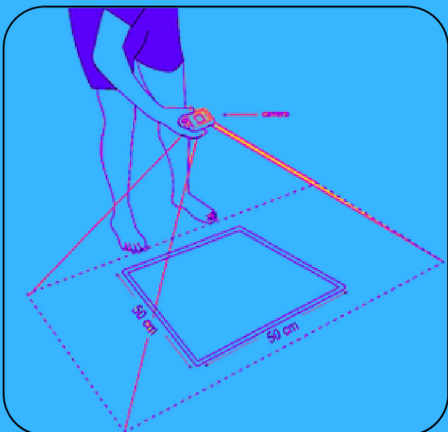
1. Place a standard 0.25m² quadrat on the intertidal bank.



2. It is best to photograph a quadrat from directly above and (i.e. nadir)



Make sure the photo details are noted on the data sheet so the photo can be matched with the quadrat details.



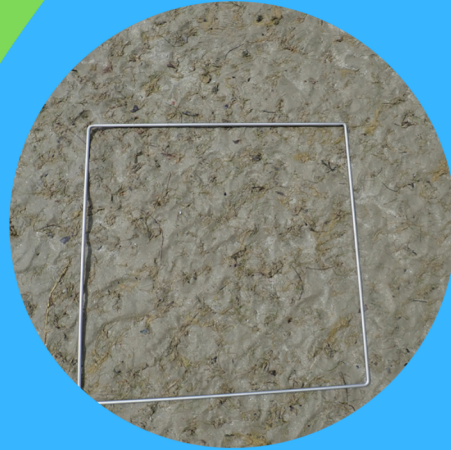
Photoquadrats provide a permanent record, which ensures consistency between observers and provides an opportunity in future to reassess imagery for new/additional information.

Photoquadrats can also be assessed post field using machine learning techniques (automated image recognition), to automatically determine benthic types in each photo and measure cover



4

Seagrass cover and composition



Looking down on the quadrat from above, estimate the total percentage occupied by seagrass leaves. Estimate cover as accurate as possible, e.g. 27%, 0.7%. It is recommended observers use a set of standard measures to ensure consistency.

Identify the species of seagrass within the quadrat and determine the percent contribution of each species to the cover

Refer to percent cover & species guides (below)

SEAGRASS-WATCH MAPPING – SPOT-CHECKS

Recorder: John Citizen GPS#/Vessel: Garmin 2 Date: 15/12/20

Point#: 036 Location: Yule Point In situ observation Drop-camera Grab

Lat: 16.383926 S Long: 145.558607 E

Time: 1013 hrs Depth: 0 m Observer: John

Sediment: Algae (%) **23** Species / % composition of cover: **HU/100**

Algae (spp./comp):

Comments:

Record seagrass cover and composition

5 Other benthic cover

Estimate the percentage cover of each other type of benthos



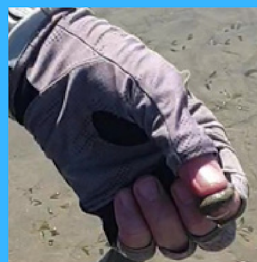
(e.g. macroalgae, hard coral) in the quadrats using the same visual technique used for seagrass.

Also note any other features which may be of interest (e.g., dugong grazing trails, evidence of turtle cropping). The detail of identifications and comments is at the discretion of the observer.

6 Sediment composition

To assess the sediment, dig your fingers into the top centimetre of the substrate and feel the texture.

Remember that you are assessing the surface sediment so don't dig too deep!!



Describe the sediment, by noting the grain size in order of dominance (e.g., Sand, Fine sand, Fine sand/Mud)

7 Repeat steps 2 more times at the Point

A point can vary in size depending on the extent of the region being mapped. In most cases a point can be defined as an area encompassing a 3m radius



1 Point, 3m radius: 3 geotagged photos and 3 quadrat measures



1. Take a geotagged photoquadrat



2. Record seagrass cover and composition data for the 2 observations on your datasheet

Record the quadrat data on your datasheet

..... In situ observation Drop-camera Grab

% cover	Species / % composition of cover
23	HU/100
35	HU/98, HO /2
39	HU/100

8 1st Point: 3 observations

1st point with 3 quadrat observations complete?



Move to the next point and Repeat steps



1. Record the GPS waypoint position of the point

2. Take 3 geotagged quadrat photos

3. Fill in point data on the datasheet.

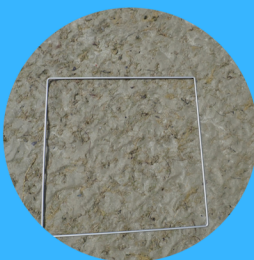
- time
- depth
- Observer etc



4. Seagrass cover and composition

5. Other benthic cover

6. Sediment composition





9 Continue mapping

Move on to the next mapping point and repeat the process.

The number of mapping points you survey will be entirely up to you

If you need to accurately map an area, then intensive surveying (sample lots of mapping points) is recommend.

It is also beneficial to try to get a good spread of mapping points over the area, as some of the changes in the seagrass meadow will not necessarily be obvious





Other applications: free diving or snorkelling

This method can also be applied to shallow subtidal (<10m) meadows



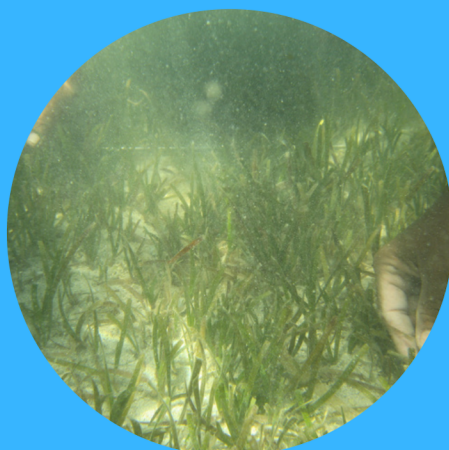
free diving or snorkelling

Any direct observation of the bottom is limited by the amount of time a person can spend snorkelling or their field of view when in the water.

The diver swims to the bottom, or as deep as is required to recognise the seagrass, presence or absence or species.

If nothing is growing on the bottom the diver can turn back without having to go to the full depth of the bottom.

Free-dives are also useful for obtaining a vegetation or sediment sample.





MAPPING COMPLETE



No data gaps

it is worth checking through the information you have gathered to make sure there are no data gaps



Sampling kit

Before returning the sampling kit, ensure it is clean, batteries removed from GPS, equipment rinsed with fresh water and let dry before long term storage



Voucher specimen

A voucher specimen should be pressed as soon as possible after collection. If it is going to be more than 2 hours before you press the sample then you should refrigerate to prevent any decomposition. Do not refrigerate longer than 2 days, press the sample as soon as possible.



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