

**NARRATIVE REPORT ON THE PROJECT
TITLED “SOS MANGROVE PROGRAM”,
FUNDED BY MOL Mauritius International Fund
for Natural Environment Recovery and
Sustainability**



2024- 2025



Executive summary

This narrative report presents the progress and achievements of the “SOS Mangrove Programme,” implemented by Reef Conservation and funded by the MOL Mauritius International Fund for Natural Environment Recovery and Sustainability. The programme, initiated in response to the 2020 MV Wakashio oil spill, aims to restore and conserve mangrove ecosystems through research, education, community engagement, and habitat rehabilitation.

Between April 2024 and May 2025, the programme advanced several key objectives:

Scientific Research: Visual surveys and mangrove productivity studies were conducted at multiple sites, including the deployment and analysis of 39 litter traps. A comprehensive eDNA survey and analysis was initiated to assess fish biodiversity across various mangrove types and seasons.

Nursery and Restoration Work: The Melville Nursery continued its operations, with new coastal plants introduced and propagated. Efforts to obtain legal authorisation for mangrove restoration at Anse La Raie progressed significantly, though challenges with site suitability remain under review.

Community Engagement and Education: The Bis Lamer mobile education unit reached over 330 individuals across Mauritius. More than 110 participants took part in 12 citizen science surveys using the Mangrove Matters app. Additionally, educational materials were updated and distributed widely during school visits, field trips, and nursery sessions.

Stakeholder Collaboration: A national workshop on mangrove restoration was held in partnership with ISME and MOL, bringing together government officials, NGOs, educators, and international experts.

The project continues to support Mauritius in building resilience against coastal degradation while strengthening community stewardship and scientific understanding of mangrove ecosystems.

Introduction

Reef Conservation is a non-profit, non-governmental organization registered with the Registrar General since 2004 and accredited with the National Corporate Responsibility Foundation since 2009. The NGO has developed, over the years with many partners including communities, other NGOs, government ministries, government institutions, funding agencies and private sector, numerous conservations, research, education, training and sensitization projects and initiatives that have enabled environmental sensitization and education of persons of all backgrounds and ages as well as protect the coastal and marine environment of Mauritius.

Project Background

On the 6th of August 2020, the bulk carrier MV Wakashio leaked more than 1,000 t of Very Low Sulphur Fuel Oil (VLSFO) into the Indian Ocean, 2 km off the coast of Mauritius after it ran aground on a coral reef on the 25th of July 2020. The area impacted is a key environmental and economic hub for Mauritius, with a Marine Park, two marine reserves and an internationally protected wetland at Pointe d'Esny. As one of the largest remaining wetlands of Mauritius and home to endemic critically endangered plant species, the mangrove ecosystem at Pointe d'Esny was designated a Ramsar site in 2011. Despite best efforts, the oil slick has impacted over 30 km of the Mauritius coastline so far and approximately 95ha of mangroves.

The mangroves playing a key role for coastal erosion mitigation, constituting a unique coastal habitat, and supporting the livelihoods of nearby local communities including the adjacent village of Mahébourg, it is crucial to understand how these critical ecosystems will respond to oil pollution (in terms of acute and chronic toxicity). It requires baseline information on their before (non-impacted) characteristics, including benthos communities and how they interact with key plant species to deliver key ecological functions and ecosystem services.

For these reasons, Reef Conservation, in collaboration the relevant authorities and other stakeholders, participated in the immediate response to the oil spill by conducting visual surveys in 15 mangrove sites from Blue Bay to Trou d'Eau Douce and participating in developing the long-term monitoring protocols with the international team of experts.

In line with the 'Wakashio' Oil spill event, Reef Conservation started to implement "The SOS Mangrove programme" which aims to optimise mangrove recovery and restoration by understanding how these critical ecosystems will respond to oil pollution and to ensure the support of the communities for future restoration activities.

This programme has been established following guidelines from the different experts and the government and related ministries concerned including the Ministries of 'Blue Economy, Environment and Tourism, Albion Fisheries Research Centre, M.O.I, Tourism Authority and International Experts (e.g. the International Society for Mangrove Ecosystems – ISME).

Activities and Deliverables

- *Purchase of equipment*

Between May 2024 and April 2025, small items were purchased under this project, for the collection of litter samples for the litter productivity analysis in Mangrove forests and for the Nursery at Melville.

Items purchased and delivered included the following:

- Storage bags
- Potting bags

Additionally, the below expenditures were made:

- Dot3D Pro license renewal

- *Research and monitoring activities*

Evaluate the long-term impacts of oil on mangrove forests impacted during the 2020 MV Wakashio oil spill.

As per the Integrated Environment Monitoring Protocol (IEMP) produced following the MV Wakashio oil spill, the frequency of the visual surveys has been reduced from monthly in 2020 to a quarterly basis in August 2021, subsequently biannual in 2022 and annually as from 2023. As a result, one mangrove visual surveys have been conducted in September 2024 across 15 mangrove sites along the South-East coast of Mauritius. The report summarizing the results obtained during these surveys is annexed to this document.



Figure 1 Visual Survey conducted in 2024.

Mangrove forests productivity across 3 core sites in Mauritius.

This research component aims to establish a baseline on the litter, flowers and fruit productivity associated with the diverse mangrove habitats in Mauritius. Mangrove litter production or litterfall is the shedding of leaves and other vegetative and reproductive structures of mangroves, which become obtainable by consumers and decomposers. Consequently, litterfall plays a significant role in ecosystem functioning, and provision of several ecosystem services including nutrient cycling and carbon storage. Litterfall is also essential for ecosystem processes on account of its importance in production of organic matter and sequence of decomposition.

To quantify the productivity of mangrove forests in Mauritius, surveys were conducted at three sites, namely, Melville Barachois, Les Paletuviers and Ferney. 39 Litter traps have been built. All traps were installed in our study sites by March 2024. Every month the content of the traps has been collected for a period of one year, stored, and the samples processed in Reef Conservation lab in Riche en Eau. The last sample collection was conducted in May 2025. The traps have been removed from the study sites. The samples are being processed. A total of 468 samples have been collected and 96 samples have been dried and sorted. Data will then be analysed and compiled in a technical report that will be shared.



Figure 2 Litter traps installed at the study sites



Figure 3 Collection of samples at the study sites and analysis

Inventory of commercially important species diversity across spatial and temporal scale in mangrove forests through eDNA analysis.

The main objective of this research is to identify fish species inhabiting mangrove ecosystems and determine if there are differences in species diversity based on forest structure and season.

To assess the diversity of commercially important fish species in mangrove ecosystems, an international tender was launched for eDNA analysis services. The tender document was prepared and distributed to various international service providers, with a submission deadline set for June 2024. Following the receipt of bids, a bid evaluation document was compiled, and an evaluation committee was established in August 2024. SPYGEN was selected as the service provider, and an official letter of acceptance was issued.

Subsequent meetings were held with SPYGEN to finalise the sampling protocol, site selection, and training schedule. A final quotation was also obtained. In January 2025, two team members successfully completed SPYGEN's online training course and were awarded certificates valid for five years.



Figure 4 Certificate for the eDNA training

During the training, the team learned to operate the water sampling equipment that would later be used for fieldwork. Seven sampling sites were selected based on mangrove forest structure types:

Riverine mangroves: Ferney and Pointe des Lascars

Fringing mangroves : Pointe des Lascars and Le Morne

Barachois systems: Melville and Les Palétuviers

Restoration site : Anse La Raie

eDNA sampling is scheduled to occur during both summer and winter to assess seasonal variations in species presence.

In April 2025, the eDNA sampling equipment was received from SPYGEN. 14 water samples were collected and sent for analysis in March 2025, and the results are currently awaited. The next round of samplings is scheduled for the winter season.

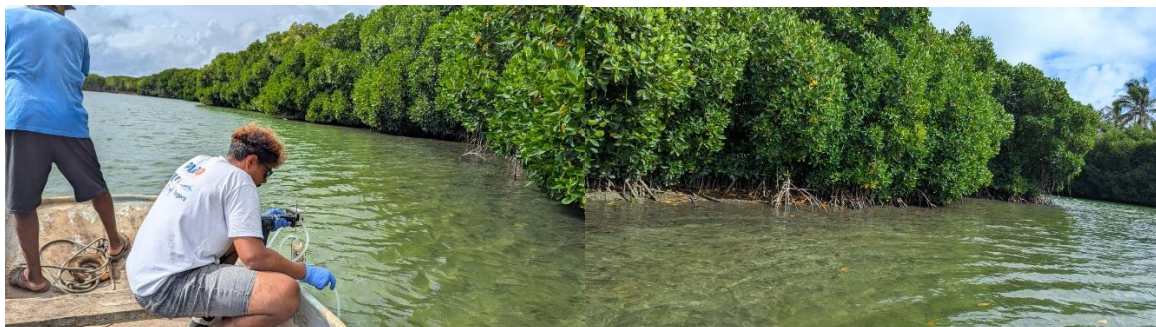


Figure 5 Water sampling for eDNA analysis at Melville Barachois

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Figure 6 Water sampling for eDNA analysis at Les Paletuviers



Figure 7 Water sampling for eDNA analysis at Pointe des lascar, Le Morne and Les Paletuviers

ISME Visit

From the 22 to 25 of October 2024, the SOS Mangrove team welcomed the ISME delegation for their annual visit in Mauritius. The aim of the visit are as follows:

- 1) Study the impact on mangrove ecosystems during the early phase of rapid sea level rise in the microtidal area,
- 2) Observations on the degradation and seedling dynamics of the invasive species *Pongamia pinnata* in the coastal transition zone of Mauritius,
- 3) Construction of an allometric equation for mangrove prop roots in Mauritius
- 4) Participation in the 2nd Mauritius Platform for Mangroves.
- 5) The team conducted field work and studies in various mangrove forests around the Island, including, Melville Barachois, Ferney and Bambou Virieux. 3D data of mangrove trees and forest were collected using a LIDAR scanner and a 3D Scanner (DPI-10) for accurate measurement of mangrove structure and growth.
- 6) Site visit at Anse la Raie Restoration site.



Figure 8 Field studies conducted by Reef conservation and ISME

- *Sensitisation of stakeholders about mangroves including school and community outreach*

Tool Development

The pedagogical booklet aims at educating young people on the importance and ecology of mangroves (see Figure 2.5). Approval of all previous sponsors and from our new sponsor (AfrAsia) was obtained for an additional chapter on restoration. The booklet was re-designed by adding the new SOS Mangrove logo and the new chapter.

A total of 1,000 booklets have been printed, with around 500 distributed during sensitisation sessions with community members and students. This includes all the Bis Lamer sessions, Nursery visits with Eco-Schools and YRE, and Citizen science surveys conducted under the SOS Mangrove project. The procurement consisted of 700 English versions and 300 French versions, with the English version intended for broader circulation among Mauritian schools, while the French version is reserved for French-oriented schools.



Figure 9 Mangrove Pedagogical Booklet

Promote citizen science and mangrove monitoring using the Mangrove Matters App.

A total of 12 citizen science surveys were organised for this year, targeting a total of 110 participants.

The table below summarizes the audience who attended these sessions as well as the number of participants who were present.

Date	Location	Group	Target
17-Jul-24	Vieux Grand Port	Beatrice Notre Dame College	19
19-Jul-24	Anse la Raie	Veranda group	17
27-Jul-24	St Martin	Community	22
16-Aug-24	Le Morne	Westin group	11
12-Sep-24	Bois des Amourettes	Lottotech	10
21-Sep-24	Pointe Maurice	VMCA Anse La Raie	12
22-Nov-24	Melville Barachois	Mariott	18
16-Apr-25	Le Morne Village	Interact club of Montebello and Le Bocage	19
17-Apr-25	St Martin	Groupement Volontaire	21
20-Apr-25	Ponte D'Esny	Rotaract Club of Montebello	13
22-Apr-25	Melville- Grand Gaube	Community	60
24-Apr-25	La case du Pecheur	Interact club of Montebello and Le Bocage	29



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Figure 10 Citizen science surveys using the Mangrove App, distribution of booklets and beach clean-up by students

During the Citizen Science surveys, participants downloaded and used the Mangrove Matters app. The team raised awareness about the importance of mangrove ecosystems for both communities and biodiversity, the threats facing mangrove forests, and the different mangrove species found in Mauritius. During sessions with students, pedagogical booklets on mangroves were distributed and

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used as educational tools. Additionally, some mangrove clean-ups were organised with specific groups as part of the Citizen Science activities.

Sensitisation of stakeholders and community with Bis lamer around the island

All planned Bis Lamer sessions initially budgeted under this project have been completed. Four Bis lamer sessions have been organized, attaining 334 community members.

The table below summarizes the audience who attended these sessions as well as the number of participants who were present.

BisLamer sessions					
Date	Venue/Location	Visitors (Children)	Visitors (Teens)	Visitors (Adults)	Total Visitors
29/10/2024	CEP Maternelle @ Vacoas	70	-	9	79
28/01/2025	Eden (Girls)	-	76	6	82
21/02/2025	Petit Verger GS	-	77	16	93
03/04/2025	Notre Dame de Lourdes RCA	75	-	5	80



Figure 11 Sensitisation with Bis lamer organized under the SOS Mangrove programme.

School visits and field trips with the Eco Schools

The Eco School Programme is an internationally recognized awarded programme, owned, and run by the Foundation for Environmental Education (FEE), Reef Conservation is a member of FEE and the national operator of Eco-Schools in the Republic of Mauritius. Eco-Schools across the world use the Seven Step Process to inform and guide their Eco-Initiatives! This framework has been designed to place young people in control of their environmental actions, motivate them to drive change and improve environmental awareness in their school, local community and beyond. Every year, 4 school visits to the Melville Barachois is organised. The team was able to conduct 8 school visits, reaching 77 students and 10 adults.

Field Trip Activity			
Date	Venue/Location	Students	Coordinator
07/04/2025	Royal College Port Louis	10	2
07/04/2025	Islamic College Port Louis	8	1
08/04/2025	Ebene SSS (Girls)	10	1
08/04/2025	St Mary's College	11	2
09/04/2025	MGSS Solferino	10	1
09/04/2025	Forest Side SSS	10	1
10/04/2025	Lighthouse Primary and secondary school	9	1
10/04/2025	Adolphe de Plevitz	9	1
Total		77	10

During these sessions, the mangrove pedagogical booklets were distributed among the students and used as a reference and educational tool.





Figure 12 Nursery visit organized under the SOS Mangrove programme, educational tools used: Informative boards and mangrove pedagogical booklets

- *Promote mangrove restoration in collaboration with community members and other stakeholders.*

Nursery Maintenance

Termites have been detected in the nursery container, and appropriate measures were taken and being followed up to clean and eliminate the infestation.

Trainings

Additionally, the SOS Mangrove team, including the nursery worker, have had internal training on the following topics:

- Plant identification techniques
- Classification of plants
- Reproduction in plants
- Flowers- How does gender in plants work

The knowledge gained will help the team to perform better on field, to be able to identify different species of endemic and native plants, and to understand the conditions for growth and culture of these species in the nursery.

Tool development for Nursery -Plant signboard

Plant signage boards will be created for the purpose of identifying and educating the visitors at Melville Nursery of the different plant species present. The design for the signboards has been finalised and requires the inclusion of the new SOS Mangrove logo. Subsequently, procurement for printing of the signboards will be launched.

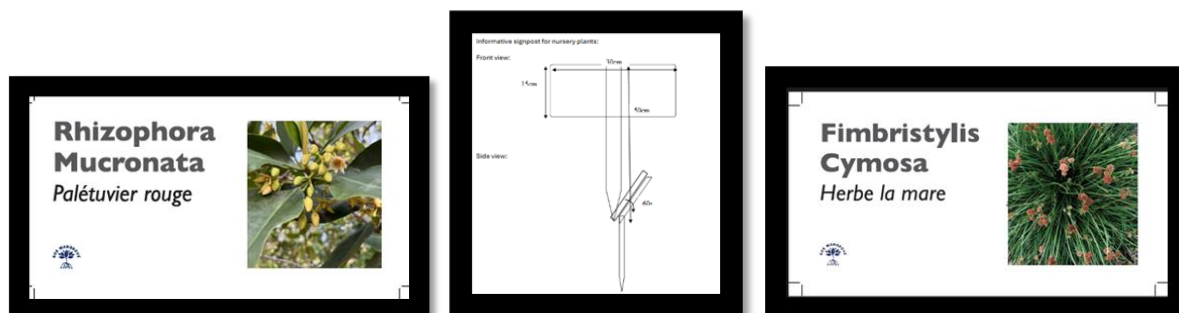


Figure 13 Signages with plant name (scientific and common name) with the images

Mangrove Restoration Permit

As per the Mauritian law in place, propagating and planting mangroves requires a permit from the Ministry of Housing and Land Use Planning, as well as the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping. As such, Reef Conservation wrote a letter to the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping to collect mangrove propagules and propagate them in the Melville barachois in July 2023. An answer was received from the same Ministry on the 28th of August 2023 asking for further information on the restoration site where grown propagules would be planted and directing Reef Conservation to seek the necessary permit with the Ministry of Housing and Land Use Planning. As a result, Reef Conservation wrote to the Ministry of Housing and Land Use Planning on the 25th of September 2023 and applied for a permit to plant mangroves at Anse la Raie, a site historically known to be suitable for mangrove restoration. In January 2024, a positive answer has been obtained from the Ministry of Housing and Land Use Planning.

A letter was received from the Ministry of Environment, Solid Waste Management and Climate Change on 26th March 2024. It was addressed to the Beach Authority stating that they have no objections to this restoration project, subject to clearance from other authorities.

On July 18th 2024, the Ministry of Housing and Land Use Planning issued a reply letter addressing the request for the permit to plant mangrove at Anse La Raie and informed that they had no objections towards the proposed activity while complying to their established conditions.

Moreover, as requested by Ministry of Blue Economy, Marine Resources, Fisheries and Shipping, mangrove nursery and restoration on the land side shall be approved by Forestry Service

and National Parks and Conservation Service. Both authorities were contacted. A site visit was organised with NPCS on the 13th September 2024. We received the letter of approval from NPCS in December 2024.

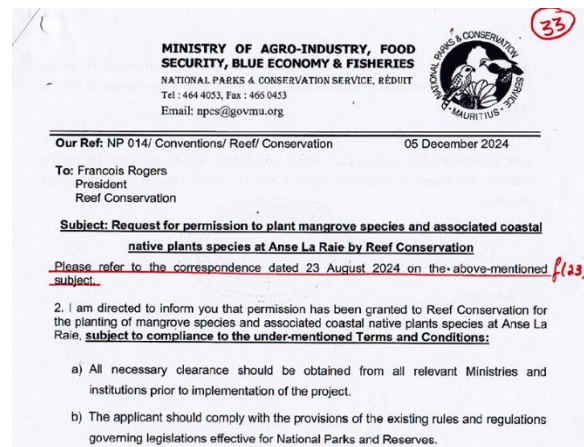


Figure 14 Letter of approval from National Parks and Conservation Service

The Forestry Services have also been contacted concurrently to obtain clearance.

On the 9th of October 2024, Ministry of Blue Economy, Marine Resources, Fisheries and Shipping requested a site visit at Anse La Raie for further analysis and suitability of the terrain for mangrove restoration.



Figure 15 Site visit at Anse la Raie by Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

Following this site visit, a reply letter was received on the 25th of November 2024 stating that the location was not suitable for mangrove propagation due to its rocky shore environment. It was also mentioned that the mangrove growing within the rocky sediment was subject to natural generation. The existing mangrove specimens on the sandy portion were planted by Albion Fisheries Research Centre and therefore the site would not require further restoration.

Further directives will be undertaken to commit towards the mangrove and associated coastal plants propagation. As such, a reply letter will be prepared to emphasize the importance and relevance of the site for these activities. We would request the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping to authorise the monitoring of these naturally regenerative mangroves and the ones planted by Ministry of Blue Economy, Marine Resources, Fisheries and Shipping. Additionally, plans are underway to obtain authorization for a coastal forest restoration activity at Anse la Raie. This would involve planting native species from our nursery while removing invasive species.

Meanwhile, other possible sites for mangrove restoration have been identified, such as Petit` requiring further investigation to assess land use and evaluate potential implications for the community.



Figure 16 Potential restoration site at Petit Sable (Requires further investigation)

Restoration Efforts at Melville Nursery

Collection and propagation of mangroves & coastal plants

The monitoring and maintenance of the plants in the nursery are on-going. We have stopped the planting of new plants during the dry season and resumed in May 2025. In the meantime, a list of native, coastal plants (not present in our nursery) was created. The potential suppliers were contacted to obtain a pricelist. These plants were purchased and planted in our nursery.

A larger area of the grounds around the nursery has been cleared for the transplantation of some species.



Figure 17 Progress in plant growth at Melville Nursery and transplantation of plants into grow bags

Twenty new species of coastal plants were added to the nursery these are listed in the table below.

Plant name
<i>Pemphis acidula</i> <Bois matelot>
<i>Psiadia lithospermifolia</i>
<i>Scaevola taccada</i> <Veloutier vert>
<i>Thespesia populnea</i> < Ste Marie> 45L
<i>Sophora tomentosa</i> 2L
<i>Dracaena concinna</i> <Bois chandelle> 2L
<i>Dracaena reflexa</i> <Bois chandelle> 25L
<i>Dracaena reflexa</i> <Bois chandelle> 2L
<i>Dracaena reflexa</i> <Bois chandelle> 25L
Vetiver Endemique
<i>Cossinia pinnata</i> <Bois juda> 2L
<i>Tarennia borbonica</i> <Bois de rat> 2L

<i>Tarennia borbonica</i> <Bois de rat> 25L
<i>Hyophorbe lagenicaulis</i> <bottle palm>75L
<i>Cassine orientalis</i> < bois d'olive> 25L
<i>Cassine orientalis</i> <Bois d'olive> 2L
<i>Diospyros egretarum</i> <bois d'ebene 45L
<i>Diospyros egrettarum</i> <Bois d'ebene blanc> 25L
<i>Eugenia lucida</i> <Bois clou> 25L
<i>Eugenia lucida</i> <Bois clou> 2L



Figure 18 Plants procured for propagation around the nursery

Promote mangrove conservation and restoration - Workshop.

In our continuous efforts to foster knowledge sharing and promote ongoing research in this critical field, Reef Conservation, in collaboration with the International Society for Mangrove Ecosystem (ISME) and Mitsui O.S.K. Lines (MOL) organised a second workshop on the “SOS Mangrove: Strategies for Restoration and Conservation” held on the 25th of October 2024 at Preskil Island Resort.

During the workshop, further discussions on the Mangrove platform regrouping key stakeholders to enhance knowledge were undertaken. The event brought together a diverse group of participants, including experts from Reef Conservation, International Society for Mangrove Ecosystem (ISME), and different NGOs, representatives from the education sector and Ministries.

A report on the workshop is attached.



Figure 19 Group photo from the workshop

Project communication

Numerous media coverage opportunities have highlighted the SOS Mangrove project. Our conservation, monitoring and restoration works, our education programme to sensitise the community about mangrove protection and preservation and the various research activities have been showcased via social media. The articles and videos can be accessed through the links provided below:

- Webinar by Ebony forest: https://www.youtube.com/watch?v=g_cVv6cWnJE



Figure 20 Posters to promote webinar on Mangrove, organised by Ebony forest

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- **STEMEX Competition: Competition May 2024-August 2024**
STEMEX Excellence Award was organized by Rajiv Gandhi Science Centre
Mangrove Matters App was awarded Gold Award and Grand winner in the community category,



Figure 21 STEMEX Award Ceremony

- The International Mangrove Conservation and Restoration Conference held in Abu Dhabi in December 2024.

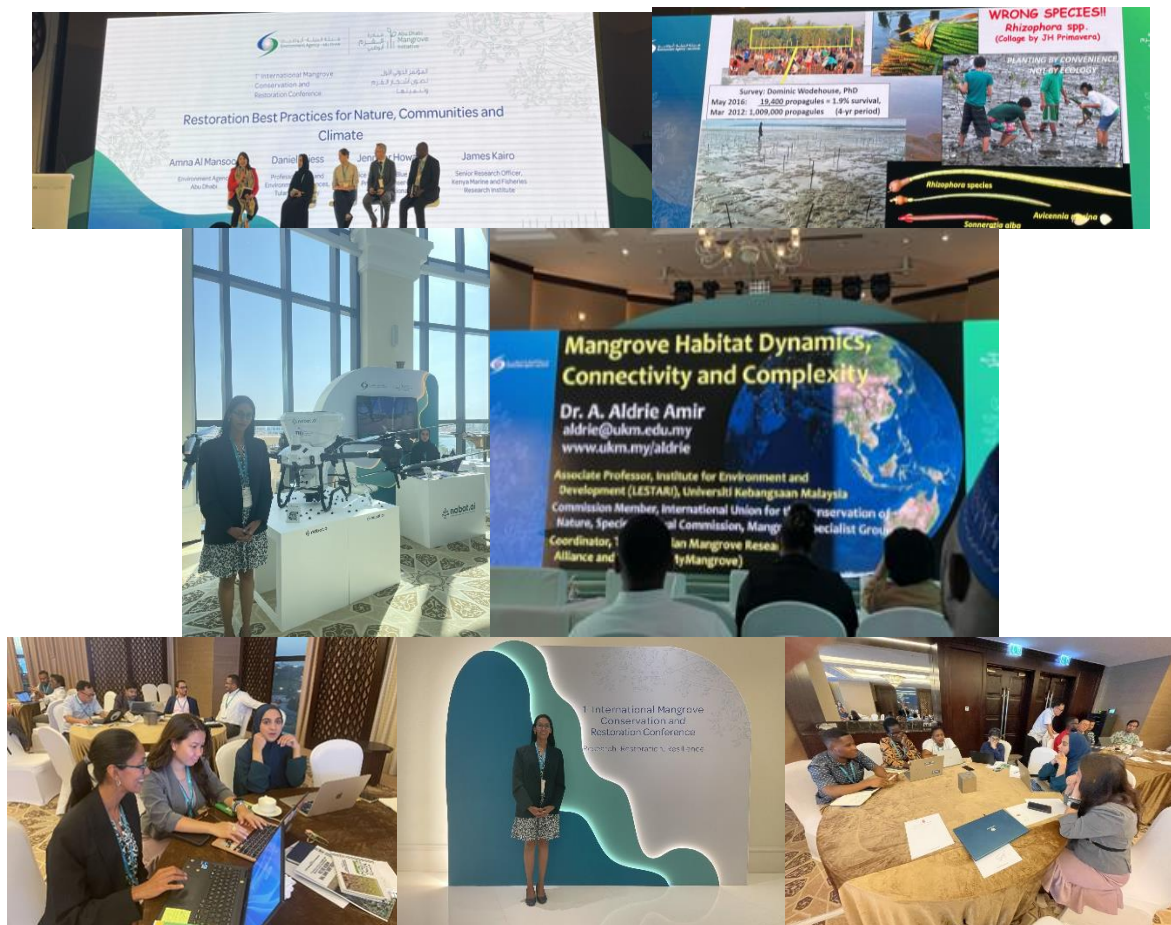


Figure 22 Attendance of panel discussions, presentations, workshops during the conference

- Mangrove Matters Challenge



Figure 23 Poster to advertise for Mangrove Challenge

The list below summarizes the activities already planned under the SOS Mangrove Programme funded by MOL Mauritius International Fund for Natural Environment Recovery and Sustainability for 2025-2026:

- To continue the long-term mangrove monitoring.
- To complete our study on mangrove leaf productivity.
- To complete our assessment of fish biodiversity in mangrove ecosystems using eDNA.
- To conduct citizen science mangrove surveys and trainings.
- To organise sensitisation and education campaigns.
- Development of a new Educational tool
- Nursery maintenance and mangrove and coastal plants restoration promotion in collaboration with community members.
- Coastal restoration and identify potential mangrove restoration sites.
- To conduct one national workshop to share experiences, new findings and work implemented on mangrove ecosystems in Mauritius.

Conclusion

the SOS Mangrove Programme successfully consolidated its position as a national model for community-led ecological conservation, scientific monitoring, and coastal resilience. Major milestones were achieved across all project pillars: ecological research, environmental education, stakeholder collaboration, and restoration efforts highlighted by the establishment of the nursery, identification of potential restoration sites, and ongoing efforts to secure the necessary permits.

While several activities—such as seasonal eDNA sampling, community training sessions, and site authorisations—are scheduled for completion by the end of 2025, the programme has already laid a strong foundation for long-term mangrove conservation in Mauritius. The partnerships formed and data collected will serve as key assets in future planning and advocacy efforts.

Reef Conservation remains committed to driving positive environmental impact by restoring mangrove habitats, advancing scientific knowledge, and nurturing community ownership of natural ecosystems. With continued support from MOL Mauritius International Fund and its collaborators, the SOS Mangrove Programme will build upon these achievements to scale its impact in the years ahead.