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الخطوات الأساسية في إعداد البحث العلمي



3 ވަނަ ބައި

އިކޮލޮޖިކަލް ސަރުކާރުގެ ރިޖިސްޓްރޭޝަން ފޯމުގެ ބަޔާން Ecological Survey Report Structure (Minimum Content Requirements)

1. Introduction

An introduction about the area including the general conditions and characteristics of the area.

2. Survey methodology

Describe the method used for surveying.

3. Survey sites

- GPS Coordinates of the proposed OECMs sites.
- Map including location plan, minimum A-3 size scaled site plan showing all aspects of proposed OECMs sites.

4. Benthic area

Information about coral reefs, sea grass beds and benthic conditions.

5. Fish community

Information about the different varieties of fish and their abundance.

6. Vegetation surveys

If the proposed area includes a terrestrial area, vegetation surveys should be carried out and results included in the report.

7. Coral community, coral health and structural complexity

Details of coral community dynamics and indicators for coral health, and information about reef complexity.

8. Endangered Species

Information about the IUCN endangered species found in the survey area.

4

المتطلبات الدنيا لخطة الإدارة

Minimum requirements for management plan

Introduction	An overview of the area giving details of its history and current status (environmental, social, and economic aspects)
Goal/ Objectives	Specify the goals and objectives for management.
Boundary and Zonation	Identify the boundary of the OECM and include the different zones if any within the area.
Management approach	This section should give details about how the area would be managed.
Governance	Highlight how the area would be governed.
Ecological and socioeconomic benefits	Give details of the ecological significance of the area and the socio-economic benefits from the area.
Enforcement and compliance	Should include the regulatory measures that are applicable to the area and the enforcement measures that would be in place as well as approaches for ensuring compliance.
Monitoring	This section should highlight how the monitoring of the area will be carried out with parameters and indicators to be monitored and frequency of monitoring.

جَعْقَرُوتْ 5

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6 ملحق

هيكلية تقرير المراقبة

Monitoring Report Structure

Introduction	- Introduction of the area with maps showing boundary - When the area was designated as an OECM - Include the announcement for OECM as an Annex
Summary of previous ecological and biological condition	Summary of the ecological survey done when the area was designated as an OECM
Current ecological and biological condition	Conditions of the area based on the monitoring parameters
Socio-economic aspects	How the area has benefited people since the establishment as an OECM or since the last monitoring period.
Enforcement and compliance	Issues with enforcement and compliance? Has there been improvements with compliance since establishment as an OECM or since the last reporting period?
Conclusion	Concluding remarks

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Monitoring parameters

The following approach in line with the Maldives National Coral Reef Monitoring Framework should be used for monitoring of OECMs.

Standardised Approach:

- Depth: 5-10m
- Frequency/timing: once a year or based on availability of capacity and resources twice a year preferably between April – May to capture bleaching / immediate post bleaching impacts and between September – November.
- Method: 8 fixed transects 20m long x 5m wide. Fixed means the starting point is marked on the reef with stainless steel rod, so the transect is attached to the same point every year
- If you want to demonstrate the reserves are effective, you may want to compare each with a nearby area, so 1 survey location in the designated OECM, 1 survey outside the designated OECM on a nearby reef
- Should record location, depth, date, time and name of person recording data
- Data should be submitted by year end to the Ministry of Environment, Climate Change and Technology and the data can also feed into the National Coral Reef Monitoring Framework Database.

Indicators to collect:

- **Fish:** within each 20m x 5m transect:
 - Abundance and size (within 5cm groupings which allows biomass calculation) using an instantaneous count approach
 - Specific indicators to family:
 - Herbivores (parrot and surgeon),
 - Reef health and coral cover (butterfly),
 - Fishing (grouper, snapper, grunt),
 - Aquarium trade species (clownfish, angelfish, lionfish)
 - Megafauna (shark, turtle, ray).
 - Number of IUCN red-list species (presence/absence): 30-minute roaming survey (2 people) recording presence of species from a checklist. Easy way to do this is by using a visual checklist that can mark the species seen, or taking photographs of all different species to identify later.

- **Benthic:** every 50cm along 20m transect (under the tape not counting the start point): This could also be carried out using the National Coral Reef Monitoring Framework Photo-quadrat Collection Protocol.
 - Live coral (by growth form: branching, table, boulder, foliose, solitary, encrusting, hard coral data to the highest level possible – eg hard coral genera)
 - Macroalgae, coralline algae, cyanobacteria
 - Sand, silt, rubble, bare rock (includes dead coral)
 - Soft coral
 - Sponge
 - Other
 - Coral recruit density (2 x 50cm quadrats at each of 0m, 10m, 20m along the transect giving 6 quadrat counts per transect, recording the number of corals <5cm in diameter/size within each quadrat)
- **Complexity:** can be visually estimated with provision of a visual guide 0-5m or using chain method
- **Reference:** two photos of each transect, start (looking in direction of transect) and end (looking back in to transect).
- **Invertebrates:** count within the 20 x 5m transect area (this follows National Coral Reef Monitoring protocol)
 - Grazers – urchins (long-spined, pencil and collector)
 - Important corallivores (COT, Pin cushion)
 - Fishery targeted – sea cucumbers (redfish, greenfish, pinkfish)
 - Threatened/fishery targeted – triton, giant clam, lobster, banded coral shrimp
- **Optional parameter (subject to availability of resources and capacity):** abiotic indicators such as water quality (including physical appearance, pH, salinity, temperature, Total Suspended Solids, Turbidity, Nitrate, Nitrite, Phosphate)

In addition to the above-mentioned parameters OECMs representing seagrass ecosystems can be monitored using Maldives Seagrass Monitoring Network Methods (<http://maldivesresilientreefs.com/resources/MaldivesSeagrassMonitoringMethods.pdf>) OECMs representing mangrove and other terrestrial ecosystems can be monitored based on the Guidelines for Coral Reefs and Small Island Vegetation Surveys (<https://www.environment.gov.mv/v2/en/download/11067>)



Ministry of Environment, Climate Change and Technology

Male', Maldives

Guideline for Recognising Areas as Other Effective Area-based Conservation Measures (OECMs) in Areas Leased for Tourism Operations

Introduction and Title	1.	(a)	This Guideline outlines the procedure for recognising areas other than any nationally protected areas as "Other Effective Area-based Conservation Measures" (OECMs) as described under the United Nations Convention on Biological Diversity (CBD), to sustainably manage and conserve the biodiversity
		(b)	This Guideline shall be titled as the "Guideline for Recognising Areas as Other Effective Area-based Conservation Measures (OECMs) in areas Leased for Tourism Operations in the Maldives."
Objective	2.		The objective of this Guideline is;
		(a)	To determine and recognise Other Effective Area Based Conservation Measures (OECMs) in the areas leased for tourism operations in the Maldives; and
		(b)	To ensure that the resort areas are sustainably managed areas.
Jurisdiction of the resort area to be recognised as an OECM	3.		The areas recognised pursuant to this Guideline shall be within the boundary of the Tourist Resorts registered with the government entity formulating policies related to tourism and within the purview of Regulation no: R-7/2012 (Regulation on Determining Boundaries of Leased Islands for Tourisms Development)
Criteria for OECMs	4.		The areas proposed as OECMs shall satisfy the following conditions.
		(a)	The proposed area is not a protected area pursuant to Law No: 4/93 (Environment Protection and Preservation Act) or any regulation formulated pursuant to it;
		(b)	The proposed area is an area with rich biodiversity and an area that is managed;
		(c)	All activities in the proposed area ensures protection and sustainable use of biodiversity and ecosystem services;
		(d)	The proposed area where applicable, supports provision of cultural, economic, social and other values.

		(e)	No activity in the proposed area shall have a negative impact on biodiversity and ecosystem services.
Procedure for recognising and delisting of OECMs	5.		The following procedures shall be followed in recognising and delisting of the resort area as an OECM. The procedure is detailed at Annex 1 of this Guideline.
		(a)	Submission of Expression of Interest for recognition of an OECM;
		(b)	Screening;
		(c)	Conducting the Ecological Survey;
		(d)	Preparation of Management Plan of the proposed area;
		(e)	Submission of the Ecological Survey, Management Plan and boundary of the proposed area;
		(f)	Decision making process and administrative procedures to recognise the proposed area as an OECM;
		(g)	Recognition of OECM
		(h)	Monitoring of area recognised as OECM
		(i)	Delisting of OECM.
Application for recognition as OECMs	6.	(a)	The expression of interest to recognise resort areas as OECMs shall be submitted by the resort owner.
		(b)	For areas satisfying the criteria set out for OECMs pursuant to Article 5 of this Guideline, the resort owner of the respective area shall submit expression of interest to the Ministry through the form at Annex 2 of this Guideline.
Screening	7.	(a)	All applications submitted as per Article 6 of this Guideline must be screened by the Ministry for the following:
		(1)	The area submitted shall be within the boundary of a tourist resort registered at the Ministry of Tourism and shall fall under the legal boundary of the resort designated under the Regulation no: 2012/R-7 (Regulation on Determining Boundaries of Leased Islands for Tourism Development) and shall not fall under an existing protected area boundary designated under the Law No: 4/93 (Environment Protection and Preservation Act) and Regulation no: 2018/R-78 (Regulation on Protected Areas)
		(2)	The area shall have the following fundamental characteristics of OECMs.
		(a)	Can affirm that the area can be managed sustainably for a long-term;
		(b)	The management of the area shall ensure protection of the habitats and biodiversity;

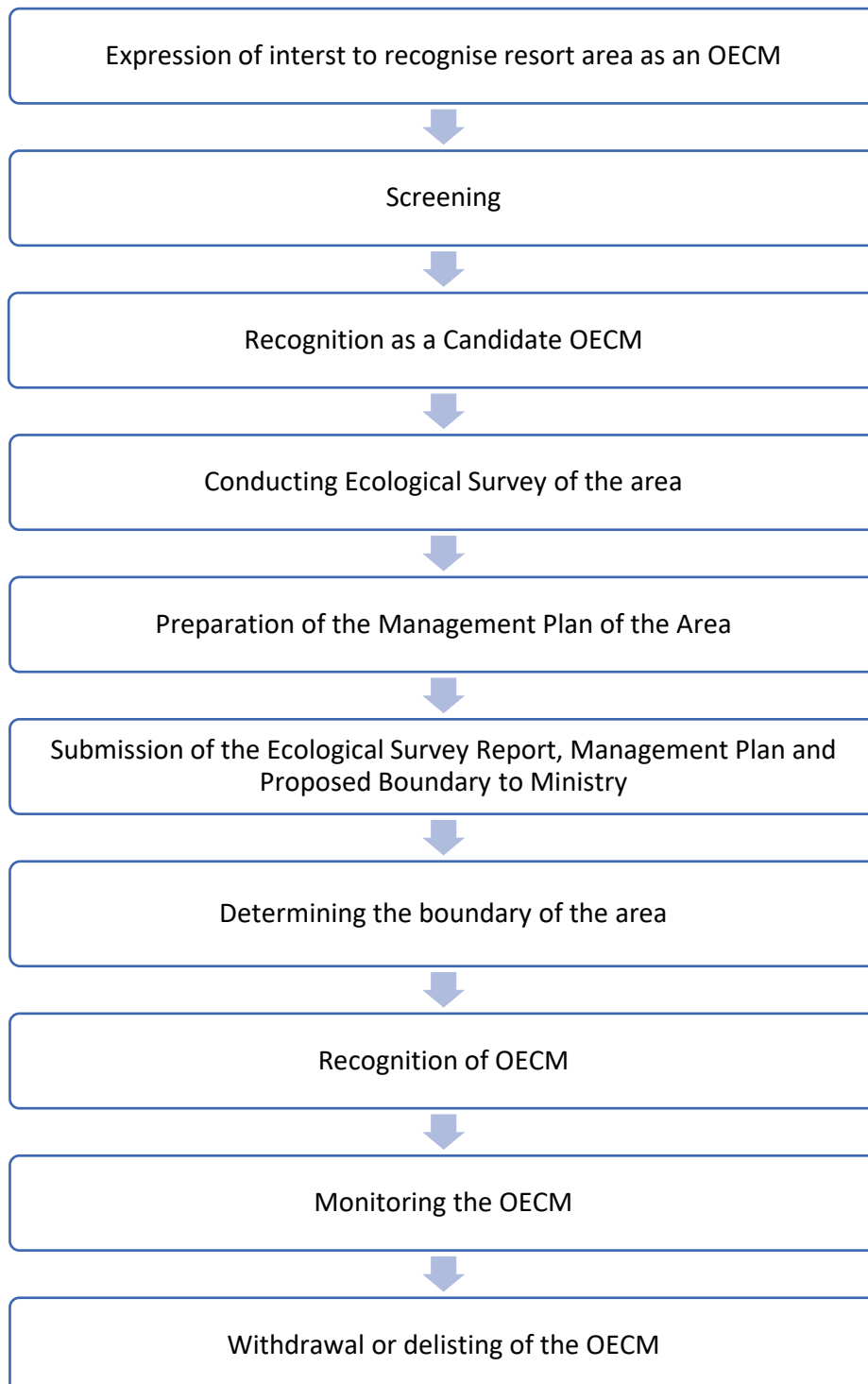
			(c)	The activities in the area shall not have any detrimental effect on biodiversity and ecosystem services; and
			(d)	any threats to biodiversity and ecosystem services shall be well managed.
		(3)		It shall be clear that the laws and regulations governing the area will ensure protection and conservation of biodiversity and ecosystem services
		(4)		The area contributes to achieving national and international goals on conservation of biodiversity and ecosystem services
		(b)		The proposed areas that satisfies the screening conditions referred in part (a) shall be recognised as “Candidate OECM”,
		(c)		Within 30 (thirty) days of application for recognition as OECM as referred in Article 6 of this Guideline, for those areas that satisfy the screening conditions referred in part (a) of this Article, the Ministry shall inform the resort owners of the recognition as “Candidate OECM” in writing.
		(d)		Within 1 (one) year of recognition of Candidate OECM, the resort owner to submit the requirements referred in Articles 9, 10 and 11 of this Guideline to the Ministry.
		(e)		Should the requirements referred in part (c) of this Guideline are not met, the area shall be delisted from its recognition as a Candidate OECM.
Conducting Ecological Survey	8.	(a)		An ecological survey shall be conducted for the Candidate OECM, and its ecological survey report shall be submitted to Ministry. The ecological survey shall be conducted in accordance with the following guideline, framework and protocols.
		(1)		“Guidelines for the Coral Reef and Small Island Vegetation Surveys in the Maldives” published in December 2021;
		(2)		Maldives National Coral Reef Monitoring Framework; and
		(3)		Maldives Seagrass Monitoring Network Monitoring Methods published in October 2020.
		(b)		To ensure validity of the surveys, video transacts shall be submitted along with the ecological survey report referred in part (a) of this Article.
		(c)		Ecological survey report referred in part (a) of this Article shall be prepared by one of the following.
		(1)		Marine biologist of the Resort; or
		(2)		Registered Survey Team appointed by the Resort.

		(d)	The ecological survey report shall include the minimum contents stipulated at Annex 3 of this Guideline.
Preparation of the Management Plan	9.		The owner of the resort shall submit to the Ministry a management plan for the Candidate OECM as provided in Annex 4 of this Guideline. The Management Plan shall be a long-term plan or shall be a plan that would be revised periodically.
Determining the Boundary of the proposed area	10.	(a)	The boundary of the Candidate OECM shall be proposed by the resort who submits the Expression of Interest. The boundary proposed by the resort shall be within the jurisdiction of the resort registered at Ministry of Tourism. The proposed area shall have a minimum distance of 100 (One hundred) meters from the brine outfall, water villa, beach replenishment and any existing or planned infrastructure.
		(b)	The Ministry shall determine the boundary of the Candidate OECM, in consultation with Ministry that oversees policies relevant to tourism and the Resort that submitted the expression of interest.
Decision on recognising the proposed area as OECM	11.		Upon completion of all the procedures detailed in this Guideline and submission to the Ministry, the Ministry shall review and inform the Resort owner of the decision within 30 (thirty) working days. In making the decision, the Ministry shall refer to the completeness of the submission.
Recognition of OECM	12.	(a)	Should the proposed area submitted for OECM is decided as an OECM pursuant to Article 11 of this Guideline, the Ministry shall declare the proposed area as an OECM and shall publish its recognition in Government Gazette in accordance with the requirements provided at Annex 5 of this Guideline.
		(b)	The areas recognised as OECM pursuant to part (a) of this Article shall be included in the “World Database on Protected Areas”.
		(c)	The areas recognised as OECMs pursuant to part (a) of this Article shall be included in a database in the Ministry’s website.
Monitoring of OECM	13.	(a)	The Resort owner shall submit a monitoring report of the recognised OECMs annually to the Ministry.
		(b)	Monitoring report referred in part (a) of this Article shall be in accordance with the format provided at Annex 6 and 7 of this Guideline.
Withdrawal and delisting from OECM	14.	(a)	Should the Resort owner at their own discretion decide to withdraw its recognition of the OECM, a letter shall be submitted to the Ministry requesting withdrawal. Upon submission of the said letter, the area shall be delisted from its recognition as an OECM without conditions.

		(b)	The Ministry may delist any OECM provided the following has not been rectified by the resort owner within 90 (ninety) days. Failure to rectify will result in delisting of the area as OECM by the Ministry.
		(1)	Breach of Management Plan prepared for the OECM pursuant to Article 9.
		(2)	Failure to submit or comply with the monitoring report pursuant to Article 13.
		(3)	If the area no longer satisfies the required criterion for OECM.
		(c)	In delisting the OECM as pursuant to parts (a) and (b) of this Article, such shall be informed through publishing in the Government Gazette. And such areas shall be removed from the databased referred in Article 12 (b) and (c) of this Guideline.
Definition	15.		Unless otherwise stated in this Guideline, the phrases shall be defined as follows:
		(a)	“Other Effective Area-Based Conservation Measures (OECMs)” refers to a geographically defined area other than a Protected Area pursuant to Law No: 4/93 (Environment Protection and Preservation Act) which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values.
		(b)	‘Ministry’ refers to the competent government authority responsible for enforcing environmental policy at the time.
		(c)	“tourist resort” refers to an island or a designated area of an island that has been developed to accommodate tourists and to provide board and lodging facilities for them;
		(d)	‘Resort Owner’ refers to the owner or person assigned by the owner, who has signed lease agreement for the island leased for tourism purpose.
		(e)	‘Registered Survey Team’ refers to a team which has at least 1 (one) surveyor registered at the Maldives Land and Survey Authority.
		(f)	‘World database on Protected Areas’ refers to the UN Environment Programme World Conservation Monitoring Centre portal exhibiting all the protected and managed areas of the world.

Annex 1

Procedure for recognising areas within resort islands boundary as OECMs



Annex 2

Ministry of Environment, Climate Change and Technology
Male', Maldives



ދިވެހިސަރުކާރުގެ ގެޒެޓް، ބަލާލެވޭ ބަންދުގެ ދަށުން
މިއަހަރުގެ
ދިވެހިސަރުކާރުގެ ގެޒެޓް

ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން
APPLICATION FOR DESIGNATION OF AREAS AS AN OECD

01 INFORMATION OF THE PROPOSED AREA

ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން

Name of the area Island Name/ Atoll
ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން

02 APPLICANT INFORMATION

ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން

Full Name: Contact no:
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Address: Email Address:
ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން

03 SUMMARY OF ECOLOGICAL AND BIOLOGICAL SIGNIFICANCE

ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން

04 CONSERVATION AND MANAGEMENT MEASURES

ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން
ފޮޓޯ ބަލާލެވޭ ބަންދުގެ ދަށުން

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Ecological Survey Report Structure (Minimum Content Requirements)

1. Introduction

An introduction about the area including the general conditions and characteristics of the area.

2. Survey methodology

Describe the method used for surveying.

3. Survey sites

- GPS Coordinates of the proposed OECM sites.
- Map including location plan, minimum A-3 size scaled site plan showing all aspects of proposed OECM sites.

4. Benthic area

Information about coral reefs, sea grass beds and benthic conditions.

5. Fish community

Information about the different varieties of fish and their abundance.

6. Vegetation surveys

If the proposed area includes a terrestrial area, vegetation surveys should be carried out and results included in the report.

7. Coral community, coral health and structural complexity

Details of coral community dynamics and indicators for coral health, and information about reef complexity.

8. Endangered Species

Information about the IUCN endangered species found in the survey area.

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Minimum requirements for management plan

Introduction	An overview of the area giving details of its history and current status (environmental, social, and economic aspects)
Goal/ Objectives	Specify the goals and objectives for management.
Boundary and Zonation	Identify the boundary of the OECM and include the different zones if any within the area.
Management approach	This section should give details about how the area would be managed.
Governance	Highlight how the area would be governed.
Ecological and socioeconomic benefits	Give details of the ecological significance of the area and the socio-economic benefits from the area.
Enforcement and compliance	Should include the regulatory measures that are applicable to the area and the enforcement measures that would be in place as well as approaches for ensuring compliance.
Monitoring	This section should highlight how the monitoring of the area will be carried out with parameters and indicators to be monitored and frequency of monitoring.

Annex 5

Content of the OECM Recognition Announcement

- (1) Introduction
- (2) Name of the area
- (3) Boundary and Zonation of the area
- (4) Activities allowed and prohibited in the area
- (5) Ecological and Biological significance
- (6) Conservation benefits
- (7) Management responsibilities

توضیحات بر مبنای سنجش محیط زیست

Monitoring Report Structure

Introduction	- Introduction of the area with maps showing boundary - When the area was designated as an OECM - Include the announcement for OECM as an Annex
Summary of previous ecological and biological condition	Summary of the ecological survey done when the area was designated as an OECM
Current ecological and biological condition	Conditions of the area based on the monitoring parameters
Socio-economic aspects	How the area has benefited people since the establishment as an OECM or since the last monitoring period.
Enforcement and compliance	Issues with enforcement and compliance? Has there been improvements with compliance since establishment as an OECM or since the last reporting period?
Conclusion	Concluding remarks

Annex 7

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Monitoring parameters

The following approach in line with the Maldives National Coral Reef Monitoring Framework should be used for monitoring of OECSs.

Standardised Approach:

- Depth: 5-10m
- Frequency/timing: once a year or based on availability of capacity and resources twice a year preferably between April – May to capture bleaching / immediate post bleaching impacts and between September – November.
- Method: 8 fixed transects 20m long x 5m wide. Fixed means the starting point is marked on the reef with stainless steel rod, so the transect is attached to the same point every year
- If you want to demonstrate the reserves are effective, you may want to compare each with a nearby area, so 1 survey location in the designated OECS, 1 survey outside the designated OECS on a nearby reef
- Should record location, depth, date, time and name of person recording data
- Data should be submitted by year end to the Ministry of Environment, Climate Change and Technology and the data can also feed into the National Coral Reef Monitoring Framework Database.

Indicators to collect:

- **Fish:** within each 20m x 5m transect:
 - Abundance and size (within 5cm groupings which allows biomass calculation) using an instantaneous count approach
 - Specific indicators to family:
 - Herbivores (parrot and surgeon),
 - Reef health and coral cover (butterfly),
 - Fishing (grouper, snapper, grunt),
 - Aquarium trade species (clownfish, angelfish, lionfish)
 - Megafauna (shark, turtle, ray).
 - Number of IUCN red-list species (presence/absence): 30-minute roaming survey (2 people) recording presence of species from a checklist. Easy way to do this is by using a visual checklist that can mark the species seen, or taking photographs of all different species to identify later.
- **Benthic:** every 50cm along 20m transect (under the tape not counting the start point): This could also be carried out using the National Coral Reef Monitoring Framework Photo-quadrat Collection Protocol.

- Live coral (by growth form: branching, table, boulder, foliose, solitary, encrusting, hard coral data to the highest level possible – eg hard coral genera)
- Macroalgae, coralline algae, cyanobacteria
- Sand, silt, rubble, bare rock (includes dead coral)
- Soft coral
- Sponge
- Other
- Coral recruit density (2 x 50cm quadrats at each of 0m, 10m, 20m along the transect giving 6 quadrat counts per transect, recording the number of corals <5cm in diameter/size within each quadrat)
- **Complexity:** can be visually estimated with provision of a visual guide 0-5m or using chain method
- **Reference:** two photos of each transect, start (looking in direction of transect) and end (looking back in to transect).
- **Invertebrates:** count within the 20 x 5m transect area (this follows National Coral Reef Monitoring protocol)
 - Grazers – urchins (long-spined, pencil and collector)
 - Important corallivores (COT, Pin cushion)
 - Fishery targeted – sea cucumbers (redfish, greenfish, pinkfish)
 - Threatened/fishery targeted – triton, giant clam, lobster, banded coral shrimp
- **Optional parameter (subject to availability of resources and capacity):** abiotic indicators such as water quality (including physical appearance, pH, salinity, temperature, Total Suspended Solids, Turbidity, Nitrate, Nitrite, Phosphate)

In addition to the above-mentioned parameters OECMs representing seagrass ecosystems can be monitored using Maldives Seagrass Monitoring Network Methods (<http://maldivesresilientreefs.com/resources/MaldivesSeagrassMonitoringMethods.pdf>)

OECMs representing mangrove and other terrestrial ecosystems can be monitored based on the Guidelines for Coral Reefs and Small Island Vegetation Surveys (<https://www.environment.gov.mv/v2/en/download/11067>)