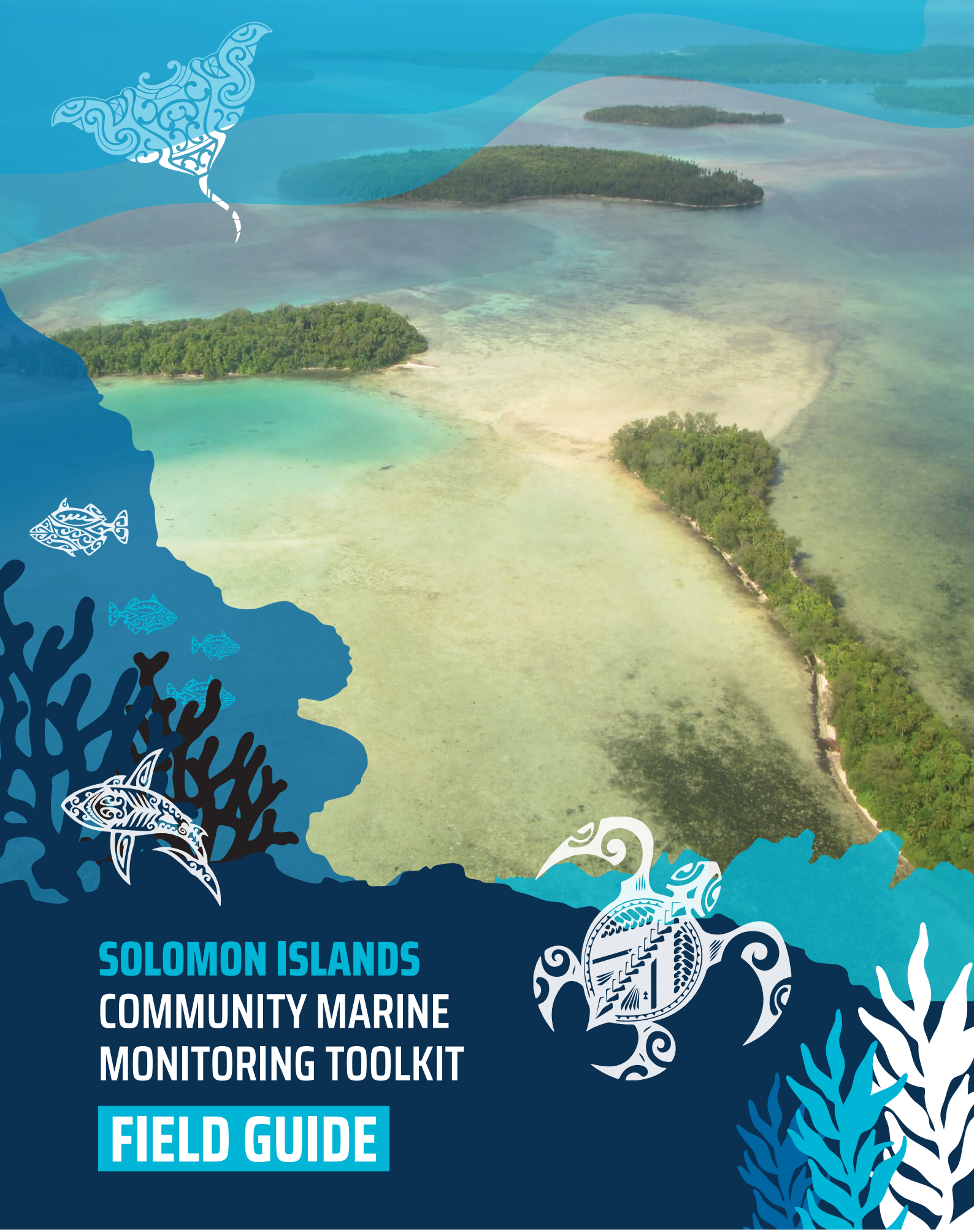

SOLOMON ISLANDS
COMMUNITY MARINE MONITORING TOOLKIT
FIELD GUIDE

EUROPEAN UNION
30 YEARS SPREP PROE
Pacific BioScapes
Wildlife Conservation Society
Pacific C2O
BLUE ACTION FUND
THE TIFFANY & CO. FOUNDATION
BLOOMBERG PHILANTHROPIES OCEAN INITIATIVE

Johanna Johnson, David Welch, Mari-Carmen Pineda, Alec Hughes, Stacy Jupiter, Robert Howard

C_2O Pacific & Wildlife Conservation Society

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FURTHER INFORMATION:
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CONTENTS

INTRODUCTION

This Field Guide has been developed to support the Solomon Islands Community Marine Monitoring Toolkit. It provides guidance and tools to be used in the field when conducting monitoring using the Toolkit methods. The development of this Field Guide recognises that community members may need prompting when conducting monitoring and assistance while they become more experienced in the methods.

HOW TO USE THIS FIELD GUIDE

The Field Guide is designed to support trained community monitors and empower them to provide leadership and training for others in their community to raise awareness about local coastal resources and effective community-based resource management.

This Field Guide includes resources for each module: a quick start for monitoring methods, identification guides, data sheets, data analysis sheets, pictorial examples to assist with surveys and reporting posters. The Field Guide has five modules for community-based monitoring:

1. Fish catch surveys
2. Invertebrate surveys
3. Coral reef surveys
4. Mangrove surveys
5. Seagrass meadow surveys

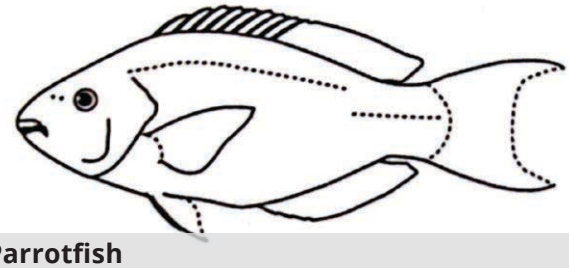
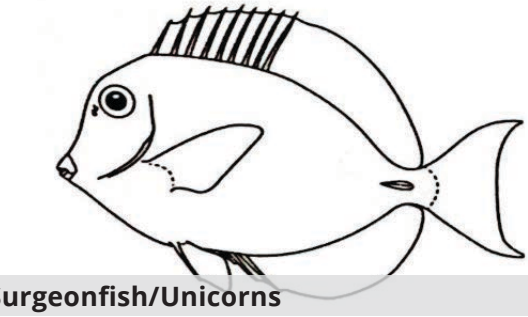
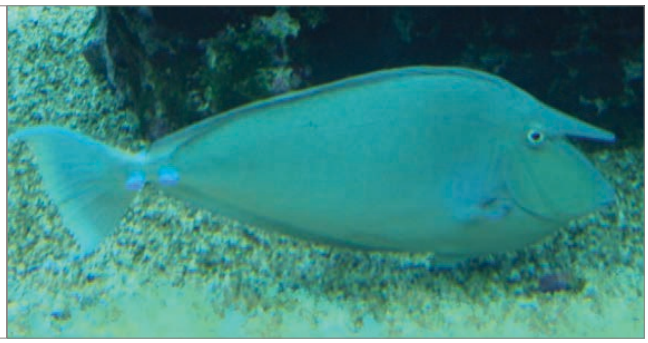
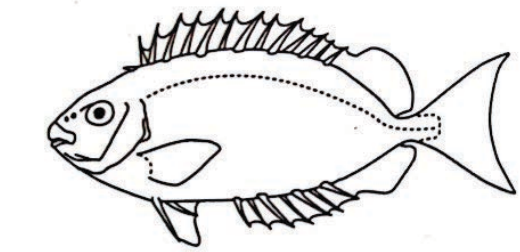
Each module is independent, and community monitors can use one or more modules, depending on their local needs, issues and resources. The Field Guide provides all the steps to establish and conduct community monitoring for each module, and how to share the results with communities to inform local decisions.

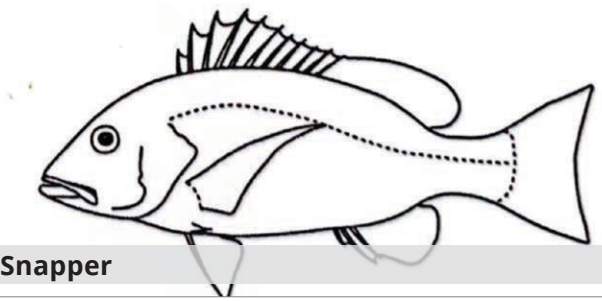
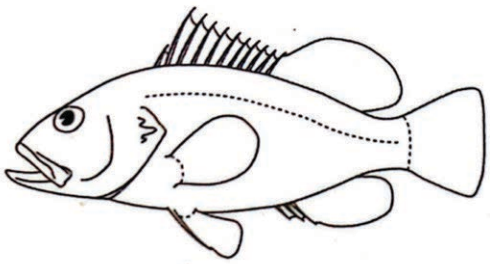
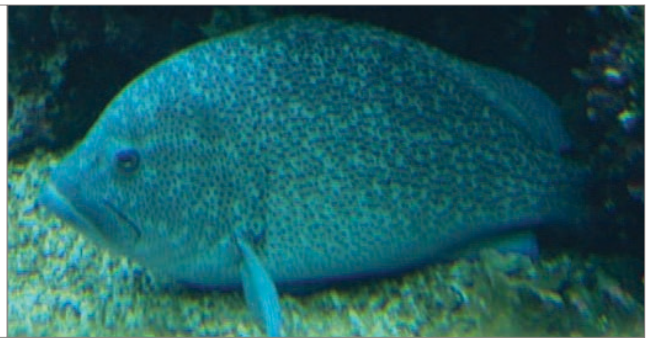
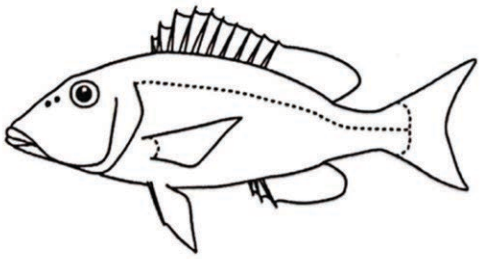
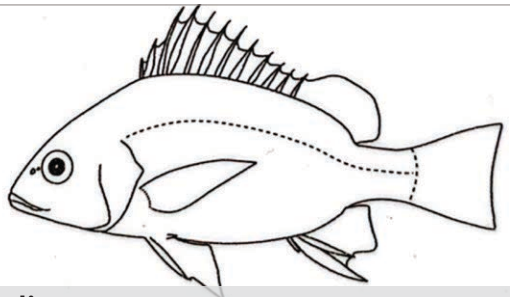
MODULE 1: FISH CATCH

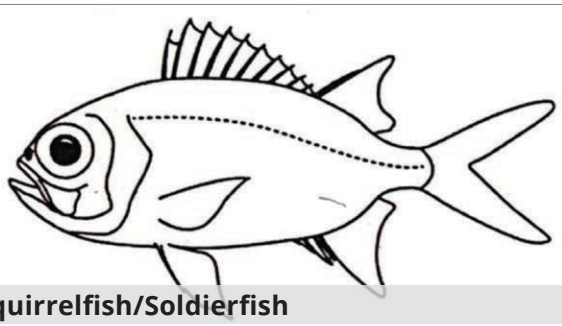
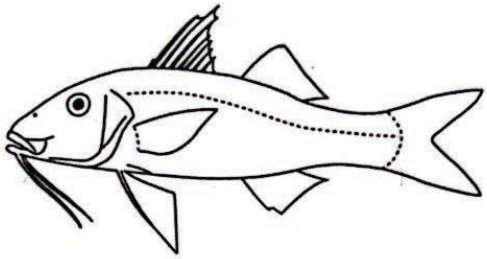
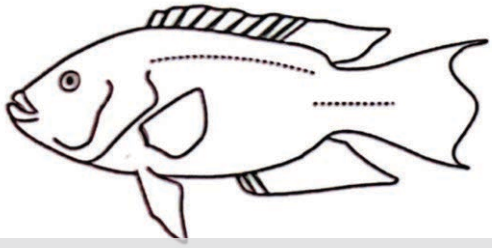
The ***purpose*** of the fish catch surveys is to assess whether overfishing of target coastal reef fish species is occurring. Further, the catch surveys assess the level of compliance with the national management plans for commercial species (National Fisheries Policy 2019-2029) that ban certain harvest methods that impact the fish stock and set minimum size limits for key species.

Fish catch surveys also provide an opportunity to raise awareness with communities about the national regulations, the importance of not catching juvenile (immature) fish and choosing fishing practices that avoid catching juvenile fish.

Guide of the identification of species groups (fish families) included in the catch survey

SPECIES GROUP	EXAMPLE SPECIES IMAGE
 **Parrotfish**	
 **Surgeonfish/Unicorns**	
 **Rabbitfish**	

SPECIES GROUP	EXAMPLE SPECIES IMAGE
 Snapper	
 Grouper	
 Emperor	
 Sweetlip	

SPECIES GROUP	EXAMPLE SPECIES IMAGE
 Squirrelfish/Soldierfish	
 Mustasfis/Goatfish	
 Klis fis/Wrasse	

QUICK GUIDE TO FISH CATCH SURVEYS

Site selection

- Surveys should be carried out in your local community by meeting different fishermen and women when they come back from catching fish.

Method

- Carry out the surveys whenever you can over a 3-to-6-month period and collate all surveys for analysis.
- A minimum of 20 surveys should be carried out during each survey period – the more the better.

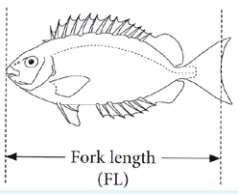
One person is needed to ask the fishermen and women about their fish catch and measure their fish catch.

Equipment you will need includes:

- Fish measuring ruler (or tape measure)
- Pencil
- Survey sheet and folder
- Fish identification sheet

Fill in every section of the survey sheet:

- Survey details
- Fishing details
- Catch details



Measure fork length for the surveys

Use the manual data analysis sheet once you have completed surveys for the 3-6 month period. Store data sheets in a safe place for computer entry at a later date.

Reporting

- Transfer the data analysis results on the graph to the data reporting poster and discuss what management actions are needed.

FISH CATCH SURVEY SHEET

Introduction: This survey aims to collect fishing catch information to better understand local fishing activity and to inform management for sustainable fishing and to maximise community benefits. The questions ask details about your catch from your recent fishing trip, including measuring the fish you caught. The more fishers we survey, the better the information will be. The survey is voluntary, and no fisher's name will be associated with results when presented publicly. **Are you willing to participate?**

1. SURVEY DETAILS

Village:	Fisher name (confidential):	Male / Female (circle)
Date:	Survey time:	Monitor name:

2. FISHING DETAILS

Number of people fishing:	Time spent fishing (hours):	Day / Night (circle one)	
Main fishing method (circle one):	Speargun	Trolling	Gillnet
Bottom hook and line	Other methods (please list):		
Other fishing method/s (circle which ones):	Speargun	Trolling	Gillnet
Bottom hook and line	Other methods (please list):		
If gillnet used, what was the mesh size:			

3. CATCH DETAILS

Species group		**Fish sizes – fork length (centimetres)** (if not all individual fish are measured write * next to the species group name)
Local name	Common name	
	Surgeonfish	
	Sweetlip/Grunt	
	Soldierfish / Squirrelfish	
	Wrasse	
	Emperor	
	Snapper	
	Goatfish	
	Parrotfish	
	Grouper	
	Rabbitfish	

FISH CATCH DATA ANALYSIS

Calculate the portion (%) of the catch that is above the critical size for each species group for each survey period; recommend using 10-20 surveys per survey period (~6 monthly).

FISH SPECIES GROUP	CRITICAL SIZE (cm)	TOTAL NUMBER OF FISH			%	STATUS
		Larger or equal to the critical size	Caught	% larger than the size limit		
		A	B	C = (A/B) X 100		
Surgeonfish	20				0-80	Overfished
					81-95	Declining
					>95	☺
Sweetlip/Grunt	40				0-80	Overfished
					81-95	Declining
					>95	☺
Soldierfish / Squirrelfish	20				0-80	Overfished
					81-95	Declining
					>95	☺
Wrasse	25				0-80	Overfished
					81-95	Declining
					>95	☺
Emperor	25				0-80	Overfished
					81-95	Declining
					>95	☺
Snapper	20				0-80	Overfished
					81-95	Declining
					>95	☺
Goatfish	25				0-80	Overfished
					81-95	Declining
					>95	☺
Parrotfish	25				0-80	Overfished
					81-95	Declining
					>95	☺
Grouper	25				0-80	Overfished
					81-95	Declining
					>95	☺
Rabbitfish	20				0-80	Overfished
					81-95	Declining
					>95	☺

MODULE 2: INVERTEBRATES

The ***purpose*** of the invertebrate surveys is to assess whether locally important invertebrates are in a healthy or unhealthy (overharvested) condition.

Invertebrate surveys also provide a valuable opportunity to raise awareness with communities about the important ecological roles that invertebrates play, how easily they are overharvested and actions that can reduce the risk of overharvest.

Giant clams

Tridacna clam species

Hippopus clam species

Sea cucumbers

Greenfish, ***Stichopus chloronotus***

Sandfish, ***Holothuria scabra***

Pinkfish, ***Holothuria edulis***

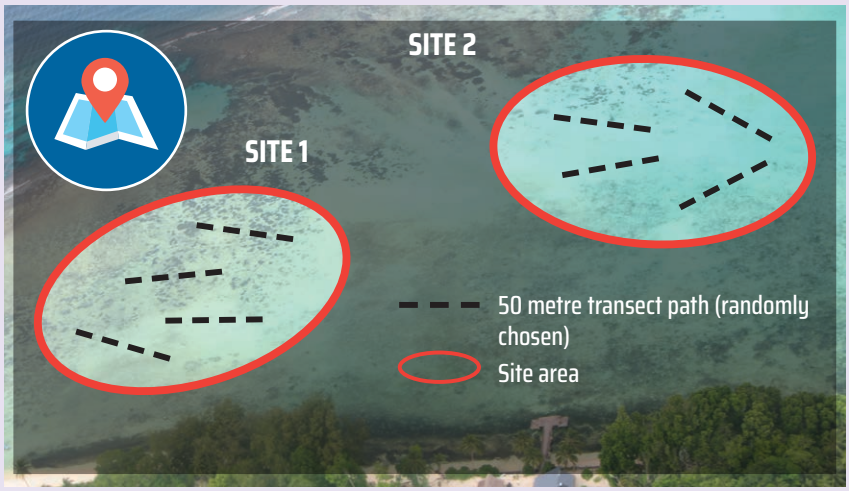
Lollyfish, ***Holothuria atra***

Flowerfish, ***Holothuria edulis***

Cowrie shells

Trochus, ***Trochus spp.***

QUICK GUIDE TO INVERTEBRATE SURVEYS

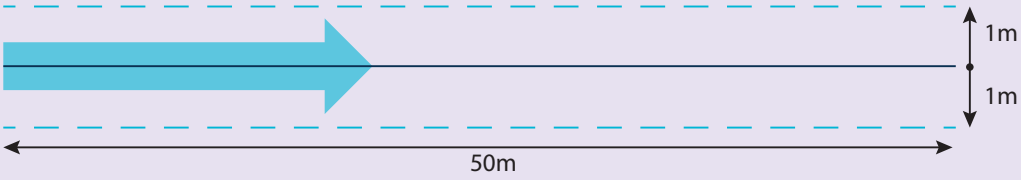


Site selection

- Choose whether to do intertidal of reef slope surveys
- Choose sites that are typical of your local marine area
- Choose sites and times that are easy and safe to access at low and high tide
- Choose a combination of sandy and hard bottom habitat

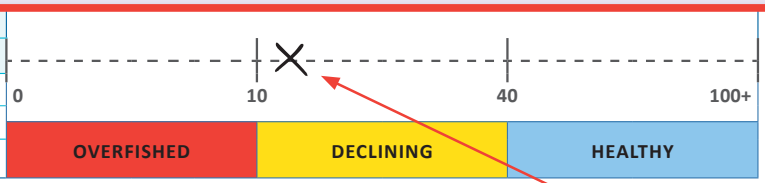
Method

- Carry out monitoring surveys once every 6 to 12 months
- Walk at low tide or swim/snorkel if necessary
- At least 2 people should monitor together
- Choose TWO random sites on the reef flat, with 3-4 straight lines (transects) **at least 30 ft (10 m) apart** (6-8 lines in total)
- Each transect should be 130 ft (40 m) long and 3 ft (1 m) wide



- Choose TWO random sites, with 4 straight lines (transects) **at least 10 m apart** (8 lines in total). Use only 3 transects if necessary.
- Each transect should be 50 m long and 2 m wide
- Count the number of invertebrates you see 1 m either side of the line
- For each species, add the total number counted per site and divide by how many transect lines you surveyed. See example below.

	Total number counted				
	T1	T2	T3	T4	Average
Site 1	27	17	11	14	17.25
Site 2	4	7	2	16	7.25
				Overall average	12.25



Site 1 average = $\frac{(27 + 17 + 11 + 14)}{4}$ = 17.25

Overall average = $\frac{17.25 + 7.25}{2}$ = **12.25**

Reporting

- Transfer the survey results onto the Data Reporting Sheet for each species you survey and discuss actions

INVERTEBRATE SURVEY SHEET

SURVEY TYPE (CIRCLE ONE):	INTERTIDAL	REEF SLOPE

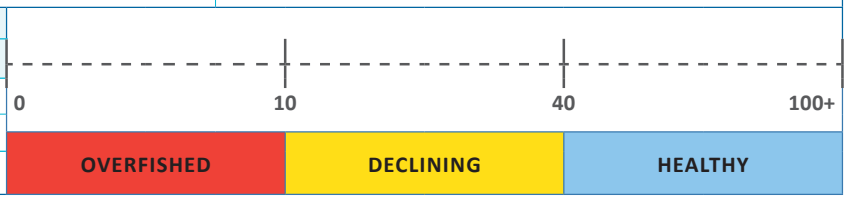
SITE DESCRIPTION

Monitor names:			Village :			
Site #1 name:		Date :		Method (circle one)	Reef Walk	Swim
Main habitat site #1 (circle on or more)	Seagrass	Sand	Hard substrate	Algae	Other:	
Site #2 name:		Date :		Method (circle one)	Reef Walk	Swim
Main habitat site #2 (circle on or more)	Seagrass	Sand	Hard substrate	Algae	Other:	

GIANT CLAM SPECIES

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

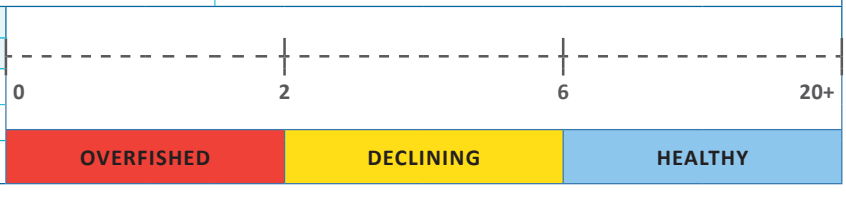
	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					



PINKFISH

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

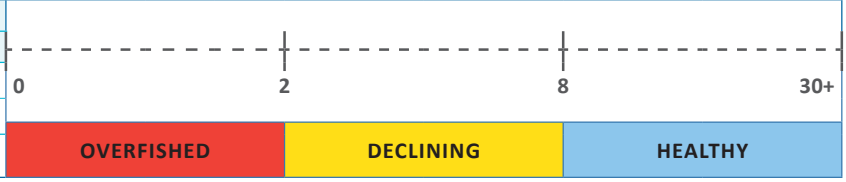
	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					



GREENFISH

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					

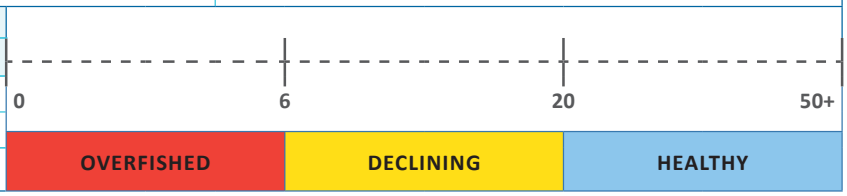


INVERTEBRATE SURVEY SHEET

LOLLYFISH

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

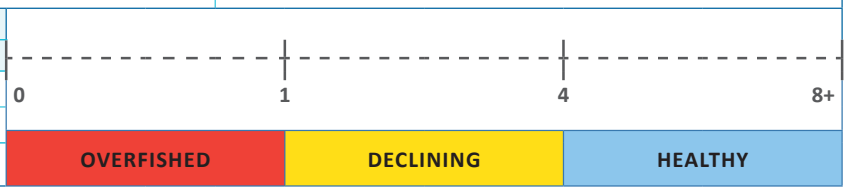
	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					



SANDFISH (SURVEY ONLY IN MUDDY SUBSTRATE)

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

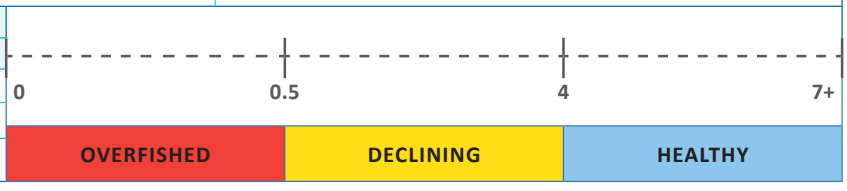
	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					



FLOWERFISH

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

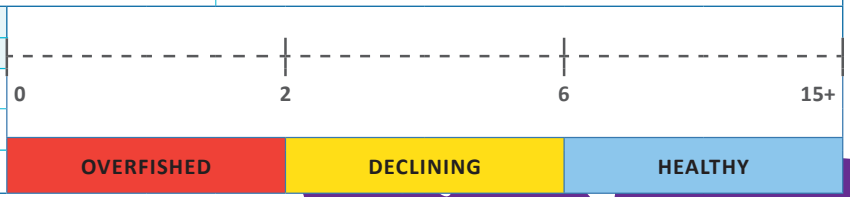
	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					



TROCHUS (REEF SLOPE METHOD ONLY)

	SITE 1	SITE 2
T1		
T2		
T3		
T4		

	Total number counted				
	T1	T2	T3	T4	Average
Site 1					
Site 2					
Overall average					

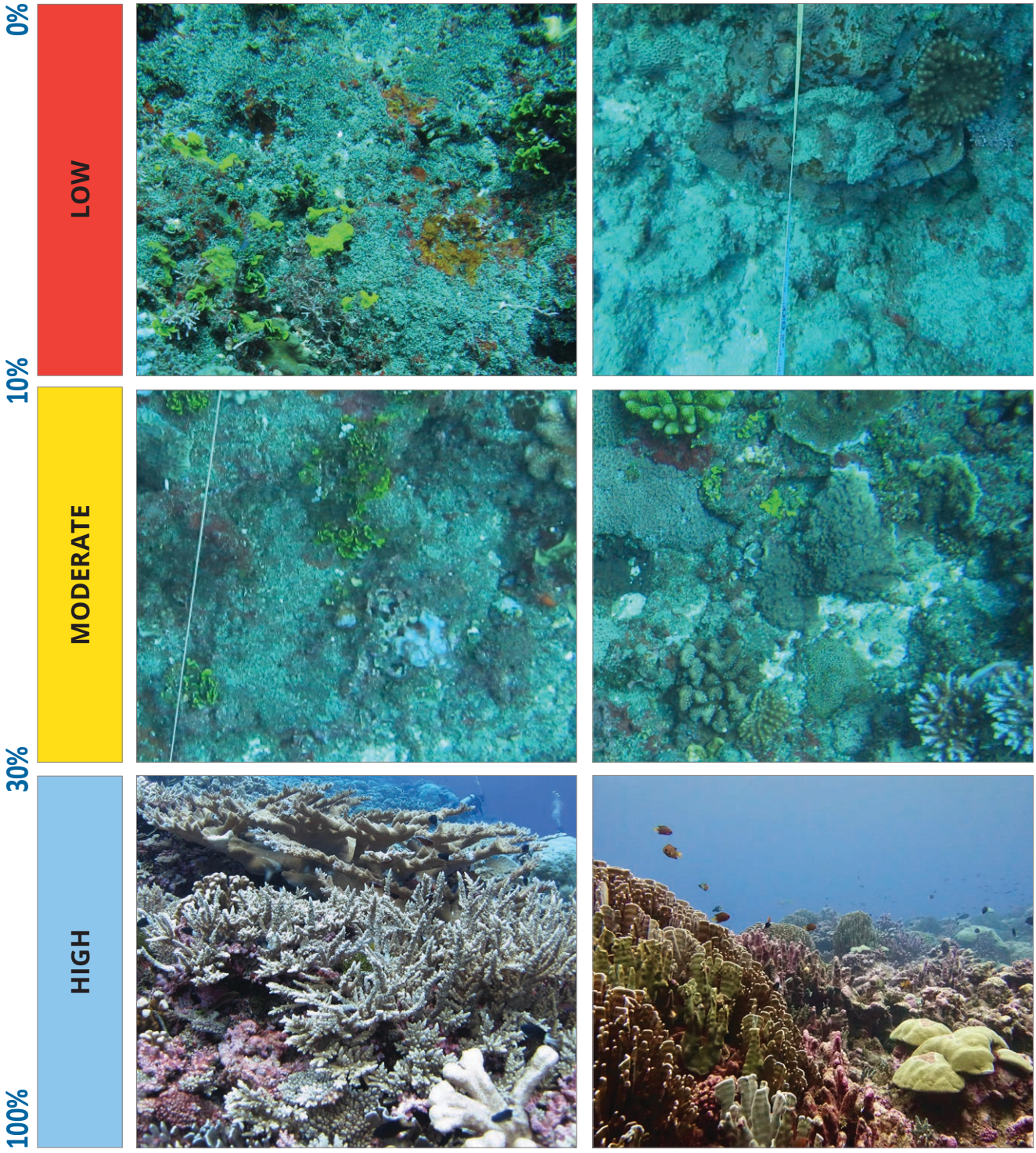


MODULE 3: CORAL REEFS

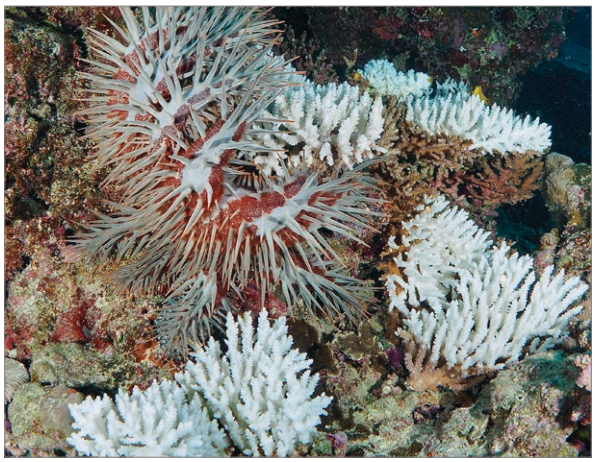
The ***purpose*** of the coral reef surveys is to assess the condition of local reefs and identify any impacts that can affect condition.

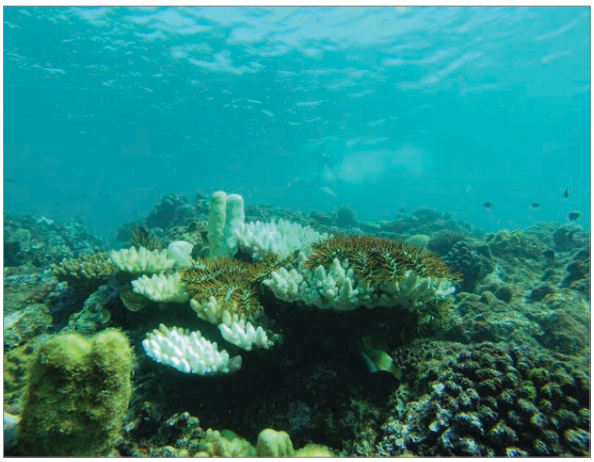
Coral reef surveys also provide a valuable opportunity to raise awareness with communities about the importance of healthy reef habitats, local activities that damage the reef and actions to maintain healthy reefs.

GUIDE FOR ESTIMATING CORAL (%) COVER

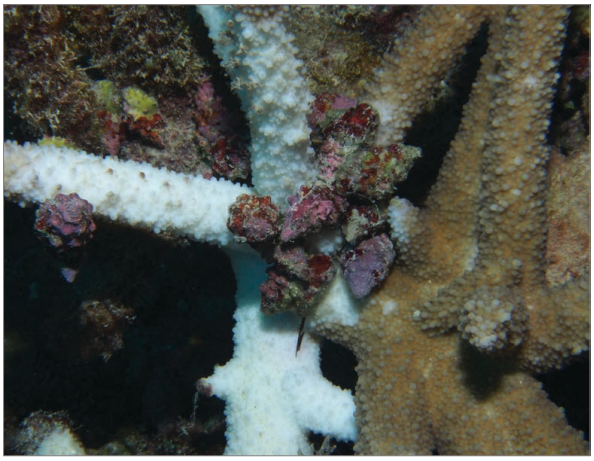


HEAT STRESS





PREDATION COTS



PREDATION SNAIL

DISEASE

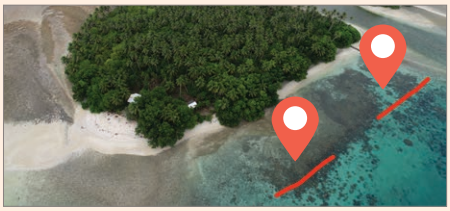
QUICK GUIDE TO CORAL REEF SURVEYS

Site selection

- Choose sites that are typical of the main reef type in the local area
- Choose sites that are easy and safe to access at low and high tide
- Choose sites that are less than 26 ft (8 m) deep

Method

- Carry out monitoring surveys once every 12 months
- If you are monitoring after an impact, monitor within 1 month of the impact, e.g. storm or long hot water period
- At least 2 people should monitor together but more people can do the survey at the same time



- Choose 2 random sites for each survey
- Sites should be at least 30 m apart, if possible
- Sites can be inside or outside your MPA

Equipment you will need includes:

- Underwater slate or paper
- Pencil
- Mask & snorkel (fins optional)

- Start at one end and swim steadily over the reef **parallel** to the shore for 10 minutes and record information on the 5 reef indicators
- Once you finish the first site, complete the second site, then return to the shore to discuss as a team

Reporting

- Discuss what you recorded with the other monitors and reach consensus to fill in a **single** survey sheet together for each site
- Transfer the survey results onto the reef data reporting poster

CORAL REEF SURVEY SHEET

SITE DESCRIPTION (ONE FORM PER SITE)		
Who	Monitor names:	
Where	Village:	Site:
When	Date:	Time:
Conditions	Weather:	Tide:
Habitat (circle one or more)	Reef lagoon	Reef front
	Reef flat	Reef slope

WHAT DID YOU SEE?			
1. Hard coral cover	Comments:		
	0%	10%	30% 100%
	Low	**Moderate**	**High**

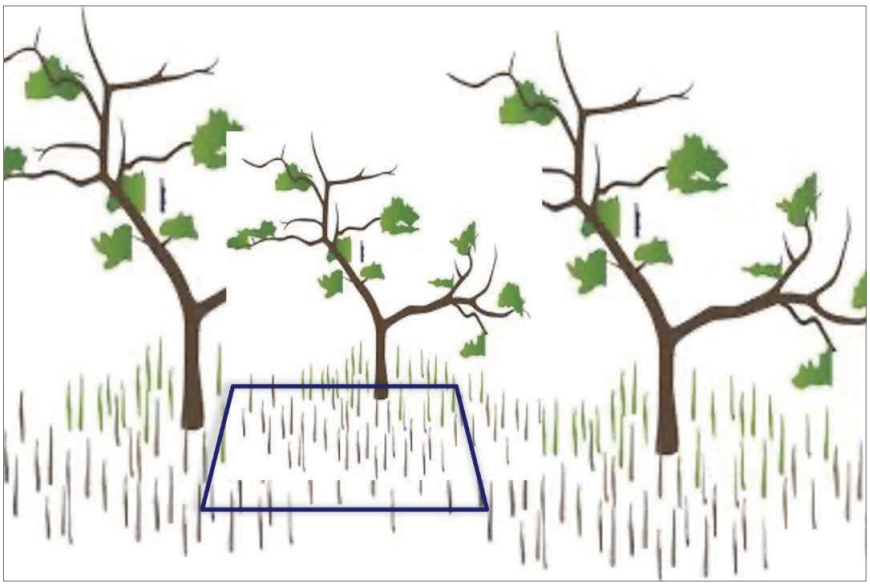
WHAT IMPACTS DID YOU SEE?			
1. Algae Cover	Comments:		
	0%	10%	25% >50%
	Low	**Moderate**	**High**
2. White Coral	Comments:		
	0%	10%	25% 100%
	Low	**Moderate**	**High**
3. Crown-of-thorn starfish (COTS)	Comments:		
	0%	1	5 50+
	Low	**Moderate**	**High**
4. Broken coral:	Comments (note type of damage):		
	0%	10%	25% 100%
	Low	**Moderate**	**High**

Litter present? (circle)	Lots	Some	None
Photos Taken? (circle)	Yes	No	
Photo Notes:			

MODULE 4: MANGROVE FORESTS

The ***purpose*** of the mangrove surveys is to assess the condition of local mangrove habitats and identify any impacts that can affect condition.

Mangrove surveys also provide a valuable opportunity to raise awareness with communities about the importance of healthy mangrove habitats, local activities that damage mangroves and actions to maintain healthy habitats.



Select 3 random 5 m x 5 m quadrats (replicates) at each site about (50 m) apart.

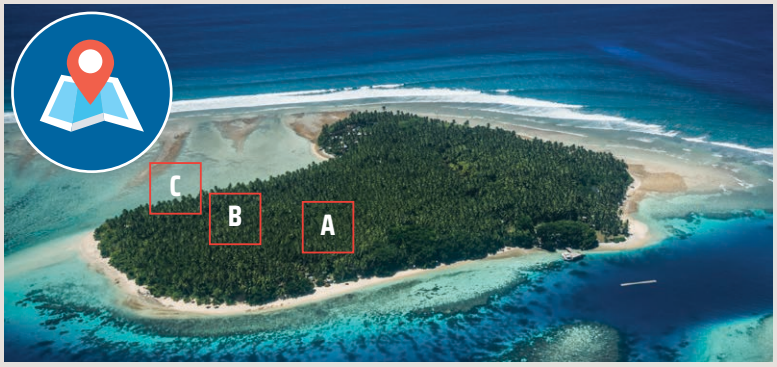
Twisted roots

Storm damage

Erosion

Timber harvesting

QUICK GUIDE TO MANGROVE SURVEYS



Site selection

- Choose sites that are typical of the local mangrove area
- Choose sites that are easy and safe to access at low and high tide

Method

- Carry out monitoring surveys once every 12 months, or within 1 month after an impact, e.g. storm
- Mangrove surveys are better carried out at low tide
- At least 2 people should monitor together but more people can do the survey at the same time

- Choose a random site for each survey, with 3 replicate 5 m x 5 m quadrats (or squares) at least 50 m apart, if possible
- The replicate quadrats can be one close to land (A), one mid-forest (B), and one close to sea (C), if your mangrove area is large enough

Equipment you will need:

- Field survey sheet & pencil
- Rope to measure quadrat (optional)

- Place the first 5 m x 5 m quadrat (using rope) and record information on the 4 mangrove indicators
- Once you finish the first quadrat (replicate), move 50 m away (if possible) and repeat the second replicate, and then the third replicate
- Record what you see at each quadrat as 1, 2 or 3 on the same survey sheet

Reporting

- Discuss what you observed with the other monitors and reach consensus to fill in a **single** survey sheet and mark the average of all quadrats using an 'X'
- Transfer the survey results onto the mangrove data reporting poster

MANGROVE SURVEY SHEET

SITE DESCRIPTION			
Who	Monitor name(s):		
Where	Village:	Site:	
When	Date:	Time:	
Conditions	Weather:	Tide:	
Location (number)	Seaward edge =1	Mid forest=2	Landward edge=3
Site Selection (circle)	Random	Marked Site	

WHAT DID YOU SEE?	
1. Mangrove canopy cover	Comments: 0% 30% 75% 100% Low Moderate High
2. Seedlings (new trees)	Comments: 0 5 10 15 Low Moderate High

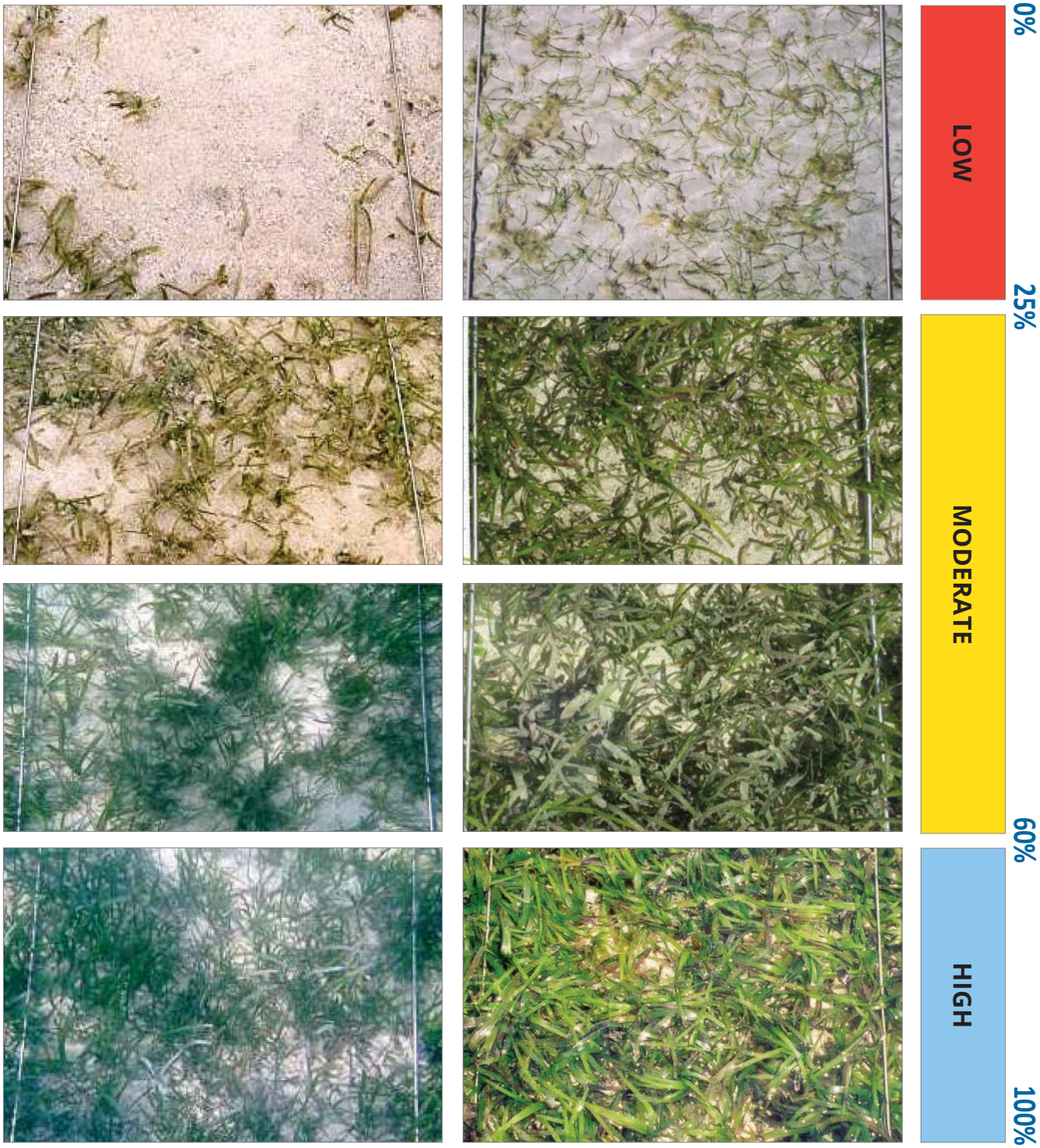
WHAT IMPACTS DID YOU SEE?				
3. Twisted or damaged roots	Comments: 0% 40% 90% 100% Low Moderate High			
4. Impacts **Level of impact:**	Comments: Low Moderate High			
Type of impact (circle all that apply):	Storm Damage	Timber cutting	Animals (eg. pigs)	
	Erosion	Development	Litter	Other
Photos Taken? (circle)	Yes	No		
Photo Notes:				

MODULE 5: SEAGRASS MEADOWS

The ***purpose*** of the seagrass surveys is to assess the condition of local seagrass habitats and identify any impacts that can affect condition.

Seagrass surveys also provide a valuable opportunity to raise awareness with communities about the importance of healthy seagrass habitats, local activities that damage seagrass meadows and actions to maintain healthy habitats.

GUIDE FOR ESTIMATING SEAGRASS (%) COVER



Source: Seagrass-Watch

QUICK GUIDE TO SEAGRASS SURVEYS

Site selection

- Choose sites that are typical of the main seagrass areas near your village (not just the healthiest site)
- Choose sites that are easy and safe to access at low and high tide

Method

- Carry out monitoring once every 6–12 months, or after an impact
- Seagrass surveys can be carried out at the same time as other monitoring, such as invertebrates or reef surveys

- At least 2 people should monitor together, but more people can do the survey at the same time

- Choose a random site for each survey, with 3 replicate 3 ft x 3 ft (1 m x 1 m) squares at least 30 ft (9 m) apart, if the area is large enough
- You can monitor as many sites as you have time for

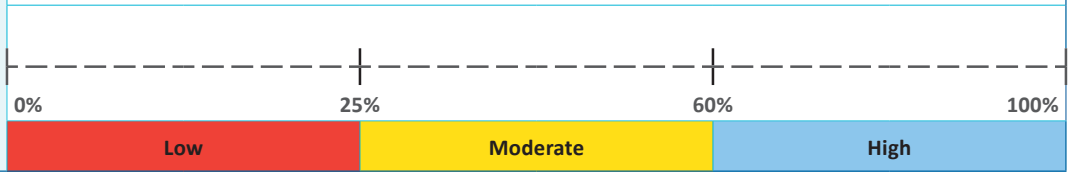
- Place the first 3ft x 3ft (1m x 1m) square (using rope) and record information on the 3 seagrass indicators
- Once you finish the first square (replicate), move at least 30 ft away and repeat for the second replicate, and then again for third replicate
- Record what you see in each square as 1, 2 or 3 on the same survey sheet

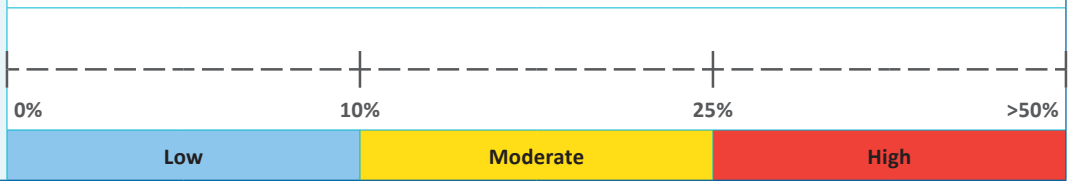
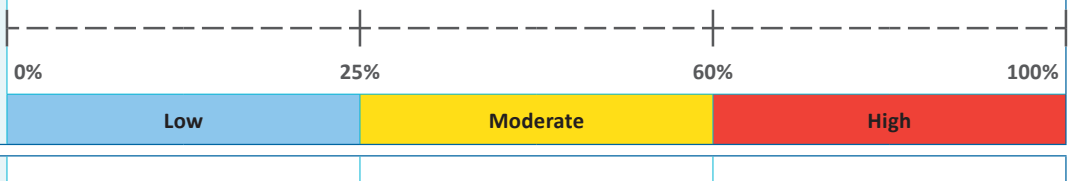
Reporting

- Discuss what you observed with the other monitors and reach consensus to fill in a **single** survey sheet and mark the average of all quadrats using an 'X'
- Transfer the survey results onto (i) **one** seagrass health reporting sheet, and (ii) **one** seagrass impacts reporting sheet

SEAGRASS SURVEY SHEET

SITE DESCRIPTION		
Who	Monitor names:	
Where	Village:	Site:
When	Date:	Time:
Conditions	Weather:	Tide:
Site Selection (circle)	Random	Marked Site

WHAT DID YOU SEE?	
1. Live Seegrass Cover	Comments: 

WHAT IMPACTS DID YOU SEE?	
2. Algae Cover	Comments: 
3. Damaged or 'burnt' seagrass	Comments: 

Litter present? (circle)	Lots	Some	None
Photos Taken? (circle)	Yes	No	
Photo Notes:			

FURTHER READING AND RESOURCES

Johnson, J.E., Welch, D.J., Pineda, M.C., Hughes, A., Jupiter, S., Howard, R. (2023) Solomon Islands Community Marine Monitoring Toolkit: A Facilitators Guide. C_2O Pacific and Wildlife Conservation Society, Melanesia, Solomon Islands (64pp).

Moritz C, Vii J, Tamelander J, Thomassin A, Anderson P, Lee Long W, Planes S. (editors) (2018) Status and Trends of Coral Reefs of the Pacific. Global Coral Reef Monitoring Network [GCRMN], French Polynesia.

Monitoring Matters Network: http://www.monitoringmatters.org

SeagrassWatch Global Seagrass Observing Network: https://www.seagrasswatch.org

Solomon Islands Government. (2019) *Solomon Islands National Fisheries Policy 2019 – 2029*.