



MAIO BIODIVERSITY FOUNDATION

JULY - SEPTEMBER 2023
Maio Island, Cabo Verde

NEWSLETTER
Nº 6



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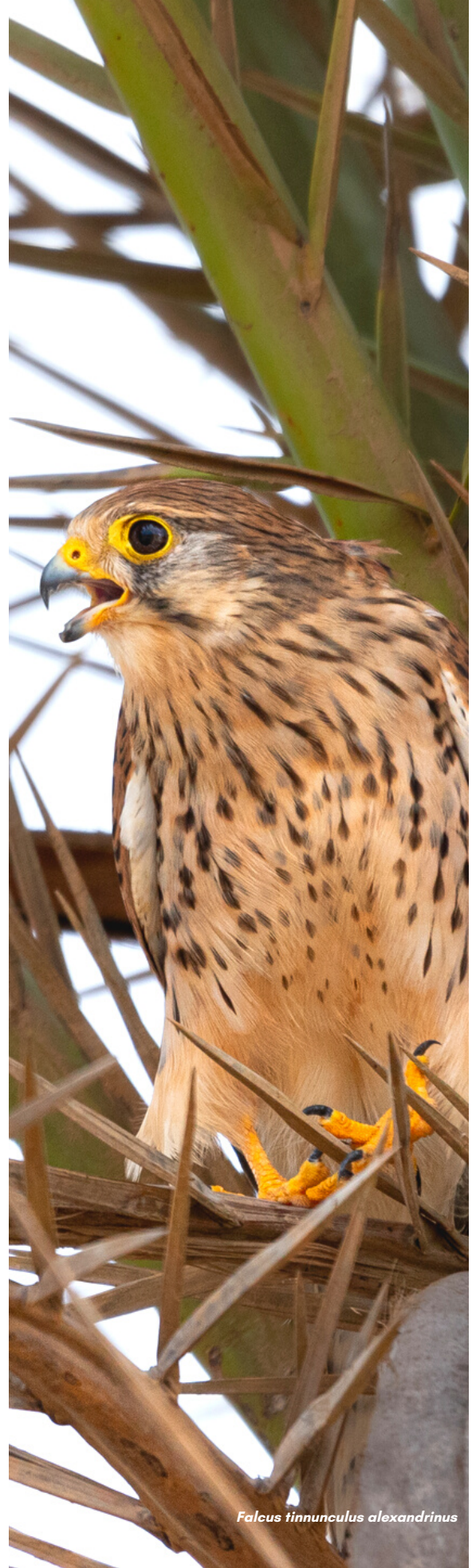
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"Active community involvement in the preservation of endemic plants on our island, despite the challenges of drought, is crucial for conserving ecosystems and biodiversity. This strengthens the bonds between the community and nature, promoting a sustainable relationship."



Falco tinnunculus alexandrinus



Dear friends and members of Maio Biodiversity Foundation,

First and foremost, I hope you are well!

With great pride, we present another edition of our official newsletter. Your unwavering commitment to various conservation initiatives for ecosystems and biodiversity has enabled us to steadily progress toward our goals and our dedication to Maio Island and its people.

Currently, we have gained more knowledge regarding the conservation of Maio's flora, which now allows us to identify and cultivate native and endemic species in greenhouses.

Also, through sea turtle tracking, the data has helped us understand their behavior between nesting intervals within a season. Initial analyses suggest that the turtles display distinct movements without preferred areas.

We aim to continue relying on your support.

Warm regards,

The Director

MAIO BIODIVERSITY FOUNDATION

TESTIMONIAL



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ADDER'S-TONGUE FERNS

Ophioglossum polyphyllum

Characterized by its unique appearance, with leaves resembling the ears of a horse, hence its common name. *Ophioglossum polyphyllum* is known for its rarity and is considered an endangered species due to habitat loss and human and environmental threats.

For the conservation of this rare plant, it is essential to take measures to protect its natural habitat and raise awareness about its significance and vulnerability. This may involve establishing conservation areas, conducting scientific research to better understand its needs and growth patterns, and involving the local community in preserving its natural environment.



"Due to the conditions, the terrestrial flora of Maio Island is relatively poor, hosting approximately 242 species of *spermatophyte* plants. There is a scarcity of *lichens*, *bryophytes*, and *pteridophytes*, in addition to 14 species of endemic angiosperm plants mainly concentrated in the northern part of the island.

Considering the importance of the Natural Park of North of Maio (PNNM) for conserving biological resources and island ecosystems, it was selected as the location for the 'Field Techniques Applied to Vegetation Monitoring in Mountainous and Dune Systems' project.

Registered with the International Union for Conservation of Nature (IUCN) as an Important Plant Area (IPA), the Natural Park of North of Maio (PNNM) harbors over half of the 14 endemic angiosperm plant species in the country. The primary challenge for the conservation of these plants is human activity. Nature watchers have successfully conducted training and collected biophysical and botanical data in 10 plots on Monte Penoso within the PNNM.

MAIO BIODIVERSITY FOUNDATION

HIGHLIGHTS



Halcyon leucocephala

CHANGING THE WORLD TOGETHER FMB AND CRITICAL TECHWORKS



On the beautiful beaches of Maio Island, 13 dedicated volunteers from Critical TechWorks joined the FMB team in an exemplary act of corporate social responsibility. This collaboration transcended the boundaries of technology and carried with it a powerful message - the importance of protecting our natural environment."

Each volunteer brought passion and commitment to the table, working tirelessly to ensure that sea turtles have a safe environment to nest and thrive. Their actions covered various locations on the island, from Bitxe Rotxa Beach to Morrinho Beach, from Santana to Barreiro. This commitment not only safeguarded one of the most endangered species on the planet but also significantly enhanced data collection, enriching our conservation efforts.

This achievement is not only inspiring but also a call to global action. Companies like Critical TechWorks are showing that it's possible to align corporate interests with environmental conservation. This partnership serves as a source of hope, reminding us that it's crucial for other companies to join this journey. Protecting our biodiversity is not a task we can face alone; it's a mission we all share.

As we celebrate this success, we also urge other companies to follow the example of Critical TechWorks and actively engage in global biodiversity preservation. Together, we can create a lasting positive impact and ensure a more sustainable future for future generations.



MAIO YOUTH AND A SUSTAINABLE FUTURE

Recognizing the significance of empowering the youth population of Maio Island as a fundamental pillar for the island's sustainable future, Maio Biodiversity Foundation takes great pride in supporting two outstanding young individuals from Maio, Delmar Andrade and Hérica Silva. They have been awarded scholarships to pursue their Bachelor's degrees in Biology at the University of Cabo Verde, located in the city of Praia, Santiago Island.

Both of these young individuals have played a crucial role in advancing conservation efforts, especially in the team dedicated to monitoring and protecting sea turtles. Their focus, commitment, and dedication have been remarkable and further reinforce our commitment to investing in the future of youth as key elements in the preservation of Maio Island as a World Biosphere Reserve.

Furthermore, we would like to mention that Delmar Andrade, from the Morrinho community on Maio Island, was selected as a Technical Assistant for the Sustainable Marine and Fisheries Program through a public competition. This achievement not only reflects Delmar's talent and dedication but also highlights the ongoing commitment of FMB to empower local youth to play significant roles in safeguarding our marine environment.

These successes make us more hopeful that by working together, we can reach important goals in making a better and more sustainable future for everyone. Welcome to this new phase, Delmar!



ABNORMAL SKIN PIGMENTATION IN SHARKS IN THE EASTERN ATLANTIC

Hypomelanosis, a term for abnormal pigmentation, occurs in various animal groups, including albinism, leucism, and piebaldism.

In cartilaginous fishes, this condition is rare, with few documented cases in about 60 species. Between 2014 and 2019, three nurse sharks (*Ginglymostoma cirratum*) with hypomelanosis were observed in Cabo Verde, specifically on Maio Island, two of which were observed in Praia Real Bay (2015 and 2019).

This study reports the first documented cases of hypomelanosis nationally.

ENVIRONMENTAL EDUCATION IN THE CLASSROOM

The study underscores the importance of assessing the impact of environmental education activities, especially in areas with high biodiversity concentration, where such assessment is often overlooked.

In the case of the study conducted on Maio Island in Cabo Verde, a single classroom activity did not have a significant effect on students' attitudes related to the environment. However, it did significantly contribute to increasing knowledge and awareness of local environmental issues. This highlights the need to individually assess each type of environmental education activity, rather than assuming that it will automatically improve attitudes and knowledge.

The study also emphasizes the importance of planning activities based on the assessment results to maximize the potential of environmental education.





**EDUCATION AND
SUSTAINABLE
DEVELOPMENT
PROGRAM**



VALUABLE CONTRIBUTIONS

We greatly appreciate the two technicians who joined the team and made valuable contributions.

The first technical reinforcement came from an application to our Volunteer Program. Liliana Chaves, born and residing in Valpaços, Portugal, was selected.

Liliana is a social worker whose life motto is 'to give and be present.' She defines herself as a woman of action, hands-on, seeking to make things happen. She showed a lot of eagerness and passion in her motivation letter to contribute to FMB's work on Maio Island.

Liliana was accommodated in the 'Casa Rural' as part of the Homestay program in the Morro locality, with the Martins family as her hosts.

During the two months she spent with us, she engaged in various outreach activities, primarily with children and young people. These activities included theater, beach and community cleanup campaigns in the



communities and beaches around the island, as well as nighttime patrols to monitor sea turtles, lectures, and more.

Secondly, we were able to count on the young Idir Cardoso from the Alcatraz locality on Maio Island, who applied for the assistant position in the program.

At the moment, Idir is in a phase of learning and adapting to this new position, but he has shown very good skills in observing and actively participating in program activities. He excels in reading and interpreting projects and in clear and objective communication with different target audiences.

In addition to the Education and Sustainable Development Program, Idir has also been contributing to the Community-Based Sea Turtle Conservation Program. He assists in the collection of GPS (Global Positioning System) devices attached to the turtles, enabling the study of their behaviors and routes in Cabo Verde waters during the nesting season.

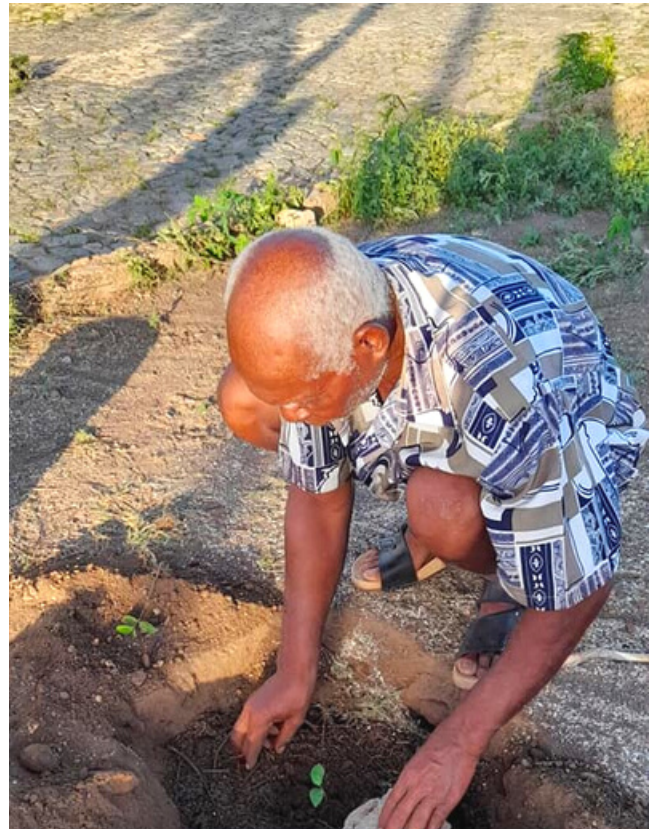


GREEN COMMITMENT FOR THE FUTURE

On October 1st, Maio Island witnessed an extraordinary event that brought hope and beauty to the island's communities. It involved the delivery and massive planting of 90 plants by the local population, including fruit, medicinal, and ornamental plants.

This was a contribution from the Local Delegation of the Ministry of Agriculture and the Environment (DMAA) to the annual environmental competition 'Zona + Amiga do Ambiente' (Z+AA) implemented by FMB in the Maio communities. The planting locations in each community were determined by the community representatives and the Maio Municipal Council (CMM).

Z+AA competition aims to hold the Maio communities accountable for the island's environmental well-being, encouraging local residents and businesses to adopt more sustainable practices. As the trees flourish



over the years, they become a symbol of commitment between the communities and the entities on Maio Island towards nature.

This event will not only benefit the environment but also bring joy and sustenance to future generations, celebrating the richness of biodiversity.

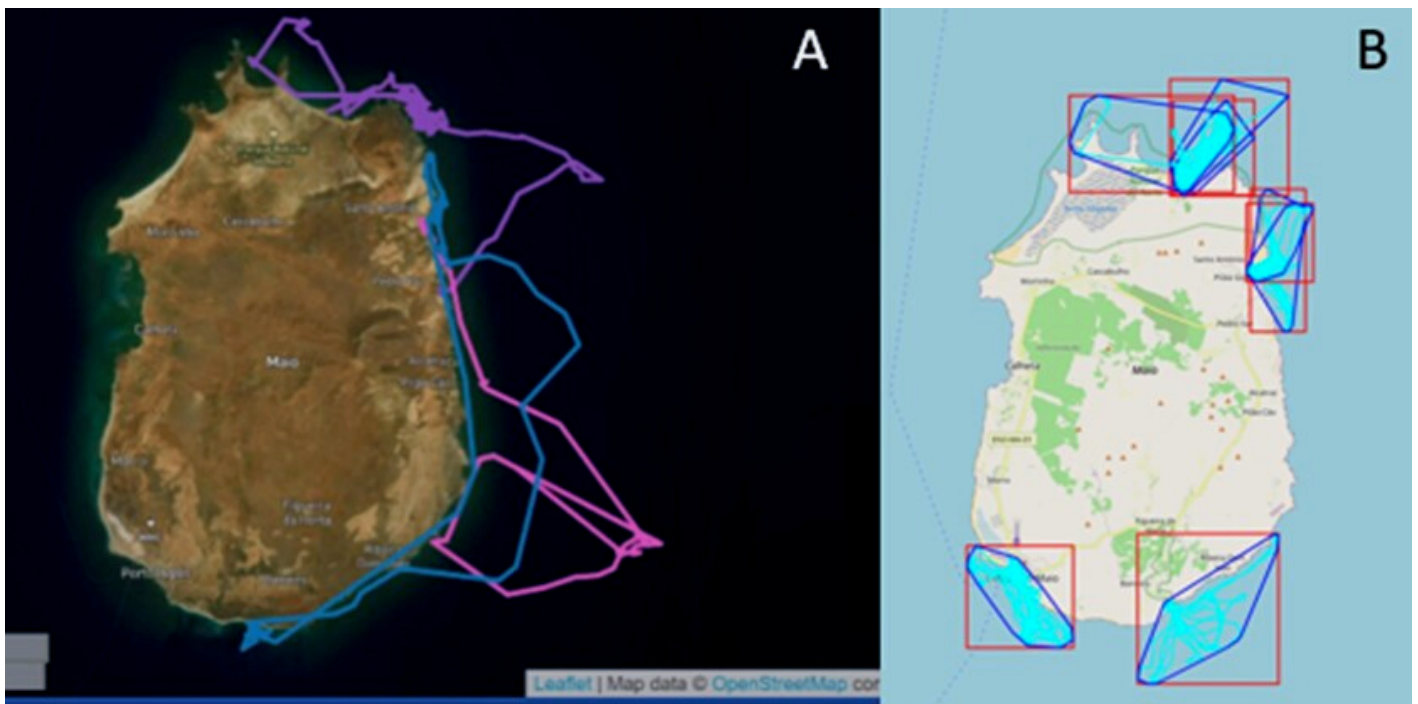
This was an inspiring example of how collective efforts can make a difference on the journey toward a healthier planet through the Z+AA competition and the exemplary collaboration between the DMAA and CMM to ensure that Maio Island, a World Biosphere Reserve, stays on the path towards sustainability and environmental preservation.

May this action continue to thrive, not only in trees but also in the hearts of future generations, celebrating the richness of biodiversity and the promise of a brighter future for our planet.

Together, we are indeed stronger!



**COMMUNITY-BASED
SEA TURTLE
CONSERVATION
PROGRAM**



THE MYSTERY OF MIGRATION

A total of 20 breeding sea turtles were studied using new tracking devices (17) and video equipment (3). Additionally, 9 artisanal fishing vessels from different areas of Maio Island were monitored to assess whether there was overlap with the same movement areas of the sea turtles.

With funding from the PEW Fellowship in Marine Conservation, we led this technological project in close collaboration with the Arribada Initiative and the University of Oxford. The goal is to create low-cost devices that assist in the monitoring and conservation of migratory marine wildlife.



The devices were attached to the shells of the sea turtles during the nesting of the first nest and were retrieved approximately 14 days later during the nesting of the second nest. The regular field teams for sea turtle monitoring and the participation of local and international volunteers enabled the recovery of the devices on the nesting beaches of the sea turtles on Maio.

The data indicate that the movement areas of sea turtles coincide with the areas occupied by fishing vessels 28% of the time they are at sea. The minimum recorded coincidence time was 4%, and the maximum was 69%. In Figure 1B, you can see the areas used by fishing vessels.

The initial analyses show that each sea turtle has different movements, and there are no preferred areas (Figure 1A). We also identified that some of them visited the islands of Boa Vista and Santiago during their breeding season (Figure 2).



"WE ONLY PROTECT WHAT WE KNOW"

Hatcheries are widely used in marine turtle conservation programs, significantly contributing to increasing the survival of the hatchlings and protecting the populations of these endangered species.

Our hatchery, located on Bitxe Rotxa Beach, serves various essential functions. These include providing a second chance to nests removed from beaches at high risk of predation and flooding, as well as conducting controlled incubation in pre-tested sand with optimal temperature and humidity conditions to promote successful hatching.



It also plays an important role in research, helping to better understand the factors that affect embryonic development and incubation.

The Bitxe Rotxa Hatchery, constructed in the month of July with a maximum capacity for 113 nests, received its first nests on July 20th. It is expected that over 5000 hatchlings from Bitxe Rotxa and Boca Lagoa (Barreiro) beaches will be released.

In addition to protecting the nests, the hatchery plays a crucial role in raising awareness and education about the importance of turtle conservation. This year, through the 'Nature School' program, we received visits from 253 students in the 4th, 5th, and 6th grades, representatives of the community groups in the 'Zona + Amiga do Ambiente' competition, as well as various national and international visitors. They had the opportunity to have their first contact with turtles and learn about their lives and the importance of their protection.



**PROTECTED
AREAS
PROGRAM**

Forsykaolea procrudifolia

EXPLORING MAIO'S FLORA



Nature watchers from Maio Island participated in a training course on Field Techniques Applied to Monitoring Vegetation in Mountain and Dune Systems, held from 4 to 9 September. The aim of the course was to develop the ability of nature watchers to select the best methods for monitoring vegetation and anthropogenic actions in phytocenoses in dune and mountain systems, among others. Dr. Isildo Gomes from INIDA in Cabo Verde led the training, which was funded by CEPF, with support from the European Union and the Organisation of African, Caribbean, and Pacific States through the BIOPAMA Program.

During the course on plant monitoring methods, a unique species belonging to the *Ophioglossum* genus was identified. It is known by the scientific name *Ophioglossum polyphyllum* and is commonly called 'Horse's Ear' or 'Snake's Tongue.' This small plant, approximately 20 centimeters tall, has a single leaf and a stem that carries spores. The stem with spores resembles a snake's tongue, and the single supporting leaf resembles a horse's ear, hence the origin of the names. This is a rare species in Cabo Verde and the only fern species on Maio Island that was not previously described.

The participants also observed several species of endemic, vulnerable, and threatened plants. These plants were in different stages of flowering and/or fruiting, demonstrating the vitality of the island's ecosystem. Some of the notable species include the *Phoenix atlantica* (Date Palm), *Lotus brunneri* and *Lotus jacobaeus* (Piorno), *Kickxia elegans* (Rock Cress), *Paronychia illecebroides* (Paronychia), *Pulicaria diffusa* (Fleabane), *Suaeda caboveriana* (Sesuvium), and *Forsskaolea procrdifolia* (Stinging Nettle).

This training strengthened conservation efforts on Maio Island by imparting crucial knowledge to identify and cultivate native of endemic species in nurseries, thereby promoting the importance of local biodiversity.

BIFLORES AND NATURE WATCHERS



As part of the project “Effective Participatory Management of Protected Areas in Maio, Cabo Verde” with financial support from the European Union and the Organisation of African, Caribbean, and Pacific States through the BIOPAMA Program, the nature watchers had the opportunity to participate in an exchange program with the partner NGO Biflores, located on Brava Island in Cabo Verde. The exchange focused on the monitoring and conservation of terrestrial flora, with the primary goal of strengthening knowledge in botany and plant nursery management.

During an intense and highly productive week, our team of nature watchers had the privilege of acquiring knowledge and practical experiences in various areas, including botanical data collection, in-situ and ex-situ conservation of flora, sustainable grazing practices, reforestation, and environmental education with a focus on flora preservation.

"This training was of utmost importance to me. I gained more knowledge and developed various experiences related to nursery planting and planting elephant grass for sustainable grazing development. I now consider myself better prepared to work in the nurseries developed on Maio Island." – Hélia dos Reis, a nature watcher.

These valuable lessons have become fundamental in supporting our ongoing efforts for flora conservation on Maio Island.

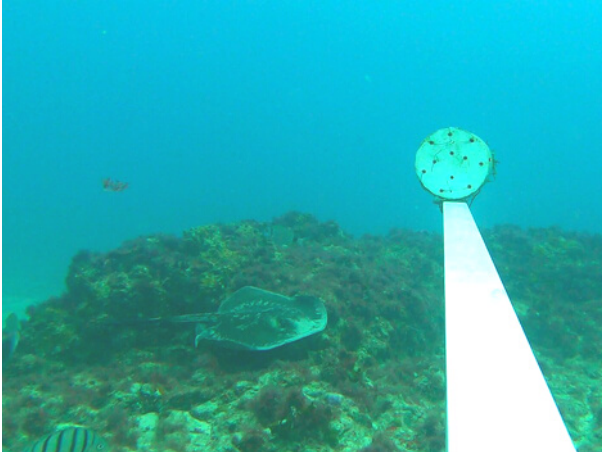
We would like to express our sincere gratitude to the NGO Biflores for their generosity, hospitality, collaboration, and support provided to the FMB nature watchers team.



**MARINE AND
SUSTAINABLE
FISHING PROGRAM**

Muraena robusta

"BRUVS: MONITORING OF FISH AND ELASMOBRANCHS"

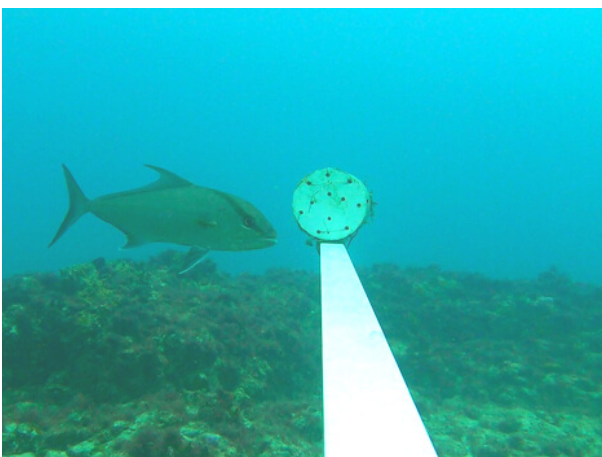
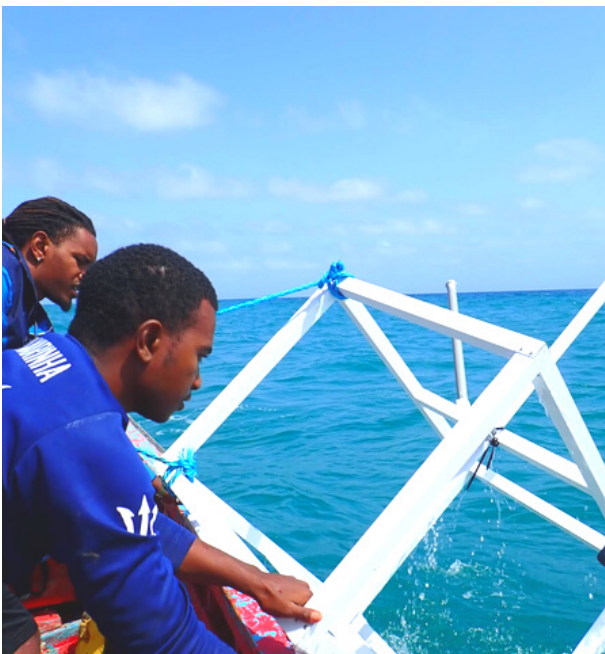


One of the central activities of the Sustainable Marine and Fisheries Program is the monitoring and analysis of fish and elasmobranch populations in protected and non-protected marine areas on the island of Maio. To achieve this goal, we have adopted an advanced technique known as Baited Remote Underwater Videos, or simply BRUVs.

This approach involves the use of BRUV devices, which consist of aluminum cubes equipped with an arm housing a bait box designed to attract fish. A GoPro camera is securely attached to the frame to record the marine environment for a period of 1 hour.

The captured videos are later subjected to a thorough analysis carried out by the technicians of the Marine Program, who identify the species appearing in the recordings and quantify the number of individuals of each observed species. This is a non-invasive method and crucial for studying the species that inhabit a particular area, as well as for monitoring the abundance of target species.

The team conducts this activity both inside and outside of marine protected areas (MPAs) with the aim of comparing the communities of organisms in regions with varying levels of human influence and fishing. Furthermore, the research aims to enhance our understanding of the diversity of species present on the island of Maio. This information is valuable and crucial for formulating recommendations for fisheries management and MPA administration, taking into account the environmental and social specifics of each region.



EVENT ORGANIZATION TRAINING - "MORAY FESTIVAL"



The traditional Moray Festival, organized by the Association of Co-Management Actors of Fishing from the North (APVN), is eagerly anticipated by the entire population of Maio Island. This year, the 5th edition of the festival was celebrated on August 19 and 20 in Baxona community, Calheta village.

With the aim of supporting APVN in building and enhancing the event's organization, thus contributing to the economic development and social enrichment of our community, FMB, a partner of the Maio 2025 Program with financial support from the European Union as part of a project funded by Fauna & Flora and Arcadia, provided training in event organization to the festival's organizing committee.

This training was led by consultant Cláudio Tavares from July 17 to 20, with the support of the Sustainable Marine and Fisheries Program. It had the participation of 30 individuals, including the APVN management and the women who sell their products at the event. During the training, the concept of creating a new model for the Moray Festival was explored, retaining the essence of previous editions, rich in tradition and accumulated knowledge, while incorporating new elements of planning and innovation that will shape future editions of the event.

The FMB initiative is a dedicated effort to strengthen its organization, promote unity among its members, engage with the local community, and establish partnerships to advance the development of Maio Island. It also aims to enhance community relationships and collaborate with like-minded supporters for the island's progress and prosperity.



FMB's VISION

Maio is an example in Cabo Verde and in the world, based on djunta mon, the conservation of biodiversity and social progress based on respect for local culture and gender equality.



FMB's MISSION

Promote the protection of biodiversity and the social progress of Maio Island through conservation actions and the empowerment and economic sustainability of local communities.



ADOPT A NEST SUPPORT CONSERVATION



Elaborated by Andreia Adrião

