Issue 13 tells the story of marine conservation in the Western Indian Ocean (WIO) region through the experiences and lessons of marine protected area practitioners from WIO nations.

Protecting the ocean is not an option. Our existence depends on it - Sylvia Earle
Since then I have returned to the region many times and have witnessed changes of geological magnitude. Globally, new technologies and energy from fossil fuels have fostered unprecedented prosperity, but Earth’s natural systems have suffered unprecedented loss. Fifty years ago, it seemed humans could take from—and put into—the ocean without limit and without concern. Now we know. The swift decline of coral reefs, mangrove forests, seagrass meadows, sharks, tuna, groupers, swordfish and other ocean wildlife and the equally swift rise of polluted waters, increasing temperature and changing ocean chemistry are directly linked to extravagant human activity. We also know there are actions that can be taken to stabilize, recover and improve ocean health.

Nowhere is this more evident than in the Western Indian Ocean. Fifty years from now, and forevermore, the nature of the ocean and of humankind will reflect decisions taken right now. There is growing support globally to protect thirty percent of the land and sea by 2030 as the vital core of Earth’s life support system, and by 2050 to have safeguarded at least half. In this volume are eloquent, thoughtful contributions that underscore reasons for hope, with clear evidence that our power to destroy can be countered, decline reversed, ecosystems restored. While it is not possible to go back to the planet that today’s grandparents knew, the right actions now can yield for tomorrow’s children a safer, more resilient world. Now we know what our predecessors could not: Protecting the ocean is not an option. Our existence depends on it.
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This issue is inspired by the Western Indian Ocean Marine Protected Areas Management Network (WIOMPAN). It features marine conservation in the Western Indian Ocean (WIO) region; practitioners share their experiences, progress, and future prospects for the region. The recently launched WIO Marine Protected Area Outlook Report 2021 is highlighted, along with updates on progress toward SDG 14.5 and the potential to accelerate progress toward post-2020 Global Biodiversity Framework targets. Voices of experience in marine conservation offer lessons gained and best practices from various marine conservation settings and programs being implemented in the WIO region.
Many of the achievements in marine conservation reported in this issue of the WIOOMSA Magazine People & The Environment would not have been possible without the dedicated individuals working in various marine protected areas (MPAs) and other places across the Western Indian Ocean (WIO) region. We're talking about our directors, wardens, rangers, community leaders and scientists. By ensuring compliance with MPA rules, working with communities, striving to restore degraded habitats, holding education and outreach events and resolving conflict, these individuals devote countless hours to marine conservation. We learn from their labours and skills that generate fresh ideas. Whether from the Comoros, Kenya, Mozambique, Seychelles, Madagascar, Tanzania or South Africa, these stories and experiences are valuable for attaining marine conservation goals.

Despite the WIO's success, more action is required to preserve the critical marine environment for species, as well as to address other threats to their survival. We are only protecting 8 percent of the WIO's exclusive economic zone, according to the WIO MPA Outlook which was published by the UN Environment Programme–Nairobi Convention and the Western Indian Ocean Marine Science Association in July 2021. The Outlook recommends an increase in areas under marine protection to slow biodiversity decline— including protecting and restoring ocean ecosystems and implementing management actions that will improve the effectiveness of our marine conservation areas. These are the same positions presented in many of the articles featured in this issue of People & The Environment.

Our WIO MPA network (WIOMPAN), is taking action to bring together MPA practitioners in the WIO region to address marine biodiversity issues together, to improve the capacity of MPA sites and advocate for MPAs as a key part of the WIO’s conservation priorities and the blue economy.

Issue 13 of People & The Environment focuses on the progress and accomplishments that the WIO region has made in marine conservation over the last decade in implementing MPAs managed by government, non-governmental organizations, and communities; lessons learned in practical marine conservation and management (coral reef restoration, fishery resource management, managing change); professionalization of MPA management through certification; and hope spots for expanding conservation. We hope you enjoy the inspiring and thought-provoking stories.

We invite you to join and support WIOMPAN so that we may all work together to share our achievements, expand our reach, and maximize our conservation impact.

WIOMPAN, which inspired the compilation of this issue of the WIOMSA magazine, is making significant progress in its work to establish new MPAs, improve members’ capacity and skills and support and collaborate with local community groups in their various marine conservation initiatives.
The western Indian Ocean (WIO) boasts **143 marine protected areas** and community-managed marine areas that cover around 7 percent of the region’s total exclusive economic zone. Over the past decade, there has been a great push to improve ocean conservation, with 63 percent of the area under protection gained in the last seven years. Although it hasn’t been a flawless process, it has been a major victory for conservation.

On 16 June 2021, the United Nations Environment Programme (UNEP) Nairobi Convention and WIOMSA launched the [Western Indian Ocean Marine Protected Areas (MPA) Outlook](#) which documents progress made by countries in the region towards the achievement of Sustainable Development Goal 14.5 — the goal for countries to conserve at least 10 percent of their marine and coastal areas by 2020. The MPA Outlook also provides lessons and opportunities to increase momentum for achieving the targets of the post-2020 Global Biodiversity Framework.
The road to 30x30

According to research published in the respected journal, *Nature*, we can restore ocean ecosystems to a healthy condition by 2050 by preserving 30 percent of the ocean. In October 2021, Parties to the United Nations Convention on Biological Diversity will meet to determine the Post-2020 Global Biodiversity Framework. With a renewed call to safeguard at least 30 percent of the world’s ocean through a network of highly protected marine areas by 2030 (“30x30”), the WIO region is charting a new course for the next decade. Almost every country in the region is establishing additional MPAs, and some are attempting to create jointly administered transboundary conservation zones.

As we face a confluence of issues, such as biodiversity loss, climate change and a rising economic crisis driven by COVID-19, a “blue recovery” that invests in our oceans to build a better, more sustainable future is critical. MPAs can play a significant role by investing in coastal communities, creating job opportunities and fostering vibrant and sustainable local economies. For our marine life and coastal communities to survive for future generations, WIO marine life and coastal communities need sustainable local economies. For our opportunities and fostering vibrant and healthy conditions, WIO nations must incorporate all areas of importance for biodiversity, including key biodiversity areas, with steps taken to ensure habitat connectivity. The UNEP Nairobi Convention and WIOMSA will shortly release the *WIO Critical Habitats Outlook* that may be used by countries to identify key locations in need of preservation, such as critical habitats and other areas essential for species at risk.

Improve management effectiveness

It will take a lot of work to get to 30 percent, but we must ensure that adequate protection is in place. Governments and MPA partners in the WIO must now focus on ensuring compliance with the minimum protection standards. Activities that undermine the efficacy of MPAs, such as illegal, unregulated, and unreported fishing, must be efficiently and completely eliminated in MPAs across the region.

According to the MPA Outlook, approximately 40 percent of WIO MPAs are not properly managed. WIO nations must collaborate to establish the criteria that serve as a baseline level of protection and all MPAs must be encouraged to achieve this level of protection. WIOMSA and the International Union for Conservation of Nature’s (IUCN’s) Biodiversity and Protected Areas Management Programme are actively collaborating to assist MPAs in the WIO area to improve evaluations of management effectiveness. With better MPA assessment, agencies will be able to implement adaptive management and improve effective protection.

Another collaboration, between the Nairobi Convention, Swedish Agency for Marine and Water Management and WIOMSA will deliver training for MPAs on adaptive management.

With an anticipated increase in the number and size of MPAs over the next decade, having trained and competent personnel to manage them is essential. The number of people working in the region’s MPAs is presently unclear but past evaluations have shown significant deficits in capacity in terms of numbers, skills and competence. The Blue Nature Alliance is collaborating with WIOMSA and the IUCN to improve the efficacy of WIO MPAs by increasing practitioner capacity through training and certification. We anticipate that as a result of this collaboration, MPAs in the WIO will have more qualified and competent personnel to manage current, planned or expanded MPAs.

The Western Indian Ocean Marine Protected Area Management Network, a social network of MPA practitioners, was recently established by the WIO region. The network aims to improve the management effectiveness of MPAs by establishing a robust network of MPA practitioners who share experiences, learning and resources. Network-based capacity-building offers the potential of learning in a group, which can be more effective than learning as an individual. MPA rangers need to grow professionally and can do so if they are linked to facilities, systems, people and institutions. Only after these connections are established can a critical mass of interested people be mobilized to take ownership of the WIO MPA system, ensuring its long-term viability.

There is a lot to be done in the WIO in the next five to ten years. The 30 percent goals for ocean protection are high, but they are critical to the health of our ocean and coastal communities. To accomplish this goal, WIO member states must treble their existing efforts in identifying, establishing, and effectively maintaining their MPAs.

*Below:* CapeNature marine rangers on patrol in the Goukamma Marine Protected Area of the Southern Cape, South Africa. © Peter Chadwick

The sustainable blue economy will play an important part in the economic recovery of the WIO after COVID-19, but we must ensure that our oceans are healthy and properly maintained. MPAs and other effective area-based conservation measures should be expanded to cover at least 30% of the WIO EEZ by 2030, while recognizing the rights and roles of indigenous peoples and local communities. The 30 percent goal must incorporate all areas of importance for biodiversity, including key biodiversity areas, with steps taken to ensure habitat connectivity. The UNEP Nairobi Convention and WIOMSA will shortly release the *WIO Critical Habitats Outlook* that may be used by countries to identify key locations in need of preservation, such as critical habitats and other areas essential for species at risk.
The Quirimbas Archipelago: A Mission Blue Hope Spot

By Mark Ziembicki and Tessa Hempson

“...At the heart of the programme is a message of hope, and a core vision to increase official protection of our oceans to 30 percent by 2030.”

Photo: Marine biologist Dr Tessa Hemson and Oceans Without Borders Marine Ranger Leo Gungulo conduct coral surveys off Vamizi Island in the northern Quirimbas. @ Mark Ziembicki
Open a newspaper, watch the nightly news or just scroll through your social media feed on any given day and you’re likely to hear a doom and gloom story about the plight of our environment. Whether it’s rainforest destruction, mass coral bleaching, the rapacious overfishing of our oceans, or another natural disaster caused by extreme weather linked to our changing climate, it’s difficult to escape all the negative news, and just as hard not to be depressed by it.

And yet around the world there are places that remain special. Places where diverse and abundant wildlife roam through ancient forests. Where mass aggregations of predators come together to feed on huge shoals of bait fish. Where a variety of kaleidoscopic coloured corals are home to an extraordinary diversity of creatures of different shapes and sizes. And, not only do these places exist, but there are inspirational people and communities dedicating their lives, resources and energy to protecting them. Places, and people, that inspire hope.

Sylvia Earle’s Mission Blue

It’s in this spirit that legendary marine scientist and explorer, Dr Sylvia Earle, established the Mission Blue Hope Spot programme. Recognizing the critical importance of our oceans to all life on Earth, the initiative brings together the people that dedicate their lives to these special places. By uniting and supporting a global alliance of individuals and organizations, the programme works to ignite public support for ocean conservation through a global network of marine protected areas or Hope Spots. At each site, a nominated Hope Spot champion (or champions, as sometimes there are two) whose responsibility is to help highlight the individuals and organizations working to protect the area, sharing their stories, and other news, challenges, setbacks and successes from the Hope Spot. At the heart of the programme is a message of hope, and a core vision to increase official protection of our oceans to 30 percent by 2030.

A site may be nominated as a hope spot for a variety of reasons, but generally it should meet one or more specific scientific and conservation criteria, such as having notable abundance or diversity of species, or unusual or representative species, habitats or ecosystems. Hope spots may be home to particular populations of rare, threatened or endemic species, or have significant natural processes, such as being a major migration corridor or having important spawning grounds. Alternatively, these sites may have notable potential for reversing damage from negative human impacts, contain important historical, cultural, or spiritual values, or have particular economic importance to local communities.
Hope in the Quirimbas archipelago

The Quirimbas archipelago Hope Spot meets almost all of these criteria. Flying over the archipelago, with its azure blue waters dotted with white dhow sails weaving between vibrant coral reefs and islands, it is easy to be transported to another, magical world; a wonderland that Jacques Cousteau, when referring to Vamizi Island in the northern Quirimbas, remarked “In the deep space of the oceans I have found my Moon”. Made up of a string of 34 islands, the archipelago spans almost 300 km of coastline, from the Tanzania–Mozambique border in the north to Pemba Bay in the south. The region is recognized for its exceptionally high species and habitat diversity, ranging from islands, coral reefs, mangrove forests, estuaries and mudflats and seagrass beds, to the abyssal depths of submarine canyons. The southern regions tend to be dominated by vast stands of mangroves and broad estuaries, that gradually give way to more sandy beaches and coral reefs in the north.

For millennia, an abundance of life has been carried westward by the south equatorial current, flowing from the teeming reefs of the Coral Triangle in the Western Pacific, across the Indian Ocean, to collide with the East African coast in the Quirimbas archipelago. Hitting the coast here, the current diverges, splitting to travel north towards Tanzania and Kenya, and south towards South Africa. As a result, the coral reefs in the northern Quirimbas are among the world’s most biologically diverse, having the highest recorded diversity of corals outside the Coral Triangle, and an exceptional array of fish and other reef life. They also serve as an important source of replenishment for marine ecosystems along the East African coast, where reefs are more heavily impacted. Regular upwelling of cool water from the depths of the nearby Mozambican channel and the deep submarine canyons that run between the islands here, means the reefs are remarkably resilient, because the cooler water reduces the risk of bleaching caused by rising ocean temperatures that are devastating coral reefs in many other parts of the world. Furthermore, these healthy, diverse and resilient reefs are also exceptionally productive, with an annual synchronized mass coral spawning event, locally referred to as the “Kitukulu”. This thriving ecosystem is consequently an important breeding site for green and hawksbill turtles, humpback whales, grey reef sharks, giant grouper, giant trevally and a multitude of other fish species.
These rangers are the ultimate on-the-ground custodians of the local environment and critical to sustainable effective conservation, particularly in remote regions such as the Quirimbas.

The Quirimbas archipelago, however, has many reasons for would-be despair. Located in Mozambique’s Cabo Delgado Province, it is among the least developed regions of one of the world’s poorest countries. Impoverished communities here rely on the sea for their livelihoods and food security. In recent years they have been severely impacted by both natural disasters, including Cyclone Kenneth that hurtled through the central Quirimbas region in 2019, and increasing political instability.

Since 2017, a growing insurgency has seen violence and conflict escalate dramatically. Initially, attacks in adjacent mainland areas drove people to the islands, increasing pressure on marine resources and island ecosystems, but as the insurgency grew and attacks spread to the islands, more and more people left the region entirely. While this has had the effect of lowering pressure on the local environment in the short-term, it has caused a humanitarian crisis and led to the reduction of conservation and community development work across the region. Some funders withdrew support for projects, while several environmental and development organizations left the region, ironically fuelling the cycle of neglect and under-development that in part led to conflict here in the first place. Conflict in terrestrial protected areas is comparatively common, but there are few examples in marine protected areas and just what will happen to the marine environment and local communities that depend on them is unknown.

Adding to the pressures, the COVID-19 pandemic has further complicated working in the region. Global lockdowns, the shutdown of international travel and quarantine have made it exceptionally difficult to travel to field sites, and caused the cancellation of planned collaborative research and education initiatives with international institutions and scientists. On the ground, field teams have been limited in their engagement with each other and the island and coastal communities they work with.
Vision of the Future

While the region faces acute and growing threats, there is significant opportunity to maintain the natural and cultural values of the region by guiding and helping facilitate its protection.

Not all organizations have left and some funding agencies have stepped up. Formal protection in the region includes the Quirimbas National Park, established in 2002, which includes a marine component. In 2018, much of the area was designated a UNESCO Biosphere Reserve, and most recently it has been recognized as a Key Biodiversity Area. Enforcement of these areas, however, is limited, and the significant marine diversity of the northern Quirimbas remains largely unprotected, with the exception of one of the smallest, yet most effective marine conservation areas, the Vamizi Island Community Sanctuary.

The Vamizi Sanctuary was established as a joint collaboration between the local community and the Vamizi Island Lodge and serves as a model for privately funded conservation. It is a powerful example of the significant role that ecotourism can play in facilitating, supporting and driving sustainable marine conservation and community development, as well as promoting education and capacity building for local communities and educational institutions. The success of this marine sanctuary is underpinned by the close collaboration between multiple partners from different sectors working together towards the shared vision of an effectively managed, and ultimately larger marine protected area in the region, while at the same time contributing to local community development.
The primary stakeholders and managers of the Vamizi Sanctuary are the local community. Through the local “Community Fishers Councils” or “CCP” (Conselho Comunitário de Pesca), the sanctuary is patrolled, and fisheries regulations enforced.

The CCP is supported by the private lodge owners, Friends of Vamizi Trust, the national Department of Fisheries, Universidade Lúrio and Oceans Without Borders, a project partnership between Africa Foundation, a not-for-profit community development organization, and &Beyond, a conservation-focused luxury travel company. The long-term commitment of these organizations is critical to the success of the Vamizi Sanctuary, because it makes long-term relationships with communities possible, as well as facilitating the type of long-term research and monitoring programmes that are most effective, and often difficult given the more typical short-term funding cycles that many scientists and research institutions are restricted by. A major focus of the programme is the development of marine community and conservation ranger teams. Drawn from the CCP and local communities, these rangers are the ultimate on-the-ground custodians of the local environment and critical to sustainable effective conservation, particularly in remote regions such as the Quirimbas. At Vamizi, the success of the collaboration is underscored by the fact that the Vamizi Sanctuary will soon be gazetted as the first community nominated national marine protected area in Mozambique.

The Quirimbas may have been one of the first Hope Spots in the Western Indian Ocean, but it certainly won’t be the last, with recent additions in southern Mozambique and undoubtedly others to come. In a world where negative environmental news stories abound, and it may seem impossible to turn the tide, the power of these success stories in the face of all odds, is critical to inspiring hope and change. This is the power of the Hope Spot programme – to share stories about the magical corners of our oceans like the Quirimbas, that inspire hope and mobilize action, and to create a global network of support for the passionate individuals and communities who dedicate their lives to conserving these critically catalytic places.
Award-winning Chumbe Island

By Eleanor Carter and Ulrike Kloiwer

Nearly three decades of effective management

Chumbe has been showcased in numerous academic textbooks and internationally renowned “best practice guides” and has won nearly all global awards for sustainable marine and terrestrial conservation, eco-architecture and socially responsible tourism. This has brought enormous positive media publicity for destination marketing of Zanzibar, which is particularly important for post-COVID recovery as Zanzibar strives for more sustainable tourism.

Sibylle Riedmiller, a former aid project manager, first came to Tanzania in 1980, where she developed a passion for sailing, diving and snorkeling, but also witnessed the widespread destruction of reefs.

As the founder of Chumbe Island Coral Park, she became the first social investor in Zanzibar, supported by the secure investment climate. She remains director of the project to this day.
It was the desire to address these challenges that first inspired the idea of utilizing private sector investment for sustainable MPA management, conservation and education – a concept pioneered in Zanzibar, on a small uninhabited island called Chumbe.

It has been over 100 years since the first marine protected areas (MPAs) in the world were established. Despite their rapid growth globally, MPAs remain challenging to implement effectively, particularly where their development and on-site management is reliant on limited government funding and staffing. Through this time, the threats to the marine environment, particularly coral reefs, have grown exponentially, fueled by over-exploitation, destructive fishing practices, loss of habitat and climate change – the first of these largely related to a lack of awareness and understanding of the importance of reefs for sustainable fisheries and livelihoods.

Initiated by social entrepreneur Sibylle Riedmiller, and developed in close collaboration with seven different government ministries, the Chumbe Island Coral Park (CHICOP) MPA was legally established in 1994, with the aims of: conserving the marine ecosystem and associated biodiversity; enhancing neighbouring fisheries for livelihoods and food security; and providing an education platform for fishers, school children and other stakeholders to learn about the importance of a healthy marine environment.

To finance MPA operations, CHICOP has taken on full responsibility for generating the revenue required through sustainable ecotourism, thus placing no burden on state financing. These funds cover all costs, including 24/7 ranger patrols, monitoring, biophysical surveying, an extensive environmental education programme and all ecotourism operations.

Following the declaration of the MPA, Chumbe not only became the first MPA in Tanzania, but also the first privately managed MPA in the world. It was duly registered with the United Nations’ World Conservation Monitoring Centre in 1995.

Ecotourism operations began in 1998, following years of investment in baseline surveys, ranger training, production of the first MPA management plan and building of a visitors’ center, classroom and eco-lodge. Operated as a not-for-profit initiative, all revenue generated from visitors is ploughed back into MPA operations. This has made Chumbe one of the only financially self-sustaining MPAs in the world.
Before joining Chumbe I used to weigh down my fishing traps with corals – I didn’t know they were alive! The more I have learned about marine conservation through my work, the more I am proud to teach others about the importance of our marine environment,” says Omar.

Omar Ame Nyange started work as Chumbe’s first park ranger in the early 1990s. A former fisherman, Omar received years of training and support, going on to lead the ranger team and oversee all on-site monitoring and surveys. Today he works with scientists from around the world whose results have been published in numerous journals globally.

The outcomes

It is now 27 years since the MPA was established and the results of effective management through private sector support speak for themselves. As shown in the figure left, the reef sanctuary is home to an enormous diversity of marine life, supporting the spillover of commercially important species to restock neighboring fishing ground and support local fishery livelihoods. Likewise, the forest is home to diverse fauna and flora, including critically endangered species.

The education programme has reached more than 11,000 school children, teachers, fishers and community members through fully funded education visits to the island. Wider outreach in Zanzibar has catalyzed sustainable business enterprises, professional learning exchanges with non-governmental organizations and government agencies, regular community-led beach clean ups and environment clubs.

The tourism operations meet the highest credentials for sustainability, with visitors having zero impact on the environment. The ecologe is powered by photovoltaic solar energy; rainwater catchment feeds the showers and taps, heated by solar panels; with greywater filtration systems and composting toilets ensuring no waste is released into the MPA. Supplies are sourced from nearby communities to support
the local economy, with no plastics or packaging permitted, to ensure waste is minimized throughout the supply chain.

The 40-strong Chumbe team, and all associated service sectors, are made up of people predominantly from proximal communities, who receive ongoing training, and who are empowered as stewards of the MPA.

Ben Taylor says "By offering opportunities for employment, access to sponsored education, long-term loans and local initiatives to support MPA operations, individuals with the drive to grasp such opportunities have been provided with the means to advance their own potential."

Chumbe has been showcased in numerous academic textbooks and internationally renowned “best practice guides” and has won nearly all global awards for sustainable marine and terrestrial conservation, eco-architecture and socially responsible tourism. This has brought enormous positive media publicity for destination marketing of Zanzibar, which is particularly important for post-COVID recovery as Zanzibar strives for more sustainable tourism.

Key lesson learned

Privately managed MPAs can be highly effective and economically viable, reducing pressure on limited government resources for conservation. By following business principles and generating revenue through sustainable ecotourism, a private protected area (PPA) can reduce a nation’s “dependency” on short-term donor funds, enabling the site to undertake long-term planning and implementation. PPAs also provide income and employment opportunities for local communities, building skills, supporting markets for local produce and empowering stewardship over marine resources.

The future

As marine ecosystems in the western Indian Ocean (WIO) continue to be degraded by numerous human-induced threats (including climate change), marine and coastal conservation efforts are needed more than ever before. For this, political support is required, to protect the livelihoods of coastal communities and secure marine resources for future prosperity. Recognizing the contribution that the private sector can make to both effective conservation area management and the livelihoods of local people, favourable political, legal and institutional instruments are needed to attract more private and community investment in marine conservation in WIO countries. This includes ensuring long-term security of tenure and investment and tax incentives to target social entrepreneurs and sustainability investors.

The crucial role of the private sector in biodiversity conservation is being increasingly recognized globally. For example, Resolution #36 of the World Conservation Congress (2016) calls on member states to promote privately protected areas (PPAs) to support ecosystem integrity that is “indispensable to humanity”.

Zanzibar has played a leading role in showcasing the effectiveness of PPAs through the Chumbe project, even receiving specific mention in the UN Secretary General’s report to the General Assembly as an exemplary model for conservation. After nearly three decades of effective management, the Chumbe team are proud of their achievements, and look forward to continuing to educate current and future generations on the importance of the marine environment, remaining a globally recognized success story for Zanzibar.
Cousin Island
still racking up world firsts

As a long-established no-take marine reserve, Cousin Island provides a unique site to study the effects of protection on marine ecosystems.

BY NIRMAL SHAH AND LIZ MWAMBUI

Photo: The MPA is home to the decade long Reef Rescuers project. © Nature Seychelles
In 1968, in an unprecedented move, the International Council for Bird Preservation (now BirdLife International) purchased Cousin Island to save the Seychelles warbler, a small songbird found only on the granitic and coralline islands of the Seychelles that was on the brink of extinction.

In 1975, Cousin Island was designated a Nature Reserve under Seychelles law. In 1975, the island was given “special reserve” status, with the surrounding ocean 400 m from the high water mark also being protected as a no-take area. BirdLife International managed Cousin Island until 1998 when the non-governmental organization (NGO) and BirdLife Partner, Nature Seychelles took it over. Today, Cousin Island is the longest established no-take marine protected area (MPA) in Africa and the Indian Ocean to be managed by NGOs.

The no-take MPA has been protected since 1975. © Cheryl Sanchez

The MPA is protected under Seychelles’ specific and general environmental laws. These protect its habitats – which include a coastal forest, wetland, mangroves, dune systems, seagrass, algal beds and coral reefs – and species, including seven species of breeding seabirds, two species of marine turtles and over 200 species of fish, corals and marine invertebrates as well as the Hawksbill turtles. Monitoring of this species began in 1972, which may mean it is the longest running monitoring programme for Hawksbill turtles in the world. A paper published by Nature Seychelles in 2010 shows just how successful the protection of Cousin Island has been for the Hawksbill turtle: there has been an eight-fold increase in nesting Hawksbill turtles on Cousin Island since conservation and monitoring of this species started, a phenomenal conservation success for a long-lived, critically endangered species.

Nature Seychelles’ headquarters on Mahé provides financial and managerial oversight, staff training and other inputs to meet planned targets for the MPA. A reserve management plan has been in place since 1975 and is updated regularly. Conservation aims have changed slightly over the years but the basic objectives outlined in 1975 – of conservation, education and research, with conservation taking precedence – remain valid today.

Cousin Island is the most important breeding site for Hawksbill turtles in the western Indian Ocean (WIO).
Cousin Island still racking up world firsts
Continued

As a long-established no-take marine reserve, Cousin Island provides a unique site to study the effects of protection on marine ecosystems.

The vision in the management plan is for the reserve to be widely acclaimed as the best-managed small island protected area in the world.

Over the years there have been many research projects, marine mapping and yearly monitoring to gauge abundance of fish, coral cover and invertebrates. Monitoring takes place in April and October when data on the benthic, fish and invertebrate communities is collected.

The coral reefs surrounding Cousin Island have undergone many changes and were particularly affected by the 1998 global coral bleaching event. Prior to this mass bleaching event, research showed that the MPA had the highest biomass of fish species important to local small-scale fishers of any studied site in the granitic islands of Seychelles. The MPA is now home to the decade long, world-first, large-scale coral reef restoration project initiated by Nature Seychelles. The project is known as “Reef Rescuers” and seeks to jump-start coral reef recovery through farming and planting thousands of coral fragments on degraded reefs. It recently began another exciting phase that will look into new scientific techniques to produce heat resilient coral colonies through the setting up of land-based coral aquaculture and the continuation of underwater nurseries.
Dailus Laurence - Chief Warden of Cousin Island. © Liz Mwambui

Athina Antoine - Reef Rescuers Technical Assistant. © Nature Seychelles

Our MPA heroes

Dailus Laurence

Chief warden

Dailus, 29, began his career on Cousin Island at the age of 21 after graduating from the Seychelles Maritime Academy. He rose through the ranks to become chief warden in 2018. Dailus ensures that the laws which govern the special reserve are respected and enforced at all times. In pursuit of this, he and his team conduct surveillance around the island every morning. He also manages the island’s ecotourism, and assists in conservation programmes including monitoring of and research on the MPA. On several occasions Dailus has been involved in the removal of illegal fish aggregating devices (FADs), used by industrial tuna purse seiners in the Indian Ocean, from inside the MPA.

Dailus helps to foster relations with the island’s resource users, chief among them tour boat operators, and the local community on nearby Praslin Island. In recognition of his contribution to conservation, Dailus was awarded the prestigious 2020 African Ranger Award promoted by the Alibaba Foundation and the Paradise Foundation. The award included prize money of US$ 10 000.

Athina Antoine

Reef Rescuers technical assistant

24-year-old Athina also joined Nature Seychelles straight from the Seychelles Maritime Academy. She was employed to work on the coral reef restoration project and has been with the project since 2017. Having limited knowledge of restoration when she started, Athina has learned from senior restoration scientists and has honed her skills in restoration. She was first involved in Nature Seychelles’ joint collaboration for coral reef restoration with the high-end resort Six Senses Zil Pasyon on Felicite Island, before joining the Reef Rescuers on Cousin Island. Her daily tasks involve surveys of donor sites for collection of healthy coral fragments, building of underwater coral nurseries, stocking nurseries with fragments, caring for corals, and transplantation of nursery-grown corals to degraded reefs. She has been equipped with additional skills through a regional training course presented by Nature Seychelles and other partners to participants in the WIO region. Athina carries out education and awareness on local media and has been interviewed for local radio and TV. She hopes to encourage other Seychellois youth to take up careers in marine science to help in the implementation of the Sustainable Development Goals.
The Road to Addo

A memorable moment in my conservation career.

BY ANÈ OOSTHUIZEN

“With the declaration of the 18 MPAs, South Africa increased its marine conservation target from 0.4 percent to 5 percent.

“Even though the wheels of conservation turn very slowly, and conservation can be challenging, frustrating and complex; it can be exciting and, when you reach your goal, very rewarding.

I have always loved nature and the outdoors and grew up hiking and camping, but not anywhere near the sea!

Watching the French father of scuba diving, Jacques Cousteau on TV, exploring the underwater world fascinated me, and that’s when I knew that someday I would also scuba dive!

For the past 14 years, I have worked in marine conservation at South Africa’s national conservation agency, South African National Parks (SANParks). When I started at SANParks, my job description was literally to declare new marine protected areas (MPAs). SANParks manages several national parks along the South African coast, most of which did not have marine conservation areas and it was my job to plan and facilitate the declaration of these new MPAs.
Taking SANParks scientists out to explore the MPA

The Addo MPA sits in one of the most diverse and beautiful regions along the South African coast - it stretches along the Alexandria dune field, the longest and largest mobile dune field in the southern hemisphere, where many endemic species occur, including several endangered seabird species on two clusters of islands. It was this beauty and the love for my home province that motivated and kept me going when things did not always go as planned.

The Addo MPA shares Algoa Bay with the city of Gqebehra (Port Elizabeth), where there are two large industrial ports, five different types of commercial fisheries, and many sea-based recreational activities. As a result, there are numerous competing users in the bay. We set out with stakeholder consultations in 2006 and kept going annually until 2013. That was when we were expecting the government to declare the new MPA, but it was not to be. In 2014, the national government initiated a blue economy project, called Operation Phakisa and our MPAs finally received recognition. Addo MPA, Namaqua MPA and 20 other MPAs were declared for public comment and stakeholder participation in 2016. Finally, in 2019, 18 MPAs, including Addo and Namaqua MPAs were finally declared.

When I saw the published gazette that declared “my” MPA, I was overwhelmed. It took 13 long years and much hard work to get to that point. I was ecstatic to have finally reached that point! With the declaration of the 18 MPAs, South Africa increased its marine conservation target from 0.4 percent to 5 percent. As SANParks, we have more than doubled the marine area under conservation from 146 400 ha to 369 900 ha.

The challenges I experienced along the way were very varied, from having to convince my own organization that marine conservation is as important as terrestrial conservation, to balancing conflict between stakeholders, securing funding to do baseline research, and teaching decision makers and stakeholders about the benefits of marine conservation and MPAs.

But this was not the end. Hard work is required to convert these “paper parks” into on-the-ground protection. MPAs need funding, rangers, vessels and operating budget to achieve the actual conservation and protection of species. Acquiring funding for new conservation areas prior to the COVID-19 pandemic was difficult, but now it is near impossible. Our marine rangers have been managing these new MPAs on a shoestring budget, making do with what limited staff and equipment they have. My next step is to lead the development of the management plans for these MPAs, but in COVID times, meaningful stakeholder interaction is very difficult.

During the time I worked on the Addo MPA I was exposed to the WIO-COMPAS programme for the Certification of Marine Protected Area Professionals and I was certified as a Level 3 MPA PRO in 2013. This was very exciting and the impact that this programme has on empowering marine rangers was contagious. I became an assessor in the programme and was inspired by the passion and commitment I saw with every event. The rangers come from all walks of life, with different levels of skill, but when they completed the assessment and received the affirmation of their experience, they swelled with pride and went back to their MPA with confidence to inspire others. I was lucky enough to travel and dive in some of the beautiful MPAs in the WIO region through this programme, all the while supported by other MPA PROs.

Conservation is hard work, and sometimes it’s heartbreaking when you have to watch species dwindling, or doubt whether your work is making a difference in the world. But, when you have a network of passionate people around you it supports you to tackle the next obstacle. Next time you feel overwhelmed, look out over the ocean in your MPA, and remember that your work does make a difference. Become a MPA PRO and join a network of people that are as passionate as you are.
On World Environment Day, 5 June 2021, the United Nations’ resident coordinator of Comoros officially handed the certificate that designates the Mwali Biosphere Reserve to the president of Comoros, Honourable Azali Assoumani.

Mwali is the first Biosphere Reserve in Comoros to be designated by the United Nations Educational, Scientific and Cultural Organization (UNESCO). It was nominated during the thirty second session of the International Coordinating Council of the Man and the Biosphere (MAB) Programme in October 2020 and was recognized for its exceptional biodiversity - marine and terrestrial – and for the efforts taken by the Comorian people and their government to strengthen, conserve and restore this biodiversity treasure, while ensuring the development of the communities that utilize its resources.
The success of the Mwali Biosphere Reserve and its MPA has been and will continue to be dependent on the local people – our collaborators – and the government.

Comorians are proud of the outstanding marine and coastal conservation activities and species recovery initiatives that have led to UNESCO’s recognition. The Mwali marine protected area (MPA) safeguards what is delicate but vital: a unique, unrivalled and priceless area where Comorians may connect with their heritage and marine life, which are the very spirit of the nation. As we take pride in the UNESCO designation, we must and the world continue our efforts to protect and share the natural treasures of the Comoro with the Western Indian Ocean region and the world, in the interests of our citizens and the world.

The MWALI BIOSPHERE RESERVE encompasses the entire land and marine territory of Mohéli, the smallest of the islands of the Union of the Comoros. Its location in the Mozambique Channel ecoregion, with a continental shelf reaching down to the 100 m isobath, means the Biosphere Reserve features a high level of biological diversity and endemcity. Find out more: https://en.unesco.org/biosphere/africa/mwali
Comoros

takes pride in its first
UNESCO Biosphere Reserve

Continued

How the journey began

The route to the MAB designation is an interesting one. It was inspired by early visionaries like the Nioumachoi Socio-cultural Development Association, which I co-founded, and the work of numerous partners. Over two decades of effort, shared leadership with the community, and love for our stunning seascape have culminated in the achievements acknowledged by UNESCO.

As a Comorian and a marine conservationist, I am thrilled to be a part of the Mwali (Mohéli) MPA’s designation as a MAB Reserve. When I was growing up in Nioumachoi village on Mohéli, the smallest of the four major islands in the Comoros archipelago, I was certain that the natural beauty that surrounded us deserved to be protected. The members of the Nioumachoi Socio-cultural Development Association became aware of the need to work for the protection and conservation of marine ecosystems and associated species. The first MPA in the Comoros was founded in 2001 on Mohéli, following many years of public advocacy and awareness, and working with both the community and the government. The MPA was established to protect endangered species such as dugongs and marine turtles and to maintain key habitats such as coral reefs and seagrass beds. While the MPA process unfolded, I went to university to study and six years later I came back home to become Mohéli Marine Park’s first park manager and scientist. The endeavour to establish Mohéli Marine Park as a key conservation area began at this time.

Working with communities

The MPA agency did not take the path to MAB classification on its own. Without a shared vision with the local people, it would not have been able to conserve the Mohéli MPA and its species’ habitats. The success of the Mwali Biosphere Reserve and its MPA has been and will continue to be dependent on the local people – our collaborators – and the government. The relationship between the community and the government is evolving and strengthening. A co-management agreement was signed by the two parties for the protection, conservation and management of marine habitats and associated species. Specifically designated areas have been assigned to ten community groups to protect, manage and conserve.

To motivate communities to take an active role in conservation, inter-community competitions were introduced, with each community giving itself a name according to the eight conservation targets of the MPA. For example, one community is called “Moina Wa Gnamba”, the baby turtle, while others are known as “Mwana Nguva”, the baby dugong; “Mwana Ndudju”, baby whale; and “Mwana Mbwedza”, baby octopus.
Blue growth

As a result of community conservation efforts, the local economy has grown. Only those who invest - those who participate in marine protection and conservation - benefit from the interest and earnings generated by each community marine region.

The MPA’s benefits have been so significant that a competition has emerged between communities living inside and outside the MPA. Communities on the fringes of the MPA requested whether they may also be included in the protected area. The request was accepted in 2015 after extensive negotiations with the government. The MPA has now become a national park that occupies three quarters of Mohéli island and out of 24 villages, only three are not part of the protected area. This extension of the protected area is the result of efforts to manage and conserve marine ecosystems and their associated species by us, the managers of the MPA, supported by communities. The ecosystem management and conservation strategy remain the same, except that currently the co-management agreements signed with the communities are specific to the village and to the species to be protected and conserved.

To increase the communities’ awareness about the conservation and management of marine spaces, each community celebrates a day according to the emblem of the village.

The future

Our goal remains to provide an environment in which nature and wildlife, especially endangered species, can thrive, survive and recover. We celebrate the achievements we have made together as the people of Comoros – underscored by the MAB designation as the first Biosphere Reserve in Comoros. You might wonder how the MAB designation will help. After all, what’s in a name? With the MAB designation, we will increase the protection of our MPA and through species recovery efforts, and also facilitate new and exciting opportunities for Comorians to benefit, appreciate and connect with their natural heritage.
In spite of massive challenges, Kiunga Marine National Reserve is achieving its objectives through management, community work, solution-oriented leadership and teamwork. A programme to better manage the burgeoning octopus fishery in the Reserve is breaking new ground.
Until very recently, octopus was not targeted by the fisheries community of Kiunga Ward, it was mostly used as bait in the lobster fishery and, because of its low value, octopus would even be discarded by fishers. Recently, however, there has been a surge in the landing of octopus, driven by high market demand from outside Lamu County, as well as from locals who believe it to be an aphrodisiac.

Kiunga Marine National Reserve, located south of the Kenyan border with Somalia, covers 25 square kilometres and includes a range of habitats, from coral reefs and sandy beaches to mangrove forests, islands and rocky outcrops and seagrass beds.

The objectives of the National Reserve are to promote sustainable fisheries, ecotourism, education, research and livelihood initiatives and to generate revenue for the Government of Kenya.

Because it is a Marine National Reserve rather than a Marine Park (which are no-take zones that only allow non-extractive activities) sustainable fishing is allowed within Kiunga and fishing activities are controlled by national regulations.

The large size of the Kiunga Marine National Reserve presents challenges for its management, and these have been exacerbated by the COVID-19 pandemic. As a result of the disease, and the measures that governments around the world have taken to curb its spread, the Kenya Wildlife Service (KWS) lost 80 percent of revenue generated from tourism in parks and reserves. This led to a reduction of the budget allocated to Kiunga Marine National Reserve, and other parks and reserves, for operations. Coupled with low staff numbers, effective management has been difficult. The National Reserve is located in a remote region on the north coast of Kenya. It borders Somalia which lacks a structured ocean governance system, especially for the management of cross-boundary matters. The Reserve includes eight beach management units (BMUs) comprising an estimated 1,000 fishers and fish mongers. Unfortunately, the use of illegal fishing gears in the National Reserve is on the increase.
As the warden in charge of Kiunga Marine National Reserve, I worked with the non-governmental organisation North Rangeland Trust, and community groups, including BMUs and the Kiunga Community Wildlife Association, to intervene in the octopus fishery, promote the sustainable management of fisheries through co-management, and ensure the effectiveness of the Kiunga Marine National Reserve. Until recently, the management of the reserve was conducted by KWS, the state organization mandated to conserve and protect Kenya’s flora and fauna, with little involvement from community groups and partners, but an initiative to better manage the burgeoning octopus fishery in the National Reserve has changed that.
For the first time in Kenya, octopus enclosures have been established in a Marine National Reserve. A programme was set up to demarcate areas the size of football fields in the marine reserve close to the villages where the members of the BMUs live. This was done to ensure the fishers could easily establish their own bylaws and ensure their enforcement, with the understanding that KWS rangers would assist with the enforcement of big cases which could not be handled by the BMUs.

The activities leading up to the closure of the octopus fisheries included awareness creation in villages, verification of the sites proposed by the communities, and mapping and confirmation of the proposed octopus closure sites. Demarcation of the sites involved using coordinates and installing buoys.

The first awareness meeting attracted 30 villagers drawn from five villages within the Kiunga Ward.

A three-day exercised to verify and map the temporary octopus closures was led by community members and rangers from 14 to 16 November 2020. The habitat characteristics of each site were checked and described to ensure site suitability. Two gear restriction areas and four temporary octopus closure sites were confirmed and selected for immediate piloting and demarcation. This was followed by awareness creation in the villages, after which the launch of the enclosure was conducted on 28 March 2021. The sites were to be closed for four months, after which they would be opened up for fishing for three days. The programme also involved training 16 community octopus closure mentors through targeted training sessions.

The overall objective of the octopus closures is to improve understanding of fisheries co-management, as it applies to the octopus fishery, set aside zones for recruitment – with the goal of improving fisheries productivity – and creating awareness within communities about the establishment of temporary no-take areas and octopus closures.
The power of Locally Managed Marine Areas

LMMA  How fisherfolk work together in Madagascar

By VATOSOA RAKOTONDRAZAFY

“I believe local leadership is the central key to the success of LMMAs because it allows for local acceptance and engagement which is sometimes hard to secure with MPAs.”

Photo: Vatosoa at sea; in discussions with small-scale fishers
I am Vatosoa Rakotondrazafy and since 2015, I have dedicated my life to defending the rights of small-scale fishers in Madagascar by leading and amplifying the locally managed marine area (LMMA) movement in the island.

First launched in the Pacific, the LMMA concept has been recognized as a holistic and people-centered approach that brings together fisherfolk, local governments, non-governmental organizations (NGOs) and, sometimes, the private sector to create mechanisms for the sustainable management of ocean and coastal resources and conservation. In Madagascar, for example, a LMMA can come together and decide to establish a temporary fishing closure of crabs for three months or prohibit whale catches in its territory. LMMA members on the island agree on bylaws that are then enforced through dina – sets of mutually agreed rules that are promulgated by the Malagasy state and whose violation will lead to fines.

For me, the LMMA approach is essential for marine conservation because it recognizes and builds on indigenous and local communities’ incredible role in managing natural resources, uplifts their traditional know-how and puts their well-being at the centre of the management of their terrestrial and marine resources. LMMA, for example, can promote alternative livelihoods to ensure food security even during temporary fishing closures. It’s also a much more cost-effective, appropriate and context-specific solution compared to most marine protected areas (MPAs) whose establishment is time-consuming and whose operationalization usually requires significant financial resources such as infrastructure and salaries for park managers, eco-guards, etc. Through LMMA, communities can uniquely create their own structures and often mobilize their existing resources. I believe local leadership is the central key to the success of LMMA because it allows for local acceptance and engagement which is sometimes hard to secure with MPAs.
In 2015, when I started work as the National Coordinator of MIHARI, I made it my mission to connect LMMAs in Madagascar with each other and increase the impact, scale, visibility and recognition of the network nationally and internationally.

Before the creation of MIHARI – Madagascar’s network of LMMAs – the concept of LMMAs was not widely known in Madagascar. I noticed this as I was conducting research on small-scale fishing in Madagascar with the United Nations’ Nippon Foundation in 2014. Initiatives were sparse and NGOs and communities each gave different names to their community-centred management of marine resources.

In my six years with MIHARI, my team and I have connected LMMAs throughout Madagascar through small-scale fisher gatherings, national and regional fora, and we have facilitated networking and learning exchanges between Lmma associations. We also built local leadership and enhanced local capacities through training on public speaking, conflict resolution, association management and many more important issues. This helped inspire communities and many NGOs to replicate the Lmma approach throughout Madagascar. As a result of our activities, we have raised the visibility of LMMAs in Madagascar. Each of our forums brought together around 200 to 400 stakeholders, including coastal communities, NGOs, representatives of the private sector, government and funders, and the fora became a critical dimension of our community building.

Although we have come a long way since we first mobilized LMMAs in 2015, there is still much to accomplish. Madagascar now has 219 LMMAs (an increase from around 50 in 2015). A next priority for MIHARI is to have the concept of LMMAs included in Madagascar’s legal frameworks. Although the current law acknowledges the rights of small-scale fishers, gaining legal recognition for LMMAs will further promote the role of fishing communities as guardians of our seas and help to strengthen their advocacy efforts, including their current push for the establishment of special areas for small-scale fisheries as a way to resolve conflicts with other users such as the industrial fisheries. It will also help to acknowledge Madagascar’s efforts in the area of LMMAs and its contribution towards achieving the 2014 Promise of Sydney during which Madagascar committed to triple the size of its protected areas.

We have taken many steps forward and backward when moving towards our vision of seeing LMMAs recognized by the Malagasy legal framework. In 2015, we created a working group of Lmma managers to conceive and advocate for the integration of LMMAs in the Promise of Sydney, but this initiative was delayed by the change in government. In October 2020, MIHARI was established officially and legally as an independent Malagasy organization.
Local fishing communities decided to localize the term LMMA (loosely translated as “plan to manage coastal resources”) as a way to counter the frequent criticism that LMMA is a foreign concept and term.

If there is anything that I took away from these many years of involvement in Madagascar’s LMMA movement, it is that fisherfolk in Madagascar have demonstrated they can manage their own resources through effective partnerships. LMMA and MIHARI have been central to this work and I am proud of the community that has worked so successfully together to achieve so much!

A toolkit on how to establish an LMMA was also published and adopted to further replicate the model in Madagascar, the Indian Ocean and the rest of the world.

Though I left MIHARI in November 2020 and joined the Malagasy think-tank INDRI for the next challenge of my career, I am still involved with the LMMA movement. I continue to support it in every way I can, including serving as the President of the Board of MIHARI.

My role at INDRI has given me a platform to widen my ambition because I am now leading a national movement in Madagascar that mobilizes collective brain power of all stakeholders (government, NGOs, communities, funders, the private sector, religious organizations, civil societies, etc.) to re-green Madagascar and restore my country’s marine and coastal resources. As a member of the International Union for Conservation of Nature’s (IUCNs) expert group, I am also advocating for the assessment of LMMA in Madagascar as a part of the IUCN Green List. This will further raise the visibility and advance my vision for the legal recognition of local and indigenous communities as guardians of our seas and coastal resources and the protection of their rights.

Above: Top: The MIHARI Team. Bottom: LMMA representatives, proud to be MIHARI members, participating in a carnival
In 2006, after an initial study demonstrated the ecological importance of the area, Conservation International decided to work towards establishing a marine protected area (MPA) in Ambodivahibe Bay, in the north of Madagascar.

During the first opening of the fishing season, large numbers of shrimps and large sized shrimps were harvested.

The Bay is a globally significant site of marine biodiversity, featuring coral reefs, mangroves and seagrass beds that provide habitat for marine turtles and globally threatened species such as the Napoleon wrasse and giant groupers. It also shelters two deep bays of global significance and a cool water upwelling system. Ambodivahibe Bay is a climate refuge for numerous species and its resources supply important proteins. At 14,000 ha, the area is not very large, but even so the implementation of the MPA has not been easy.
A rocky start

An early obstacle was the strong opposition to the MPA by a single person, the president of a Fokontany, the administrative body of one of the villages to be included in the planned MPA. He played a powerful role by convincing all local people to oppose the establishment of the MPA. However, this changed in 2008 when he was asked to participate in an exchange visit to locally managed marine areas (LMMAs) in Andavadoaka in the south of Madagascar. The exchange visit included eight days of travel by car from the north to the south of Madagascar. After the trip, this individual testified, "I was really against the establishment of marine reserves in our region at the beginning. Everything was not clear to me; I was afraid of foreign intrusions. After the meeting with the fishermen of Andavadoaka, I convinced the people around me. Today, I am proud that our community is moving in the right direction; we have become an example and are able to train other villages to follow our path."

As a president of the Fokontany, he organized a meeting to inform people that the initiative to establish the MPA was correct because it had the potential to support the community’s quality of life. Initially, the villagers were angry. They considered him a traitor and threatened to kill him if he continued to articulate this position. It did not discourage him; he wanted to go ahead and change people’s minds. Eventually, most villagers were ready to work with us. In 2009, the first marine reserve was set up in a single village called Iovona. An exponential growth in fish catch followed, especially with respect to octopus. Other marine reserves developed until local associations were installed in all four villages surrounding Ambodivahibe Bay. In one village, called Ampondrahazo, the community created marine reserves for mangroves and shrimp fisheries. During the first opening of the fishing season, a great number of large sized shrimps were harvested. At that point, the community did not totally trust the MPA, they believed that Conservation International had brought the large shrimps into the mangroves. It was only after the second opening of the fishing season that they were convinced of the benefits of the fishing regulations. Currently, crab numbers are beginning to increase.
As a result of fundraising, all the local communities’ needs are met with 15 m$^3$ of cold storage and 500 kg of ice production per day, as well as 12 kW photovoltaic power for 65 households.

**The supply of fresh water**

Water is a big issue in Ambodivahibe Bay, with people walking for up to three hours every day to provide water for their families. A supply of fresh water was granted to villagers to improve their health, except in Ivovona because they refused the drilling system; the ground water in their village is scarce and of poor quality. However, these villagers were patient. They waited a long time to build a gravity-fed water system, digging a channel for 11 km of piping from the watershed in the forest to the village. In December 2015, the installation of the gravity-fed water supply was installed with three stations.

**Make the development last**

Apart from the activities related to the well-being of the local communities, other activities are supported by the MPA. For example, the communities proposed an improvement to their goat and sheep farming to compensate for periods when they cannot go fishing.

In addition, women in three villages were privileged to get simple facilities for ecotourism activities and to host visitors. Most people are illiterate therefore a decision was taken to support predominantly youths from the villages to acquire functional literacy, with a local association partnering with Conservation International to provide the training. Given the increase of fisheries products from the marine reserves, local fishers were interested in installing a cold chain to avoid wasting the catch that is not sold. Also, with increasing numbers of visitors to the site, electrification became important.

As a result of fundraising, all the local communities’ needs are now met with 15 m$^3$ of cold storage and 500 kg of ice production per day, as well as 12 kW photovoltaic power for 65 households. With the improvements to cattle farming and the consequent generation of income, community members are able to
send their children to study in town and to send their family members to hospital in case of complicated illness. From 2009 to the present, the activities outlined above have proceeded very well and after the MPA was established in April 2015, the role of local communities as co-managers of the MPA was cemented. My support to the team focused on the designation of a formal MPA and community-based management of at least 20 marine reserves within four LMMAs as management units of the MPA. A platform called MITAFA was created to gather representatives from the four LMMAs and it serves as co-manager of the MPA. Community livelihood projects and capacity building were developed, accompanied by ecological and socio-economic research and fisheries management initiatives. The community participates actively in ecological monitoring and patrolling activities. However, climate change poses a growing threat. Local capacity for managing the MPA must be strengthened, and effective measures need to be implemented to reduce pressures on natural ecosystems in the context of climate change.

To warrant the long-term sustainability of marine resources and their habitats, periodic mangroves and littoral forest restoration is launched and the community is taught about the importance of this activity for their resilience to climate change.

Since May 2018, Conservation International has obtained the designation of management from the Ministry of Environment, which ensures the MPA’s sustainable management. In 2014, during the last World Park Congress, Madagascar announced the tripling of its total MPAs. This allowed Conservation International to expand the Ambodivahibe MPA to the south. The integration of local people in the south into the protected area has helped to alleviate pressures on the natural systems, including pressures on the current Ambodivahibe MPA.
How can local people reap the benefits of a marine protected area? Continued

A number of challenges remain, with the alleviation of poverty and food insecurity within the communities being one of the priorities. The remoteness of the area, lack of infrastructure, and challenges with accessing markets for fisheries products constrain the communities’ ability to improve the current situation. Poaching from outside communities is growing, mainly during closed fishing periods, and compliance with regulations is yet to be strengthened to avoid causing severe damage to marine habitats. The existing LMMAs are an effective solution but require more and sustained support over a longer period to secure their gains. A lack of equipment and enforcement capacity to implement management plans, including land-based threats, need to be addressed. Maintaining the level of support is a big challenge and the platform that will make this possible is MITAFA. With Conservation International, I will continue to work on each of these aspects while striving towards an overall vision for the area.

The most important thing I have learned during my ten years of overseeing this MPA is that the partnership between various entities – local communities, traditional authorities, environmental organizations, young adults, and children – needs to be established. Close proximity to, and frequent discussions with, local communities are one of the key strategies I have adopted to achieve results.
Moving from freshwater to the ocean - it’s all water!

With a PhD in animal biology and conservation and a specialization in freshwater snails, I started my career by working with small associations as a coach, educator and facilitator. My objective was to raise awareness among children and the youth about the importance of protecting the environment. Later, I moved into the health field where I gained good professional experience. After five years in that job, I returned to my first occupation, working in an organization involved in the conservation of large forest corridors. More recently, I joined Conservation International for which I am the director of the Science and Knowledge Department and in charge of the Marine Programme.

Because my experience is in the freshwater field (I am the Science and Technical Review Panel National Focal Point for the Ramsar Convention in Madagascar), I did not expect to dive into ocean activities, but Ambodivahibe has engendered my passion for the ocean over the past 10 years. The journey has not been easy because I worked with a small team of three people – a marine specialist, a field agent and a driver – on the one hand, and the local communities in four villages surrounding the MPA on the other hand. I had to learn quickly to master the dialect that is spoken in the north so as to effectively work with people in the field and to this day I am still learning many new things.
Locally managed marine areas (LMMAs) emerged in the early 2000s out of a need of local communities in Madagascar to improve fisheries benefits.

“LMMAs are the interface between fisheries and marine biodiversity conservation.”
In a country where fishing is not well regulated at the local level, the LMMA approach has resulted in an increase in fish production and quality.

LMMAs use traditional or government rules to regulate access to resources. The rules range from temporal and seasonal closures to community convention or customary laws. In a country where fishing is not well regulated at the local level, the LMMA approach has resulted in an increase in fish production and quality.

Research conducted within the LMMAs also revealed improved quality of habitat and increased species diversity. In addition to being a relatively simple fisheries management tool, LMMAs provided a starting point for community-based marine conservation and stewardship, as well as a model for sustainable fisheries management.

As the number of LMMAs in Madagascar has expanded, they are supported by the MIHARI Network, but legal and practical issues hinder the implementation of the LMMA model. For example, at a strategic level, the governance of LMMAs is floating between two ministries – one responsible for fisheries management and the other in charge of protected area management. This uncertainty prevents the recognition of the roles of LMMAs as a meeting of marine biodiversity conservation and sustainable fisheries management, but also stands in the way of securing the appropriate support to grow and perform. At a local level, the capacity of communities is limited and they can be overwhelmed by the responsibility of implied fisheries and conservations activities.

USAID’s five-year conservation and community project Hay Tao, provides assistance to stakeholders from the Malagasy government, LMMAs and fishing communities, to overcome problems and develop strategic and technical innovations to potentially secure both conservation and fishery benefits, while ensuring the rights of local fishers. It does this through one of its implementing partners, the Coastal Research Center at the University of Rhode Island.

Above: President of the LMMA in the west of Madagascar, doing an illustration of the LMMA’s partners.
At a strategic level, USAID Hay Tao supported the ministry in charge of fisheries to review the development of the fisheries management plan and integrate LMMAs as stakeholders. The project collaborated with the MIHARI Network and conservation non-governmental organizations to identify the best framework for LMMAs and achieve full recognition of the rights of communities to manage resources.

The project also lent a hand to define the indicators that enable the assessment of the performance of LMMAs in Madagascar in reaching conservation international standards such as the International Union for Conservation of Nature’s Green List of Protected areas, and other conserved areas.

At a local level, USAID Hay Tao supports individual LMMAs to effectively manage areas by equipping them with a capacity development tool that allows them to identify strengths and gaps in management, and request training accordingly.

LMMAs are recognized as pillars of marine and coastal management in Madagascar and the government is collaborating with partners to develop the required legal framework. Laws on community resources management are under review, with the goal of better securing communities’ rights to management.

At the local level, LMMAs from the west coast of Madagascar are implementing the existing fisheries management plan. Another 12 LMMAs are participating in the development of the fisheries management plan in their region.

Marine conservation and fisheries are naturally linked and must be integrated holistically. LMMAs are the interface between fisheries and marine biodiversity conservation. When done well, communities of fishers can become active participants in shaping the future of both fisheries and conservation, and the future of the ocean. Encouraging communities to integrate marine biodiversity conservation management can be a long process because it entails going through each step of fisheries management, but it is worthwhile.

The assessment of six LMMA leaders’ management capacity against LMMA competency norms resulted in the following findings:

- Communities have strong knowledge of marine and fisheries resources bioecology, and threats at their LMMA sites;
- they have leadership and stewardship of resources;
- they know the governance structure that work best for their communities; and
- they clearly define the most appropriate social convention that respect the rights of all community members.

Communities generally require help in the following areas:

- follow up and monitoring: activity monitoring, performance monitoring or resources monitoring;
- negotiating with government and the private sector.

Fishers from LMMA Kivo in the west of Madagascar
Putting marine conservation on the map

BY MAMY RAKOTOARIRIAONA

The MNP has 870 000 ha of marine protected areas distributed across eight national parks in northwest, northeast and southwest Madagascar.

"After completing my PhD studies in geography, specifically forest governance and sustainable human development, I wanted to work towards the conservation and management of protected areas and continue my work in marine conservation. Today I am the general director of Madagascar National Parks (MNP) which is a non-profit and non-governmental organization that has been in existence for 30 years."
MNP has a mandate to sustainably manage and conserve a network of 43 parks and reserves, including eight marine national parks (Nosy Hara, Nosy Tanihely, Lokobe, Sahamalaza Radama Island, Kirindy-Mite, Nosy ve Androka, Mananara Nord and Masoala National Parks) which represent the jewels of Madagascar’s marine biodiversity and natural heritage.

I started off my working life as a director of Park Ranomafana, which is a terrestrial protected area. After eight years in this position, I was appointed director of operations in the central office, with the task of monitoring and assessing the technical conservation activities of the 43 protected area networks across the island. I noticed that the eight marine parks did not carry out conservation activities and I decided to establish an action plan and marine monitoring for these eight parks.

The MNP has 870 000 ha of marine protected areas distributed across eight national parks in northwest, northeast and southwest Madagascar. Although these marine parks were created to be conserved, protected and managed, no conservation actions had been implemented since their creation because of a lack of materials and equipment, and qualified staff to monitor the marine biodiversity and ecosystems.

In order to change this scenario and collect the data necessary for conserving the eight national parks, I partnered with an international marine expert, Yann Frejaville. Since 2013, Yann has established an ecological monitoring plan for MNP, trained ten staff on how to monitor marine biodiversity and manage the protected areas. The training focuses on coral reefs, seagrasses, fish biomass, mangroves, threats and monitoring.

This initiative is funded by the KfW Development Bank, which has allowed us to purchase diving equipment and offer diver training to 22 MNP staff and local communities and teach methods of data analysis. Over a period of five years, marine ecological monitoring has been ongoing and the MNP now owns a database on marine biodiversity and habitats.

To improve the conservation of the marine parks, a Pêche Côtières Durable project funded by KfW was initiated in 2017. This project is being implemented under my leadership and in collaboration with several development sectors and marine conservation institutions.

Coral reefs have the capacity to assimilate carbon in large quantities. In the eight marine parks of MNP, the reefs are still healthy.

The blue economy offers great opportunities for Madagascar, as well as for the conservation of the eight marine parks.

Mamy Rakotoarijaona
In the eight marine parks of MNP, the reefs are still healthy. Ecological monitoring has shown a slight annual variation at the level of each monitoring station which reflects the resistance and/or resilience of living hard corals in the face of degrading factors. The biomass assessment also shows the superiority of Nosy Hara (2.78 tonne/ha) compared to other parks. For density, Kirindy Mite National Park and Nosy Tanihely present a high value with, respectively, 50 individuals/m² and 30 individuals/m².

Many projects can be carried out in our MPAs in pursuit of the blue economy. For example, we can develop tourism, aquaculture and the repopulation of fishery resources while respecting the environment. The development of fisheries research and line fishing are also possible. All these activities contribute to the creation of jobs for the local communities around our MPAs, while being reinforced in the first place by their training.

For my part, the blue economy offers great opportunities for Madagascar, as well as for the conservation of the eight marine parks, even if they are still underexploited. In particular, the use of local resources as a source of jobs and growth is an exciting new challenge for the future of the MNP.
Sensitization, compliance, and adaptive management enhance Watamu Reserve fisheries.

BY DADLEY K. TSIGANYIU

We faced resistance and interference from fishers and political leaders alike, but our zeal and determination immediately started bearing fruit when the fishing grounds started recovering.”
One would expect everything to be in excellent working condition after five decades of protection, right? I had the same impression when I first arrived to the Watamu marine park and reserve in 2017. I had just been deployed by Kenya Wildlife Service to assume charge of Watamu after many years of working in terrestrial protected areas in Kenya.

My first few days of patrolling were a little confusing because I saw many fishers in the reserve. This is in contrast to terrestrial parks, where the number of local people who are engaged in extractive activities is minimal.

Knowing very little about marine conservation problems and having no prior knowledge of them, I was intrigued as to why there were so many fishermen in the reserve and if they were doing what was allowed. To get a better understanding, I spoke with the fishermen and also watched how the park rangers dealt with fishing infringements. I noticed that there were many different styles of fishing. The fishers caught different species - some very large and to very small and from different habitats. It became instantly obvious to me that some of the fishing methods taking place in the reserve were in violation of the rules. It was disheartening to see very many juvenile fish being caught with monofilament and small-mesh cast nets, only for the bycatch to be dumped back into the sea. I even noticed that some fishers were using mosquito nets for fishing. Fishers, were apparently unaware of restrictions on resource use in the marine reserve.

Through my investigations and interactions with fishermen, I discovered that compliance with fisheries rules was lacking. Noncompliance with marine reserve and fisheries laws seemed to have had a detrimental effect on MPA ecosystems and decreased the probability of fulfilling conservation objectives, based on the small catches I observed.

Immediately, I put sustainable fisheries management at the top of my list of things to consider. In this context, there is little doubt that monitoring, control and surveillance (MCS) was indispensable for improving law enforcement and compliance in Watamu. The ecological effectiveness of the Watamu marine reserve was highly dependent on fishers compliance. However, I knew well that enforcing fisheries regulations in a multiple-use and multiple-gear MPA will be challenging.
Engaging with fishers

The Fisheries Department organises fishers into groupings called Beach Management Units (BMUs). In Watamu, BMUs were established to strengthen the management of the fish-landing stations, fisheries resources and the aquatic environment. With this in mind, meeting with the BMUs was the obvious first step in tackling the fisheries issues in Watamu. My first meeting with the BMUs was unpleasant. The meeting turned into a shouting match with officials of the various BMUs taking advantage of the opportunity to settle scores. It was apparent that these institutions, which were established under the Fisheries Act, lacked the fundamental governance mechanisms needed to settle disputes and sustainably manage their fisheries resources. The BMU members were unaware that they were fishing in marine reserves where only subsistence fishing is permitted under the Wildlife Act. This led me to collaborate with other leaders to expand my community sensitization programmes to all communities within the MPA. **In order to control its activities through appropriate licensing, we encouraged all fishers, fish merchants and fish mongers to register with the BMUs.**

The BMUs eventually admitted that some of their fishing practices were unlawful and unsustainable after several discussions. The fishers asked for a six-month grace period to purchase, replace, and learn how to utilise authorised fishing equipment. They agreed to limit the number of days they may use unlawful gear to Tuesdays and Thursdays, and they registered with the BMUs to get their licenses. It was also decided that for those fishers who do not attend meetings, sensitization should take place at sea.

Watamu rangers supervised fishing operations throughout the grace period to ensure that the agreed-upon resolutions were followed. This gave the rangers a chance to learn about adaptive management, which considerably increased their monthly aquatic and beach monitoring duties. I also showed them why it was critical to control the activities taking place in the reserves to properly protect the park and reserve.
A second sensitization session was conducted towards the end of the grace period, during which the fishermen requested more time, which I refused. We joined up with the rangers to conduct an operation to remove illegal fishing gear and apprehend illegal fishers.

From October 2019, when the grace period lapsed, we removed over 100 illegal fishing nets and spear-guns and prosecuted over 50 illegal fishers.

We encountered opposition and meddling from both fishers and political leaders, but our passion and persistence paid off when the fishing grounds began to recover. The Fisheries Department supported the operation by carrying out a vetting, registration and licensing exercise for all fishers. This was followed by elections of BMU officials. Currently, one of the BMUs, Uyombo, operates a fish market, and the majority of the BMUs collect and report statistics on their daily catch. The quantity and size of fish caught are promising, and most fishers are spending less time at sea.

Although it is possible to meet fisheries management goals in marine protected areas, success is associated with simultaneous efforts to deal with political, public communication and ecological considerations, as well as passion. I’ve learned that nothing happens until you have a strong desire to achieve. The fish assemblages in the Watamu marine reserve in Kenya were previously severely damaged as a result of overfishing and the deployment of unsustainable fishing equipment, but this has now been reversed.

Top left: Improved catch, as displayed by a fisher in Watamu Marine National Reserve. Left: Rangers confiscate illegal fishing nets.
Connecting MPA leaders through professionalization

"that first certification event in terms of assessment methods and scoring systems.

It was 2008 and there was panic in the air along the Malindi coast. Marine Protected Area (MPA) rangers from five western Indian Ocean (WIO) countries gathered for the first ever Western Indian Ocean Certification of MPA Professionals (WIO-COMPAS). These brave yet unknowing rangers volunteered to become candidates in one of the toughest professional experiences of their lives.

Photo: Level 1 and 2 WIO-COMPAS candidates with assessors following a boat and beach patrol, Dar es Salaam Marine Reserve System, Tanzania, 2017.
That was when I knew we had something of value and meaning for the men and women who protect and steward our shared MPAs.

Some of them thought it was going to be an easy “training” event by the water, but instead they found themselves scrambling late at night to locate electronic files as evidence of their past performance. The candidates wanted to prove their competence to the assessors, but they also wanted to earn the respect of their peers. They arrived in Malindi not knowing each other and left as a tightly knit community that had shared a unique experience.

The assessors were equally nervous and burning the midnight oil. It is one thing to read a competence statement on paper, but quite another to evaluate a person’s diverse experience and score it fairly. Additionally, the assessors were concerned to ensure consistent scoring rubrics were applied across all the candidates for rigour and fairness. So much was learned in that first certification event in terms of assessment methods and scoring systems.

Despite the nerves and exhaustion, when it was time to sign the Code of Ethics for this nascent certification programme, the candidates were clear and adamant that it had to maintain high standards even if it was challenging existing norms for the region.

Accomplishments

The story of WIO-COMPAS should be enjoyed, celebrated and widely shared. The programme was developed and designed by MPA practitioners from across the WIO region and is administered by WIOMSA and the University of Rhode Island’s Coastal Resources Center. The goals of the programme are to assess and certify MPA staff and to professionalize the field.

To achieve this, WIO-COMPAS has developed competences for three positions within MPAs. As of 2021, there have been 18 certification events resulting in the certification of 99 MPA PROs, including:

- 59 Level 1 - marine field operations
- 35 Level 2 - site management
- 5 Level 3 - policy and planning.

A key strength of the programme is that the assessors are themselves leaders from the WIO MPA community who have trained 14 assessors and mentored 7 apprentices. WIO-COMPAS has been endorsed by the International Union for Conservation of Nature’s World Commission on Protected Areas, the International Ranger Federation, Game Rangers Association of Africa and WWF South Africa.

Thirteen years after its inception, the programme continues to grow and evolve. The specific competences have been refined and a certification renewal process is in place to ensure continued professional development for those already certified. WIO-COMPAS started with a focus on certifying individuals, although the broader goal was to inform and assist the national MPA organizations in the region to fully invest in the concept. Some countries realized that their site managers were not given the same level of responsibility as those in other WIO countries. Several of the organizations were able to incorporate the competences into their recruitment and onboarding training programmes. These developments enable a systems-wide approach that not only ensures the right people are hired, but that they are retained, with opportunities for job recognition, development and advancement. These are hallmarks of a true profession and the WIO region is leading the way with the professionalization of MPA leaders.
The latest development has been the influence WIO-COMPAS has had with community-based MPAs or locally managed marine areas (LMMA). The core concepts of competences, standards and assessment have been adapted from an individual focus to one that looks across a management committee. The question has changed from “what can this one person do?” to “what can this group of community volunteers do together as a committee?”.

Kenya and Tanzania created a set of 35 competences for their Beach Management Units in 2019. In Madagascar, a network of government agencies and non-governmental organizations are now in the process of developing a set of competences that works in the local context. While each iteration may differ, they all share a foundation of a competence-based approach to individual and organizational capacity development.

Another area in which WIO-COMPAS has made an important contribution, is in strengthening the social network of the MPA rangers. Field staff rarely get invited to regional gatherings and are often in remote locations with weak internet access. These and other factors limit the networking, shared sense of purpose and motivation for long term professional development.

After more than a decade of long nights and nervous moments there is in the WIO region a rich network of MPA professionals who trust one another and understand the calibre of a person based on their certification achievement.

To document the emergent professional community, WIO-COMPAS conducted a social network analysis of their candidates starting in 2008 - asking them who they communicate with when they seek new information, and who they most respect. From the beginning, the network was fragmented with a few bright spots. Kenya and Tanzania traditionally have close ties and South Africans are well connected nationally. After that, the network weakens quickly. Mozambique is isolated by language and Madagascar has weak internal networks across challenging geography. A recent network analysis in 2018 shows the growing linkages across the region. The new WIO MPA management network (WIOmpan) will help connect the WIO-COMPAS network of rangers with other stakeholders associated with MPAs.
Looking forward

There are three areas where the programme can help to improve MPA management in the coming decade. First, the programme provides a rigorous package of proven tools for human resources departments to adopt and improve the recruitment, onboarding and development of MPA staff. A competence-based approach enables on the job learning at reduced costs. Second, an exchange programme between certified MPA professionals can spread skills and innovations across the region through the most dedicated and proven performers on the ground. Third, WIO-COMPAS has the data to prove that excellent staff can achieve only so much. Improved policies are needed in the larger national economies to reduce the drivers impacting coastal areas and hindering stewardship efforts. WIO-COMPAS started as a voluntary programme and now needs to be fully institutionalized within the region to reap the full benefits of the programme.

WIO-COMPAS was a ground-breaking idea when it launched, and it remains so today.
About WIOMSA:
The Western Indian Ocean Marine Science Association promotes the educational, scientific and technological development of all aspects of marine sciences throughout the Western Indian Ocean region with a view towards sustaining the use and conservation of its marine resources.

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About WIOMPN:
The Western Indian Ocean Marine Protected Area Management Network aims to shape the future of MPA practitioners by providing opportunities for development, fostering valuable connections, and facilitating member success through learning, mentorship and career growth

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