



ADAPT[•] ISLAND

Collection report Summary

**European
Commission**

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1. Objectives of the report

This report is part of the action C1: "Collection campaigns of biological material". The Grant Agreement within the action C1, plans for the annual collection campaigns of biological material (propagules, seeds, coral fragments, seagrass seeds). The collected material is cultivated within the nurseries. The specimens obtained will be used during transplantation operations within the identified target sites.

The objectives of this report are to present for the year 2021:

- The overall progress of the project;
- The progress of the rehabilitation actions;
- The latest collection results;
- The evolution of the restoration operations;

2. Technical and scientific strategy

Following comments from various experts inside and outside the GPMG, the Technical and Scientific Strategy was revised and sent to the Scientific Council member for advice and review. This manuscript will evolve throughout the project.

3. Impact of the sanitary and social local context on the actions of the project

The health and social context in Guadeloupe had a strong impact on the smooth running of the operations during the year 2021. Land operations were delayed by at least four days (no access to the sites). In addition, the difficulties of resupplying materials intensified in 2021, delaying the construction of the experimental nursery. The maintenance operations of the coral farm could be maintained.

4. Coastal forests: Mangroves and associated terrestrial ecosystems.

4.1. New strategic proposals

Target ecosystems

In addition to mangrove which had been previously identified as a target environment, it is proposed in the STS to focus on coastal xerophytic forests, mangrove and swamp forests.

Site selection

One of the main objectives to be achieved at the end of the project is the rehabilitation of 80,000 m² of mangrove. The rehabilitation and revegetation operations will focus on the Canal du DIC (Domaine Industriel et Commercial) area. This study perimeter of 124 240 m², is divided into two zones. The core zone (68,765 m²) is composed of severely degraded sites that require the implementation of corrective environmental measures. The buffer zone (or peripheral zone) of 55,134 m² will be subject to ecological monitoring.

4.1. Ongoing operations

Rehabilitation operation

The pilot site, the parcel AL n°0257, was filled to the detriment of the mangrove. Following preliminary studies, the first phase of clearing work began in late 2021 and 891.97 m³ of soil were excavated. This corrective environmental measure aims to restore the parameters conducive to the development of the mangrove. Pending the results of the soil pollution analysis, the soil is stored on site.

Nurseries

No changes have been made in the "Morne savon" nursery since its reorganization in June 2020. This nursery is defined as a transitional nursery. In 2021, an experimental nursery was built within the front yard of the LIFE Adapt'Island premises. The project obtains 48 m² of additional growing space.

4.2. Future operations

The Pilot Site

The second phase of the Pilot Site clearing work will be launched in 2022.

Invasive alien species have been identified within our pilot site and in the secondary channels of the Jarry DIC canal. Thus, in 2022, Invasive Species management operations will be conducted.

In 2022, a mangrove nursery will be installed in the side channels of the pond located on the pilot site. Thus, approximately 160 m² will be dedicated to the cultivation of plants used for the vegetation of degraded littoral zones.

North site of the mouth of the DIC canal

This second site is located at the mouth of the DIC canal. Its total area is estimated at 47,316 m² of which 14,694 m² is heavily backfilled. The access road to the site is being stabilized. The preliminary studies will be carried out in early 2022. The objective is the extraction of the present embankments in order to restore the parameters favorable to the development of the mangrove. This larger project will begin in 2022.

Plant material collection operation

No plant material collection operations were conducted in 2021. Following the finalization of the installation of the two nurseries, seedling and seed collection operations will be conducted in 2022.

Re-vegetation operation and ecological diagnosis

In parallel to the nurseries maintained by the LIFE Adapt'Island team, cultivation contracts will be signed with local nurserymen for the target tree species. The vegetation of the pilot site is planned for 2022. All the actions carried out, in the nursery or on the target sites, will be monitored in order to evaluate the success of the operations that will be undertaken.

5. Coral reefs

5.1. New strategic proposals

Regulatory Approval

Some of the project's target species are subject to protected status. The use of these species is subject to strict regulation. In order to proceed with the coral reef restoration operations, a request for regulatory authorization was obtained (Prefectural Order of March 7, 2019). This exemption is effective until 2023.

5.2. Ongoing operations

Target species

The project's updated coral reef restoration strategy incorporates conservation issues for two threatened coral species (*Acropora cervicornis* and *Acropora palmata*). Other coral species will be integrated into the project such as the branching species of the genus *Porites* or the species *Madracis auretenra*.

The coral farms

The first farm is located north of Caye à Dupont between 9 and 11 meters deep on a sandy-muddy bottom. As of 31/12/2021, it is composed of 18 coral trees, 3 coral domes and 6 gabions.

In 2021, a second farm was created. It is located west of the Caye à Dupont between 4 and 6 meters deep on a sandy bottom. As of 31/12/2021, it is composed of 8 coral tables, 7 domes and 10 *Acropora palmata* morays.

Species present in the farms December 29, 2021:

- *Acropora cervicornis*, 864 living specimens
- *Acropora palmata*, 43 healthy cuttings
- *Porites porites*, 104 fragments of opportunity
- *Madracis auretenra*, 101 fragments of opportunity

The aforementioned structures supporting the coral specimens are maintained on a quarterly basis to limit biological fouling on them.

The protocol applied to manage the diseased cuttings is the one defined and implemented in August 2020, it had been validated by a Scientific Committee in order to treat the diseased and dead coral specimens. The disease observed on the coral farm affects both species of *Acropora*.

Acropora spawning collection and observation campaigns in 2020 and 2021

During the spawning of the species *Acropora palmata* on the leeward coast in August 2020, fertilized gametes were returned to the sea on the riprap of the Pointe Jarry breakwater. A follow-up was carried out in March 2021 (+7 months) to observe if, following the operation, juveniles had settled. However, no larvae were observed. In parallel, a follow-up of coral juveniles was carried out on the dike. 47 coral juveniles were inventoried.

From August 24 to 28, 2021, observations of *Acropora palmata* spawning were made. However, observations showed only a small number of colonies that laid eggs. The chances of success were assessed by the team as too low. The transport and re-implantation of embryos or larvae on site 2 of farm 2 was not performed.

Three nights of observation of *A. cervicornis* and *A. prolifera* were carried out in the National Park of Guadeloupe on the reef flat of the Grand Cul-de-Sac Marin, near Fajou Islet. The expected spawning of the coral *A. cervicornis* and the possible spawning of *A. prolifera* were not observed during the study campaign.

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Individual genetic identification of *Acropora*

Individual genetic identification of all *Acropora* specimens in the nursery was conducted in 2021. Each individual was tagged and collected in December 2020. Subsampling took place in May 2021. Genotyping analysis revealed 9 different genotypes of *Acropora cervicornis* and 6 different genotypes of *Acropora palmata* on the farm.

Fragmentation of *Acropora* specimens from the coral farm

Fragmentation operations equivalent to a cumulative number of 954 *A. cervicornis* cuttings were performed in 2021.

Transplantation and follow-up of cuttings

During the second half of 2021, 405 identified cuttings were transplanted to 2 sites, Mouchoir Carré 3 (MC3) and Mouchoir Carré 4 (MC4). Five follow-ups were conducted following transplantation.

5.1. Future operations

A public contract with a purchase order was notified in December 2021 for 36 months in order to ensure the management of the two coral farms, the coral transplantation operations, the observation and collection of coral gametes and the follow-up of the operations performed.

6. Seagrass meadows

6.1. New strategic proposals

A Grant Agreement rider was created on September 29, 2021, to adjust the project objectives. According to the rider, a new action is officially created, Action C5 "Installation of Eco-Moorings". At the same time, seagrass transplantation operations are revised to an experimental, Research and Development level.

6.2. Ongoing operations

Preparatory actions for the installation of a mooring zone

The installation of an eco-responsible and respectful anchorage and light equipment zone (ZMEL) is being set up in the bay of Pointe-à-Pitre, near the Cochon Islet. The objective is to create an organized anchorage zone to clean up the area and control the number of visitors. This anchorage area of about 40 ha will eventually include 75 anchorages and 6 buoys of the Pink Bank eco-designed LIFE Adapt'Island. Numerous preliminary studies were carried out prior to the installation of the mooring area. In addition, two consultation meetings were held with sea users to share the objectives of the project and present the mooring area.

6.1. Future operations

Installation of the ZMEL

Once the contract has been awarded and regulatory approvals have been obtained, work will begin on the installation of the ZMEL.

Collection of seagrass seeds and cultivation

In view of the revision of the project related to the seagrass actions, light operations of collection of seagrass seeds will be implemented in June 2022. To do this, a request for authorization from the DEAL by email will be made in April 2022.

Follow-up of sea grass beds

Ecological diagnoses will be made before and after operation on the site. Moreover, the realization of the ecological diagnoses is done on the one hand at the scale of a quadrat or an anchorage, on the other hand at the scale of the site. The specifications for the realization of the monitoring of the herbarium are being drafted and should be published in the first half of 2022.