

## Environmental and Social Management Plan for

### ***"Research and Development of Hatchery Culture of the Tropical Echinoderm HOLOTHURIA SCABRA and HOLOTHURIA sp. "PENTARD" in the Republic of Seychelles for the consequent application in Sustainable Commercial Production."***

#### 1. **Project Description** (location, specific activities)

*Briefly list the planned activities. Clearly identify the issues to be addressed in terms of potential E&S impacts and the proposed solution (to be retrieved from the concept note and/or full proposal - 500 words max).*

The sub aim of the project is to collect adult sea cucumber broodstocks of the above named two species from Coetivy Island, transfer them to our pilot research facility at the Seychelles Fishing Authority (SFA) facility in Providence, have them spawn whereby we will then grow out juveniles.

Major activities undertaken throughout timeframe of project:

Activity 1: Design Hatchery layout and setup with equipment. List of supplies, suppliers.

Activity 2: Formulate feeding program for entire grow cycle, work out total amount of different feeds to be used throughout the experiment's timeline.

Activity 3: Order equipment, Supplies and Feed.

Activity 4: Apply for import permits; arrange & pay for shipping, handling, clearing, logistics & vat.

Activity 5: Site preparation. Installation of Roof covering and secure storage, Connection for Water, Electricity and Air supply.

Activity 6: Take delivery of equipment, supplies & feed.

Activity 7: Setup Pilot Hatchery and test run system.

Activity 8: Literature Study of Peer reviewed and published results and experiments that have proven effective.

Activity 9: Draft site applicable hatchery culture techniques and experiment procedures.

Activity 10: Implementation of M&E protocols and data management systems with Lab folder notebook log.

Activity 11: Perform M&E with daily notes, monthly reports.

Activity 12: Start Hatchery Cycle 1.

Activity 13: Perform experiments based on key indicators; all procedures & results logged.

Activity 14: Start Hatchery Cycle 2.

Activity 15: Perform experiments based on key indicators; all procedures & results logged

Activity 16: Arrange permits from SFA for R&D and Broodstock collection

Activity 17: Arrange equipment, SOP, logistics for transportation of Brood stock from location to Brood stock habitat simulator tank.

Activity 18: Collect and Transport Brood stock to R&D facility. Brood stock conditioning and fattening.

Activity 19: Schedule meetings with stakeholders SeyCCAT & SFA to present updates and progress reports.

Activity 20: Literature Study of Peer reviewed and published results of Theoretical and Practically applied IMTA models

Activity 21: Engage with SFA to strategize use of Sea cucumber in existing and future aquaculture projects.

Activity 22: Develop IMTA Monitoring & Evaluation program in collaboration with SFA. This will be in the very basic form whereby we will be placing the samples of juvenile sea cucumber we will produce from this experiment, into the existing trial fish cages at sea in the designated area next to Providence, being administered by SFA. From there we will be monitoring the growth patterns of the sea cucumber juveniles, such as their weight and length, over specific determined periods. This will be a very basic exercise which in our next application of BGF5, we intend to do the actual IMTA experiment and application, within the prawn tanks on Coetivy.

Activity 23: Transport Juveniles from Hatchery Experiments to Aquaculture Production systems in place.

Activity 24: Monitor & Evaluate results of IMTA models used in production over a specified time frame in conjunction with SFA

Activity 25: Literature Study of successful Micro Algae Culture laboratories and Methodologies.

Activity 26: Determine future feed requirements based on different potential production systems and production goals.

Activity 27: Develop feed production strategy and cycle based on above requirements.  
Activity 28: Evaluate and analyse technical specifications of equipment that can facilitate production needs.  
Activity 29: Design floor layout and production flow plan.  
Activity 30: Draft final technical drawing of laboratory  
Activity 31: Compile Manual with Complete SOP for culturing live feed  
Activity 32: Conduct a Preliminary Analysis and Outline of Plan.  
Activity 33: Prepare a projected income statement.  
Activity 34: Market Research  
Activity 35: Plan Business Operations  
Activity 36: Prepare an Opening Balance sheet.  
Activity 37: Review and analyse all data  
Activity 38: Compile into report for decision making and for investing.

The above activities will take place at two main locations:

1. SFA Broodstocks Quarantine and Acclimatisation Facility (BQAF), at Providence.
2. Coetivy Island in the sea where we will be collecting adult broodstocks only.

The stated activities are due to be spread out over a period of 18 months for implementation.

At the BQAF facility at Providence, we are expecting 2 people from Harmony Investments to be working on the activities while at Coetivy we are expecting 6 people to be working on specific activities of which the team of six will consist of Harmony Investment, IDC and SFA personals. The team from Mahe is expected to be 4, comprising 2 from Harmony Investments, 2 from SFA, to join 2 from IDC who will already be based on Coetivy Island. We expect to make 2 trips to Coetivy. The first one will be a logistic assessment exercise whereby the two personals from Harmony Investments will travel to Coetivy for 2 days to assess existing logistical support on ground. The second trip will be for broodstock collection whereby the team of 4 from Mahe will be on Coetivy for 2 days also.

Another component of the project is to build a small storage room. This will be done by Shreeji construction, and it will involve maximum 3 builders. Copy of approved plan attached as **Annex 11**. Copy of approval letter from planning authority attached as **Annex 1**.

## 2. Risks, mitigation measures and monitoring

Identify and list potential environmental and social risks associated to the project. For each of the identified risks proposed mitigation measures to mitigate these risks and develop indicators to monitor the implementation of the proposed mitigation measures.

Potential risks	Mitigation measures	Indicators to monitor implementation of mitigation measures
<b>Environmental risks</b>		
Damage to flora and fauna during broodstock collection	Develop and implement a protocol for sea cucumber broodstock collection  Guidance from SFA and IDC staff present during the field trips will be followed.	All field participants to follow broodstock collection protocol by Harmony Investment ( <b>Annex 8</b> ), National Occupational Safety and Health Policy ( <b>Annex 2</b> ) and SFA aquaculture fact sheets ( <b>Annex 4</b> ).
	Carry out pre departure briefing to cover all protocols to be followed.	All participants in specific brood stock collection activity to be present for the briefing and they will be taking part in the brief and rehearsal before departure.  Team members to be assigned specific duties and roles during the activity.
Target species mortality	Develop and implement a protocol for proper collection and transfer of targeted species.	Collection protocol to be followed as per Sandfish <i>Holothuria Scabra</i> fact sheets ( <b>Annex 4</b> ) and SAS biosecurity and fish health management ( <b>Annex 5</b> )  % of target species died during collection and transfer
	Use experienced diver already involved with sea cucumber fishing along with SFA experts, for collection of live broodstock.	Collection of broodstock to be carried out by trained diver and trained SFA officer who will be part of the broodstock collection team as per Sand Fish <i>Holothuria Scabra</i> ( <b>Annex 4</b> ) and SAS for responsible Sea Cucumber Farming, Ranching and Stock Enhancement ( <b>Annex 7</b> )
Pollution of marine environment from discharges.	Follow Seychelles Aquaculture Standards, Effluent and Waste Management protocols for SFA ( <b>Annex 6</b> )	Test water samples as per protocols from SAS Effluent and Waste Management Protocols for SFA ( <b>Annex 6</b> )

Solid Waste from Providence Facility and Coetivy facility.	Follow the National Occupational Health and Safety policy on how to keep the facility clean and how to dispose of solid wastes. <b>(Annex 2)</b>	Research facility to be kept clean as per National Occupational Health and Safety policy <b>(Annex 2)</b> and as per guidance of both SFA and IDC.
<b>Occupational health &amp; safety risks</b>		
Injuries or accidents to staff	Follow the National Occupational Safety and Health Policy <b>(Annex 2)</b> and Safety protocols and notification for SFA staff leaving port to go at sea <b>(Annex 3)</b>	Health and safety protocol provided  All protocols are available and relevant personals are familiar with them.
Diving incidents or accidents	Follow all relevant SAS protocols as per relevant attached annexes  Follow Seychelles Diving Guidelines, <b>(Annex 9)</b>  Familiarize staff in health and safety protocols	Make available Seychelles diving guidelines and ensure all personals involved in the diving operation are familiar with it.  % of staff involved in the project informed in health and safety
COVID 19 Infections	Follow SFA Safety Communique, COVID 19 SOP <b>(Annex 10)</b>	SFA Safety COVID 19 communique briefed to all participants
Injuries and accident during construction of the store by Shreeji construction	To include E&S safeguards clauses including Environmental, Social, Health and Safety (ESHS) Conditions of Particular Application and ESHS Technical Specifications for Construction, in works contract	A copy of contract with the relevant clauses provided

### **3. Monitoring Plan**

*The objective of the monitoring plan is to ensure that the mitigation measures are properly implemented.*

#### **3.1. Data collection, analysis and report responsibilities**

*List personnel or organization responsible for collecting data related to monitoring indicators, processing data and reporting to the PIU.*

Targeted species mortality

1. Collect and record data of species mortality of both adult broodstocks collected and juveniles produced.

Wastewater quality

1. Support to be sought from SFA to test wastewater samples as per protocol and records kept.

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

*List the additional support that is required to ensure that the mitigation measures are properly being implemented.*

1. Proponents develop data forms
2. Data collected transferred or stored in appropriate format e.g. excel spreadsheet etc.
3. SFA to offer guidance on wastewater monitoring with any required training given to proponent

### 3.3. Monitoring table

For every mitigation measures proposed, list the monitoring indicator, frequency of monitoring, responsible for monitoring and the associated cost. This will ensure early detection of conditions that require additional or alteration in mitigation actions, provide info on progress and results of mitigation.

Mitigation measures	Indicator	Frequency	Responsibility	Cost
Develop and implement a protocol for sea cucumber broodstock collection	Protocol developed and present in print and soft copy and implemented	Once	Proponent	Rs5000
Guidance from SFA and IDC staff present during the field trips will be followed.	Guidance and briefings given by SFA and IDC staffs and recorded	Once before broodstock collection exercise is done	Proponent / SFA and IDC officer	0
Carry out pre departure briefing to cover all protocols to be followed	Briefing done and recorded	Once before broodstock collection exercise	Proponent	0
Develop and implement a protocol for proper collection and transfer of targeted species.	Protocol developed and present in print and soft copy and implemented with records of mortality rates	Once	Proponent	Rs150
Use experienced diver already involved with sea cucumber fishing along with SFA experts, for collection of live broodstock.	Experienced diver present during field trip for broodstock collection and conducting dives	Once	Proponent / Experience diver	0
Follow Seychelles Aquaculture Standards, Effluent and Waste Management protocols for SFA (Annex 6)	Protocols made available in print and soft copy to all involved in wastewater monitoring and implemented	Once	Proponent	Rs250
Follow the National Occupational Health and Safety policy on how to keep the facility clean and how to dispose of solid wastes. (Annex 2)	Protocols made available in print and soft copy to all participants on the project and implemented	As required	Proponent	0

Follow the National Occupational Safety and Health Policy (Annex 2)	Policy present in print and soft copy and implemented by all using the facility	As required	Everyone using the facility	0
Follow all relevant SAS protocols as per relevant attached annexes	All protocols made available in soft copy and in print and all of them implemented accordingly	As required	Proponent	Rs500
Follow Seychelles Diving Guidelines, (Annex 9)	Guidelines made available in print and in soft copy, implemented	Before every dive exercise	Proponent / Diver	Rs150
Familiarize staff in health and safety protocols	Make protocol available to all staff in print and soft copy	Once	Proponent	0
Follow SFA Safety Communique, COVID 19 SOP (annex)	Share communique with all staff in print and soft copy	At the beginning of the implementation of research	Proponent	Rs150
To include E&S safeguards clauses including Environmental, Social, Health and Safety (ESHS) Conditions of Particular Application and ESHS Technical Specifications for Construction, in works contract	A copy of contract with the relevant clauses provided	Once on drafting contract	Proponent / Shreeji construction	Rs200

### 3.4. Implementation schedule

Provide a schedule for implementation of the various mitigation measures and activities that will enable for the monitoring of the implementation of the mitigation measures.

Activity	Timeline of Activity										
Mitigation measures											
Develop and implement a protocol for sea cucumber broodstock collection	July 2021										
Guidance from SFA and IDC staff present during the field trips will be followed.	November 2021										
Carry out pre departure briefing to cover all protocols to be followed	November 2021										
Develop and implement a protocol for proper collection and transfer of targeted species.	July 2021										
Use experienced diver already involved with sea cucumber fishing along with SFA experts, for collection of live broodstock.	November 2021										
Follow Seychelles Aquaculture Standards, Effluent and Waste Management protocols for SFA (Annex 6)	October 2021										
Follow the National Occupational Health and Safety policy on how to keep the facility clean and how to dispose of solid wastes. (Annex 2)	July 2021										
Follow the National Occupational Safety and Health Policy (Annex 2)	June 2021										
Follow all relevant SAS protocols as per relevant attached annexes	July 2021										





#### 4. Grievance Redress Mechanism

In line with the World Bank safeguards policies, the SWIOFish3 project has developed a Grievance Redress Mechanism (GRM) to receive, process and respond to complaints from any person or group of people related to the project or is affected by its activities. The GRM is a system designed to answer questions, clarify doubts and resolve implementation problems and complaints of individuals or groups affected by SWIOFish3 project activities. GRMs are intended to be accessible, collaborative, efficient, and effective in resolving concerns through dialogue, joint fact-finding, negotiation, and problem solving. Grievances can surface at different stages of the project cycle. Some grievances may arise during the project design and planning stage, while others may come up during project implementation. In general, grievances that may be encountered in the implementation of the SWIOFish3 project can be grouped into three categories:

- Grievances related to the changes in access to marine resources through management plans;
- Grievances related to project activities financed through the BGF disbursed by SeyCCAT and the BIF disbursed by DBS;
- Grievances related to issues encountered by local communities or persons where SWIOFish3, SeyCCAT and DBS project activities are occurring.

Individuals or groups affected by the SWIOFish3 subproject can

- Collect a complaint form at the offices of the District Administration, SWIOFish3, Department of Fisheries, Department of Blue Economy, SFA, Department of Environment, Public Health Authority, SeyCCAT, DBS and CEPS.
- Fill out the complaint form and deposit it in the complaint box placed at the most convenient office.
- The form can also be filled and submitted online on the GRM platform: [www.swiofish3.sc/grm](http://www.swiofish3.sc/grm)
- Call or SMS the SWIOFish3 line: 2827373
- Send an email to the Project Environmental and Social Specialist: [swiofish3.grm@gov.sc](mailto:swiofish3.grm@gov.sc)
- Send a letter to: SWIOFish3 Project c/o Department of Blue Economy, Victoria, Mahe, Republic of Seychelles.
- Meetings
  - You can have a one-to-one meeting with your district administrator or a SWIOFish3 officer.
  - You can express your concern during a community meeting with project implementers and relevant institutions.
  - You can also have a one-to-one meeting with an officer of the Citizen Advice Bureau within CEPS, if you feel that project implementers or officers have behaved inappropriately towards you (abuse, harassment, gender based violence).

Please note all Annexes are attached to the separate email and sent as any attempt to cut and past the word documents results in complete distortion of all formatting of tables above.

Annex 1: Approval letter from Planning Authority for storage space

Annex 2: National occupational safety and health policy

Annex 3: Safety protocol and notification for the SFA staff leaving port to go at sea.

Annex 4: Aquaculture fact sheet -Sea Cucumber-Sandfish *Holothuria Scabra*

Annex 5: SAS Biosecurity and fish health management

Annex 6: SAS Effluent and waste management protocols for SFA

Annex 7: Responsible Sea cucumber farming, ranching and stock enhancement

Annex 8: Sea cucumber broodstock collection protocol, Harmony Investment

Annex 9: Seychelles diving guidelines 2019

Annex 10: SFA Health and safety communique COVID 19 SOP

Annex 11: Copy of approved plan for storage