

WESTERN INDIAN OCEAN

# MARINE PROTECTED AREAS OUTLOOK

Towards achievement of the Sustainable Development Goals



## COUNTRY CHAPTER: REPUBLIC OF MAURITIUS



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Nairobi Convention Secretariat  
United Nations Environment Programme  
United Nations Avenue, Gigiri  
PO Box 47074  
Nairobi, Kenya  
Tel: +254 (0)20 7621250/2025/1270  
Fax: +254 (0)20 7623203  
Email: [nairobi.convention@unep.org](mailto:nairobi.convention@unep.org)

**Coordinators for the preparation of the MPA Outlook:** Jared Bosire, Timothy Andrew, Dixon Waruinge and Julius Francis

**Editors:** Lawrence Sisitka and Matthew D. Richmond

**Layout:** Desiré Pelsler | Earth & Oceans Developments

**Cover:** Rocky shores, KwaZulu-Natal Province, South Africa © Judy Mann. Insets (left to right): Great White Pelican watches a purse-seine trawler, Dassen Island, South Africa © Peter Chadwick; Coral garden, Mnazi Bay, Tanzania © Jennifer O’Leary; Landing site, Kipini, Kenya © Remy Odenyo.

**For citation purposes this document may be cited as:**

Leckraz, S. 2021. Marine & Coastal Areas under Protection: Mauritius, p. 103–118, In: UNEP-Nairobi Convention and WIOMSA. 2021. *Western Indian Ocean Marine Protected Areas Outlook: Towards achievement of the Global Biodiversity Framework Targets*. UNEP and WIOMSA, Nairobi, Kenya, 298 pp.

**ISBN: 978-9976-5619-0-6**

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## FOREWORD

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It is indeed an honour to launch the *Western Indian Ocean (WIO) Marine Protected Areas (MPA) Outlook* in my capacity as the Minister for Agriculture, Climate Change & Environment in the government of Seychelles. I commend the Contracting Parties to the Convention for this excellent example of regional collaboration in documenting the progress made towards the attainment of the SDG 14.5 Target of 10 percent protected area of each country's EEZ.

The WIO region has a coastline stretching for more than 15 000km, a continental shelf area of some 450 000km<sup>2</sup> from Somalia in the north to South Africa in the south and covers ten countries (Comoros, France, Kenya, Madagascar, Republic of Mauritius, Mozambique, Seychelles, Somalia, South Africa and the United Republic of Tanzania) five of which are island States. The combined population for the WIO region is 244 million, and the ten countries in the region are Contracting Parties to the Nairobi Convention for the protection, management and development of the coastal and marine environment of the WIO region.

The combined economic value of the WIO ecosystems goods and services is estimated at over USD 20 billion Gross Marine Product per annum and a total asset base of over USD 333.8 billion. With over 30 percent of the WIO population (about 60 million people) living within 100km of the coastline, the coastal and marine ecosystems provide essential sources of livelihoods and income to coastal communities and significantly contribute to national economies.

However, the WIO is threatened by ecosystem degradation from rapid urbanization, increased population growth, coastal development, land reclamation and conversion. Impacts of climate change and variability have led to coral bleaching, sea-level rise, flooding and other effects. In response to the emerging natural and anthropogenic challenges, Contracting Parties to the Nairobi Convention are adopting an integrated approach in the management of ocean resources to maintain a balance between conservation and development. The approach aligns with the 2030 Global Agenda for Sustainable Development with Sustainable Development Goal (SDG) 14 focusing on the need to mobilize global effort to conserve and sustainably use the oceans, seas and marine resources for sustainable development.

The *MPA Outlook* outlines the significant strides made in the region in promoting the protection of critical coastal

and marine resources. The *MPA Outlook* prepared by the Contracting Parties to the Convention documents the progress made in the WIO region towards achieving MPA targets based on the Convention of Biological Diversity (CBD)'s Aichi Target 11/SDG 14.5 and provides a baseline for the post 2020 Global Biodiversity Framework.

The region has established 143 MPAs (or equivalent), covering a total of 555 436.68km<sup>2</sup>, representing 7 percent of the total combined exclusive economic zone (EEZ) of the nine countries covered in the *MPA Outlook*. Most of the MPAs predominantly protect coastal habitats. Notably, a few MPAs have been proclaimed over very large areas of deep-sea habitats contributing to a larger proportion of the 7 percent.

By March 2020, Seychelles had designated 30 percent of its EEZ as protected marine areas, tripling the UN CBD Target 11 for 10 percent marine protection by 2020, and the UN SDG-14.5 for 10 percent coastal and marine protection. Seychelles with an EEZ of 1 374 000km<sup>2</sup> and a land mass area of 455km<sup>2</sup> achieved this milestone through the debt for nature swap spearheaded by The Nature Conservancy (TNC). Promising initiatives on trans-boundary MPAs are being developed between Kenya and Tanzania and between Mozambique and South Africa.

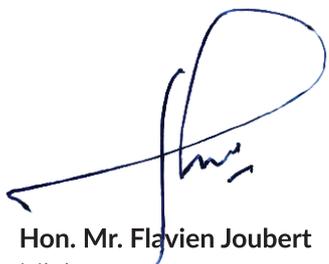
The establishment of MPAs has a long history in the region. South Africa declared the first MPA in 1964, the Tsitsikamma MPA, which was the first MPA in the region and since then South Africa has steadily increased the number and coverage of its marine conservation estate. By 2019, South Africa had 42 MPAs raising the total MPAs cover from <0.5 percent to 5.4 percent of the EEZ.

The *MPA Outlook* comes at a time when the region has embarked on large-scale socio-economic developments that are equally exerting pressure on MPAs. The *MPA Outlook* thus provides some answers and innovative approaches to minimize the scale of negative impacts on MPAs.

The *MPA Outlook* is the best form of experience sharing, and documenting best practices in MPA management across the WIO.

On behalf of the Contracting Parties, I wish to acknowledge and thank the Nairobi Convention Secretariat for the overall coordination of the process; the Western Indian Ocean Marine Sciences Association (WIOMSA) for technical and financial support through the Marine Science for Management (MASMA) Programme and the Global Environment Facility for funding the preparation and production of the *MPA Outlook* under the GEF funded

Project on the Implementation of the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources and activities (WIO-SAP) executed by the Secretariat.

A handwritten signature in blue ink, consisting of a large, stylized loop at the top and a series of smaller, connected strokes below it.

**Hon. Mr. Flavien Joubert**

Minister

Ministry of Agriculture, Climate Change & Environment

Republic of Seychelles

## EXECUTIVE SUMMARY

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The Western Indian Ocean (WIO) is renowned for the richness of its marine biodiversity, especially that associated with the region's widespread coral reef systems. The mangroves, seagrasses, rocky and sandy shorelines with associated dune systems and coastal forests, and the deep-sea features such as seamounts, ridges and abyssal plains also contribute substantially to the biodiversity of the region. The innumerable islets and atolls scattered across the WIO also support extraordinary biodiversity, including vast numbers of often rare, endemic and endangered marine species.

This rich marine biodiversity supports burgeoning coastal populations both directly, through the provision of a variety of marine resources and vital ecosystem services such as coastal protection, and indirectly, through the opportunities it provides for economic growth through sectors such as fisheries, tourism, infrastructure development and others. However, the marine resources are coming under increasing pressure in the coastal areas through the escalating needs of the local populations, exacerbated by the use of illegal fishing techniques, such as "blast" or dynamite fishing and the use of poisons, and in deeper waters from the legal and illegal harvesting of vast quantities of resources by international commercial fishing fleets. The tourism sector that brings benefits to coastal communities is in many places damaging the very resources the tourists wish to enjoy. In addition, interest in mineral resources including oil and gas reserves, found under the seabed, is exacerbating pressure on coastal ecosystems. Developing coastal nations in the WIO region, particularly those faced with financial constraints, are keen to exploit mineral resources for the benefit of their populations, leading to an exponential increase in the issuing of prospecting and extraction rights.

To these pressures are added increased levels of land and sea-based pollution, sedimentation from silt-laden rivers, and extensive coastal development; together with the increasingly evident impacts of climate change including sea-level rise, ocean warming and acidification, and increased frequency and intensity of storm events. If the twin threat from coastal development and climate-related pressure, is left unmitigated, with no protection afforded to the marine and coastal systems, there is every likelihood that the marine biodiversity of the WIO region would be irreversibly compromised. The consequential impacts on the livelihoods of coastal communities, and the well-being of the populations across the region, are likely to have long-term and negative ramifications on the national economies of the coastal states.

Aware of the global threat from both human-caused and climate change-related stressors, the global community in 2015 committed to achieving the United Nations Sustainable Development Goals (SDG). With particular relevance for the marine environment is SDG 14, "Life below Water".

The SDG 14 has several targets including Targets 14.2 on sustainable management and protection of marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans by 2020; and 14.5 that aimed at all countries conserving at least 10 percent of coastal and marine areas, essentially their exclusive economic zones (EEZs), consistent with national and international law and based on the best available scientific information by 2020. Target 14.5 was aligned to the Convention on Biological Diversity (CBD) Strategic Plan for Biodiversity 2011–2020 Aichi Target 11, which encouraged all signatory nations to ensure that:

"By 2020, at least 17 percent of terrestrial and inland waters, and 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes." (Secretariat of the Convention on Biological Diversity, 2010).

This *MPA Outlook* reviews the commitment by governments to achieve 10 percent protection of important marine and coastal areas through effectively and equitably managed MPAs and other effective area-based management measures (Aichi Target 11 and SDG 14). The review takes into account the formulation of the CBD's post 2020 biodiversity framework, that proposes, among other goals a zero net biodiversity loss by 2030, as well as providing a baseline for the post 2020 framework.

The declaration of marine protected areas (MPAs), has long been considered a key tool in the fight to conserve the world's marine biodiversity, and the WIO countries have played their part, by identifying and declaring MPAs; from Tsitsikamma, the first MPA in Africa, proclaimed by the Government of the Republic of South Africa in 1964, to the MPAs proclaimed in 2019 by the Governments of Seychelles and the Republic of South Africa, and those proposed for imminent declaration by the government of Comoros. It is also evidently clear that the mere proclamation of an MPA is no guarantee of effective protection. An assessment on MPA management effectiveness showed

that many MPAs in the region lack human resources, skills, equipment, and institutional commitment to fulfil their functions adequately. The assessment also revealed serious declines in conservation funding. The COVID-19 pandemic led many countries to adopt lockdown measures, affecting tourism revenues on which many MPAs in the WIO depend to finance MPA operations. Marine conservation in the WIO region needs a post-COVID recovery plan and marine conservation efforts must now be funded not only at the level that they were at before the pandemic but at an even higher amount that reflects the severity of the unprecedented threats to biodiversity and associated economic sectors.

Madagascar has pioneered an interesting approach to protecting marine areas through a rapid increase in the number of Locally Managed Marine Areas (LMMAs), where coastal communities work in collaboration with government and other stakeholders to protect their coastal resources. A similar approach has been recorded under a variety of names in different countries, across the region. Over three hundred LMMAs have been established across the region in the last ten years. While most of these do not, as yet, provide the levels of protection afforded by the more established formal and effectively managed MPAs, they have great potential to increase the coastal areas under conservation management in the region quite substantially.



Prime targets (prawns and fish) from inshore beach seining off Malindi, Kenya. © Peter Chadwick

At a transnational scale, the moves to initiate trans-boundary MPAs, such as between Kenya and mainland Tanzania, and Mozambique and South Africa, must be lauded and supported. Coastal states are also taking a large-scale approach to marine conservation, often within “Blue Economy” initiatives such as the Blue Economy Roadmap developed by the Government of Seychelles and Operation Phakisa in South Africa. In both cases, these initiatives have involved thorough and complex marine spatial planning processes, identifying areas suitable for different uses and activities, including for conservation.

In Seychelles, two new MPAs covering an area of 208 365km<sup>2</sup> were declared as a result of this process. In South Africa, 20, mostly offshore MPAs covering an area of 54 214km<sup>2</sup>, have been proclaimed under Operation Phakisa following an intense consultation process with all stakeholders. The Seychelles and South African experiences provide excellent models for other WIO countries for the planning, identification and declaration of offshore MPAs. These two experiences were underpinned by strong policy support, evidence-based decision making and requisite financing. These are key lessons in any successful MPA establishment and eventual operationalization and management programmes.

The Republic of Mauritius, Kenya, Tanzania, and other countries have embarked on Blue Economy initiatives and adopted the application of area-based planning tools such as marine spatial planning processes, underpinned by scientific information and understanding of the marine environment. The WIO region is fortunate to be home to some highly productive and effective marine science institutions and scientists, all linked to the Western Indian Ocean Marine Science Association (WIOMSA), which has partnered with the Nairobi Convention Secretariat in the production of this *MPA Outlook*. It is the science emanating from these institutions which provides the evidence required firstly to identify and assess the threats to marine ecosystems and species, and then secondly to identify the areas and habitats most in need of protection and the forms of protection most appropriate to them. However, while the scientific understanding of the coastal and inshore environments is solid, this is not necessarily the case with the offshore deep-sea environments, which have only recently been the focus of concerted scientific attention and research. The value of such research is shown in the proclamation of the South African offshore MPAs.

To achieve its prime purpose of assessing progress towards meeting the SDG and Aichi targets, this *MPA Outlook* set out to document and celebrate the

achievements up to 2020 in the establishment of MPAs, or equivalent levels of protection, across the WIO region. It also documents the exciting move towards more community-based coastal conservation initiatives as represented by the LMMAs and other sites managed collaboratively with coastal communities. In addition to this documentation, there are elements of assessment and analysis to guide the expansion and strengthening of marine conservation in the region, particularly towards the achievement of the post-2020 Global Biodiversity Framework (GBF).

More specifically, the body of the *MPA Outlook* is structured as follows:

#### **Part I**

Outlines the purposes for the development of the publication, the key methodologies employed in gathering and documenting the information, and some of the challenges faced in compiling the *MPA Outlook*. The specific purpose of the *MPA Outlook* was to provide a baseline assessment of existing coastal and marine conservation efforts in the region. This involved not only a quantitative assessment of the areas and habitats under protection, but also a qualitative assessment. In addition to the primary technical purposes of this *MPA Outlook*, it was intended to document and celebrate the achievements of governments in furthering the conservation of their marine and coastal environments. It also provides the opportunity to encourage and motivate governments, supported by the scientific community, in increasing efforts towards long-term conservation of vital marine resources, species and ecosystems, including those in the deep-sea.

#### **Part II**

Describes the international and regional marine conservation contexts in which the *MPA Outlook* is located. This *MPA Outlook* was not developed in isolation; rather it is embedded in, and is intended to contribute significantly to, the increasing momentum of initiatives aimed at securing the biodiversity and productivity of coastal and marine areas. These initiatives operate from the global to the local levels, with increasing emphasis on the synergies between them as exemplified by the “think globally act locally” environmental mantra.

#### **Part III**

Provides detailed descriptions of the MPAs (and equivalents) in each WIO country, together with information on proposed MPAs and areas such as LMMAs under less formal forms of protection. The

data revealed that there are 143 MPAs (or equivalents) in the WIO region, covering a total of 555 436.68km<sup>2</sup>, representing 7 percent of the total combined EEZ of the nine countries included in this analysis. The numerical majority of MPAs in the region protect predominantly coastal habitats. However, the few MPAs proclaimed over large areas of deep-sea habitats (by France, Seychelles and South Africa) contribute by far the largest proportion of the total area under protection, and make the greatest quantitative contribution (6.2 percent of the 7 percent) to the percentage of total EEZ protected. To strengthen the emerging LMMAs as an approach to community level protection, an enabling policy environment and capacity building of both communities and their supporting agencies will be key for the effective establishment and management of these community managed areas.

#### **Part IV**

Provides an assessment of the management effectiveness of MPAs across the region, and makes initial recommendations for improving levels of management effectiveness. The key finding was that legislative and institutional frameworks that support the establishment and management of MPAs exist in every country, suggesting that there is the political will to meet the global and regional marine conservation objectives and targets. However, widespread failure to implement legislation, and in many countries, the ineffective functioning of mandated institutions was observed. Among the challenges identified, those that are cross-cutting throughout the region include shortfalls in financial and personnel capacity, insufficient clarity on MPA boundaries, leading to compliance challenges, and management decision support systems that are only weakly guided by science.

#### **Part V**

Draws on the information provided to analyse the current situation regarding marine conservation in the WIO region, in particular in relation to the achievement of the SDG and Aichi targets. Part V also makes initial recommendations on where future marine conservation efforts, particularly the siting of MPAs, might be concentrated as countries work towards the Targets in the post-2020 GBF.

The key findings of this *MPA Outlook* indicate that there are 143 sites across the WIO region that are considered as MPAs or as having equivalent legal status and levels of protection. The vast majority of these are coastal and/or inshore, however the largest, covering by far the greatest extents of the ocean are the few MPAs with considerable offshore deep-sea elements. These include the MPAs

declared in Seychelles and South Africa's 20 MPAs, of which 14 are offshore sites, proclaimed in 2019. Since it is not practically feasible for the SDG or GBF target to be achieved through the declaration of only coastal and inshore MPAs, as this would require the protection of entire national coastlines extending 37km offshore, or equivalent (i.e. half the coastline extending 74km offshore), identification, declaration and management of offshore MPAs by regional countries remains the most viable option of achieving this target.

A further finding is that the majority of existing MPAs across the region are not managed as effectively as they could and should be, due primarily to lack of funding for essential staff, equipment and capacity development, and weak institutional support and commitment. The question is raised whether the immediate priority should be for governments to firstly ensure effective management of their existing MPA estate, before embarking on expansion of this estate. A balance between establishment of new MPAs and effective management of existing sites is a critical decision, which each country will need to continuously consider.

A very positive finding is that there is every indication of the willingness and commitment of the Nairobi Convention contracting parties to strengthen marine conservation in areas within their jurisdiction. This is evidenced by improvements in legislation, including the development of new MPA-specific legislation, such

as in Comoros, and the declaration of new MPAs in Mozambique, Seychelles, Comoros and South Africa.

There is also a good reason to be optimistic about the potential for coastal communities, with the support of governments and other stakeholders in LMMAs (or equivalents) to take on the mantle of coastal and inshore conservation, while the governments themselves focus on the offshore areas. Ongoing efforts on the development of the post-2020 GBF provide a basis for the WIO region to work towards a no-net loss of biodiversity by 2030. This may include exploring the immense opportunities for better recognizing and supporting conservation by local communities and private actors and adopting new models for Ocean Stewardship that reward sustainable actions by stakeholders.

The expansion of the MPA estate by 2030 and by 2050 is also among the goals of the post-2020 Framework. From a regional perspective, configuring an effective post-2020 regional network of effectively managed MPAs would require concerted efforts towards implementing the proposed theory of change that assumes transformative actions are taken to (a) put in place tools and solutions for implementation and mainstreaming, (b) reduce the threats to biodiversity and (c) ensure that biodiversity is used sustainably to meet people's needs and that these actions are supported by (i) enabling conditions, and (ii) adequate means of implementation, including financial resources, capacity and technology.

**Lawrence Sisitka**

Co-editor

MARINE & COASTAL AREAS  
UNDER PROTECTION

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# REPUBLIC OF MAURITIUS

Sanjeev Leckraz



## COUNTRY OVERVIEW

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The Republic of Mauritius (RoM), situated in the south-western part of the Indian Ocean, consists of two main islands, Mauritius (1865km<sup>2</sup>) and Rodrigues (109km<sup>2</sup>) and its ocean territory extends from these islands and a group of outer islands, namely Saint Brandon (Cargados Carajos Shoals), Agalega, the Chagos Archipelago including Diego Garcia, and Tromelin (Mauritius Constitution, 1968; RoM, 2013). Forty-nine nearshore islets surround Mauritius while eighteen islets lie in the lagoon of Rodrigues. The main island Mauritius, at latitude 20°17'S and longitude 57°33'E, is situated 800km east of Madagascar, and forms part of the volcanic chain of Mascarene Islands.

With a population of 1.3 million, Mauritius has a total land area of 2040km<sup>2</sup> and claims an exclusive economic zone (EEZ) of 2.3 million km<sup>2</sup> (Figure 1). An additional expanse of extended continental shelf area of approximately 400 000 km<sup>2</sup> is co-managed with the Seychelles, following a joint submission made by the two countries to the United Nations in 2011. The Maritime Zones of Mauritius is largely unexplored.

Mainland Mauritius has a coastline of 322km and is surrounded by 150km of protective coral reefs which occupy an area of about 300km<sup>2</sup> and enclose a lagoon area of around 243km<sup>2</sup>. The volcanic origin of the main island, surrounded by fringing coral reefs and some 44 main rivers and streams discharging into the lagoon, contribute to the diversity of its habitats and marine flora and fauna. The coastal zone consists of sandy beaches, coastal dunes, rocky shores, nearshore wetlands and mangroves, lagoon corals, coral reefs and all their associated marine life. All these marine ecosystem components are interconnected. The main critical ecosystems include mangroves, seagrass beds and coral reefs. This rich marine and coastal biodiversity provides Mauritians with a multitude of valuable goods and services.

Located some 650km east of Mauritius at latitude 19°43'S and longitude 63°25'E, Rodrigues has a land area of 109km<sup>2</sup> and a population of less than 40 000. Rodrigues has a coral reef platform that forms an almost continuous rim, 90km long and varying enormously in width from 50m in the east to 10km in the west. Rodrigues is the smallest of the Mascarene Islands and is surrounded by the largest lagoon in the Indian Ocean which is 13km wide and covers an area of 240km<sup>2</sup> (Chapman, 2000).

Mauritius faces multi-fold challenges in the ocean sector. Habitat loss and degradation are the major threats to marine ecosystems of Mauritius. Despite their

significance to these islands, marine and coastal ecosystems such as mangroves, seagrass beds and coral reefs face a wide array of threats – mainly due to human causes (overexploitation of resources, erosion, siltation and pollution, coastal development) and invasive alien species. In addition, the impacts of climate change are heavily affecting these ecosystems. To conserve marine biodiversity, the Government has established a system of Marine Protected Areas (MPAs) comprising fishing reserves, marine parks and marine reserves in the waters around Mauritius and Rodrigues.

The delimitation of our territorial waters dates back to 1970s. Our Exclusive Economic Zone (EEZ) was first defined in the Maritime Zone Act of 1st August 1977 which later was repealed to become the Maritime Zone Act 2005 (Sinatambou, 1995). The Republic of Mauritius is a signatory to the United Nations Convention on the Law on the Sea (UNCLOS) and in relation to the coordinates for its Exclusive Economic Zone, these are set out in the Maritime Zones Act.

Mauritius has enacted several key laws for the protection and conservation of its marine environment; namely the Maritime Zones Act of 2005, the Environmental Protection Act of 2002 and the Fisheries and Marine Resources Act of 2007. The Maritime Zones Act provides for the preservation and protection of the marine environment and the prevention and control of marine pollution in the territorial waters, including the continental shelf, the EEZ and the historic waters of Mauritius. The Environment Protection Act provides the legal framework for environmental protection and management in Mauritius, while the Fisheries and Marine Resources Act provides for the proclamation and management of marine protected areas (MPAs).

The mandate for the protection and management of the Marine Protected Areas falls under the responsibility of the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping. There are some active NGOs which work closely with the Ministry to raise community awareness on MPAs.

The protection of coastal and marine ecosystems within the EEZ of the RoM is dispersed over several laws and regulations since these resources are of diverse origins and exploited at different levels. The current main legislation for the protection of marine flora and fauna is the Fisheries and Marine Resources Act 2007 which provides for the proclamation of MPAs and the Environmental Protection Act 2002 provides for the protection of the coastal and marine environment from pollution sources. The RoM is also a signatory of several Conventions

# 5. REPUBLIC OF MAURITIUS

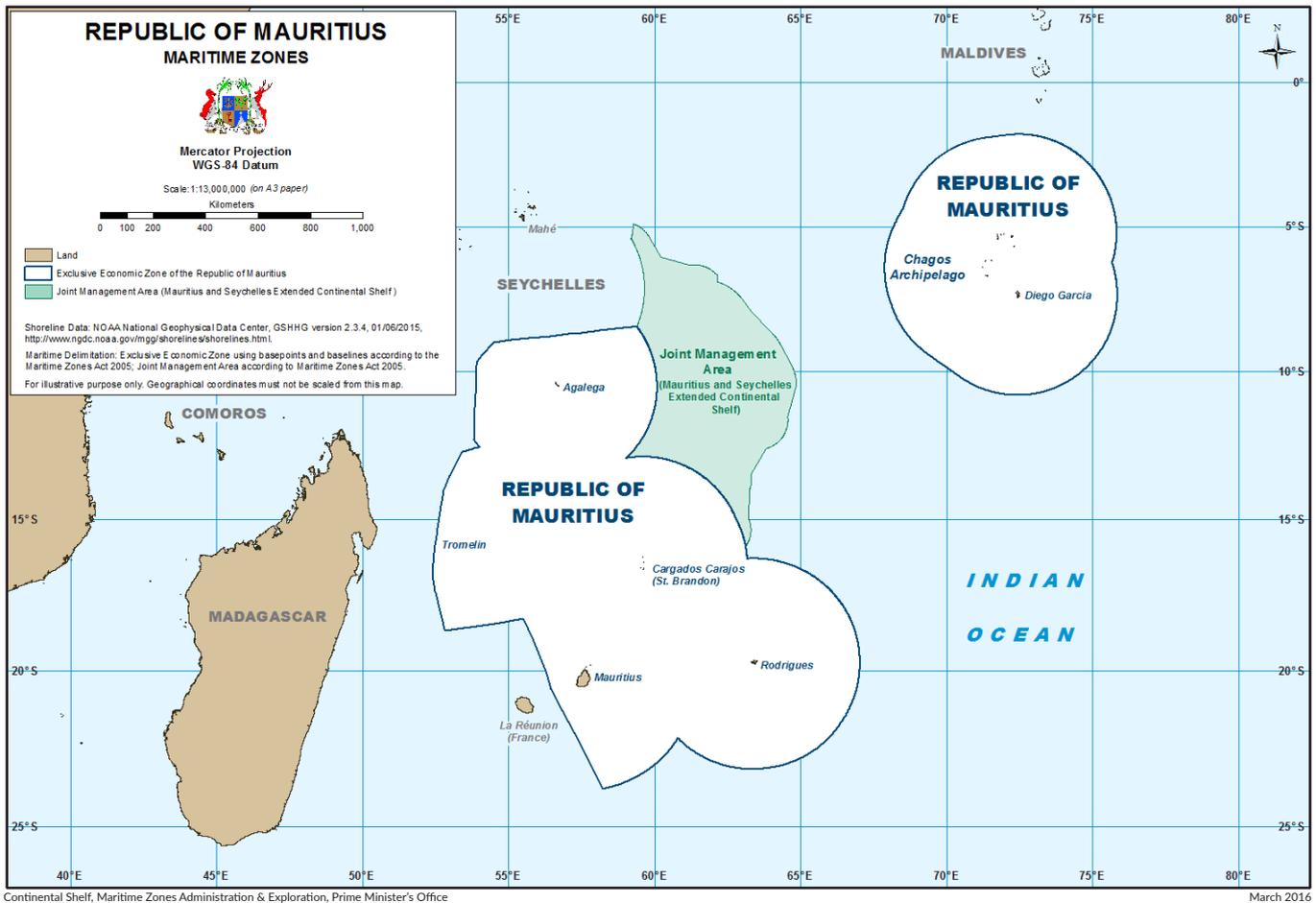


Figure 1: Map of EEZ of the Republic of Mauritius (Source: Department of Continental Shelf, Maritime Zones Administration and Exploration).

for the marine ecosystems and resources including the Convention on the Territorial Sea and Contiguous Zone (1958), Ramsar Convention (1971), United Nations Convention on Law of the Sea (1982), Convention on the Protection, Management and Development of the marine and coastal environment of the Eastern African Region and related protocols (Nairobi Convention 1985), Convention on Biological Diversity 1992, amongst others.

## MARINE PROTECTED AREAS OVERVIEW

The concept of having MPAs around Mauritius has been the subject of discussion since the late 1940s to the extent that the Fisheries Ordinance of 1948, subsequently replaced by the Fisheries Act No. 22 of 1970 and the Fisheries Act No. 5 of 1980 all included provisions for marine reserved areas i.e. Fishing Reserves. However, the first six Fishing Reserves in Mauritius Island were only described for the first time in the Sixth Schedule of

Government Notice No. 18 of 1983 (Boyramboli, 1995), one in each coastal district.

The underlying objective behind designating a Fishing Reserve in each coastal district of Mauritius was to protect and conserve the fisheries resources of the designated areas to ensure that fish would be available in case of crisis such as the possibility of the outbreak of war. The Fishing Reserves were, in those days, abundant in fish, crustaceans, oysters and other seafood. They also contained healthy mangrove forests, dense seagrass meadows and thriving coral reefs which acted as important nursery grounds for the juveniles and larvae, as well as feeding grounds for fish and crustaceans.

Recognizing the importance of protection and conservation of the marine ecosystems, some studies were carried out to establish Marine Parks in Mauritius (Procter and Salm, 1974; Robertson, 1994). Unfortunately, these studies did not result directly in the establishment of Marine Parks and MPAs since at that time the country was facing economic and social problems. Nonetheless, some of

the management measures prescribed in these reports were implemented, namely bans on the use of explosives, underwater spear fishing, live corals to produce lime, sardine nets, and prohibition of removal of shells and coral, capture of turtles and marine mammals, use of large nets and gill-nets in reserve areas and also declaring mangroves as protected species. Subsequently, another study carried out by the Canadian International Development Agency (CIDA) (Boyramboli, 1995) resulted in the establishment of two marine parks under the Wildlife and National Parks Act 1993 in 1997.

The establishment of Marine Parks in Rodrigues was planned for a later stage, once both Marine Parks of Mauritius were operational and the management techniques mastered. However, in the waters around Rodrigues Island, five Fishing Reserves areas were already promulgated under the Government Notice No. 128 of 1984 (Rathacharen, 2001).

MPAs are managed by the Government of Mauritius, through the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping (Fisheries Division). The total area occupied by these MPAs is about 80km<sup>2</sup> which represents about 29.5 percent of the lagoon of Mauritius. However, on the vast scale of the EEZ, at a claimed 2.3 million km<sup>2</sup>, all the RoM MPAs, inclusive of those associated with Rodrigues Island, and the Fishing Reserves in Mauritius (but not the small Fishing Reserves on Rodrigues, for which areas are not defined), represents approximately 0.009 percent.



## MARINE AREAS UNDER PROTECTION

The RoM has to date proclaimed eighteen MPAs under its Fisheries and Marine Resources laws and the Rodrigues Regional Assembly Act. The MPAs are categorised into three types, namely Fishing Reserves, Marine Parks and Marine Reserves. In Mauritius, eight MPAs have been proclaimed (Figure 2) with ten in Rodrigues (Figure 3). The following sections describe the main features of the three types of MPA.

### Fishing Reserves

Areas of the sea that are reserved by law with the objectives to protect the fish and fisheries resources as well as the critical habitats, namely the seagrass beds, the mangrove forests, the macro-algae fields and the coral reefs found therein. Fishing methods are controlled and fishing gears are limited in Fishing Reserves where only basket trap and line fishing are allowed. Fishing Reserves are bounded by the high water mark on the shore to the reef crest of the fringing reefs.

### Marine Parks

Areas of the sea that are reserved by law mainly for conservation, education and research, controlled recreation, awareness creation and limited extractive use in specific zones.

The objectives of Marine Parks are for the:

- protection of the marine fauna and flora;
- conservation of the marine life in a pristine condition for future generations;
- provision of a living laboratory for conducting scientific research;
- allowing for controlled uses of the different resources at a sustainable level;
- conservation of the brood stock of marine biota for seeding neighbouring areas;
- allowing for education, appreciation and enjoyment of the sea and its creatures; and
- creation of awareness towards marine conservation.

The boundaries of marine parks extend from the high water mark on the shore to the reefs and extend one kilometre offshore from the fringing reefs.

Coastal landscape of Mauritius' North Coast. © José Paula

# 5. REPUBLIC OF MAURITIUS

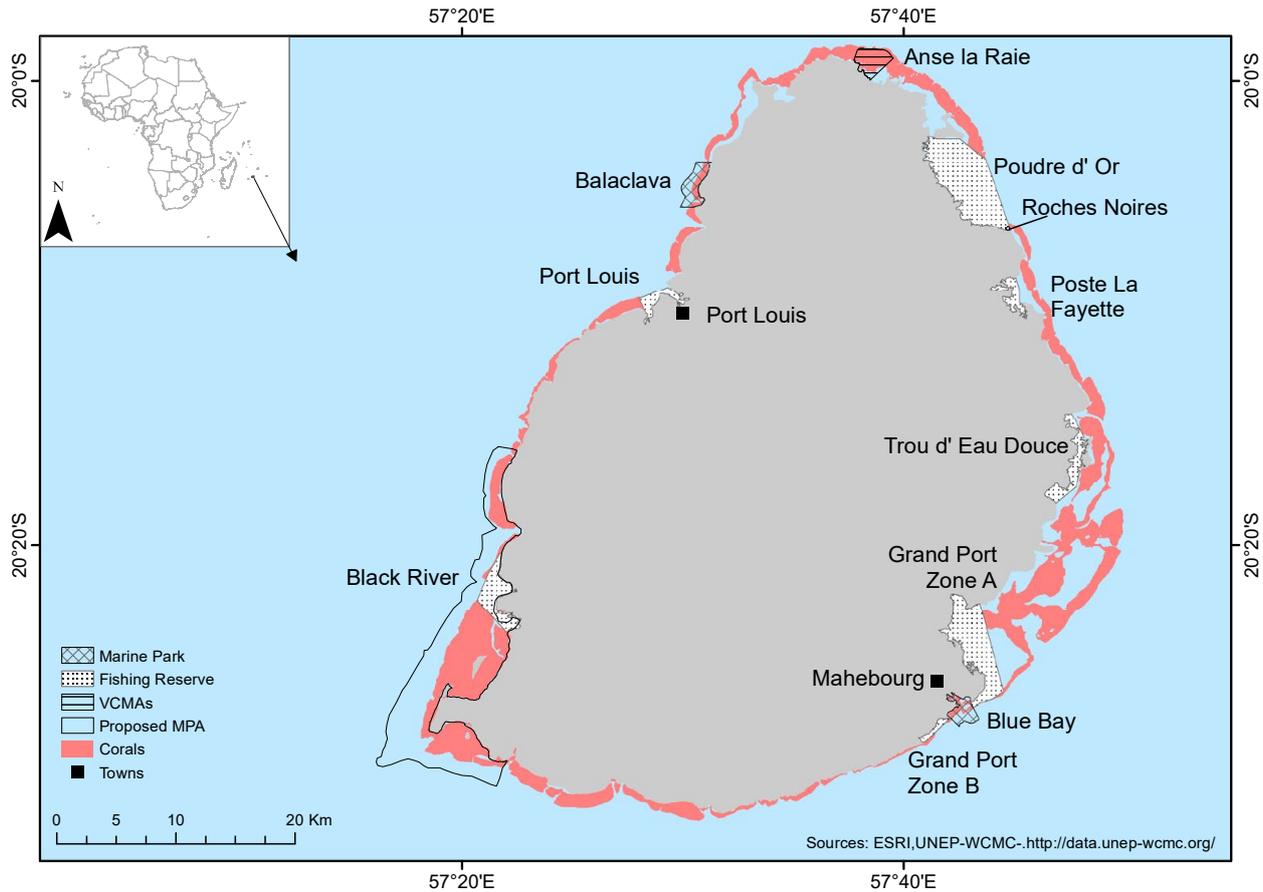


Figure 2: Marine Areas under Protection in Mauritius.

## Marine Reserves

Meant only for conservation, education, research, recreational use and awareness creation. Extractive uses are not permitted therein except with the written authorization of the responsible authority. Marine Reserves are found in Rodrigues Island only.

## MARINE PROTECTED AREAS OF MAURITIUS ISLAND

Under Section 7 of the Fisheries and Marine Resources Act, 1998, eight MPAs have been proclaimed in Mauritius, with two designated as Marine Parks and six as Fishing Reserves (Figure 2). The Marine Parks are the Blue Bay and the Balaclava Marine Parks while the Fishing Reserves are the Port Louis, Black River, Trou D'Eau Douce, Poste Lafayette, Poudre D'Or and the Grand Port. The Grand Port Fishing Reserve is divided into two zones, namely the Grand Port Fishing Reserve Zone A and Fish-ing Reserve Zone B. The MPAs may be categorized as coastal/pelagic including the lagoon and the coral reefs, that extend to some extent beyond the reef.

## Marine Parks

### Blue Bay Marine Park

Located in the southeast of Mauritius, the Blue Bay Marine Park extends over an area of 3.53km<sup>2</sup> seaward, starting from Pointe Corps de Garde as its northernmost point to Pointe Vacoas, its southernmost point. Blue Bay has been declared a Marine Park because it harbours a marine ecosystem of rare beauty in terms of diverse and rich communities of marine flora and fauna, especially the coral reefs which have been preserved for years in good condition. Apart from the coral reefs, the Blue Bay Marine Park also comprises open sea, mangroves, seagrass beds, sandy beaches and shoreline to the high-water mark. Blue Bay Marine Park is bordered to the east and west by the much larger Grand Port (Mahébourg) Fishing Reserve (18.28km<sup>2</sup>).

Blue Bay Marine Park was first proclaimed as a National Park in 1997, then declared a MPA and subsequently a Marine Park in June 2000 under the Fisheries and Marine Resources Act, 1998. In 2008, Blue Bay Marine Park was also listed as a Ramsar site (see Table 1). Blue Bay Marine Park is classified as an IUCN Category II Marine Protected Area and is of coastal/pelagic type. A biological

inventory of the marine park carried out in 2012 under the “Partnership for MPAs in the Republic of Mauritius” project, funded by GEF, UNDP and the Government of Mauritius (PARETO, 2012) revealed the presence of 108 species of coral, 233 fish species, 201 species of shellfish, 30 species of echinoderms and 38 species of macro-algae, amongst others.

**Table 1: Summary table for Blue Bay Marine Park.**

<b>Blue Bay Marine Park</b>
TYPE/IUCN CATEGORY
Coastal/Pelagic/Category II
PROCLAMATION LEGISLATION DATE
First designated as a National Park in October 1997 under the National Parks and Wildlife Act, 1993. Designated as Marine Park in June 2000 under the Fisheries and Marine Resources Act, 1998. This Act was repealed and replaced with the current Fisheries and Marine Resources Act (Act No. 27 of 2007). Listed as Ramsar site in January 2008
EXTENT
3.5km <sup>2</sup>
INSTITUTIONAL FRAMEWORK
<ul style="list-style-type: none"> <li>- legally mandated authority: Government of the Republic of Mauritius</li> <li>- managed by Ministry of Blue Economy, Marine Resources, Fisheries and Shipping (Fisheries Division)</li> </ul>
MANAGEMENT PLAN
5 year plan, 2012-2016, in need of review and update
HABITATS
Beaches and nearshore, mangrove, seagrass, coral and biogenic reefs, rocky reefs, shelf sediments, deep sea and offshore pelagic
RISKS/THREATS
<ul style="list-style-type: none"> <li>- terrestrial inputs (nutrients, organic matter, mud from agricultural land use and flash floods)</li> <li>- physical damage due to increasing aquatic activities from tourism</li> <li>- climate change resulting in successive bleaching events due to increase in sea surface temperature</li> </ul>
MANAGEMENT OPPORTUNITIES
<ul style="list-style-type: none"> <li>- review and implementation of the existing Management Plan</li> <li>- opportunity to collaborate with local NGOs, operators and other stakeholders including owners of the adjacent lands and sugar estate bordering the park</li> <li>- local capacity building in MPA management Opportunity to collaborate with local NGOs, operators and other stakeholders including owners of the adjacent lands and sugar estate bordering the park</li> <li>- local capacity building in MPA management</li> </ul>

The Blue Bay Marine Park has been demarcated into different specific zones with specific coloured buoys in order to provide protection to critical habitats, ecosystems and ecological processes; to conserve biological diversity, to cater for various permissible activities; and to separate conflicting human activities.

### **Balaclava Marine Park**

Located in the northwest of Mauritius, the Balaclava Marine Park extends over an area of 4.85km<sup>2</sup> seaward, starting from Petite Pointe aux Piments as its northernmost point down to Batteries des Mortiers, its southernmost point. Balaclava Marine Park was first proclaimed as a National Park in 1997 and declared a Marine Park in 2000 under the Fisheries and Marine Resources Act, 1998 (see Table 2).

The Balaclava Marine Park is managed through application of the Fisheries and the Marine Resources (Marine Protected Areas) Regulations which came into force in 2001 and subsequently amended in 2007. The regulations provide the different tools for the management of the park; namely: (a) Zoning system, (b) Permit system and (c) law enforcement and patrol. Awareness campaigns and monitoring of the marine ecosystems, namely the coral reefs, the seagrass beds and the macro-algae assemblages are also carried out along with monitoring of fish and other marine invertebrates.

The Balaclava Marine Park has been divided into different specific zones, to provide protection to critical habitats, ecosystems and ecological processes; to conserve biological diversity, to cater for various permissible activities; and to separate conflicting human activities. However, the permit system associated with the zonation is only partly being implemented. Awareness campaigns and monitoring of the marine ecosystems, namely the coral reefs, the seagrass beds and the macro-algae assemblages are also conducted, along with visual population surveys of fish and marine invertebrates.

When the MPA was first proclaimed in 1997, 48 species of coral and 137 fish species were recorded during field surveys. Subsequently, an inventory of the marine park carried out in 2009 revealed the presence of 118 species of coral, 289 fish species, and 219 species of molluscs (Nicet *et al.*, 2009).

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Table 2: Summary table for BalACLava Marine Park.

BalACLava Marine Park	
TYPE/IUCN CATEGORY	Coastal/Pelagic/Category II
PROCLAMATION LEGISLATION DATE	First designated as a National Park in October 1997 under the National Parks and Wildlife Act, 1993. Then declared a MPA and subsequently designated as Marine Park in June 2000 under the Fisheries and Marine Resources Act, 1998
EXTENT	4.85km <sup>2</sup>
INSTITUTIONAL FRAMEWORK	<ul style="list-style-type: none"> <li>– legally mandated authority: Government of the Republic of Mauritius</li> <li>– managed by the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping (Fisheries Division)</li> </ul>
MANAGEMENT PLAN	5 year plan, 2012-2016, in need of review and update
HABITATS	Beaches and nearshore, estuaries, seagrass, coral and biogenic reefs, rocky reefs, shelf sediments, deep sea and offshore pelagic
RISKS/THREATS	<ul style="list-style-type: none"> <li>– terrestrial inputs (nutrients, organic matter, mud from agricultural land use and flash floods)</li> <li>– physical damage due to increasing aquatic activities from tourism</li> <li>– climate change resulting in successive bleaching events due to increase in sea surface temperature</li> </ul>
MANAGEMENT OPPORTUNITIES	<ul style="list-style-type: none"> <li>– review and implementation of the existing Management Plan</li> <li>– opportunity to collaborate with local NGOs, hotel operators and other stakeholders including owners of the adjacent lands and sugar estate bordering the park</li> <li>– local capacity building in MPA management</li> </ul>

## Fishing Reserves of Mauritius

Six “marine reserved areas” in Mauritius Island were first described in the Sixth Schedule of Government Notice No. 18 of 1983 (Boyramboli, 1995). However, these marine reserved areas were formally declared as Marine Protected Areas and designated as Fishing Reserves under section 7(2) of the Fisheries and Marine Resources Act 1998 in 2000. All the Fishing Reserves are of coastal type and are of IUCN Category IV (Table 3). The objectives of the Fishing Reserves are for the protection of critical habitats, namely the coral reefs, mangrove forests, and the seagrass and macroalgal beds.

Currently, the Fishing Reserves are not physically demarcated by marker buoys and management is carried out only through enforcement of the law by the Fisheries Protection Service and the National Coast Guard (NCG) through sea patrols. Moreover, the permit system is only partly applied, especially for specific projects such as construction of jetties, demarcation of swimming zones, delimitation of mooring zones and fireworks displays.

Under the project UNDP/GEF/Government of Mauritius “*Mainstreaming biodiversity into the management of the coastal zone in the Republic of Mauritius*”, which is currently being implemented, activities such as the development of a management plan for each Fishing Reserve, their physical demarcation with marker buoys and their biological inventories are earmarked for the future. The six Fishing Reserves are:

### Poudre D’Or

The reserve covers an area of 25.42km<sup>2</sup> and encloses that part of the sea that extends from Ile D’Ambre up to Pointe Roche Noire. Its boundary starts on the mainland at a point having coordinates 20°2’23.11”S, 57°41’9.73”E and runs in a southeasterly direction to a point with coordinates 20°2’29.27”S, 57°41’26.56”E at Pte Courant on the shore of Ile D’Ambre. It then runs along the shore of Ile D’Ambre up to a point having coordinates 20°2’29.96”S, 57°42’31.19”E at Pte Dejeuner. Thereafter, it runs in a southeasterly direction up to a point with coordinates 20°3’22.87”S, 57°43’40.63”E located at the southern side of Passe St. Geran, thence along the reef up to Pointe Roche Noire having coordinates 20°6’30.01”S, 57°44’50.17”E.

Poudre D’Or Fishing Reserve includes a range of habitats, namely mangroves, the Riviere du Rempart (north) estuary, seagrass, beaches and nearshore, coral reefs and shelf sediments. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the Poudre D’Or Fisheries Post with the assistance of the Poudre D’Or NCG.

### Poste Lafayette

The reserve occupies an area of 2.8km<sup>2</sup> and is that part of the sea that stretches from Pointe La Brise to Pointe de Flacq. The boundary extends from a point behind the Fisheries Poste at Pointe Labrise having coordinates 20°8’30.38”S, 57°45’2.70”E and runs south up to a point lying on the eastern extremity of Malno Islet having coordinates 20°8’58.40”S, 57°45’11.35”E. From there, the boundary runs again southerly up to Pointe de Flacq at a point having coordinates 20°9’34.63”S, 57°47’33.78”E. Post Lafayette Fishing Reserve presents several different habitat types, namely beaches and nearshore, mangroves,

seagrass, coral reefs, rocky reefs and shelf sediments. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the Post Lafayette Fisheries Post with the assistance of the Poste Lafayette NCG.

#### **Trou D'Eau Douce**

The Trou D'Eau Douce Fishing Reserve occupies an area of 5.74km<sup>2</sup> and comprises that part of the sea that stretches from Trou D'Eau Douce village up to Quatre Soeurs village. Its boundary starts from a point behind the old lime kiln at Trou D'Eau Douce having coordinates 20°14'21.44"S, 57°47'33.78"E and runs south easterly to include the inner lagoons of Ilot Lievres at a point having coordinates 20°14'59.60"S, 57°47'54.73"E, Ilot Manganie at a point with coordinates 20°15'21.76"S, 57°48'7.76"E, Ile aux Cerfs at a point having coordinates 20°15'49.55"S, 57°48'14.56"E. From this point the limit follows the high water mark along the westerly coastline of Ile aux Cerfs up to a point which has 20°16'47.95"S, 57°47'56.23"E as coordinates. From this point, the limit follows a south-southwesterly direction up to a point being the eastern extremity of Ile Camisard and having coordinates 20°17'30.24"S, 57°47'46.86"E and from this point the limit runs in a south westerly direction up to a point at Point St Lain which has 20°18'13.96"S, 57°46'50.99"E as coordinates.

The habitat types present within the Trou D'Eau Douce Fishing Reserve include the Grand River South East (GRSE) river estuary, beaches and nearshore, coral reefs, rocky reefs, shelf sediments, seagrass and dense mangroves. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the Trou D'Eau Douce and GRSE Fisheries Post with the assistance of the NCG of the Trou D'Eau Douce and Deux Freres NCG Posts.

#### **Grand Port**

The Grand Port Fishing Reserve is found in the Grand Port district in the southeast of Mauritius, and covers an area of 18.28km<sup>2</sup>, comprised of two zones, namely Zone A and Zone B. Zone A is located at the eastern side of the Blue Bay Marine Park while Zone B is situated at the western side of the marine park.

Zone A: Having an extent of 17.16km<sup>2</sup>, the Grand Port Fishing Reserve Zone A encloses that part of the sea which stretches from Old Grand Port up to Blue Bay. Its boundary starts at the high water mark at a point having coordinates 20°22'31.19"S, 57°43'25.03"E behind the Roman Catholic Church at Old Grand Port and runs up to another point on the eastern extremity of Ile aux Aigrettes having coordinates 20°25'12.39"S, 57°44'10.60"E. From

there the boundary extends to a point on the reef having coordinates 20°26'17.64"S, 57°44'29.04"E. From the last mentioned point, the limit follows the reef crest to a point on the reef having coordinates 20°26'59.14"S, 57°43'7.58"E which then follows the reef crest up to the northern limit of the Blue Bay Marine Park at Pte Corps de Garde having coordinates 20°26'44.53"S, 57°42'59.73"E.

The habitat types present within the Grand Port Zone A Fishing Reserve include the Ferney and La Chaux rivers estuaries, sub-tidal sandy-mud beach, sub-tidal mud beach, macro-algal beds, outer reef channel, rocky shoreline, back reef, fore reef slope, inter-reef soft substrate, inter-reef rubble substrate, seagrass beds and mangroves. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the Mahebourg Fisheries Post and Blue Bay Marine Park Centre with the assistance of the NCG of the Mahebourg NCG Post and the Blue Bay Emergency Rescue Centre.

Zone B: Covering an area of 1.12km<sup>2</sup>, the Grand Port Fishing Reserve Zone B encloses that part of the sea which extends from Pointe Vacoas at La Cambuse up to Ilot Brochus at Le Bouchon. Its limit starts at a point at Pointe Vacoas (the southern limit of the Blue Bay Marine Park) having coordinates 20°27'24.55"S, 57°42'3.95"E, and runs up to a point on the reef having coordinates 20°27'25.20"S, 57°42'4.65"E and from this point the limit follows the reef crest up to a point on the reef having coordinates 20°28'28.55"S, 57°40'56.02"E. From this point the limit runs in a southwesterly direction up to point at Le Bouchon having coordinates 20°28'29.88"S, 57°40'49.67"E.

The habitat types present within the Grand Port Zone B Fishing Reserve include beaches and nearshore, coral reefs, rocky reefs, shelf sediments, seagrass beds and mangroves. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the Mahebourg Fisheries Post and Blue Bay Marine Park Centre with the assistance of the NCG of the Blue Bay Emergency Rescue Centre.

#### **Black River**

Located in the west, in the Black River District, the Black River Fishing Reserve covers an area of 7.97km<sup>2</sup>. It is that part of the sea which stretches from Petite Case Noyale up to Tamarin and it extends from Pointe des Requets having coordinates 20°23'47.79"S, 57°22'2.61"E and runs up to a point on the reef at Grande Pointe having coordinates 20°22'17.98"S, 57°20'35.87"E. From Grande Pointe the limit runs in a north-northeasterly direction up to a point called Pointe Lascars having coordinates 20°21'19.29"S, 57°21'8.42"E and from there the limit follows the reef

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crest up to a point having coordinates 20°21'19.94"S, 57°21'43.41"E. From the last mentioned point, the limit runs in an easterly direction up to a point on the high water mark having coordinates 20°20'24.76"S, 57°21'47.13"E.

The habitat types present within the Black River Fishing Reserve include the Riviere du Rempart (west) and Riviere Tamarin estuaries, beaches and nearshore, coral reefs, shelf sediments, seagrass beds and mangroves. Control of activities, surveillance and enforcement are undertaken by the Fisheries Protection Service based at the La Preneuse Fisheries Post and the NCG of the Black River NCG Post.

### Port Louis

Having an area of 3.31km<sup>2</sup>, the Port Louis Fishing Reserve is located in the west-northwest of Mauritius in the district of Port Louis. It is that part of the sea stretching from Martello Tower at Pointe aux Sables having latitude 20°10'3.11"S and longitude 57°28'20.04"E to a place called Pointe Tortue with latitude 20°9'24.86"S and longitude 57°28'0.22"E to Fort George having GPS coordinates 20° 8'52.79"S, 57°29'21.01"E, and includes the Port Louis Harbour.

The main habitats protected include Riviere Latanier estuary, beaches and nearshore, coral reefs, shelf sediments, seagrass beds and mangroves. Being a restricted area, strict control of activities and surveillance of the Port Louis Fishing Reserve is carried out by the Fisheries Protection Service and the NCG posted at the Port Louis Harbour under the supervision of the Mauritius Ports Authority.

## MARINE PROTECTED AREAS OF RODRIGUES ISLAND

Ten MPAs have been declared and proclaimed in Rodrigues Island (Figure 3), out of which five are classified as Fishing Reserves, four as Marine Reserves and one as a multiple-use MPA. The fundamental roles of the MPAs of Rodrigues Island are for biodiversity conservation, fish stock enhancement, research, education and recreation and tourism. In all the Marine Protected Areas of Rodrigues Island some degree of extractive use is allowed at designated locations subject to a written authorization from the Departmental Head of the Commission for Agriculture, Environment, Forestry, Fisheries and Marine Parks. However, the fishing methods and gears are subject to strict control. Excluding the Fishing Reserves, the other MPAs of Rodrigues occupy a total area of approximately 67.3km<sup>2</sup> which represents about 28 percent of the lagoon area.

Table 3: Summary table for Fishing Reserves of Mauritius.

Fishing Reserves of Mauritius Island	
TYPE/IUCN CATEGORY	Coastal/Category IV
PROCLAMATION LEGISLATION DATE	Section 7(2) of the Fisheries and Marine Resources Act 1998 in 2000
EXTENT	Total area of approximately 63km <sup>2</sup>
INSTITUTIONAL FRAMEWORK	<ul style="list-style-type: none"> <li>- legally mandated authority: Government of the Republic of Mauritius</li> <li>- managed by the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping (Fisheries Division)</li> </ul>
MANAGEMENT PLAN	No management plans exist currently
HABITATS	Beaches and nearshore, coral reefs, rocky reefs, seagrass beds, mangroves, shelf sediments and estuaries
RISKS/THREATS	<ul style="list-style-type: none"> <li>- terrestrial inputs (nutrients, organic matter, mud from agricultural land use and flash floods)</li> <li>- illegal activities such as poaching</li> <li>- climate change resulting in successive bleaching events due to increase in sea surface temperature</li> </ul>
MANAGEMENT OPPORTUNITIES	<ul style="list-style-type: none"> <li>- development of a Management Plan for each Fishing Reserve</li> <li>- local capacity building in MPA management</li> </ul>

### South East Marine Protected Area (SEMPA)

This multiple-use MPA was proclaimed in 2009 (Table 4) and originally identified in consultation with the local communities from ten villages bordering it. SEMPA is not only the largest MPA of Rodrigues but also that of the Republic of Mauritius covering a marine area of 43km<sup>2</sup>. It stretches from the shoreline to the 20m isobath and is composed of a variety of habitats including the lagoon, off-lagoon waters, reef slopes, reef flats, channel reefs, back reef areas and seagrass beds. Sand is the dominant substrate in the lagoon, with large patches of seagrass beds, macro-algae fields and dead coral rubble. The dominant substrate on the reef flat is rubble with small to medium coral colonies. However, big patches of coral colonies occur, namely at Couzoupa. The reef slope is a gently sloping spur and groove formation, with the spurs dominated by branching coral colonies.

The SEMPA is managed by the principles of co-management or participatory approach to management through

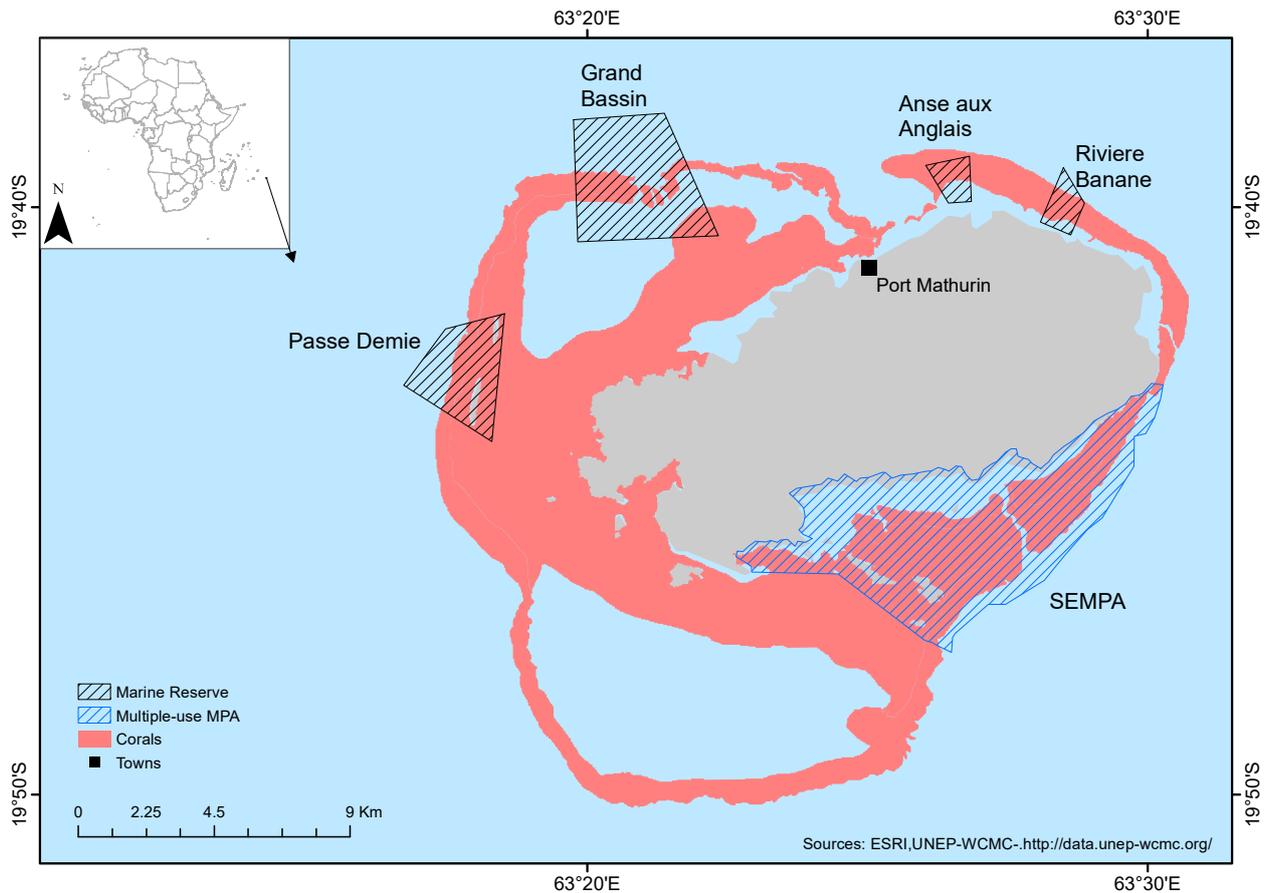


Figure 3: Marine Areas under Protection in Rodrigues, excluding the five Fishing Reserves (not currently geo-referenced).

the application of the Rodrigues Regional Assembly (Fisheries and Marine Resources – South East Marine Protected Area SEMPA) Regulations of 2011. The SEMPA has been demarcated into fourteen different specific zones in order to provide protection to critical habitats, ecosystems and ecological processes; to conserve biological diversity, to cater for various permissible activities; and to separate conflicting human activities.

Table 4: Summary table for South East Marine Protected Area.

South East Marine Protected Area (SEMPA)
TYPE/IUCN CATEGORY
Coastal/Category IV
PROCLAMATION LEGISLATION DATE
<ul style="list-style-type: none"> <li>– proclaimed in 2009 under the Rodrigues Regional Assembly (Fisheries and Marine Resources: Marine Protected Areas) Regulations of 2009</li> <li>– Rodrigues Regional Assembly (Fisheries and Marine Resources: South East Marine Protected Area SEMPA) Regulations of 2011</li> </ul>
EXTENT
43km <sup>2</sup>

<b>INSTITUTIONAL FRAMEWORK</b>
<ul style="list-style-type: none"> <li>– legislative area/region/province: Rodrigues</li> <li>– legally mandated authority: Rodrigues Regional Assembly</li> <li>– managed by the Commission for Agriculture, Environment, Forestry, Fisheries and Marine Parks</li> </ul>
<b>MANAGEMENT PLAN</b>
5 year plan, 2012-2016, in need of review and update
<b>HABITATS</b>
Beaches and nearshore, seagrass, coral and biogenic reefs and shelf sediments
<b>RISKS/THREATS</b>
<ul style="list-style-type: none"> <li>– terrestrial inputs (nutrients, organic matter, and mud from agricultural land use)</li> <li>– climate change resulting in successive bleaching events due to increase in sea surface temperature</li> <li>– Inability to control activities within the watershed of the MPA</li> </ul>
<b>MANAGEMENT OPPORTUNITIES</b>
<ul style="list-style-type: none"> <li>– review and implementation of the existing Management Plan</li> <li>– opportunity to collaborate with local NGOs, hotel operators and other stakeholders operating in the MPA</li> <li>– local capacity building in MPA management</li> </ul>

## Marine Reserves

The population in Rodrigues is heavily dependent on fishing for their livelihoods. Fishing around Rodrigues is concentrated inside the lagoon and the techniques used include hook and line, basket trap and seine net fishing. Declines in fish stocks over the past decades have prompted the introduction of different protection measures. In 2007, the Rodrigues Regional Assembly gazetted four Marine Reserves (no-take zones) in the north of the island (Figure 3) covering 24.3km<sup>2</sup> and representing about 10 percent of the lagoon (Hardman *et al.*, 2010).

The Marine Reserves were identified through a participatory process with the support of Shoals Rodrigues, a local marine non-governmental organization (NGO). Fishermen from 17 villages were consulted and asked to identify appropriate locations for the marine reserves with a view to promote sustainable fisheries and to improve conservation status of the marine environment. From the five areas identified by the fishers, four were put forward for legal gazetting by the local government (Pasnin *et al.*, 2016). To date only limited management of the areas has been implemented and seine net, hook and line and basket trap fishing still occurs (Hardman *et al.*, 2010).

All four Marine Reserves were demarcated with buoys in 2009 and 2010; however, all demarcation buoys are presently lost, due to equipment failure, bad weather, lack of maintenance and vandalism. A management plan for the Marine Reserves was drafted by a Technical Sub-Committee composed of various stakeholders including fishers, NGO officers, tour operators, MPA officers and fisheries protection officers and compiled by a team of international scientists. However, the management plan could not be implemented due to lack of local capacity and labour.

The Marine Reserves, of coastal/pelagic type, have been promulgated under the Rodrigues Regional Assembly (Fisheries and Marine Resources: Marine Reserves) Regulations of 2007 (see Table 5). The Marine Reserves are Riviere Banane, Anse aux Anglais, Grand Bassin and Passe Demie, as described below.

### **Passe Demie**

Includes an area of 7.2km<sup>2</sup> of the lagoon, extending out towards the reef flat and the shallow fore-reef slope to a depth of 25m. In general, the lagoon habitat is composed of sand and dead coral substrate interspersed with live coral colonies. The reef slope has high habitat complexity and abundant massive corals.

The Passe Demie Marine Reserve is bounded as follows: Inside lagoon: 19°41.814 S, 63°18.521 E and 19°43.995 S, 63°18.293 E; Outside lagoon: 19°42.072 S, 63°17.471 E and 19°43.037 S, 63°16.721 E.

### **Grand Bassin**

Covers an area of the lagoon of 14.1km<sup>2</sup>, extending out towards the reef flat and the shallow fore-reef slope to a depth of 30m. Sand is the dominant substrate in the lagoon, with macro-algae and rubble. The dominant substrate on the reef flat is rubble with small coral colonies and sand. The reef slope is a gently sloping spur and groove formation, with the spurs dominated by branching coral colonies. The Grand Bassin Marine Reserve is bounded as follows: Inside lagoon: 19°40.589 S, 63°19.827 E and 19°40.485 S, 63°22.340 E; Outside lagoon: 19°38.401 S, 63°21.372 E and 19°38.505 S, 63°19.777 E.

### **Anse aux Anglais**

Covers an area of 1.5km<sup>2</sup> in the lagoon, extending out towards the reef flat and the shallow fore-reef slope to a depth of 20m. Two main habitats occur within the lagoon. The east side of the lagoon consists of continuous limestone pavement whilst the majority of the substrate in the west side of the marine reserve is dominated by consolidated rubble. The reef flat is characterized by a limestone pavement. The reef slope has a gently sloping spur and groove structure. The grooves are approximately 5m wide and filled with coarse rubble and sand; the spurs are dominated by branching coral colonies (Jacobs, 2005).

The four boundaries of Anse aux Anglais Marine Reserve have the following GPS coordinates: Inside lagoon: 19°39.932 S, 63°26.443 E and 19°39.904 S, 63°26.858 E; Outside lagoon: 19°39.286 S, 63°26.040E and 19°39.136 S, 63°26.821 E.

### **Riviere Banane**

Includes an area of 1.5km<sup>2</sup> of the lagoon extending out towards the reef flat and the shallow fore-reef slope to a depth of 20m. The lagoon habitat is composed mostly of sand and coral rubble, overlying a coralline platform. The reef flat consists of a coralline platform covered with turf algae and small compact coral colonies. The reef slope is a gently sloping spur and groove formation, with the spurs dominated by branching coral colonies. Shoals Rodrigues, a local NGO, has been mandated to manage the Riviere Banane Marine Reserve, for which a four-year management plan was developed (2008–2011). The four boundaries of Riviere Banane Marine Reserve have the following GPS coordinates: Inside lagoon: 19°40.257 S, 63°28.085 E and 19°40.473 S, 63°28.628 E; Outside lagoon: 19°39.936 S, 63°28.874 E and 19°39.328 S, 63°28.500 E.

Table 5: Summary table for Marine Reserves of Rodrigues.

Marine Reserves of Rodrigues Island	
TYPE	Coastal/Pelagic
PROCLAMATION LEGISLATION DATE	<ul style="list-style-type: none"> <li>- proclaimed in 2009 under the Rodrigues Regional Assembly (Fisheries and Marine Resources: Marine Protected Areas) Regulations of 2009</li> <li>- Rodrigues Regional Assembly (Fisheries and Marine Resources: South East Marine Protected Area SEMPA) Regulations of 2011</li> </ul>
EXTENT	Total of approximately 24.3km <sup>2</sup>



Mangrove growing on basalt shoreline in Mauritius.

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INSTITUTIONAL FRAMEWORK
<ul style="list-style-type: none"> <li>- legally mandated authority: Rodrigues Regional Assembly</li> <li>- governance structure and management under Shoals Rodrigues, responsible for Riviere Banane Marine Reserve), with Rodrigues Regional Assembly responsible for the other Marine Reserves</li> </ul>
MANAGEMENT PLAN
A four-year management plan (2008-2011) was developed for River Banane Marine Reserve, but needs to be reviewed and updated
HABITATS
Beaches and nearshore, seagrass beds, coral reefs, rocky reefs and shelf sediments
RISKS/THREATS
<ul style="list-style-type: none"> <li>- terrestrial inputs (nutrients, organic matter, and mud) from agricultural land use</li> <li>- physical damages due to destructive fishing methods</li> <li>- illegal activities such as poaching</li> <li>- climate change resulting in successive bleaching events due to increase in sea surface temperature</li> </ul>
MANAGEMENT OPPORTUNITIES
<ul style="list-style-type: none"> <li>- review and implementation of the existing Management Plan for River Banane, and development of plans for the other marine reserves</li> <li>- local capacity building in MPA management</li> </ul>

## Fishing Reserves

The Fishing Reserves have been declared under Sections 2 and 38 of the Fisheries Act, 1980 where specific regulations known as the Fisheries (Reserved Areas) (Rodrigues) Regulations 1984 of the Act were promulgated (Table 6). The boundaries of the Fishing Reserves have been so far described using specific points on land and at sea, though their GPS coordinates have not been recorded and their areas not calculated. Moreover, there is no formal management being undertaken in the Fishing Reserves except for sea patrolling by the Fisheries Protection Service. The five Fishing Reserves are described as follows:

### *Pointe La Gueule to Pointe Venus*

The area bounded in the west by an imaginary straight line drawn from Pointe La Gueule to the eastern limit of the reef at Passe Batage on the east by an imaginary straight line running roughly north from Mont Venus to the reef opposite and the coast.

### *Anse Quitor (within SEMPA)*

The area bounded by an imaginary line joining Pointe Corail through Domingue, Gombrani to Pointe Caverne or Pointe Vingt Tours and the coast. The main habitat types found within the Anse Quitor Fishing Reserve are the beaches and nearshore, coral reefs, shelf sediments

## 5. REPUBLIC OF MAURITIUS

and seagrass beds. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the SEMPA Interpretation Centre.

### **Manioc to Pointe La Gueule**

The area bounded by an imaginary line running from Pointe Manioc to Diamant and the coast.

### **Baie Topaze**

The area bounded by an imaginary line running from Pointe Palmiste through Fregate to Pointe L'Herbe and the coast.

### **Grande Passe (within SEMPA)**

The area forming the Pass of Port Sud Est and within 91.4m (100 yards) at each side of the pass. Habitat types therein include coral reefs and shelf sediments. Control of activities, surveillance and enforcement are carried out by the Fisheries Protection Service based at the SEMPA Interpretation Centre.

Table 6: Summary table for Fishing Reserves of Rodrigues.

<b>Fishing Reserves of Rodrigues Island</b>	
TYPE	Coastal
PROCLAMATION LEGISLATION DATE	Fisheries Act, 1980 and 1984 regulations
EXTENT	Approximately 20km <sup>2</sup>
INSTITUTIONAL FRAMEWORK	<ul style="list-style-type: none"> <li>– legally mandated authority: Rodrigues Regional Assembly</li> <li>– managed by the Commission for Agriculture, Forestry, Fisheries and Marine Parks</li> <li>– planning framework currently managed by the implementation of the Fisheries (Reserved Areas) (Rodrigues) Regulations 1984 of the Fisheries Act of 1980</li> </ul>
MANAGEMENT PLAN	No management plans currently exist
HABITATS	Beaches and nearshore, seagrass, shelf sediments and coral reefs
RISKS/THREATS	<ul style="list-style-type: none"> <li>– terrestrial inputs (nutrients, organic matter, and mud) from agricultural land use</li> <li>– physical damages due to destructive fishing methods</li> <li>– climate change resulting in successive bleaching events due to increase in sea surface temperature</li> </ul>
MANAGEMENT OPPORTUNITIES	<ul style="list-style-type: none"> <li>– development of a Management Plan for each Fishing Reserve</li> <li>– local capacity building in MPA management</li> </ul>

### **Total area currently under protection and proposed for protection**

The current situation indicates that only a very small proportion of Mauritius' claimed EEZ is under protection, and even with the addition of the proposed MPA the area under protection will be just 0.01 percent of the EEZ (Table 7).

Table 7: Mauritius EEZ under protection and proposed for protection.

Mauritius' EEZ	2 300 000km <sup>2</sup>
<b>EXISTING MPAs</b>	
No. of MPAs	18
MPA area	139.2km <sup>2</sup>
% EEZ	0.009
<b>PROPOSED MPAs</b>	
No. of proposed MPAs	1
Proposed MPA area	97km <sup>2</sup>
Potential % EEZ	0.012

## **PROPOSED MARINE PROTECTED AREAS IN MAURITIUS**

The Mauritius Marine Conservation Society, a local NGO and other partners carried out a feasibility study for the creation of one or more MPAs in the southwest coast of Mauritius. The area of study covered a coastline of about 40km and stretched from the village of Pointe Moyenne, Flic en Flac to the village of Le Morne. The coast in this area supports a diverse and rich marine biodiversity with many habitat types such as the lagoon, offshore open waters, coral reefs, mangroves, seagrass beds, macro-algal fields and estuaries. Moreover, the area is well known as a site for dolphin and other cetacean watching. The study was carried out through a collaborative approach with the participation of other stakeholders, namely the fisher communities, the tourist operators and the local users (see Thomassin, 2011).

A key outcome of the study was a proposal for the creation of a unique MPA starting from the village of Flic en Flac up to southernmost extremity of Le Morne village to include the buffer zone of the Morne Brabant World Heritage site and Fourneau Islet. The proposed area includes the lagoon, the coral reefs to the 20m isobaths and the habitats comprise seagrass beds, macro-algal

fields, coral reefs, mangroves, and estuaries amongst others (Figure 2).

The proposed MPA of multiple-use type is planned to be demarcated into several zones, namely fishing, nautical activities, mooring and swimming and sanctuary/no-take zones. The area also included the Black River Fishing Reserve. In addition to corals, fishes and seagrasses, the species of significant importance found within the area includes ten species of cetaceans (dolphins and whales) and two species of marine turtles.

## NON-FORMAL PROTECTED AREAS - VOLUNTARY MARINE CONSERVATION AREAS

The concept of designating Voluntary Marine Conservation Areas (VMCAs) is relatively new in Mauritius and was introduced for the first time by Reef Conservation, an NGO based in the northern area of the island where it is engaged in conservation of coastal and marine environments. VMCAs are selected sites in the lagoon where resource users and coastal communities agree that no extractive or destructive activities are carried out. The main objectives are to protect marine biodiversity and help marine life regenerate within these VMCAs and the surrounding lagoon. VMCAs in Mauritius are community conservation sites and are not legally designated, therefore they have no legal status to date.

Following feasibility studies, two VMCAs were established in the north of Mauritius (see Figure 2), the first one being the Roches Noires VMCA in 2011 and the other the Anse La Raie VMCA in 2013 (Table 8). The VMCAs were set up through a participatory approach and at each site a VMCA committee consisting of boat operators, fishers, village representatives and volunteers was also established for management purposes. Management activities include long-term and consistent monitoring of the marine ecosystem, carrying out sensitization activities and monitoring compliance with agreed rules. Other activities include training of members of local communities as eco-guides, in marine resource management and marine ecology and conservation. An underwater trail and two fixed mooring buoys were also installed at the Anse La Raie VMCA to promote sustainable tourism at this site.

The main habitats of the Anse La Raie VMCA consist of the beach and nearshore, coral reefs and shelf sediments while those of Roches Noires VMCA are beach and nearshore, seagrass beds, coral reefs, rocky reefs and shelf

sediments. More details of the VMCAs, the challenges they faced, activities and benefits are described in the Case Study on the following page.

Table 8: Summary table for the VMCAs of Mauritius.

Fishing Reserves of Rodrigues Island	
TYPE	
Coastal	
NAME OF VMCA	
Roches Noires	Anse La Raie
DATE OF ESTABLISHMENT	
2011	2013
EXTENT	
0.1km <sup>2</sup>	0.5km <sup>2</sup>
HABITATS	
Beach and nearshore, seagrass, coral reefs, rocky reefs and shelf sediments	Beach and nearshore, coral reefs and shelf sediments
COMMUNITY INVOLVEMENT	
The local communities within the VMCAs are fully involved in their management, surveillance and maintenance	
RISKS/THREATS	
<ul style="list-style-type: none"> <li>- terrestrial inputs (nutrients, organic matter, mud from agricultural land use and flash floods)</li> <li>- illegal activities such as poaching</li> <li>- climate change resulting in successive bleaching events due to increase in sea surface temperature</li> </ul>	
MANAGEMENT CHALLENGES	
<ul style="list-style-type: none"> <li>- lack of expertise in management of VMCA</li> <li>- inability to control activities within the watershed of the reserves</li> </ul>	
MANAGEMENT OPPORTUNITIES	
<ul style="list-style-type: none"> <li>- development and implementation of a Management Plan</li> <li>- opportunity to collaborate with local NGOs, hotel operators and other stakeholders of the region</li> <li>- local capacity building in MPA management</li> </ul>	

## CASE STUDY

### Voluntary Managed Conservation Areas

Kathy Young, Celine Mitermique, Emeline Bouvelle and Marine Françoise

Coastal lagoons in Mauritius play an important economic, social and cultural role. Tourism is mainly focused in coastal regions, with many activities in the lagoons and sea. Local communities fish in the lagoons for subsistence and recreation and beaches are an important leisure pastime for Mauritian families. Despite existing conservation measures and legislation, coral reefs in Mauritius are still on the decline due to increasing human pressures, destructive actions and now climate change effects. Voluntary Marine Conservation Areas (VMCAs) promote community involvement and stewardship towards marine resources.

VMCAs are an alternative concept to the traditional MPA being established by Reef Conservation (a local Mauritian NGO). These are community conservation sites, which encourage an inclusive and bottom-up approach for the protection of marine habitats and promote sustainable use of marine resources with stakeholders (coastal inhabitants, fishers, boat operators and hotels etc). These selected sites in the lagoons are where users voluntarily agree that no extractive or destructive activities should take place. A participatory approach is used to engage stakeholders in resource mapping, training, sensitisation, scientific research, monitoring, communication, visibility, sustainable actions and management. Two VMCAs have been created, the first in Roches Noires (0.16km<sup>2</sup>) in 2011, with successful replication in Anse la Raie (0.69km<sup>2</sup>) in 2013. Initial funding was from the Indian Ocean Commission: Regional Coastal Management Programme (RECOMAP) in 2008 with further funding in 2012 and 2016 from the GEF Small Grants Programme of the UNDP and local private sector partners.

For both VMCAs, the marine habitats have been monitored for over six years and hard coral and seagrass cover is stable. Both areas have established VMCA community committees. The Anse La Raie VMCA is in a snorkel area used by boat operators, where two fixed mooring buoys and a snorkel trail have been established in the site and operators trained to use these tools. Over 40 persons, including boat operators, have received training about coastal and marine habitats or as marine eco-guides. In Anse La Raie the VMCA is promoted by local boat operators to visitors.

Today the direct users and coastal communities who have engaged in establishing their VMCAs are advocates of the programme. Establishing successful sites, however, is not a short-term project and cannot be approached in this way. Time is needed to make VMCAs a success along with a well-structured programme that allows stakeholders to participate fully. These voluntary sites do have their drawbacks as there is no legal standing for the areas and the code of conduct established with direct users may not always be upheld by others from outside the area. Currently, these established sites are small and limited in their ability to provide the ecosystem services of a larger MPA. However, more or larger VMCA sites are envisioned as communities become engaged and see the benefits of conservation.

VMCAs can provide a number of positive outcomes for communities and conservation including; the expansion of protected areas through a network of sites, developing or including restoration initiatives for sites, developing new eco-tourism opportunities and the promotion of co-management arrangements with local communities, NGOs and government, thereby sharing the responsibility for managing and maintaining marine resources.



Anse La Raie VMCA corals (*Galaxea sp.*), and fish (Red-Cheek wrasse *Thalassoma genivittatum* and Sixbar wrasse *Thalassoma hardwicke*).

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## REFERENCES

- Boyramboli, B. 1995. Marine Protected Areas in Mauritius. Tropical Marine Ecosystem Project. National Training Course – Island of Rodrigues. For the Ministry of Fisheries, presented at a Training Course in Rodrigues.
- Chapman, B. 2000. Marine Biotope Classification and Mapping of Rodrigues Using Landsat 7 ETM + Satellite Imagery MSc. thesis, University of Wales, Bangor.
- Hardman, E.R., Green, J.M., Desire, M.S. & Perrine, S. 2010. Movement of sonically tagged blue spine unicorn fish, *Naso unicornis*, in relation to marine reserve boundaries in Rodrigues, Western Indian Ocean. *Aquat. Conserv. Mari. Freshw. Ecosyst.* 20: 357-361.
- Jacobs, L. 2005. A biological and social assessment of a proposed Marine Protected Area in Rodrigues, Mauritius. MSc. thesis, University of Wales, Bangor.
- Nicet, J.B., Barrere, A., Faure, G., Jamon, A. & Quod, J-P. P. 2009. Evaluation environnementale. Rapport PARETO/ ARVAM pour le compte WWF/Albion Fisheries Research Centre. 63 pp.
- PARETO. 2012. Simian G. Nicet J.B., Jamon A., Cadinouche A., Barrere, A., Zubia M., Quod JP. *Habitat mapping and biodiversity inventory of Blue Bay Marine Park.* 74 pp.
- Pasnin, O., Attwood, C. & Klaus, R. 2016. Marine systematic conservation planning for Rodrigues, Western Indian Ocean. *Ocean & Coastal Management*, 130: 213–220.
- Procter, J. & Salm. R. 1974. Conservation in Mauritius. Unpublished IUCN/WWF report to the Government of Mauritius.
- Rathacharen, B.D. 2001. Country Report on Status of Marine Protected Area Management for the Republic of Mauritius, Ministry of Fisheries.
- Robertson, I.S.B. 1994. The establishment of Marine Parks and Controlled Areas. A report prepared for the Fisheries Advisory Services Project, Food and Agriculture Organisation of the United Nation, Rome.
- Republic of Mauritius. 1968. The Constitution of Mauritius. 81 pp.
- Republic of Mauritius. 2013. Maurice Ile Durable Policy, Strategy and Action Plan. Ministry of Environment and Sustainable Development. 147 pp.
- Sinatambou, E. 1995. La Protection de L'Environnement Marin à L'île Maurice.
- Thomassin A. 2011. Recommandations finales dans: *Etude de faisabilité pour la mise en place d'une ou plusieurs AMP sur la côte sud-ouest de Maurice* rédigé pour MMCS/ProGeCo. 54 pp.

This *MPA Outlook for the Western Indian Ocean (WIO)* is the first comprehensive regional analysis that provides a detailed update on the efforts by the Nairobi Convention countries to meet globally agreed marine conservation targets especially SDG14.5, which states that by 2020, to conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. This is also aligned to the Convention on Biological Diversity Strategic Plan for Biodiversity 2011–2020, Aichi Target 11. In 2019, the region had 143 proclaimed MPAs with several proposed across different countries.

A key purpose of this *MPA Outlook* was to establish baselines using appropriate indicators to assess the progress of the Contracting Parties to the Nairobi Convention in meeting these targets. Thirty authors contributed to the nine country chapters, the various case studies and other parts of this volume. Included are detailed descriptions of the MPAs in the countries of the region, the legal mandates under which they exist, the challenges they face and estimates of their management effectiveness. The main findings indicate that the vast majority of the sites across the WIO region, that are considered as MPAs or as having equivalent legal status and levels of protection, are coastal and/or inshore, however the largest, covering by far the greatest extents of the ocean, are those with considerable offshore elements. The assessment also established that the majority of existing MPAs across the region are not managed as effectively as they could and should be, due primarily to lack of funding for essential staff, equipment and capacity development, and commitment from relevant authorities. Recommendations are provided to support improved management of current MPAs and strengthen proposals from different countries for the establishment of further areas under protection, so as to reach conservation goals, including those being developed under the post-2020 Global Biodiversity Framework, while safeguarding coastal livelihoods and economies over the coming decades.

