

Environmental and Social Management Plan for SeyCCAT financed project BGF2/L/N15:

Marine Biodiversity Baseline assessment around Frégate Island, the eastern most Seychelles 'Inner' granitic island'

1. Project Description (rationale, objectives, location, specific activities)

This document assesses environmental and social impacts expected in the context of the SeyCCAT-funded project '*Marine Biodiversity Baseline assessment around Frégate Island, the eastern most Seychelles 'Inner' granitic island'*'. This project will be led by Green Islands Foundation in partnership with Fregate Islands Private and the University of Seychelles. Actions undertaken to mitigate the impacts are also presented.

This project proposes to collect data for an initial assessment of the coral reef assemblage and associated marine species, and monitor trends over time at Fregate island. The data will be collected through standardized marine monitoring scientific methodologies currently employed by GIF, thus, can be used to compare findings with other granitic islands. The marine monitoring will be augmented with novel spatial monitoring technologies provided by Coralive.org.

This Environmental and Social Management plan describes mitigation measures to be put in place to address the potential environmental and social impacts and risks associated with undertaking the project at Fregate Island to achieve the following project objectives:

Objective 1: To address the lack of knowledge of marine biodiversity around Fregate Island, by undertaking the first biodiversity assessment of coral reef species and coral species diversity around Fregate Island.

Objective 2: Identify composition and coral reef health through coral cover analysis of Fregate Island coral reef.

Objective 3: Combining data and conclusions of objective one and two to establish long-term marine monitoring program for year-on-year comparison of long-term trends in the structure of reef fish and coral communities

The project will involve between up to 5 expert surveyors at a time to carry out assessment data collection and the deployment of specialist equipment.

The nature of the project is to collect baseline data to report on the status of coral reef biodiversity, therefore, limiting interference on marine life is essential to record representative data. The project methods for all objectives are designed to minimize any direct or indirect effects on the environment, equipment and personnel.

This ESMP will assist the project in meeting its obligations whilst mitigating impacts in accordance with the Environmental, the work health and safety legislation of Seychelles and internal protocols. This ESMP applies to all managers, project leaders, marine surveyors and Fregate island private staff and to other persons involved in the carrying out scientific research on or around the island.

2. Risks, mitigation measures and monitoring

Potential risks	Mitigation measures	Indicators to monitor implementation of mitigation measures
Environmental risks		
<i>Coral damage (trampling) by divers</i>	<p>Team leader to conduct pre-dive briefings to brief surveyors of marine monitoring protocol</p> <p>Dive lead (GIF project manager) to oversee diving sessions</p> <p>Dive team leader to conduct preliminary practical skill assessment to determine diver abilities and competencies</p> <p>Risk assessment to be undertaken by dive lead</p>	<p>Smooth running of survey sessions</p> <p>No/minimal coral damage during diving</p> <p>Dive team leader keep tab of divers with higher likeliness to trample</p> <p>Signed risk assessment forms (Annex 3)</p>
<i>Coral damage from equipment (e.g BRUV)</i>	<p>Supervision of diving activities by dive team leader</p> <p>Dive team leader to ensure BRUV and equipment lowering of equipment in safe conditions and as per BRUV protocol</p>	<p>No/minimal coral damage from survey equipment</p> <p>All dive sessions run as per protocol (See annex 2)</p>
<i>Macro-fauna strikes from boat propellers</i>	<p>Skippers to follow slow speed</p> <p>Surveyors to act as spotters when boat is in motion to spot marine fauna</p>	<p>No marine fauna strikes from survey boats</p>

<p><i>Pollution of sea from littering/fuel</i></p>	<p>No tank fuelling to be made at sea as much as possible</p> <p>No contaminated bilge water to be discarded at sea</p> <p>Portable/ extra tanks need to be secured</p> <p>No littering to be made</p> <p>Dive team leader to brief team of pollution risks during pre-dive briefings</p>	<p>No pollution from marine survey sessions</p> <p>Pre-diving briefing checklist(See Appendix I)</p>
<p><i>Marine environment damage by anchoring</i></p>	<p>Anchoring in sand as much as possible</p> <p>Anchorage away from high biodiversity /sensitive zones</p> <p>Skipper to position boat over anchor before pulling up anchor to minimize damage. Experience FIP skippers to work with survey teams as far as possible</p>	<p>No/limited environment damage from survey sessions</p> <p>Only experienced skipper assigned to marine survey work</p>
<p>Social risks</p>		
<p>Dive-related sickness</p>	<p>Dive sessions to be properly planned by dive team leader. All divers to be made aware of survey planning during pre-dive briefings.</p> <p>Dive team leader to ensure risk assessments are conducted prior t dive sessions</p>	<p>Pre-dive briefing checklist</p> <p>Dive plan</p> <p>Dive session run according plan</p> <p>Signed risk assessment forms</p>

	<p>Limited diving: No more than 3 dives a day to be undertaken. All diving to take place below 30 m. Each diver need to be equipped with emergency air reserve of between 25 and 30 %.</p> <p>All divers to adhere to safety stops and slow ascent. All divers to be equipped with dive computers</p> <p>All divers to be made aware of the emergency contacts and protocol in the Health and Safety Management plan</p> <p>Dive team leader to ensure divers are physically fit, drink water and sober</p>	<p>No surveyor contracts decompression sickness</p> <p>Oxygen present on survey boat.</p> <p>Emergency protocol contained in the Health and safety Management plan placed at prominent location on the boat</p>
<p>Other Injuries incurred by divers (e.g. cuts from propellers, sunburns)</p>	<p>Skipper/divers to observe safety procedures at all times and to look out for other dive team members</p> <p>Dive team leader to ensure divers are physically fit, drink water and not sober/not drugged.</p> <p>No surveyor to undertake lone dives</p> <p>Dive team leader to brief surveyors about need to wear UV protective clothing, hats, sunglasses and sunblock.</p> <p>Skipper/dive team leader to be aware of current weather forecast and tidal and sea conditions</p> <p>Dive team leader to terminate any dive</p>	<p>No injuries reported</p> <p>Signed risk assessment forms</p> <p>Tide tables</p> <p>Real-time weather forecast</p>

	<p>activity where unsafe conditions arise</p> <p>All divers to be made aware of the emergency contacts contained in the Health and Safety Management plan</p>	Emergency protocol on prominent location on the survey boat
Other project – related risks		
No interests from UniSey students to participate in the project	<p>Data collected from the project to be analyzed by project officer for the project instead</p> <p>GIF and the Blue Economy Institute have signed a Memorandum of Understanding (MoU) for a collaboration in marine programmes</p>	<p>Assigned project officer by GIF</p> <p>UniSey students participation in the project</p>
No/Limited collaboration from Fregate island	The project fits into an agreement signed between GIF and Fregate Island Private for the development of a long-term marine programme as well as a marine habitat assessment. This project fits in with the agreement.	Full cooperation received including co-financing and staff involvement for the project from Fregate Island Private.
Equipment damage /loss during surveys	<p>Dive team leader to brief surveyors on proper equipment use and responsibilities</p> <p>Dive team leader to ensure all equipment are cleaned and dried properly after use</p>	<p>No/minimal equipment damage or loss</p> <p>Cleaned/dried equipment at all times</p>

	Project equipment loss to be replaced by GIF and or surveyor depending on circumstances	GIF 'Issue of equipment' agreement signed
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3. Monitoring Plan

3.1. Data collection, analysis and report responsibilities

1. Data on mitigation measures and /or incidences to be compiled in survey session reports

Reports to include mitigation measures put in place/incidences and what actions were necessary to redress them. It is the responsibility of the project report officer (ideally also have the capacity of dive team leader) to compile the report.

Periodic ongoing monitoring of ESMP will be required during the life of the project. It is the responsibility of the GIF General Manager who oversees overall project implementation to conduct regular internal monitoring of the project to verify direct implementation of environmental and social mitigation measures contained in the ESMP. Parameters to be monitored include awareness and application of protocols; number of accident cases reported etc.

2. GIF will report on the application of the ESMP in project reports to SeyCCAT as per reporting schedule (every six months)
3. SeyCCAT will review reports and provide copies to the project implementing unit

Periodic external verification of the application of the ESMP, therefore monitoring data will be conducted by SeyCCAT and Project Implementation Unit (PIU) to assess implementation of the ESMP at a frequency pre-determined (every six months) by SeyCCAT secretariat and the project implementing unit.

3.2. Additional support (capacity building, resources etc.)

1. Standard reporting on ESMP

GIF in conjunction with partners FIP and UniSey need to develop a standard template for reporting on the implementation of the ESMP as part of the project reporting requirements. Data collection forms + reporting template to be developed (Appendix II)

2. Training

All surveyors and participants in the project need to be briefed and appropriately trained on requirements of the ESMP by the project lead when they are contracted before each diving session.

Checklist on requirement to be developed for pre-diving briefings (Appendix I)

3.3. Monitoring table

Mitigation measures	Indicators	Frequency of data collection	Responsible for data collection	Cost
Develop marine monitoring protocol to guide organized/clear dive plan	Marine monitoring protocol provided	One time (Annex 1)	GIF	SCR o
	Running of survey session against application of monitoring protocol	At completion of each survey session (twice yearly)	GIF dive team leader	SCRo
Develop BRUV deployment protocol to minimize BRUV stations and environmental damage Ensure equipment are deployed in safe environmental conditions	BRUV protocol developed	One time (Annex 2)	GIF	SCR o
	General running of BRUV session against application of protocol	At completion of each BRUV session (every quarter per year)	GIF dive team leader	SCRo
	Equipment damage assessment following mapping surveys	Once a year	Coral live engineer	SCRo additional costs as engineer will be on the island
Monitoring of risks to prevent/minimize divers injuries	Signed Risk assessment form	Prior to each survey session (Annex 3)	GIF dive team leader	SCR o

	Assessment of risks incurred by divers	Twice yearly	GIF dive team leader	SCR 0
Informed sea(including tidal) and weather conditions prior to diving	Tide table Weather forecasts updates	Consulted prior to each dive session	GIF dive team leader/skipper	SCR 100 tide table Weather updates available online
Health and Safety Management plan including Emergency protocol developed to guide emergency incidences from /evacuation of diving accidents	Health and Safety Management plan Monitoring of dive-related incidents during surveys	One time (Annex 4) At completion of each survey session (twice a year)	FIP/GIF GIF dive team leader	SCR 0 Cost of potential incidents unknown. Accident-related costs to be borne by FIP and GIF Cost of evacuation unknown. Evacuation costs to be borne by diver's insurance

3.3. Implementation schedule

Activity	Timeline of Activity							
Monitoring of the mitigation measures implementation								
	2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Develop marine monitoring protocol to ensure organized/clear dive plan		X Completed Annex 1						
Monitoring of general running of survey session against application of monitoring protocol				X				X
Develop BRUV deployment protocol to minimize environmental/equipment damage		X Completed Annex 2						
Monitoring of BRUV deployment to minimize station, associated equipment & environmental damage			X	X	X	X	X	X

Monitoring of equipment deployment to minimize equipment damage e.g. drone				X				
Risk assessment form for all divers developed		X Completed Annex 3						
Risk monitoring conducted prior to all dive sessions				X				X
Tide tables to inform of tidal conditions prior to diving	X Purchased for 2019				X To be purchased for 2020			
Weather conditions checks				X				X
Health and safety protocol developed to guide emergency incidences from /evacuation of diving accidents		X Developed Annex 4						
Monitoring of dive-related incidences				X Appendix II				X

Appendix I

Checklist for pre-survey briefings

Briefings should be done by the survey lead to all surveyors and skipper on surveys in the context of the project “*Marine Biodiversity Baseline assessment around Frégate Island, the eastern most Seychelles 'Inner' granitic island*”

Reference documents:

- a. Risk assessment to be filled by all surveyors and countersigned by lead surveyor
- b. Monitoring protocol –to be read by all surveyors prior to survey
- c. Weather conditions update + tide tables
- d. Dive plan – to be sent or discussed with surveyors prior to survey
- e. FIP Health and safety plan (Including Emergency protocol) sent to all surveyors prior to survey date
- f. Environment and Social Management plan – to be sent to all surveyors prior to survey

Notes for pre-dive briefing (approx 15 minutes)

- Lead surveyor thanks everyone for offering their assistance and time on the surveys
- Cross-check that risk assessment forms are filled by surveyors
- Cross-check that all surveyors read survey protocol
- Cross-check that all surveyors know of dive/survey plan – who is responsible for what
E. g coral, fish₁, fish₂, BRUV bait preps, BRUV lowering etc
- Cross-check list that all equipment for survey are available
- Cross-check that skipper is familiar with dive plan and dive site(s)
- Cross-check that all oxygen is on-board
- Check that Emergency protocol is in a prominent location on vessel
- Brief all surveyors on potential risks and mitigation measures & how to report them

1. Injuries to surveyors
 - Injuries from propellers - *skipper to observe divers at all times, ok sign before leaving/entering boat, use buoy to indicate location etc..*
 - Dive related diseases – *observe best dive practices, brief on symptoms, immediate report to dive lead should symptoms be felt, how to activate emergency evacuation*
 2. Damage to equipment
 - BRUV cameras –*lowering/pulling up properly and gently*
 - GPS & other equipment – *remain waterproof/cleaned after use*
 3. Damage/pollution to marine species +environment
 - Trampling –*stand in sand only, no coral damage, observe best practices*
 - Littering/pollution – *absolutely no littering at sea/all waste returned to land*
 - Propeller strikes – *assign observer for megafauna/report immediate to skipper/slow speed*
- All reporting to be done on form **Data collection on ESMP application for survey work**

Lead surveyor to invite questions from surveyors/skipper

Good luck!

Appendix II

Data collection on ESMP application for survey work in the context of the project

“Marine Biodiversity Baseline assessment around Frégate Island, the eastern most Seychelles ‘Inner’ granitic island’

The completed form is to accompany all survey reports

Form filled by Name _____ Position: _____
Organisation: _____

1. Surveyors Details

1a. Surveyors name

Surveyor 1..... Organisation:.....

Risk assessment completed? (Yes) (No) Dive certification: (Please provide copy of certificate)

Surveyor 2 Organisation:.....

Risk assessment completed? (Yes) (No) Dive certification: (Please provide copy of certificate)

Surveyor 3..... Organisation:.....

Risk assessment completed? (Yes) (No) Dive certification: (Please provide copy of certificate)

Surveyor 4 Organisation:.....

1b. Skipper's name:

Certification: (Please provide copy of certificate) Years of experience as skipper:.....

Familiarity with site: (Yes) (No):

2. Survey Information

Date: _____ Time : From XX hrs to XX hrs

Sea condition : (calm) (Moderate) (rough) Wind speed: _____ km/hr Tide: _____ m

Type of survey: State if BRUV /Dive survey & Types (s)

To be completed post-survey

3a. Pre-briefing

Was a pre-briefing conducted by the dive lead? (Yes) (No)

If no state why? _____

3b. Were all surveyors made aware of potential risks from the survey?

List risks :

- | | |
|----|----|
| 1. | 4. |
| 2. | 5. |
| 3. | 6. |

3c. Were any incidences reported as follows:

Damage of equipment during surveys ? (Yes) (No) Which equipment ?

Describe damage reported:

What remedy action need to be taken:

Damage of coral by divers? (Yes)(No) Describe damage:

Explain why damage was not avoided: _____

Injuries of surveyors? (Yes) (No) Which surveyor? _____

Explain how injury was incurred: _____

Explain how surveyor was treated: _____

Was Emergency evacuation plan activated? (Yes) (No)

Give details:

4. Was the survey completed as planned? (Yes) (No)

If not state why: _____

5. Recommendations to improve next survey session

Signature of project lead: _____