WESTERN INDIAN OCEAN

MARINE PROTECTED AREAS OUTLOOK

Towards achievement of the Sustainable Development Goals

COUNTRY CHAPTER: SEYCHELLES

UN environment programme

Nairobi Convention

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WIOMSA Coasts Ocean and People

Western Indian Ocean Marine Science Association

SWEDEN

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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:
Bijoux, J. 2021. Marine & Coastal Areas under Protection: Seychelles, p. 167–186, 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

CONTENTS

Foreword	v
Executive summary	vii
Acknowledgements	xi
List of contributors	xiii
Abbreviations	xvii
PART I: STRUCTURE, PURPOSE, METHODOLOGY AND LIMITATIONS	**1**
Structure	3
Purpose	3
Process and methodologies	5
Limitations	8
PART II: CONTEXT OF THE OUTLOOK	**11**
Context	13
Forms of protection	20
Making the case: Existing connectivity & networking	20
PART III: MARINE & COASTAL AREAS UNDER PROTECTION	**23**
1. COMOROS	25
2. FRENCH TERRITORIES IN THE WESTERN INDIAN OCEAN	41
3. KENYA	57
4. MADAGASCAR	71
5. REPUBLIC OF MAURITIUS	103
6. MOZAMBIQUE	119
7. REPUBLIC OF SOUTH AFRICA	133
8. SEYCHELLES	167
9. UNITED REPUBLIC OF TANZANIA: TANZANIA MAINLAND	187
10. UNITED REPUBLIC OF TANZANIA: ZANZIBAR	203

11. Summary of MPAs: Classification, characterization & main achievements in relation to conservation targets 215

PART IV: MPA ESTABLISHMENT & MANAGEMENT EFFECTIVENESS 229

Summary 231

Introduction 231

Results 234

Conclusions 251

Overarching recommendations for improving MPA management effectiveness 251

PART V: MEETING THE GLOBAL GOALS & MARINE BIODIVERSITY CONSERVATION TARGETS 257

Introduction 259

Review and summary of regional progress on MPAs 260

Conclusions and recommendations 271

Moving forward from 2020 and beyond 274

FOREWORD

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^2 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^2, 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^2 and a land mass area of 455km^2 achieved this milestone through the debt for nature swap spearheaded by The Nature Conservancy (TNC). Promising initiatives on transboundary 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.

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EXECUTIVE SUMMARY

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 transboundary 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^2 were declared as a result of this process. In South Africa, 20, mostly offshore MPAs covering an area of 54 214km^2, 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^2, 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 sup¬port 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

SEYCHELLES

Jude Bijoux

Ste. Anne Island, Seychelles. © Jennifer O'Leary

COUNTRY OVERVIEW

The Seychelles Archipelago lies to the northeast of Madagascar about 1600km east of the coast of Kenya, spanning 4–11°S and 45–56°E. The country is often described as a Small Island Developing State (SIDS) or a large ocean state due to the high ratio of ocean to land. The exclusive economic zone (EEZ) is 1.34 million km^2 while the land area is only 445km^2. The archipelago is made up of 115 islands in two distinct geological groups. Forty-two islands are located on the Mahé Plateau in the eastern half of the archipelago, on the northern arc of the Mascarene Ridge (Israelson and Wohlfarth, 1999). Most of these islands are of granitic origins made of Pre-Cambrian rock dating back 650 million years (Braithwaite, 1984). All of the granitic islands are found within a radius of 50km from the island of Mahé where the capital, Port Victoria, is located. The remaining 73 islands are of coralline origin and are either sand cays or raised coral atolls, with all but two located off the Mahé Plateau, in the south and southwest of the archipelago.

The Seychelles climate is tropical and humid with an average rainfall of 2362mm per year (measured on the granitic islands). The weather is influenced by alternating monsoon seasons dominated by prevailing winds in two different directions: the generally calmer and wetter northwest monsoon prevails from November to March while the stronger and drier southeast trade winds prevail from May to October (Bijoux *et al*., 2008). Air temperatures range from 26 to 31°C with mean humidity of 80 percent. Sea surface temperatures in Seychelles range from 26 to 31°C whilst surface salinity ranges from 34.5 to 35.5g/kg (Taylor and Lewis, 1970).

As a result of the relatively small sizes of the islands, the Seychelles is often considered to be coastal in its entirety. The islands have a total coastline of about 600km and no single point of land is more than 5km from the sea. The population in mid-2017 was estimated at 95 843 (NBS, 2017). Most of the population live on the three main granitic islands of Mahé, Praslin and La Digue. As these three main islands are mountainous in nature, the majority of development occurs on the narrow coastal plateaux. The coastal zone is therefore of great social and economic importance in the day-to-day lives of the inhabitants and for the economy. The outer islands have no permanent residents; the only people living there are employed in the tourism industry, in conservation or in the upkeep and maintenance of the islands.

The nation's economy is dependent on fisheries and tourism, which have helped the islands to attain the highest Gross Domestic Product (GDP) per capita in Africa (USD 15 410 in 2016). Due to its nature-based economy, Seychelles is highly dependent on the health of its marine and terrestrial environment, and is therefore concerned about the risks from many threats including climate change.

The legislative and institutional framework for the exploration, exploitation and management of marine areas in the Seychelles is highly complex. The four main pieces of legislation pertaining to protected areas and conservation of marine resources include the Town and Country Planning Act (2016), the Environment Protection Act (2016), the Fisheries Act (updated 2014) and the National Parks and Nature Conservancy (NPNC) Act (1969), which will soon be replaced by the Nature Reserves and Conservancy Act, once approved by the Legislature.

The designation of protected areas as a conservation tool has been generally focused on terrestrial ecosystems in the Seychelles with close to 50 percent of the land area under formal protection. Until recently, less than 1 percent of the marine waters were designated as marine protected areas (MPAs) but the Seychelles is moving forward on a 30 percent goal for the ocean. To date, MPAs have been designated under three different Acts. These MPAs are being managed by a number of institutional actors including government, parastatal, non-governmental organizations and private foundations.

MPAs in the Seychelles are important for protecting critical marine habitats. Most of the marine habitats in the MPAs are known and have been documented. However, few surveys have been undertaken to describe the marine habitats within the Seychelles EEZ in any detail. Large areas of soft bottom habitats are known to be found in the deep sea but have been poorly studied. Shallow marine habitats are consequently better documented. For example, the coral reefs are estimated to cover an area of 1690km^2 of which 40km^2 are found around the inner, granitic islands (Spalding *et al*., 2001). However, the extent of seagrass beds is yet to be determined, despite large areas of seagrass documented from around many of the outer islands. The largest seagrass area surveyed to date is found around the Providence-Cerf Bank, which measures 45km long and 14km at its widest. Mangrove forests are estimated to cover around 29km^2 (Spalding *et al*., 1997). Most mangroves are found in the outer islands especially in the lagoons of the Aldabra and Cosmoledo atolls.

These marine habitats are the source of Seychelles marine biodiversity, but are not properly documented due to a lack of scientific research and taxonomic surveys (Bijoux

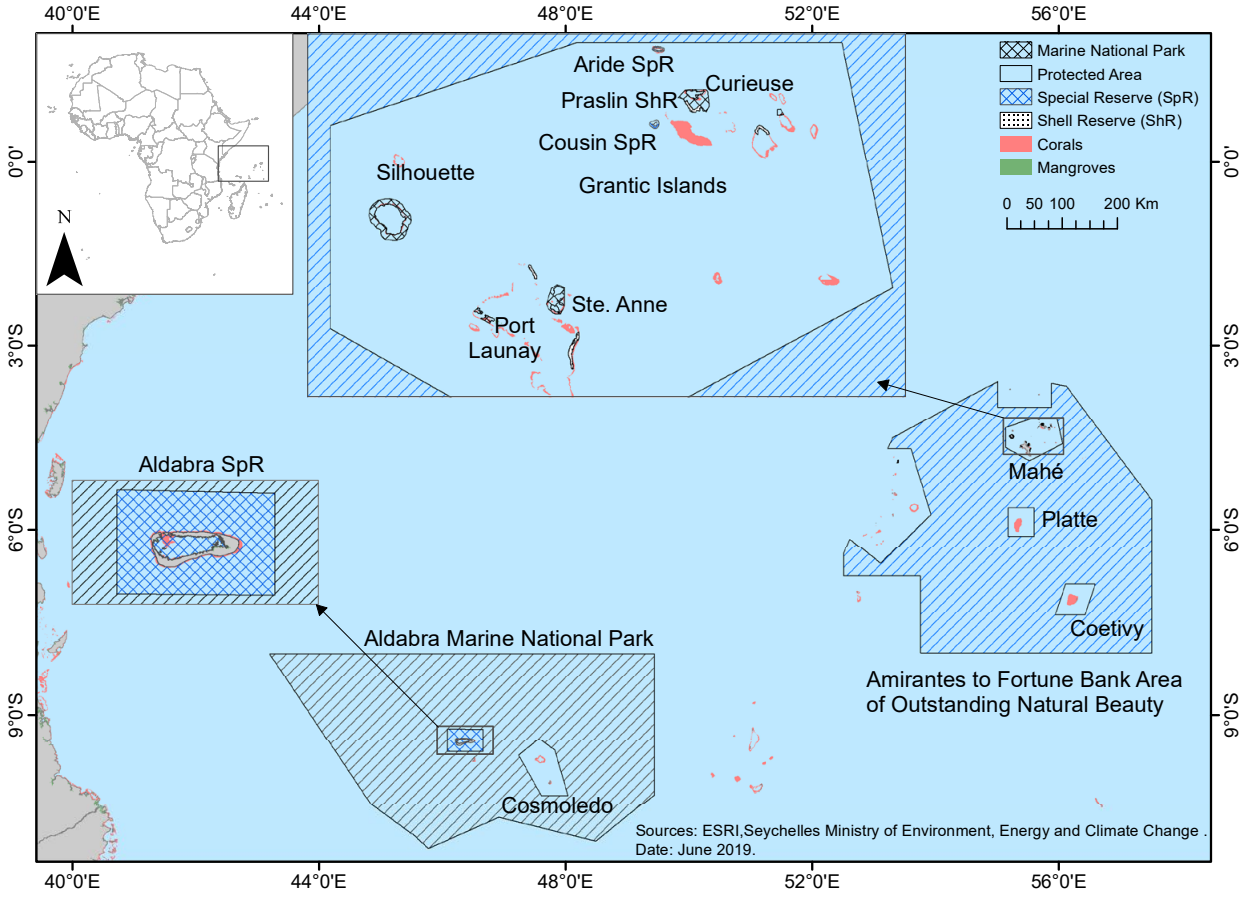


Figure 1: Seychelles Marine Protected Areas.

et al., 2003). More than 2600 species have been documented (Bijoux *et al*., 2003), many of which are protected by Seychelles' network of MPAs. Of special mention are the Critically Endangered Hawksbill turtle (*Eretmochelys imbricata*) and the Endangered Green turtle (*Chelonia mydas*) which use the beaches within the Seychelles MPA network extensively for nesting. Certain MPAs of the Seychelles are nesting sites of global significance for a number of seabird species such as Frigate birds (*Fregata* spp.), Terns (*Sterna* spp.), Boobies (*Sula* spp.), and Shearwaters (*Puffinus* spp.). The Aldabra Special Reserve and World Heritage Site is also home, to what appears to be a growing population of dugong (*Dugong dugon*), which was once thought to be locally extinct.

MPA OVERVIEW

Seychelles currently has 16 formally declared Marine Protected Areas (Figure 1), with a total area of 353 663km^2 (~ 26.4 percent of EEZ). The first of these marine protections was designated in 1973 and the most recent in 2018. Although the MPAs are designated under three different Acts (see above), the majority are designated under the NPNC Act, which makes provision for the following four different types of MPAs with different levels of protection:

- **Strict Nature Reserves** – offer the highest level of protection under the law and are described as areas set aside to permit the free interaction of natural ecological factors without any outside interference excepting that deemed indispensable for the safeguard of the very existence of the reserve. These reserves are classified under IUCN Category I, but to date no sites have been proclaimed under this category.

- **Special Reserves** – also categorized under IUCN Category I are areas set aside in which characteristic wildlife requires protection and in which all other interests and activities are subordinated to this end. Three sites are currently designated as Special Reserves.

- **National Parks** – IUCN Category II protected areas are areas set aside for the propagation, protection and preservation of wildlife or the preservation of places or objects of aesthetic, geological, prehistoric,

Seychelles National Parks Authority boat, Curieuse Island. © Jennifer O'Leary

historical, archaeological or other scientific interest for the benefit, advantage and enjoyment of the general public and includes, in the case of a Marine National Park, an area of shore, sea or seabed together with coral reef and other marine features so set aside. There are today seven sites which have been designated as Marine National Parks.

- **Area(s) of Outstanding Natural Beauty** – IUCN Category VI classified and described as areas set aside by reason of its natural beauty or other special characteristics for its preservation and maintenance for the benefit, advantage and enjoyment of the general public. There is one MPA which has recently been declared under this category. It is anticipated that Category VI MPAs will become more widespread as Seychelles continues to reconcile the protection of its environment and the development of its ocean-based (blue) economy.

Most of the Marine National Parks and Special Reserves that exist today were first identified as part of a Government white paper, Conservation Policy in the Seychelles (1971), which accompanied the development of the then Seychelles Tourism Policy (1969). In the white paper it is stated "The Government's policy statement on tourism development in Seychelles emphasized the overriding need to protect the natural beauty of the islands and their natural environment, which are among our greatest assets. It was envisaged that one of the most important ways of achieving this should be through the designation of national parks and other reserves and through the protection of areas where characteristic wildlife could be conserved in its natural surroundings, for the enjoyment of the public."

The white paper was prepared in the same year that the Seychelles International airport was officially opened and the Seychelles tourism industry took off.

Four Shell Reserves with a total area of 7.39km^2 have been designated under the Fisheries Regulations (1987). The Shell Reserves were designated for the conservation of marine gastropods, which at that time were extensively exploited for the marine curio trade. The demand for local shells is currently not great and the Shell Reserves are not actively managed. The Fisheries Regulations (1987) also have foreign fisheries restriction zones, where fishing by foreign vessels is prohibited (First Schedule) and where the use of nets is banned (Section 15 (1) (2)). These restriction zones are however not considered as MPAs.

A Protected Area Policy was adopted in 2013 (GoS, 2013) with the aim of providing a framework for the elaboration of legislation and associated guidelines for the establishment, coordination, guidance and management of Protected Areas (PAs) in Seychelles. The new vision is "…to have a Protected Areas System on the land and in the sea that protects and conserves high conservation value, comprehensive and ecologically representative examples of the Seychelles' natural diversity and cultural heritage and that provides ample opportunities for the fair and equitable sharing of the benefits arising from the sustainable use of these resources."

The Nature Reserves and Conservancy Act is currently under development and will support the implementation of the PA Policy. This new Act will make provision for other forms of protection not currently covered by existing legislation, such as sustainable use and community-based MPAs.

MARINE AREAS UNDER PROTECTION

Out of the sixteen Seychelles MPAs, fourteen are long-established and have been in existence for more than two decades. The other two were declared in 2018, as part of the Marine Spatial Planning (MSP) Initiative. The current MPA network include sites declared under four different categories. There are three Special Reserves (SRs), seven Marine National Parks (MNPs), four Shell Reserves (ShR), one Protected Area and one Area of Outstanding Natural Beauty (AONB) (Table 1). The SRs, MNPs and AONBs are designated under the NPNC Act (1969), whereas the Protected Area is designated under the Protected Areas Act (1967) and the Shell Reserves under the Fisheries Act (1987).

The Special Reserves have both marine and terrestrial components, whereas the Marine National Parks are almost entirely marine, apart from three Parks (Curieuse, Ile Cocos and Silhouette), where terrestrial components are also included. The Ste Anne Marine National Park was the first MPA to be declared in 1973 followed by the Cousin Island Special Reserve in 1975. The Aldabra Special Nature Reserve, designated in 1981, became a World Heritage Site in 1982 under the Convention concerning the Protection of World Cultural and Natural Heritage, adopted in 1972.

In February 2018, the Seychelles greatly increased the marine area under protection by a total of 208 365km^2 when two extensive MPAs were designated under the NPNC Act. These two areas were further extended in April 2019. The gazette area for the Aldabra "Marine National Park" covers 177 447 km^2. This new marine protection surrounds the existing Aldabra Special Reserve and UNESCO World Heritage Site which was also extended 2125.2km^2 in April 2019 to increase the total area of the Aldabra Special Nature Reserve to 2559km^2. This is an MSP Zone 1 Category for High Biodiversity Protection and in total is 179 853km^2. The gazette area includes Assumption Island, but excludes the waters surrounding Astove and Cosmoledo.

The other MPA that was designated in 2018 is the Amirantes to Fortune Bank "Area of Outstanding Natural Beauty". This is an MSP Zone 2 – Medium Biodiversity and Sustainable Uses covering 173 468km^2 and encompassing most of the Mahé Plateau lying beyond the territorial sea, and the waters from Amirantes east to Fortune Bank. Under the MSP Initiative (see Case Study, after Table 1) efforts are on-going to discuss the areas that are within the territorial waters and complete the zoning design for the 30 percent marine protection goal. Management and implementation plans for these areas are being prepared, including policy and regulations. Implementation of a new management approach in these newly designated areas is scheduled to start by April 2021.

Table 1: Seychelles' established and formally declared MPAs.

ALDABRA SPECIAL RESERVE	
TYPE	Coastal MPA
ECOSYSTEM AND LOCATION	Seychelles Outer Islands 9°25'S, 46°24'E
PROCLAMATION YEAR LEGISLATION	1981 / NPNC Act
PURPOSE	Protection of outstanding natural environment – extensive pristine coral reefs – large enclosed lagoon – extensive mangrove forest – vast areas of seagrass meadows – striking fish biomass – largest population of breeding frigate birds (*Fregata* spp.) in the Indian Ocean and large population of boobies (*Sula* spp.) – 2 percent of world's population of crab plovers – potentially resident population of dugongs (*Dugong dugon*) – lots of marine migratory species (e.g. humpback whales *Megaptera novaeangliae*) – large number of nesting Green turtles (*Chelonia mydas*) – high density and diversity of sharks and groupers – large population of coconut crabs – high variety of resident and migratory wading birds – hosts one of the world's only two oceanic flamingo populations – hosts one of the largest Giant tortoise populations in the Indian Ocean

IUCN CATEGORY	Category Ib
MULTIPLE USE ZONE	Mostly no-take and restricted access but with limited tourism and recreation and food security zones for staff
EXTENT	Marine area: 2406.4km^2 Land area: 152.6km^2
HABITATS	Coral reefs, seagrass and algal communities, mangrove, rocky shores, deep sea and offshore pelagic habitats, sandy beaches, intertidal mudflats, freshwater and brackish pools
INSTITUTIONAL FRAMEWORK	*Site management*: On site Island Manager in charge of park operations and a Science Coordinator in charge of science and monitoring; from Mahé (Head Office) overhead coordination by Chief Executive Officer and other support staff *Managed by*: Seychelles Island Foundation *Oversight*: Board of Directors appointed by the President of the Republic
MANAGEMENT PLANNING	*Status*: Current *Dates*: 2016 onwards *Specific objectives*: – protect and enhance the ecological integrity of the unique Aldabra Atoll – facilitate research that will inform management and enhance the understanding of integrated ecological systems and global environmental change – use Aldabra's on-going conservation success story to inform, educate, and inspire the local and international community – promote and facilitate tourism to Aldabra where activities are closely supervised, do not impact on the values and generate financial support for on-going conservation programs
THREATS	– alien invasive species – illegal fishing by fishermen from neighbouring countries – climate change causing mass coral bleaching events and drier conditions on land – oil spill from marine traffic – maritime piracy – accumulation of marine debris
OPPORTUNITIES	– extend the area of the Special Reserve by an additional 1km from its current boundary – make use of the conservation success of the site to further promote it – use the fish biomass at the site as a baseline for fisheries management – marketing of the atoll based on its remoteness – intrinsic value of the site
COUSIN ISLAND SPECIAL RESERVE	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°20'S, 55°40'E
PROCLAMATION YEAR LEGISLATION	1981 / NPNC Act
PURPOSE	Protection of nesting habitats for seabirds, rookeries for marine turtles, coral reefs – population of eight seabird species nesting on the island stable or increasing – increase of 800% in the number of nesting turtles over the last 30 years – high biomass of fish important to the artisanal fishery recorded before the mass coral bleaching events – high densities of commercially important sea cucumber species – have large area of restored coral reef habitat
IUCN CATEGORY	Category Ib
MULTIPLE USE ZONE	Complete no-take zone
EXTENT	Marine: 1.7km^2 Land: 0.27km^2
HABITATS	Coral reefs, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: CEO of Nature Seychelles is official site manager; Chief Warden is in charge of park operations; Science Officer in charge of science and monitoring *Managed by*: Nature Seychelles *Oversight*: Board of Directors

MANAGEMENT PLANNING	*Status*: Current *Dates*: 2018–2022 *Specific objectives (selected)*: – to protect and manage marine flora and fauna and preserve habitats in their natural condition – to understand the effects of climate change on the natural values of the reserve – to conduct and support research that will lead to a better understanding of the heritage of the reserve, and to provide information that will contribute to effective management of the reserve and surrounding area – to identify and monitor changes in the island environment, which will in turn provide an indication of the effectiveness of management
THREATS	– climate change (causing coral bleaching, extreme droughts, affecting food availability for seabirds) – beach erosion which is effecting infrastructure and turtle nesting
OPPORTUNITIES	– to demonstrate success based on the age of the reserve and the large number of conservation initiatives that have been effectively implemented over the years – to restore coral reefs in the reserve based on coral reef restoration techniques that have been effectively trialled in the reserve – to make use of Cousin Island experience to inform the management of other Seychelles' MPAs, particularly on the preparation of a systems plan for Seychelles' MPAs, looking at management at a network level as opposed to the customary site level
ARIDE ISLAND SPECIAL RESERVE	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°13'S, 55°40'E
PROCLAMATION YEAR LEGISLATION	1979 / NPNC Act
PURPOSE	Protection of nesting habitats for seabirds, rookeries for marine turtles, coral reefs – carbonate and granitic reefs (extensively affected by coral bleaching) – large population of nesting seabirds – nesting site for Hawksbill and Green turtles
IUCN CATEGORY	Category Ib
MULTIPLE USE ZONE	Complete no-take zone
EXTENT	Marine area: 6.4km^2 Land area: 0.71km^2
HABITATS	Coral reefs, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: Island manager in charge of reserve operations and Conservation Officer in charge of science and monitoring *Managed by*: Island Conservation Society (ICS) *Oversight*: Aride Island Management Committee and ICS Council
MANAGEMENT PLANNING	*Status*: Outdated, but yearly targets current *Dates*: 2006–2011 *Specific objectives (selected)*: – to maintain, enhance and enforce the legal and physical protection for the wildlife and ecosystem processes on and surrounding the island, in particular by preventing the introduction of exotic species and the illegal harvesting of native biota – to maintain or where desirable to increase the natural and semi-natural habitats and their associated species, both on the island and in the surrounding marine reserve – to re-establish endemic or native species known or likely to have occurred previously on Aride and to provide, where desirable, a refuge for other threatened species native or endemic to Seychelles
THREATS	– climate change (causing coral bleaching, droughts) – poaching for octopus, shearwater chicks and seabird's eggs – terrestrial invasive alien species

OPPORTUNITIES	– better marketing of the site in collaboration with operators making use of the park and tourism establishments – offering opportunities for fund raising through longer term stay on the island – building partnerships and sharing resources among partners – streamlining visitor management to make it less resource intensive – working in closer collaboration with the military to control poaching – develop and offer specialised on-site conservation training courses for students – share island conservation experiences, challenges and lessons learned with others – use of long-term biological datasets to inform management practices
STE ANNE MARINE NATIONAL PARK	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°37'S, 55°30'E
PROCLAMATION YEAR LEGISLATION	1973 / NPNC Act
PURPOSE	Protection of coral reefs, seagrass and rookeries for marine turtles – coral reefs – seagrass beds – nesting site for Hawksbill and Green turtles
IUCN CATEGORY	Category II
MULTIPLE USE ZONE	Complete no-take zone
EXTENT	Marine area: 9.96km^2 Land area: None
HABITATS	Coral reefs, seagrass, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: Operations Manager is in charge of park operation *Managed by*: Seychelles National Parks Authority *Oversight*: Board of Directors appointed by the Minister responsible for Environment
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – the management objectives for the park are not officially defined
THREATS	– climate change (causing coral bleaching) – sedimentation from large scale dredging and land reclamation on the east coast of Mahé Island – high nutrient input from the nearby Port Victoria – poaching for fish
OPPORTUNITIES	– greater stakeholder involvement in park management – undertake more scientific work with international partners – strengthen conservation in the park through implementation of a management plan – further increasing the number of visitors to the park – collecting more revenues for tourism establishments based in the park – to work with other law enforcement organizations to enforce park regulations – coral reef restoration
CURIEUSE MARINE NATIONAL PARK	
TYPE	Coastal MPA
LOCATION	Seychelles inner Islands 4°17'S, 55°43'E
PROCLAMATION YEAR LEGISLATION	1979 / NPNC Act
PURPOSE	Protection of coral reefs, seagrass and rookeries for marine turtles – coral reefs – mangrove forest – nesting beaches for Hawksbill and Green turtles – sheltered bays

IUCN CATEGORY	Category II
MULTIPLE USE ZONE	Complete no-take zone; Park zoned for only non-extractive activities
EXTENT	Marine area: 13.70km^2 Land area: 2.66km^2
HABITATS	Coral reefs, seagrass, mangrove, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: Park's Officer based on Curieuse is in charge of park operations under the guidance of the Operations Manager *Managed by*: Seychelles National Parks Authority (SNPA) *Oversight*: Board of Directors appointed by the Minister responsible for Environment
MANAGEMENT PLANNING	*Status*: Current *Dates*: 2018–2022 *Specific objectives (selected)*: – to ensure that prioritized marine and terrestrial habitats and populations of iconic and endangered species within the park remain healthy and are protected, and that degraded habitats are improved through restoration and other mitigation actions – to offer an environment where appropriate responsible tourism can continue to develop with the involvement of and for the benefit of local communities in a way that is equitable for all – to promote scientific research and monitoring of species and ecosystems within the park, and to understand and mitigate the influence of external factors – to positively contribute to the local fishery through spill-over and larval subsidy – to use the conservation actions being implemented in the park as a vehicle for increasing public education, awareness and activism – to protect and promote the historical and cultural heritage of Curieuse Island – to develop infrastructure and facilities for visitors and staff on the island in a manner that respects the sensitive natural environment of the area
THREATS	– Government's commitment to SNPA and the Seychelles network of MPAs so that the park is able to continue to generate funding for its operations and continue to support the large number of operators who are dependent on Curieuse for their livelihood – climate change (causing coral bleaching, extreme droughts and lack of water) – poaching for fish, octopus and coco-de-mer palms and nuts
OPPORTUNITIES	– greater stakeholder involvement in park management – undertake more scientific work with international partners – strengthen conservation in the park through implementation of new management plan – restoration of socio-economically important coral reef sites – restoration of coastal terrestrial habitats – rurther increasing the number of visitors to the park – rmproving knowledge transfer and the nature experience of visitors to the park
PORT LAUNAY MARINE NATIONAL PARK	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 9°39'S, 5°23'E
PROCLAMATION YEAR LEGISLATION	1979 / NPNC Act
PURPOSE	Protection of coral reefs
IUCN CATEGORY	Category II
MULTIPLE USE ZONE	Complete no-take zone
EXTENT	Marine area: 1.54km^2 Land area: 0.04km^2
HABITATS	Coral reefs, seagrass, mangrove, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: Park's Officer based at Port Launay; also responsible for Baie Ternay Marine National Parks operations under the guidance of the Operations Manager *Managed by*: Seychelles National Parks Authority (SNPA) *Oversight*: Board of Directors appointed by the Minister responsible for Environment

MANAGEMENT PLANNING	*Status*: Current as of 2020 *Dates*: 2018–2022 *Specific objectives*: – to ensure protection of coral reefs and associated population species, while promoting scientific research and monitoring – to offer an environment where sustainable eco-tourism can continue to develop for the benefit of the local communities – to use conservation actions in the park as a means to engage communities, increasing public education and awareness
THREATS	– climate change (causing coral bleaching) – poaching for fish and octopus
OPPORTUNITIES	– greater stakeholder involvement in park management – undertake more scientific work with international partners – strengthen conservation in the park through implementation of a management plan – finding ways to collect more revenues from visitors to the park – collecting revenue for tourism establishments based in the park – working with other law enforcement organizations to enforce park regulations
BAIE TERNAY MARINE NATIONAL PARK	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°38'S, 55°22'E
PROCLAMATION YEAR LEGISLATION	1979 / NPNC Act
PURPOSE	Protection of coral reefs – Coral reefs – Touristic beach – Sheltered bay – Intertidal mudflats
IUCN CATEGORY	Category II
MULTIPLE USE ZONE	Complete no-take zone
EXTENT	Marine area: 0.86km^2 Land area: None
HABITATS	Coral reefs, seagrass, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: Park's Officer based at Port Launay is in charge of park operations under the guidance of the Operations Manager *Managed by*: Seychelles National Parks Authority (SNPA) *Oversight*: Board of Directors appointed by the Minister responsible for Environment
MANAGEMENT PLANNING	*Status*: Current as of 2020 *Dates*: 2018–2022 *Specific objectives*: – to ensure that all the coral reefs and its associated populations remain healthy and are protected – to promote scientific research and monitoring while improving the health of degraded marine ecosystems through restoration and other mitigation actions – to offer an environment where sustainable eco-tourism can continue to develop for the benefit of the local communities
THREATS	– climate change (causing coral bleaching) – poaching for fish and octopus – future development of the area around the park – crown of thorn starfish (COTS)
OPPORTUNITIES	– greater stakeholder involvement in park management – undertake more scientific work with international partners – strengthen conservation in the park through implementation of a management plan – finding ways to collect more revenues from visitors to the park – working with other law enforcement organizations to enforce park regulations

SILHOUETTE MARINE NATIONAL PARK	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°29'S, 55°13'E
PROCLAMATION YEAR LEGISLATION	1987 / NPNC Act
PURPOSE	Protection of coral reefs – goral reefs – granitic reefs – sea turtle nesting sites
IUCN CATEGORY	Category II
MULTIPLE USE ZONE	In principle should be complete no-take zone, but does not have any regulations
EXTENT	Marine area: 10.35km^2 Land area: 18.6km^2
HABITATS	Coral reefs, seagrass, rocky shores, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: There is currently no active site management *Managed by*: Seychelles National Parks Authority (SNPA) *Oversight*: Board of Directors appointed by the Minister responsible for Environment
MANAGEMENT PLANNING	*Status*: No official plan but a Conservation Management Plan containing a few marine-based activities has been prepared by ICS and is being implemented *Dates*: N/A *Specific objectives*: – the management objectives for the park are not officially defined
THREATS	– lack of site management. – climate change (causing coral bleaching) – poaching for fish and octopus
OPPORTUNITIES	– integrate the management of the park into the annual work plan of the SNPA – work with the Island Development Company (IDC) and ICS in managing the park – developing innovative sustainable financing mechanisms for park management
ILE COCOS, ILE LA FOUCHE, ILOT PLATTE MARINE NATIONAL PARK	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°18'S, 55°52'E
PROCLAMATION YEAR LEGISLATION	1997 / NPNC Act
PURPOSE	Protection of coral reefs – coral reefs – granitic reefs
IUCN CATEGORY	Category II
MULTIPLE USE ZONE	Complete no-take zone
EXTENT	Marine area: 1.65km^2 Land area: 0.05km^2
HABITATS	Coral reefs, rocky shores
INSTITUTIONAL FRAMEWORK	*Site management*: Park's Officer based on La Digue island is in charge of park operations under the guidance of the Operations Manager from Mahé *Managed by*: Seychelles National Parks Authority (SNPA) *Oversight*: Board of Directors appointed by the Minister responsible for Environment
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – the management objectives for the park are not officially defined

THREATS	– climate change (causing coral bleaching) – unstable coral rubble preventing recovery of reef – high density of black-spined sea urchins – anchor damage to coral reef – poaching for octopus
OPPORTUNITIES	– greater stakeholder involvement in park management – undertake more scientific work with international partners – strengthen conservation in the park through implementation of a management plan – working with other law enforcement organizations to enforce park regulations
NORTH EAST POINT SHELL RESERVE	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°34'S, 55°27'E
PROCLAMATION YEAR LEGISLATION	1987 / Fisheries Act (1987)
PURPOSE	Protection of marine shells (gastropods) – coral reefs
IUCN CATEGORY	Category IV
MULTIPLE USE ZONE	Removal of marine shells prohibited
EXTENT	Marine area: 2.99km^2 Land area: None
HABITATS	Coral reefs, seagrass
INSTITUTIONAL FRAMEWORK	*Site management*: There is currently no active management of the Shell Reserves *Managed by*: Seychelles Fishing Authority *Oversight*: Board of Directors appointed by the President of the Republic
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – as per the Fisheries Regulations (1987) the objective is to protect marine gastropods
THREATS	– there are no urgent threats since the collection of marine gastropods for curio trade is not popular
OPPORTUNITIES	– to deregulate and deproclaim the site
ANSE FAURE SHELL RESERVE	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°42'S, 55°31'E
PROCLAMATION YEAR LEGISLATION	1987 / Fisheries Act (1987)
PURPOSE	Protection of marine shells (gastropods) – coral reefs
IUCN CATEGORY	Category IV
MULTIPLE USE ZONE	Removal of marine shells prohibited
EXTENT	Marine area: 1.08km^2 Land area: None
HABITATS	Coral reefs, seagrass
INSTITUTIONAL FRAMEWORK	*Site management*: There is currently no active management of the Shell Reserves *Managed by*: Seychelles Fishing Authority *Oversight*: Board of Directors appointed by the President of the Republic
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – as per the Fisheries Regulations (1987) the objective is to protect marine gastropods

THREATS	– there are no urgent threats since the collection of marine gastropods for curio trade is not popular
OPPORTUNITIES	– to deregulate and deproclaim the site
POINTE ZANGUILLES SHELL RESERVE	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°18'S, 55°43'E
PROCLAMATION YEAR LEGISLATION	1987 / Fisheries Act (1987)
PURPOSE	Protection of marine shells (gastropods) – coral reefs
IUCN CATEGORY	Category IV
MULTIPLE USE ZONE	Removal of marine shells prohibited
EXTENT	Marine area: 1.74km^2 Land area: None
HABITATS	Coral reefs, seagrass
INSTITUTIONAL FRAMEWORK	*Site management*: There is currently no active management of the Shell Reserves *Managed by*: Seychelles Fishing Authority *Oversight*: Board of Directors appointed by the President of the Republic
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – as per the Fisheries Regulations (1987) the objective is to protect marine gastropods
THREATS	– there are no urgent threats since the collection of marine gastropods for curio trade is not popular
OPPORTUNITIES	– to deregulate and deproclaim the site
LA DIGUE SHELL RESERVE	
TYPE	Coastal MPA
LOCATION	Seychelles Inner Islands 4°20'S, 55°49'E
PROCLAMATION YEAR LEGISLATION	1987 / Fisheries Act (1987)
PURPOSE	Protection of marine shells (gastropods) – coral reefs
IUCN CATEGORY	Category IV
MULTIPLE USE ZONE	Removal of marine shells prohibited
EXTENT	Marine area: 1.58km^2 Land area: None
HABITATS	Coral reefs, seagrass
INSTITUTIONAL FRAMEWORK	*Site management*: There is currently no active management of the Shell Reserves *Managed by*: Seychelles Fishing Authority *Oversight*: Board of Directors appointed by the President of the Republic
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – as per the Fisheries Regulations (1987) the objective is to protect marine gastropods
THREATS	– there are no urgent threats since the collection of marine gastropods for curio trade is not popular
OPPORTUNITIES	– to deregulate and deproclaim the site

AFRICAN BANKS AND SURROUNDING REEFS PROTECTED AREA	
TYPE	Coastal MPA
LOCATION	Seychelles Outer Islands 4°54'S, 53°20'E
PROCLAMATION YEAR LEGISLATION	1987 / Protected Areas Act
PURPOSE	Purpose of designation unclear
IUCN CATEGORY	Undetermined
MULTIPLE USE ZONE	Site does not have any regulations
EXTENT	Marine area: 8.20km^2 Land area: 0.09km^2
HABITATS	Coral reefs, seagrass, sandy beaches
INSTITUTIONAL FRAMEWORK	*Site management*: None assigned *Managed by*: Ministry of Environment, Energy and Climate Change *Oversight*: Board of Directors appointed by the President of the Republic
MANAGEMENT PLANNING	*Status*: No plan *Dates*: None *Specific objectives*: – the management objectives for the park are not officially defined
THREATS	– climate change (causing coral bleaching) – unregulated activities
OPPORTUNITIES	– to be officially managed as an MPA – undertake more scientific work with international partners – strengthen conservation in the park through implementation of a management plan – working with other law enforcement organizations to enforce park regulations
ALDABRA MARINE NATIONAL PARK	
TYPE	Pelagic MPA
LOCATION	Seychelles Outer Islands 10°05'S, 46°46'E
PROCLAMATION YEAR LEGISLATION	2018, extended in 2019 / NPNC Act
PURPOSE	Protection of pelagic waters and benthic habitats – pelagic zone – marine mammals – marine birds – whale sharks – sharks and fish – benthic habitats – seabird foraging habitat
IUCN CATEGORY	To be determined
EXTENT	Marine area: 177 447km^2 Land area: None
HABITATS	Deep sea and offshore pelagic and benthic habitats
INSTITUTIONAL FRAMEWORK	*Site management*: New marine protection category for MSP Initiative. The institutional framework for site management is in progress and will be determined by 2020
MANAGEMENT PLANNING	*Status*: Underway with the Seychelles MSP Initiative No management plan at present *Specific objectives*: As per the nomination package, namely: – expand the area and increase the level of protection for the deep, marine waters and seabed surrounding the Aldabra Group, conserving unique biodiversity features in these waters of the Seychelles archipelago, improving management for large marine predators and highly migratory species, and protecting the seabed from any alteration

THREATS	– overfishing – piracy (still a real if intermittent threat) – illegal, unreported and unregulated (IUU) fishing – fisheries by-catch – waste and oil spill from marine traffic – petroleum development
OPPORTUNITIES	– to meet the national goal of protecting 30% of Seychelles' EEZ
AMIRANTES TO FORTUNE BANK AREA OF OUTSTANDING NATURAL BEAUTY	
TYPE	Pelagic MPA
LOCATION	Seychelles Outer Islands 5°06'S, 54°30'E
PROCLAMATION YEAR LEGISLATION	2018, extended in 2019 / NPNC Act
PURPOSE	Protection of seascape – pelagic zone – deep sea reefs – upwelling and drop-off ecosystems – seabird foraging habitats – marine mammals foraging and breeding habitats – sharks, rays, turtles
IUCN CATEGORY	To be determined
EXTENT	Marine area: 173 468km^2 Land area: None
HABITATS	Deep sea and offshore pelagic and benthic habitats
INSTITUTIONAL FRAMEWORK	*Site management*: New marine protection category for MSP Initiative. The institutional framework for site management is in progress and will be determined by 2020
MANAGEMENT PLANNING	*Status*: Underway with the Seychelles MSP Initiative No management plan at present *Specific objectives*: As per the nomination package: – the purpose of this zone is to expand marine protection for marine biodiversity, benthic habitats and the important upwelling ecosystem that occurs in these waters of Seychelles, and to improve sustainable management of compatible uses of coral reef and bank habitats found outside of the Inner Islands and off the Plateau
THREATS	– illegal, unreported and unregulated (IUU) fishing – fisheries by-catch – chronic oiling and oil spills – overfishing
OPPORTUNITIES	– to meet the national goal of protecting 30% of Seychelles' ocean – to demonstrate how biodiversity conservation and sustainable use of the marine environment can be effectively achieved

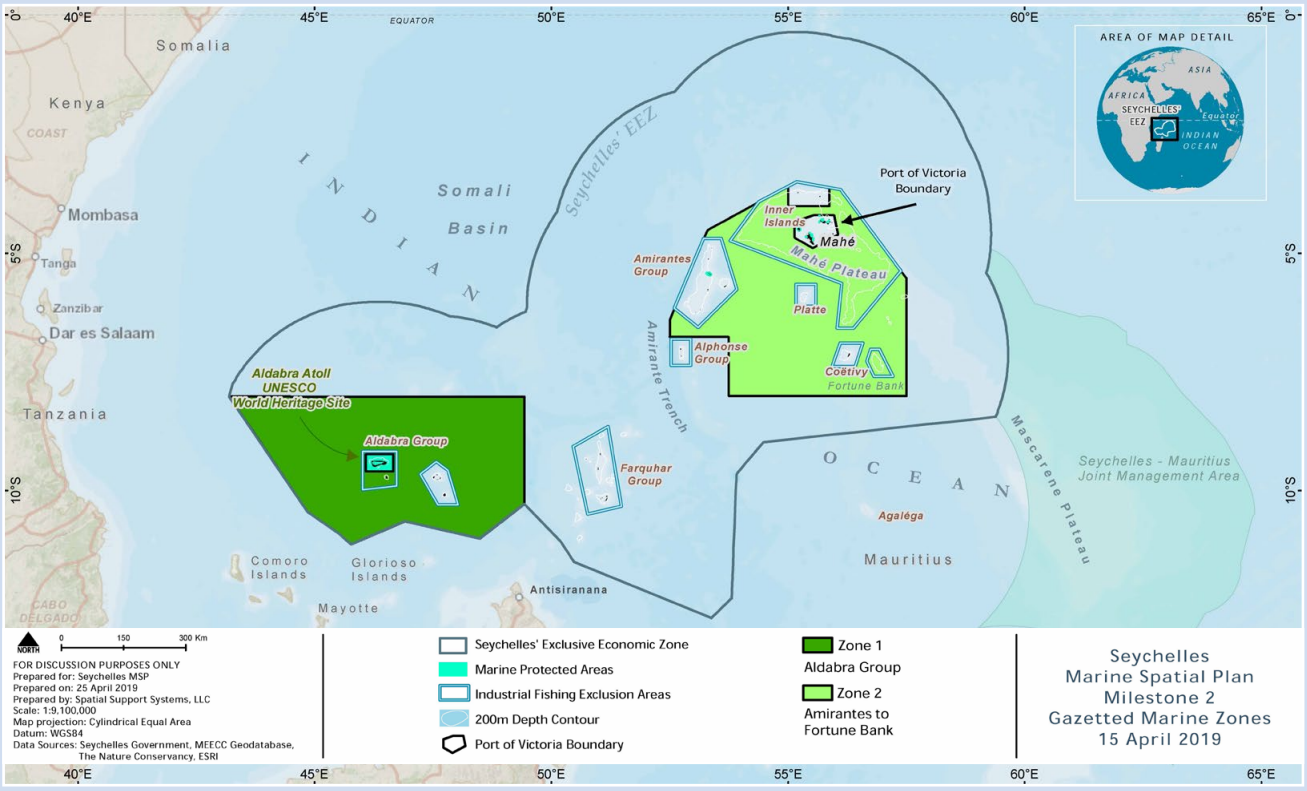
CASE STUDY

The Seychelles Marine Spatial Planning Initiative

Joanna Smith, Didier Dogley, Alain de Comarmond, Wills Agricole, Helena Sims, Rob Weary, Martin Callow, Rick Tingey and Jude Bijoux

The Seychelles Marine Spatial Planning (SMSP) initiative was established in 2014 after the Seychelles Government announced that it will be designating 30 percent of its Territorial Waters and EEZ as protected areas. The SMSP is led by the Government with process design and facilitation from The Nature Conservancy (TNC). To establish the funding mechanism in support of this commitment, the Government partnered with TNC to develop an innovative debt restructuring. To accomplish this refinancing, TNC facilitated a buy-back of USD 21.6 million of Seychelles' debt, blending impact capital and grant finance, with the Paris Club. Proceeds from the deal repay the impact investor and TNC, as well as releasing funds to support in-country, nature-based solutions to marine conservation and climate change.

From its inception, the SMSP was founded on a public participatory process, drawing on best available data and local knowledge. There are over 11 marine sectors involved in the planning, with a decision-making framework developed comprising an Executive Committee, Steering Committee and Technical Working Groups. The SMP has five thematic areas: fisheries, conservation, utilities and infrastructure, non-renewable resources, and recreation and tourism. The zoning design was developed using an iterative process, with three categories – Zone 1: High Biodiversity Protection category to cover 15 percent of Seychelles EEZ; Zone 2: Medium Biodiversity Protection and Sustainable Uses category to cover another 15 percent, provide access and opportunities for existing and new sustainable uses; and Zone 3: Multiple Use Zone to occupy 70 percent of the EEZ, aimed at optimizing economic opportunities and the Blue Economy, and to include essential marine infrastructure and public utilities. The first two new marine protection zones were designated in February 2018 and extended in April 2019 to increase the protected marine area by more than 350 000km^2 to cover 26.4 percent of the EEZ. Thus, Seychelles greatly surpassed the 10 percent goal of the Aichi Target 11 and UN Sustainable Development Goal 14.



AREAS UNDER CONSIDERATION FOR FORMAL PROTECTION

The government of Seychelles has set a target to have 30 percent of its EEZ and territorial waters under increased protection by 2020. This is being facilitated by the MSP Initiative described above. The MSP Initiative is a public process that uses an integrated approach to improve ocean management with participation from all key stakeholders.

Outputs of this government-led initiative include 410 000km^2 of Seychelles' waters with increased protection status and the full 1.34 million km^2 in improved management for marine resources (Smith *et al*., 2018). Implementation of the Seychelles MSP Initiative will commence from 2021 onwards. In preparation for this, the MSP Initiative is developing a Marine Spatial Plan Policy, a governance framework and costing analysis.

A number of areas in the Seychelles outer islands have been previously identified for MPA status (Table 2 and Figure 2) through the GoS-UNDP-GEF Outer Islands Protected Area Project. These areas contain a diversity of shallow marine habitats (less than 200m depth) including coral reefs, seagrass beds, mudflats, mangrove areas and shallow lagoons. Within these areas there are also documented spawning aggregation sites for coral reef associated fish species. Discussions are still ongoing concerning the designation of new MPAs in the outer islands and there is a possibility that the proposed number and extent of MPAs designated would change

Once designated, the sites will greatly increase the area of shallow marine ecosystems under formal protection. It has not been decided what management authority will be mandated to manage the sites. As a result of the logistical issues of operating in the Seychelles outer islands, it is expected that there will be some form of co-management arrangement with responsibility shared amongst a number of organizations. The outer island project and the MSP team are working together to ensure synergies in efforts of site identification and objectives for marine protection.

In the inner islands there are a number of sites under consideration for designation as MPAs including the areas around North, Denis and Récif Island. While the area for designation around North and Denis Island is yet to be established, an area within the perimeter, 300m from the high-water mark, is being proposed for Récif Island. An extension of the Aride Special Reserve from 400m to 1000m from the high-water mark is also

Estimating seagrass density, under a Science for Active Management (SAM) initiative, Curieuse Island MPA, Seychelles. © Jennifer O'Leary

under consideration. There are also proposals to designate five important nesting sites for marine turtles along the south coast of Mahé Island and two aggregation areas for the whaleshark (*Rhincodon typus*) and other marine megafauna as Temporary Protected Areas (TPAs) with an IUCN Category IV (Ecological Reserve) status. The Turtle TPAs are proposed to protect the Critically Endangered Hawksbill turtles (*Eretmochelys imbricata*) at these important nesting areas during their peak nesting season between October and April. A total of 0.4km^2 is proposed, containing beach, nesting platform and nearshore foraging habitats.

The two marine megafauna TPAs are proposed for the areas around the south and northwest of Mahé Island extending respectively around 2km and 3km offshore with a total area of 27.8km^2 and 25.1km^2, with the purpose of protecting migratory whalesharks. Designation of these sites should become possible when the Nature Reserves and Conservancy Act is enacted. The Act will provide the legal framework for the designation of TPAs, which is not in the preset legal framework.

Table 2: New protected areas identified for designation in the Seychelles Outer Islands.

SITE	MARINE AREA (km^2)	TERRESTRIAL AREA (km^2)
Alphonse group	128.3	19.4
Desroches	343.0	3.7
Poivre	28.4	1.4
Farquhar	223.0	4.0
D'Aross and St. Joseph	40.0	1.4

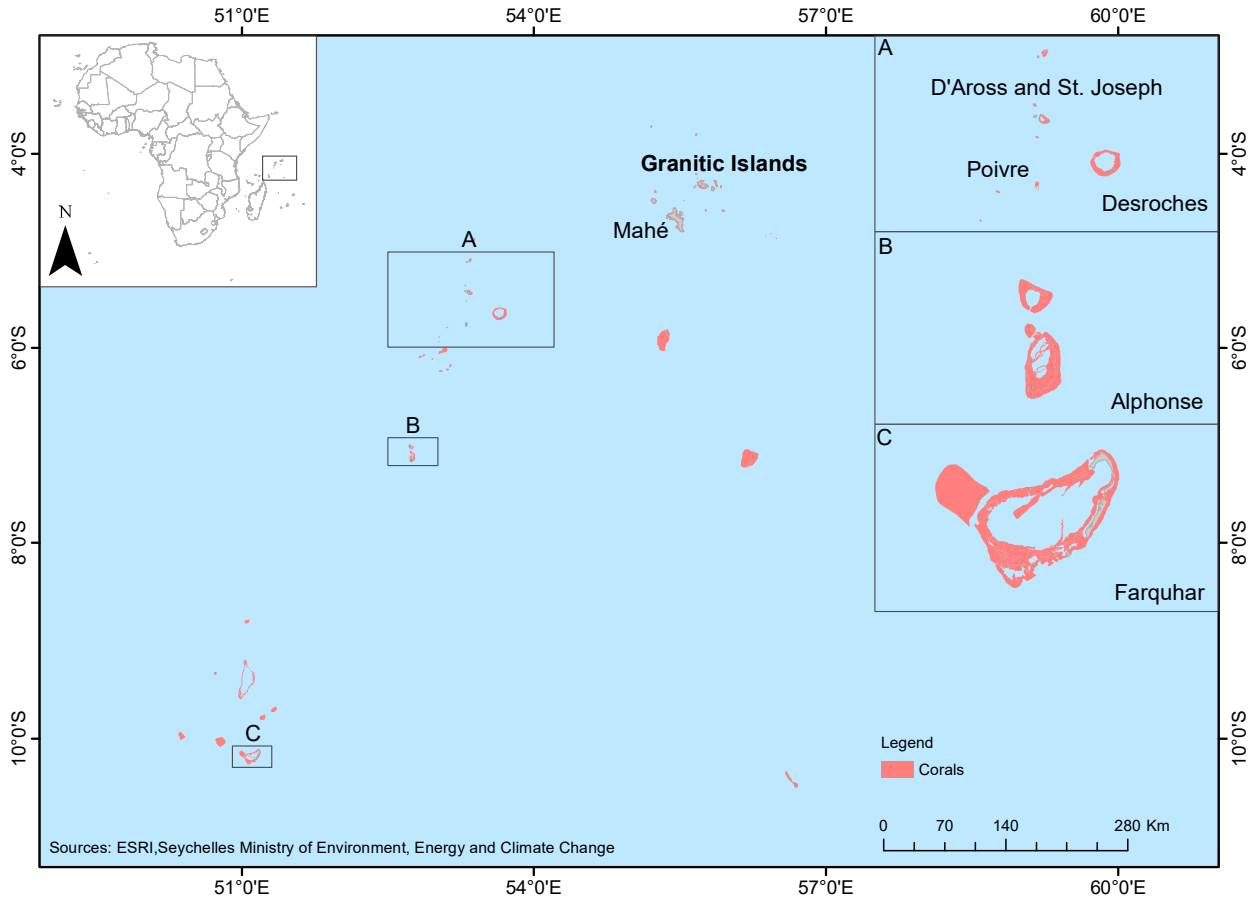


Figure 2: Island groups for which parts of the marine area are under consideration for designation as new MPAs.

Total area currently under protection and proposed for protection

The current situation indicates that over a quarter of Seychelles' EEZ is now under protection, and with the addition of the proposed MPA the area under protection will approach 27 percent of the EEZ (Table 3). When the proposed MPAs are formally recognized, the 30 percent target will be reached.

Table 3: Seychelles EEZ under protection and proposed for protection.

Seychelles' EEZ	1 336 559km^2
EXISTING MPAs	
No. of MPAs	16
MPA area	353 663km^2
% EEZ	26.46
PROPOSED MPAs	
No. of proposed MPAs	To be determined
Proposed MPA area	Approx. 50 000km^2
Potential % EEZ	4

NON-FORMAL PROTECTED AREAS

The role of non-formal, voluntary, protected areas in the Seychelles is mostly of an educational and social empowerment nature, which encourages the public or group of stakeholders to actively manage certain areas for environmental purposes. The groups involved with the management will tend to have some form of direct or indirect benefits from their involvement with management.

Seychelles has only one voluntary Marine Protected Area. This is the Port Launay coastal wetland, which was declared a Ramsar Site in November 2004. The site is one of the best preserved mangrove wetlands in the Seychelles' inner island group and is an area which has been left relatively intact over the years. It occupies an area of 1.24km^2 and includes both mangrove forest and coral reef habitats. The wetland was proposed for inclusion within the boundaries of the Morne Seychellois National Park but this did not occur. The site does have a current management plan and is being managed with the involvement of partners from the community, the private sector and government.

The islands of D'Arros and St. Joseph atoll in the Amirantes group are privately owned and the marine areas around them are privately managed as *de facto* marine protected areas. Management is carried out by the Save Our Seas Foundation D'Arros Research Centre. This area was designated as a Special Reserve by National Parks (D'Arros and St. Joseph Special Reserve) (Designation) Order, 2014 but the legislation was repealed less than two months later. Presently, D'Arros and St. Joseph atoll is not recognised by fishers or tourism operators as a voluntary protected area. It however remains one of the sites being considered for formal protection under the GoS-UNDP-GEF Outer Islands Protected Area Project.

The islands in the D'Arros and St. Joseph atoll have a total land area of approximately 6.3km^2. The shallow marine habitats around the islands cover an area of approximately 28km^2. Most of the marine environment is made up of reef flats dominated by seagrasses and reef slopes dominated by hard corals. A shallow lagoon 3.5km in length and 3 metres in average depth is found at St. Joseph and is popular with rays, blacktip reef shark (*Carcharhinus melanopterus*) and sicklefin lemon sharks (*Negaprion acutidens*). The beaches around the islands are popular rookeries for Green turtles (*C. mydas*) and Hawksbill Turtles (*E. imbricata*). Manta rays (*Manta birostris*) are frequently found in the channel between D'Aross and St. Joseph. The St. Joseph atoll is also an important site for seabirds with more than 1000 Greater Frigate (*Fregata minor*) and Lesser Frigate (*Fregata ariel*), and 1500 Lesser Noddies (*Anous tenuirostris*) roosting on the atoll. At least seven species of seabirds breed on the islands including 23 000 pairs of Wedge-tail shearwaters (*Ardenna pacifica*) and 500 pairs of Roseate terns (*Sterna dougallii*). A population of Pink-backed Pelican (*Pelicanus rufescens*) has been lost from St Joseph Atoll (Bijoux *et al*., 2003).

The marine areas around the island of Denis and North are also currently managed as voluntary MPAs while the nomination of the sites for formal protected area status are considered alongside the new Protected Area Policy and new Protected Area legislations currently being prepared. The privately owned islands of Bird and Fregate also have active marine conservation programmes and the marine areas around them are managed as *de facto* marine protected areas.

Over the years there has also been growing realization by resource users of the need to protect the marine resources on which they depend for their livelihood. The Praslin Fishers Association (PFA) is presently implementing a project with financial support from the Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) to establish an informal voluntary temporal fisheries reserve in the bay of Baie Ste Anne, Praslin (5.4km^2). The rationale is that fishermen from this area will voluntarily fish outside the reserve for six months of the year, during the northwest monsoon when the weather is calm, and fish the reserve during the rough weather period when it is difficult to venture far from the coast. The voluntary temporary closure is seen as a means of conserving the fisheries resources inside the bay while safeguarding the livelihood of fishermen. The marine environment in the bay of Baie Ste. Anne is dominated by shallow seagrass beds. The area is one of the few places in the Seychelles where the Broadblade seagrass (*Enhalus acoroides*) is found.

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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.