Parke Marino Aruba 2019 2021

Preliminary Management Plan

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PARKE NACIONAL ARUBA

Parke Marino Aruba - Preliminary Management Plan 2019-2021

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Cover photos: A school of French grunts (Haemulon flavolineatum) and a traditional fishing boat (courtesy of Armando Goedgedrag / Artmando Multimedia)

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Executive Summary

In 2016 the Government of Aruba in partnership with TNO Caribbean was awarded the BEST 2.0 Program grant to establish Marine Protected Areas (MPAs) on Aruba, thereby entering the process of establishing a national marine park. Parke Marino Aruba was officially established by law AB 2018 no. 77 on 21 December 2018 (see Appendix E) and brought under the management of Fundacion Parke Nacional Aruba (FPNA) on 16 April 2019.

This marine park management plan delineates the key goals, objectives and priorities which have been agreed upon with Ministry of Spatial Development, Infrastructure and Environment (MinROIM) and the Directorate for Nature and Environment (DNM) for a two-year transition phase of the marine park. This management plan should serve to provide guidance during the two-year transition phase for establishing a practical and concise management plan that can be executed accordingly. The provision of this for Aruba's first-ever marine park management plan is therefore a critical element in the future protection, management and restoration of the different marine protected areas as one of the key elements within the natural heritage of Aruba.

This document is intended as a reference for the staff of the Aruba National Park Foundation (FPNA) and will additionally assist government, key stakeholders and potential funders in their planning and thinking in relation to the management of Parke Marino Aruba. It is also intended for any other interested parties and the community at large. This management plan focuses on critical management issues for the

short and medium term, based on identified management measures, focussing on habitats, species and stakeholders involved for the initial 4 marine protected areas (MPAs), together forming Parke Marino Aruba:

- MPA Arikok
- MPA Sero Colorado
- MPA Mangel Halto
- MPA Oranjestad Reef Islands

The MPAs will be managed as multi-use MPAs similar to existing marine parks in the Dutch Caribbean. Ecosystem-based management (EBM) and other relevant emerging marine management approaches will be applied, allowing wise use of MPAs, while promoting non-destructive and sustainable activities, minimizing negative human impact on the environment and identifying research priorities to benefit the conservation of natural ecosystems and their ecosystem services.

Communication to build awareness, as well as developing a sense of ownership for the specific MPAs, will form a crucial part of these management, restoration and climate change adaptation activities and will be of utmost importance during the two-year transition phase of the marine park.

FPNA will manage Parke Marino Aruba, on behalf of the Aruban government, within the framework of Sustainable Development Goals (SDGs) and the Blue Economy concept and in accordance with national and international laws, treaties and conventions, standards and policies. FPNA aims to work together with expert partner-organizations such as the Dutch Caribbean Nature Alliance (DCNA), the Dutch national committee of the International Union for Conservation of Nature (IUCN-NL), the United Nations Environment Programme - Caribbean Environment Programme (UNEP-CEP), the Caribbean Marine Protected Areas Management (CaMPAM), the Gulf and Caribbean Fisheries Institute (GCFI), the National Oceanic and Atmospheric Administration (NOAA), the Royal Netherlands Institute for Sea Research (NIOZ), the Dutch office of the World Wildlife Fund (WWF-NL) and the Aruban Directorate of Nature and Environment (DNM).

The management of the four MPAs will commence with a two-year transition phase during which the plan will be tweaked and established for consecutive years. This definite marine park management plan will be evaluated and adjusted annually as well as comprehensively evaluated every 4 years, followed by a revision or new management plan. Evaluation of the management organization and results will be based on annual (financial) reports.

Contents

Introduction

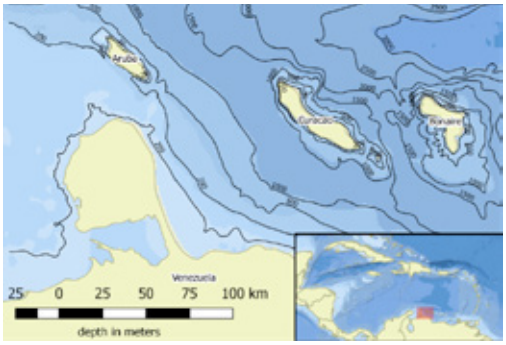


Figure 1:
Bathymetry of Caribbean region and ABC islands.

Figure 2:
EEZ boundaries of Aruba.

Aruba Island Overview

Aruba is one of the leeward islands in the Caribbean Sea. Aruba is a constituent country of the Kingdom of the Netherlands. Together with Curaçao, Sint Maarten and the Netherlands, Aruba forms the Kingdom of the Netherlands. Aruba is considered a Small Island Developing State (SIDS), with a land area of approximately 179 km^2. The maximum length measures approx. 32 kilometers, the maximum width approx. 10 kilometers[1].

Geographic Location

Aruba is part of the Leeward Islands or ABC-islands (Aruba, Bonaire and Curacao) and is located in the Caribbean Sea (12.5211° N, 69.9683° W) 24 km off the coast of Venezuela (Figure 1). Until 1986, Aruba was part of the Dutch Antilles. Within the Dutch Kingdom, Aruba is now considered an autonomous territory. After the dissolution of the Dutch Antilles in 2010, Aruba was assigned an Exclusive Economic Zone (EEZ) (Figure 2) where the Dutch Kingdom could transfer management responsibilities to the local government, making them responsible for economic activities up to 370 km (200 nautical miles) from the shoreline.

[1] See http://www.sustainablesids.org/

Like many SIDS, Aruba's economy is largely dependent on tourism. Before the 1960's the economy revolved around oil refining (Figure 3). Tourism in the past was not a main contributor to Aruba's Gross Domestic Product. In 1985 the Lago Oil and Transport Company announced that it would cease its oil refining operations in Aruba. Since the closure of the Lago refinery, the Aruban governments consistently opted for an economic growth strategy through accelerated expansion of the island's tourism sector Aruba's economic realignment from oil refining to popular tourist destination resulted in an exponential population growth in order to provide for labor demand in the tourism sector.

The graph below illustrates the growth of Aruba's population in relationship to other tourism influenced factors such as accomodations built and arrivals.

Aruba Population and Growth 1925-2000 at 5-year Intervals

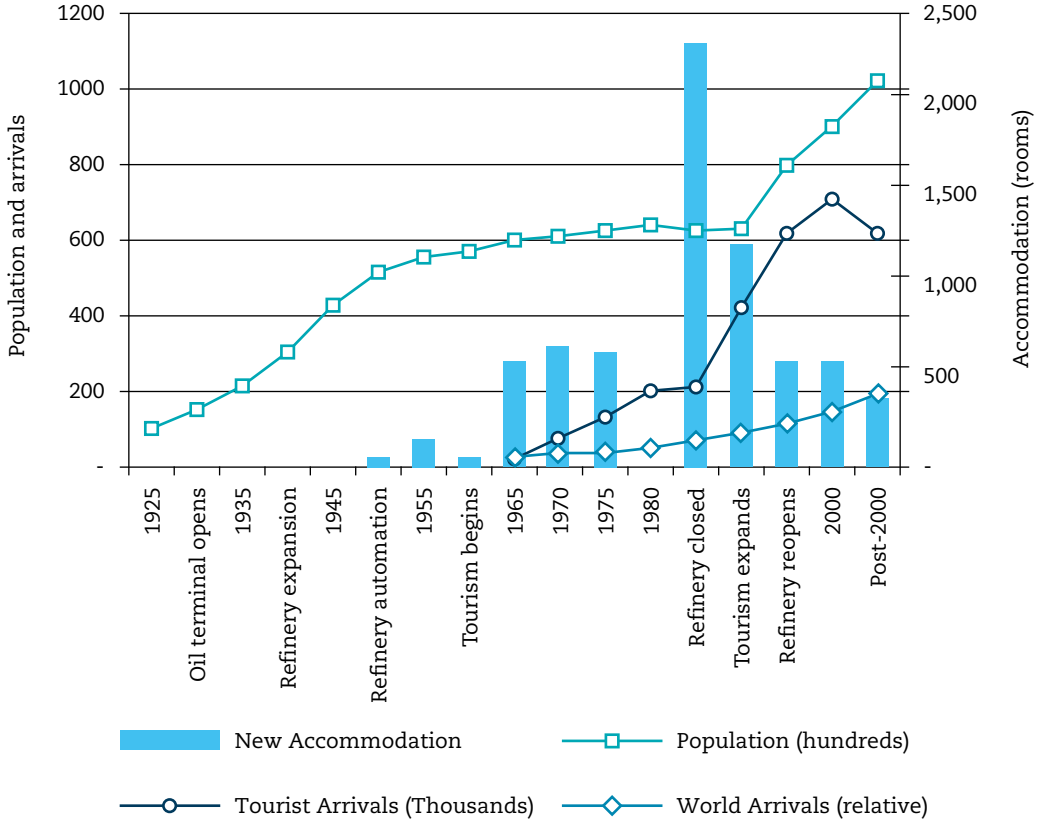


Figure 3:
Population growth and international visitors by history (5-year intervals), accommodation facilities between 1925 – post 2000 (Cole & Razak, 2009).

The Aruban tourism industry is generally considered to contribute approximately 89% to the gross domestic product with the total number of tourist arrivals reaching well over 1 million per annum and this figure is intended to increase.

The Aruban tourism industry is almost entirely dependent on the unique appeal of our beautiful white beaches and turquoise waters, the rugged landscapes and Aruba's distinct wildlife. Our natural resources are part of our cherished Aruban identity and a most important feature of the Aruban tourism product.

Environmental, Ecological and Socio-economical Importance

Aruba is surrounded by the sea and therefore highly dependent on it.
The marine environment has a variety of habitats that support ecological communities, including globally threatened species.

Like many natural environments, the marine environment provides a number of benefits to our ecosystems that are also vitally important to our well-being as inhabitants as well as our economy. Not only does the entire population of Aruba benefit from harvested products derived from our marine environment, such as water and food; but in a world where awareness of climate change is becoming increasingly more present ecological functions such as carbon sequestration become evermore relevant.

Our marine environment is highly used for cultural (recreational) services such as motorized water sport activities, recreational fishing and more eco-friendly activities such as diving, snorkelling and swimming.

A well functioning marine park program plays a significant role in supporting ecological functions that are needed to maintain healthy ecosystem processes, which include:

- nutrient cycling;
- genetic diversity;
- provision of nursing, breeding, foraging, and resting grounds for birds, fish, sea turtles, and a range of other animals.

Many of the fish species go on to populate the reefs and provide a source of food for commercial and recreational fishing but also serve other socio-economic activities such as in the recreation and tourism sector for diving and snorkeling.

As Aruban- and world citizens we are all dependent on the benefits our marine ecosystem provides. It is therefore of utmost importance that we apply the principles of a sustainable blue economy and SDGs (see Appendix D and C respectively) in order to ensure we can rely on these ecosystem services in the context of climate change, now and for future generations.

Establishing Parke Marino Aruba

In 2016 the Government of Aruba in partnership with TNO Caribbean was awarded a grant by the BEST 2.0 Program in order to establish Marine Protected Areas (MPAs) on Aruba.

The Nature Protection Ordinance (Natuurbeschermingsverordening, AB 1995 no. 2) provided the legal basis for establishing Marine Protected Areas (MPAs) through the decree: Landsbesluit Parke Marino Aruba. The decree further specifies that the management of such marine protected areas are to be described in a management plan.

Parke Marino Aruba consists of 4 marine protected areas (MPAs) collectively comprising 6020 hectares. A listing of the four MPAs is provided in table 1, below.

Table 1: Aruba's Marine Protected Areas (MPAs)

MPA name	Location[2]	Size
MPA Arikok	The coastal waters adjacent to Parke Nacional Arikok (PNA)	1650 hectares
MPA Sero Colorado	The coastal water around the "Eastern Cape" of Sero Colorado	1870 hectares
MPA Mangel Halto	The coastal water along Mangel Halto, Isla di Oro, Santo Largo, with coastal mangroves	1600 hectares
MPA Oranjestad Reef Islands	In the capital city, from the lagoon next to Governor's Bay Beach up to Punta Brabo, excluding the cruise ship passage channel	900 hectares

Use Designation and impediments to effective marine ecology conservation

The underlying premises for the MPA designations are based on a EU Best funded project executed by TNO Caribbean, the Directorate for Nature and Environment (DNM) and the Ministry of Spatial Development, Infrastructure and Environment (MinROIM) that resulted in the legal designation four areas as Nature Reserves. These four areas are further described in the project 'mother document' Parke Marino Aruba Management Plan (April 2019), to be implemented as multi-use MPAs. Other existing marine parks in the Dutch Caribbean contain multi-use MPAs which include 'reserve areas' (i.e. Bonaire National Marine Park, Saba National Marine Park, St. Eustatius National Marine Park and St. Maarten Man of War Shoal National Marine Park). The four Aruba MPAs (Figure 4) - with each containing one or more Key Biodiversity Areas (KBAs) - will be managed as multi-use MPAs.

[2] For GPS coordinates see AB 2018 no. 77, in Appendix E.

Figure 4:
Aruba's protected nature areas, including the four Marine Protected Areas (MPAs)

Due to the relatively small area of the MPAs and their location, there remain crucial elements missing that would ensure effective ecosystem-based conservation and management of the Aruban marine habitat. Conversely, only a marine park fully surrounding the island with designated management and zoning could effectively conserve marine biodiversity and ecosystems and would ensure:

- ecosystem connectivity is addressed (marine life is often highly migratory);
- marine life is protected through multiple habitats during different stages of their life cycles;
- 'No-take' areas are assigned and function as strict reserves and 'spill-overs' to replenish stocks relevant to (artisanal) fisheries;
- better enforcement capabilities with regards to factors negatively affecting marine habitats;
- financial sustainability, as this is a basis for the comprehensive system of user fees and an approach internationally recognized as Value for Funding through inclusion of the IUCN designation for Marine Protected Areas[3].

Significant challenges are foreseen in terms of management and conservation deliverables, when the requirements of effective marine park management - listed above - are weighed against the size and dispersity of the 4 small MPAs assigned to Parke Marino Aruba's protection and care.

[3] https://www.iucn.org/commissions/world-commission-protected-areas/our-work/marine marine-protected-areas-global-standards-success

The managing organization: Fundacion Parke Nacional Aruba (FPNA)

As of 16 April 2019, Fundacion Parke Nacional Aruba (FPNA) will not only be the managing organization of Arikok National Park and the connecting National Park/RAMSAR site, but will also be the managing organization of the new 'Parke Marino Aruba' or the Aruba National Marine Park.

Fundacion Parke Nacional Aruba (FPNA) is first and foremost a nature conservation management organization, appointed by the government of Aruba to manage protected nature areas and herewith FPNA is to be distinguished from other (non-governmental) organizations. FPNA strives to protect, conserve and where possible restore Aruba's unique nature for current and future generations and to function as a conservation leadership organization that makes our natural and cultural heritage accessible in a sustainable way.

FPNA's primary goals are based on the organization's Articles of Association:

1. Nature Conservation: Protecting, conserving and where possible restoring Aruba's natural heritage - diverse land, water and air environments and species of flora and fauna - according to best practices on a scientific basis.

2. Conservation Education: Informing and educating the Aruban community and visitors alike about Aruba's unique nature and conservation practice. Stimulating a sustainable lifestyle and inspiring and engaging the community and visitors to conserve nature.

3. Sustainable Recreation: Providing excellent visitor experience to individuals and group visitors - the local community and tourists alike - with the possibility to access, explore and experience Aruba's unique nature in both a sustainable and unforgettable, memorable way.

4. Science & Research: Applying the latest and accepted scientific theories and working according to best available practices to deliver effective long-term results. Science and research form the basis of our conservation work and guides our conservation management actions, with best practices also applied to all other areas of our organization, activities and outputs.

Together with the local community and other stakeholders, FPNA strives to build a future in which people and nature live in harmony. Moreover, FPNA aspires for Aruba to become a leader in the field of nature conservation and sustainability, both within the Caribbean and beyond.

Parke Marino Aruba preliminary management plan

This first-ever Parke Marino Aruba management plan is a living or working document that lays out the management actions for the first two-year start-up or preliminary phase from October 2019-2021, during which a definite management plan will be established.

Purpose of a marine park management plan

This marine park management plan is a critical element in the future protection, management and restoration of the different MPAs as it aims to provide guidance on how natural and cultural resources, visitor use, educational programs, community relations and park administration will be managed from the beginning.

This management plan is based on the 'mother document' Parke Marino Aruba Management Plan (April 2019), developed by TNO Caribbean, DNM and MinROIM and is intended as a reference for the staff of FPNA and provides the necessary tools to implement the purpose, vision, management goals and objectives established for the marine park.

This management plan additionally functions as a compliance document to the Aruban government and as an informative document to the community at large, giving insight into fundamentals to (key) stakeholders and potential capital providers.

Transition Phase

Aruba's Marine Park's management will effectively commence with a two-year transition phase during which intensive stakeholder consultations will be held to come to a broad-based common vision on how and to which extent Parke Marino Aruba's conservation goals will be operationalized. Stakeholder engagement is essential for conservation to have any chance of being successful. During the transition phase there will also be an emphasis on raising awareness of the designation and purpose of the newly established MPAs.

MPA effectiveness is compromised when local communities are not involved and lack the social and economic incentives to comply with the MPA regulations. Failure is often attributed to factors relating to MPA's design and operation. Conversely, the successful establishment of a MPA can potentially be achieved by educating the local community on conservation issues regarding the local environment, then encouraging ownership and allowing them to also benefit from the established MPA.

In addition, the transition phase will allow for the establishment of a definite Management Plan (a management plan usually has a duration of approximately 10 years) which will be based on research, consultation, monitoring and other data collection. Once formalized, this management plan will be annually reviewed and adjusted, and comprehensively evaluated every 4 years, followed by a revision or a new management plan.

The marine park management plan will target critical management issues for the short and medium term, based on identified and agreed upon management measures, focussing on habitats, species and stakeholders involved for the initially 4 marine protected areas (MPAs), together forming Parke Marino Aruba (6020 hectares):

- MPA Arikok - 1650 hectares
- MPA Sero Colorado - 1870 hectares
- MPA Mangel Halto - 1600 hectares
- MPA Oranjestad Reef Islands - 900 hectares

When setting up a MPA, it is vital to have in-depth knowledge of the area so as to define ecological boundaries and set Specific-Measurable-Achievable-Realistic-Timebound (SMART) Ecosystem-based Management (EBM) objectives. It is also important to have the support of the community, established techniques for surveillance and a legal framework for enforcement and surveillance .

FPNA will manage Parke Marino Aruba in accordance with national and international laws, treaties and conventions, standards and policies. FPNA aims to work together with expert partner-organizations such as the Dutch Caribbean Nature Alliance (DCNA), the Dutch national committee of the International Union for Conservation of Nature (IUCN-NL), the United Nations

Environment Programme - Caribbean Environment Programme (UNEP-CEP), the Caribbean Marine Protected Areas Management (CaMPAM), the Gulf and Caribbean Fisheries Institute (GCFI), the National Oceanic and Atmospheric Administration (NOAA), the Royal Netherlands Institute for Sea Research (NIOZ), the Dutch office of the World Wildlife Fund (WWF-NL) and the Aruban Directorate of Nature and Environment (DNM).

Ecosystem Based Management

Ecosystem-based management (EBM) is an integrated management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation. Moreover, this approach allows for the management of dynamic nature of ecosystems in the face of uncertainty by considering a broad range of influences within a region, including external influences, factors, and stressors. As a broad management approach, EBM considers cumulative impacts on marine environments; an approach that works across sectors to manage species and habitats, economic activities, conflicting uses, and the sustainability of resources. EBM allows for consideration of resource trade-offs that help protect and sustain diverse and productive ecosystems and the services they provide[4].

EBM will be applied to Parke Marino Aruba, allowing wise use of MPAs, while promoting non-destructive sustainable activities, minimizing negative human impact on the environment and identifying research and conservation areas to benefit the conservation of ecosystem services. EBM will be incorporated into the definite Management Plan as a source, point of departure and framework, together with the relevant Sustainable Development Goals (SDGs) and Blue Economy concept.

EBM includes the following core characteristics:

- Adaptive and flexible, responsive to monitoring and research results
- Place-based with geographic areas defined by ecological criteria
- Cross-sectoral, considering interactions between sectors of human activity
- Proactive, incorporating tradeoffs to manage the marine and coastal environments
- Inclusive and collaborative, encourages participation from all levels of government, indigenous peoples, stakeholders

As EBM entails adaptive management, it is crucial that this marine park management plan is periodically evaluated and revised - hence a living or working document. Adaptations will be made based on the latest available science, data and best practices. Constant research and monitoring is essential in this process.

[4] Source: https://www.ecosystems.noaa.gov/EBM101/WhatisEcosystem-BasedManagement.aspx

Marine park purpose, significance, mission and vision

Every national park and/or protected area needs a plan that provides clear guidance about how the natural and cultural resources, visitor use, education programs, community relations and park administration will be managed. A management plan is a tool that describes how a park is to be protected, used, developed and managed. It describes the desired future state or condition of the park and the most efficient path to achieve this.

Marine Park Purpose

The park purpose reaffirms the reasons the park was set aside for protection. The purpose of Parke Marino Aruba includes:

- To conserve and protect marine biodiversity and ecosystems while managing accessibility in a sustainable way
- To maintain and enhance the ecosystem goods and services which the protected area provides to the economy of Aruba
- To inspire and educate the population in general and school children in particular, as well as tourists, with regard to the marine environment and its ecological values, and raising awareness with regard to the contributions they can make to its conservation
- To conduct scientific research or cause it to be conducted for the benefit of marine biodiversity, management, conservation, restoration, development of the marine environment, and knowledge development

Marine Park Significance

Significance statements express why park resources and values are important enough - within a global, national, regional, and system-wide context - to merit national park designation. Aruba is in dire need of marine conservation. The turquoise blue waters surrounding the island are a big attraction for the tourism industry, which our island almost solely depends on. A long history of unregulated fishing and harvesting, overuse of ecosystems - also for recreation purposes -, as well as pollution, sedimentation and coastal development, have had a negative impact on coral reefs, seagrass beds, mangroves, and sandy beaches. These activities are negatively impacting nature in general and the marine environment in particular, and are ultimately bad for tourism and the Aruban community. Marine ecosystems are very fragile and take decades, centuries even, to recover from degradation.

Table 2 below shows significance statements that have already been identified for each MPA, more significances can be identified during the 2 year transition phase and the course of marine park management.

Table 2. Marine Park significance

MPA	Significance
MPA Arikok	> relatively low exploitation level when compared to the other Aruba MPAs due to MPA Arikok's remoteness and rough ocean conditions. > relatively low impact from land based anthropogenic sources > only MPA located fully on the windward side of the island with its associated oceanographic and ecosystem features > long stretches of limestone cliffs > white sandy beaches > contains nesting sites for e.g. sea turtles and marine birds > connected with MPA Mangel Halto via terrestrial protected areas
MPA Sero Colorado	> white sandy bay beaches > potential shark nursery > reef islands with "Important Bird Area" classification > contains nesting sites for e.g. sea turtles and marine birds > sea turtle foraging habitat > historical records show the site used to contain mangrove forests
MPA Mangel Halto	> white sandy beaches > seagrass habitat > sea turtle foraging habitat > reef islands > relatively large mangrove forest > potential seahorse habitat > connected to RAMSAR site Spaans Lagoen > connected with MPA Arikok via terrestrial protected areas
MPA Oranjestad Reef Islands	> diverse coral reefs > white sandy beach > reef islands > potential shark habitat

Fundamental Resources and Values (FRVs)
Fundamental Resources and Values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management because they are essential to achieving the purpose of the park and maintaining its significance.

Conversely, note that the identification of FRVs should not be interpreted as meaning that some park resources are not important. FRVs focus planning and management in terms of priority. If FRVs are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

Initial research has identified the following fundamental resources and values for the MPAs that together comprise Parke Marino Aruba:

- coral reefs
- seagrass beds
- mangrove systems
- a large diversity of breeding seabirds in Aruba (IBAs)
- potential shark nursery areas
- potential seahorse habitat
- marine mammal nursery areas
- sea turtle foraging areas
- sea turtle nesting beaches
- marine bird nesting areas
- endemic and/or endangered species
- white sandy beaches and bays
- geological landmarks
- historic sites

All four of the designated MPA areas are classified as Key Biodiversity Areas (KBAs) which are sites identified nationally with global significance, supported by the International Union for the Conservation of Nature (IUCN), Birdlife International, Conservation International (CI), the Critical Ecosystem Partnership Fund (CEPF), and other international conservation organizations.

Parke Marino Aruba is the island's first form of marine resource management with the goal of nature conservation. A well-functioning marine park is an important tool in conserving species, habitats, biodiversity and ecosystem services, and can ultimately help sustain or restore their socio-economic value.

Marine Park Mission

The mission of Parke Marino Aruba is:

- To conserve and protect marine resources through ecosystem-based management principles, while inspiring and engaging the community at large to join these efforts for current and future generations.

Marine Park Vision for the Future

Parke Marino Aruba's vision is based on a set of conditions to strive for upon the completion of the objectives identified in this preliminary and the resulting definite plan. The plan calls for actions that can make this vision a reality.

- Our vision is that FPNA will manage Parke Marino Aruba as a regionally and globally successful and significant (multi-use) Marine Protected Area, thereby exemplifying marine conservation management excellence and leadership.

Critical issues & potential threats

Management planning focuses on identifying and developing strategies to solve problems. This management plan identifies and addresses the key issues, and existing and potential threats relative to Parke Marino Aruba that were identified in the planning process. Additionally, this management plan recommends zoning, sensitive species protection, resource monitoring and other actions to appropriately manage these issues.

In implementing this management plan, constructive and ongoing dialogue will be necessary among all stakeholders to find mutually supported limits and uses that are consistent with the purposes of each park.

The following table (3) sets out and summarizes the key management issues for Parke Marino Aruba. The underlying premises of these issues list are based on the "mother document", 'Parke Marino Aruba Management Plan' (dated April 2019) and field observations. In the detailing of the management plan in the subsequent chapters, the management issues[5] are further elaborated in the form of management objectives and their impacts listed, which will guide future actions. These management issues have been prioritized from high (1) to low (10), based on a 'priority brainstorm' of FPNA staff and will be adapted as new data is gained.

[5] Factors causing negative impact to the environment, flora and fauna.

Table 3: Key management issues for Parke Marino Aruba

Issue [6]	Priority [7]	Summary Description
Marine and coastal recreation (unregulated)	5	> Sunscreens harmful to marine life and ecosystems > Marine debris and (plastic) pollution > Noise pollution > Light pollution > Public toileting > Unregulated recreational activities i.e. causing physical damage as a result of e.g. boating (anchoring, strandings, prop damage), trampling (tourists walking on corals, seagrass beds, etc. > Recreational facilities i.e. disturbance of mating, resting and nesting sites
Maritime activities	7	> Anchoring > Boat maintenance/cleaning > Fuel > Propeller forces > Noise pollution
Extractive activities	10	> Fisheries (incl. for the aquarium trade) > Oil/gas extraction and exploration > Poaching > Unregulated sampling for either scientific, educational or other purposes
Land, air and marine pollution	6	> Sedimentation > Eutrophication > Pesticides > Industrial facilities > Harbors > Ballast water > Landfill > Vessel cleaning > Littering and garbage dump; solid and fluid waste and chemical management > Sewage treatment facilities > Oil spills and leakages of oil and chemicals as a result of land based facilities
Coastal development	4	> Hotels, condominiums, lodges, etc. > Residentials > Industrial facilities > Harbors > Littering and garbage dump; solid and fluid waste and chemical management > Sewage treatment facilities > Roads
Invasive species & diseases	8	> Lionfish > *Halophilia stipulacea* > Coral diseases i.e SCTLD, coral bleaching etc.
Wildlife feeding	9	> Tours > Individual
Data deficiency	3	> Insufficient data to guide effective decision-making.
Climate change & natural disasters	11	> Sea level rise > Sea temperature rise > Ocean acidification > Sargassum influxes > Tropical storms, hurricanes and tsunamis > Coastal erosion

[6] Issues have been combined and summarized to provide a manageable list.
[7] This list and priority ranking is preliminary and has been chosen on the basis of short term feasibility and level of impact on the conservation of resources. Stakeholders need to be involved in reassessing the list during the two-year transition phase of the marine park.

Issue	Priority	Summary Description
Lack of awareness	2	Once people are more aware of the importance of marine resource management for their own livelihood as well, they will they will subscribe to the sustainable management and protection of our coasts, marine habitats and seas.
Sustainable financing	1	FPNA manages Parke Marino Aruba for the government, hence public sector budgets will remain at the core of the long-term funding but may not be consistent. Bilateral and multilateral donor funds may possibly become an important secondary source of finance. However, there is a need to secure this conventional funding for biodiversity conservation, both in order to maintain existing flows as well as to increase them. Supplementary financing mechanisms with high potential need to be considered and explored. The diversification of funding may be seen as a prerequisite for ensuring the long-term financial sustainability of the MPAs of Aruba. An island-round marine park model would highly increase the potential to reach financial sustainability as it allows the managing organisation to receive (non-governmental) contributions for the services provided.

Conservation strategies

Defining goals and objectives is the first step, and one of the most important steps in the management planning process. Goals are defined here as the broadly stated primary purposes for which Parke Marino Aruba is established. They identify WHAT we want to achieve. Objectives are the more explicit statements of how the goals will be accomplished. They also identify HOW we are going to get there. In all cases, the goals and objectives must be consistent with the language and intent of the fundamental purpose of the park, as reflected in the legislation or decree establishing it.

Goals and Objectives

The following goals and objectives apply to all of the park areas in Parke Marino Aruba. Strategies specific to each MPA will be discussed in the Profiles & Strategies section of this management plan.

Goal 1:

Establish a program of marine research and monitoring to support long-term active management and conservation of natural (and cultural) resources based on best available knowledge (science-based) and best practices.

Objectives

Research

The availability of basic data (including baseline) and information relating to the natural processes, species and habitats is an important component in supporting the decisions and actions that lead to the sustainable and effective protection and management of the areas. Furthermore, specific studies targeted on individual species, groups of species or aspects of the habitats found within and around

the sites can provide valuable additional information for the fine tuning of conservation plans and can assist in the prioritization of actions.

Monitoring
Monitoring measures the same parameters repetitively with a regular interval in order to compare results. Monitoring allows policy makers and managers to review and understand the impact of their actions and, on the basis of that review, to continue, stop, change and/or modify their mitigations in order to maintain or improve the results. In addition, monitoring is particularly important in order to demonstrate success in relation to funding. Monitoring can therefore contribute to future efforts to secure funds and identify future priorities for funding. Monitoring will provide the basis for Ecosystem-Based adaptive Management (EBM).

Historical research
Documenting oral histories is becoming more and more important as time passes. Oral histories provide more timely and in-depth information on current conditions and potential impacts than is otherwise available in the limited time frame in which (social) impact assessments are often conducted. Furthermore, oral histories provide a contextual framework for understanding quantitative results. FPNA will initiate an oral history project to document the life (his)stories of our senior residents of Aruba as well as obtaining relevant information from materials and artefacts from archival institutions.

Goal 2:

Conserve and (where possible) restore native and regionally/globally important marine species, habitats, ecological processes, resilience and aesthetics, with particular effort given to protecting foundation, keystone, endemic and endangered species.

Objectives

Species, Habitat and Ecosystem Conservation and Connectivity
Species, habitat and ecosystem conservation and connectivity management is one of the critical requirements for the protection and maintenance of the MPAs. It includes specific management related to the typical (and rare) habitats and species with important ecological functions that are found on the sites. It also addresses issues such as water management, pollution and climate change. Research & Monitoring is an integral part of conservation programs.

Invasive species mitigation
FPNA will together with relevant stakeholders research and monitor invasive species which have a significant impact on the marine habitat and find sustainable ways to mitigate their impact.

Goal 3:

Promote positive, engaging, inspiring and informative relationships and dialogue with the community and all stakeholders.

Objectives

Outreach and Awareness

By creating more awareness (through numerous channels), the community and visitors will understand the importance and uniqueness of our natural resources and the benefits of conservation. Therefore they will be more likely to adhere to rules and regulations and contribute to conservation actions as responsible world citizens. This awareness can be reached through educational programs, media campaigns, signage, communications and marketing.

Stakeholder Engagement

Generally speaking, all individuals, groups or organisations that are in one way or another affected, involved or interested in the marine park can be considered stakeholders[8]. They include the government, authorities, experts and users. Engaging and including all stakeholders in the marine park management process and operations creates a sense of ownership and encourages stakeholders to take responsibility for their own actions. Stakeholders can be involved or engaged through official stakeholder meetings or sessions, but also through volunteer programs, community engagement, activities and events aimed to inspire the stakeholders to actively participate and contribute to conservation efforts as well as mitigate their potential negative impacts.

Regional & Global Networking and Partnerships

Marine resource management should not only occur at a national level, but also at regional and global levels. Many nations and organizations worldwide are dedicating more and more efforts to the conservation of the marine environment and ecosystems. Together with all such partners, we can join our efforts and exchange knowledge and expertise to strengthen the effectiveness of Parke Marino Aruba.

Goal 4:

Allow for sustainable use of the Marine Park by promoting non-destructive activities and working with stakeholders to establish guidelines and regulations to minimize negative impacts on the natural environment.

Objectives

Increased sense of 'Ownership' and broad support guidelines and regulations

By working together with stakeholders to establish guidelines, the stakeholders will contribute and gain insights of impacts of their actions in the marine park. By addressing these impacts and finding alternatives, solutions and restrictions together, they will support these regulations when implemented by the managing organization.

[8] See http://msp.ioc-unesco.org/msp-good-practices/engaging-stakeholders/ for more information on (the importance of) stakeholder engagement.

Minimize/eliminate negative impacts
Guidelines and regulations will indicate the accepted behavior in order to minimize adverse effects on the marine environment. At the same time, these regulations will also restrict actions that will have adverse impacts on the marine park.

Create facilities & offer alternatives to mitigate destructive usage
When implementing restrictions, it is crucial for the success of such measures to offer alternatives, including methods that are less destructive to the natural resources.

Goal 5:

Ensure sufficient capacity for effective Marine Park management, finance and operations.

Objectives

Resources (human, material) and administration
Management and operations of the marine park will depend on the availability and capacity of its resources. For the short term, as this marine park is in the start-up phase, the first priorities will be to meet staffing requirements for successful execution of tasks and responsibilities as well as acquiring boat(s) and vehicle(s) to be able to reach all parts of the marine park areas and transport between them. Secondly, some investments will be made to initiate the research and monitoring program as this will be the basis to motivate any mitigation measures.

Safety
All facilities, boats and vehicles are supplied with basic emergency response equipment. All staff members are trained on a regular basis (every 2 years) in first aid, CPR and AED practices. Staff will receive marine search and rescue training.

Enforcement & Legislation
Whilst there is a legal framework for the protection of nature on Aruba it is not always consistently or effectively enforced. Government entities can provide assistance in enforcing national laws and also provide training for marine park staff in order to acquire the necessary legal authority to enforce legislation.

Financial sustainability
All management and operations depend upon financial support. While the foundation of many protected area systems has historically relied on public finance, this model is becoming more and more difficult to rely on. Over time, it must be recognized that there must be multiple sources of funding, including finding creative and equitable ways to access a portion of the foreign exchange that the tourist industry brings to the island.

FPNA will develop a sustainable and recurring financial plan for supporting park operations. Existing and potential sources of funding include:

- User fees (i.e. park entrance, diving, commercial photography and videography)
- Mooring program
- Dive tag program
- Grants from national and international organizations for specific projects
- Corporate sponsorship
- Fundraising efforts by other foundations and other local groups
- Scientific research permits
- Concession contracts and commercial permit fees
- Funding i.e. through DCNA, ATA and Tourism Product Enhancement Fund (TPEF), amongst others

In order to gain an impression of what visiting divers as well as all other - potential - users who come to Aruba would consider a suitable fee level for a user fee, FPNA will conduct questionnaires concerning the 'Willingness to Pay' of a visiting tourist. Methods, such as "Willingness To Pay studies" (WTP) are used to assess the park visitors' views and opinions towards fee systems and the potential of paying more in order to sustain an organisation's role in nature management and conservation of national park resources. Note that user fees and a dive tag program will only be viable with an island-round marine park.

Sustainable Development Goals and Blue Economy

The aforementioned goals and objectives are specific to the marine park and management plan. Additionally, there are overarching goals and ideals that are implemented on a national, regional and global level in order to reach sustainable (marine) resource management and conservation. These are the UN Sustainable Development Goals (SDGs) - specifically SDG 13, 14 and 15 - and the Blue Economy as developed for the Small Island Developing States (SIDS). The integration of SDGs and Blue Economy in 'Parke Marino Aruba' is reflected in Appendix C and D.

Management Zoning

A zoning plan is used where protected areas are required to deliver multiple objectives, as is the case with the four MPAs of Parke Marino Aruba. Zoning plans typically separate conflicting human activities; allow specific activities in certain areas; and provide protection in other areas as needed to sustain resources. Zones are preferably demarcated with buoys, signs or other markers and should be clearly displayed on maps of the park. The zoning plan is primarily intended to achieve nature conservation objectives. The zoning plan is kept as simple as possible and provides the minimum restrictions on human activities compatible with the needs of users and sustainable use of the natural resource (Kelleher, 1999).

Management zoning involves decisions about what type of recreational or consumptive use should be allowed, and where. Typically, it involves a range of spatial zones with varying levels and types of human activity.

Zoning requires two steps:
1. A descriptive step which identifies important values and opportunities. It requires an inventory of resource characteristics and existing uses.
2. An allocation/prescriptive step in which decisions are made about which opportunities and values should be provided, and where.

In short, the zoning process helps managers, operators, visitors and local communities understand what the park values are and where they are located, especially the sensitive resources.

The management zones for Parke Marino Aruba areas should take into account important resources, use patterns, opportunities for visitor use, and management needs. The exact allocation of management zones are to be identified based on further inventories during the two-year transition phase.

Conservation Zone

In this zone, waters, bays and beaches will be managed to conserve natural resources and processes while accommodating uses and experiences that do not adversely affect the ecological integrity or scenic quality of the area. Regulations on levels and methods of traditional (artisanal and small-scale[9]) fishing and commercial sports fishing will continue, and may be amended in the future as future conditions dictate.

Scientific monitoring of the status of key features of the aquatic marine environments (fish populations, coral cover and health, benthic community, mangroves, etc), birds and other (endangered) species and populations, will guide future use characteristics and levels. The vast majority of Parke Marino Aruba will be designated as a Conservation Zone and it is the government's intention for the near future to expand it into an island-round marine park. An island-round conservation zone allows use, but manages use to reduce impact.

Zoning for human activities

The zoning of activities is based on the long term vision, natural values, activities and threats. Designated areas will need to be assigned to accommodate certain activities e.g., swimming area, snorkeling trail, kayak routes, mangrove trail, etc. Exceptions may be imposed for certain activities. For example: in the MPA Arikok, considering the low number of dive operators and surfers a maximum number of entrants can be maintained, a minimum dive qualification (e.g. rescue divers require minimum 40 dives) and only at specific locations.

[9] Definition of artisanal and small-scale fishing: The term "artisanal" refers to the relative level of technology, while "small-scale" refers to the size of the fishing unity (scale). According to FAO's Glossary: Traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption. In practice, definition varies between countries, e.g. from gleaning or a one-man canoe in poor developing countries, to more than 20-m. trawlers, seiners, or long-liners in developed ones. Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries. See: http://www.fao.org/3/x2465e/x2465e0h.htm

Sensitive Resource Zone

This zone consists of places in the park that support natural resources that are (1) unusually fragile, (2) limited geographically and (3) would benefit from area-specific protection. Areas in this zone will be managed to restore where appropriate, perpetuate target species and their habitats, and to limit and remove potentially disruptive activities.

The following areas potentially will be designated in this zone:

MPA Arikok
- The entire marine environment
- Sea turtle nesting sites
- Shore bird nesting sites

MPA Sero Colorado
- Sea turtle nesting sites
- Shore bird nesting sites
- Shark nursery areas
- Coral reefs
- Seagrass beds

MPA Mangel Halto
- Majority of mangroves
- Sea turtle nesting sites
- Shore bird nesting sites
- Seagrass beds
- Coral reefs

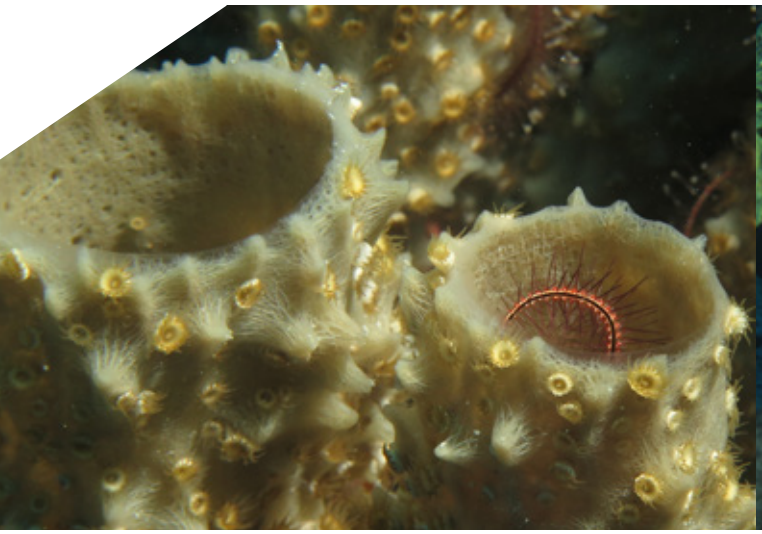
MPA Oranjestad Reef Islands
- Sea turtle nesting sites
- Shore bird nesting sites
- Shark nursery
- Marine mammal nursery
- Mangroves
- Coral reefs

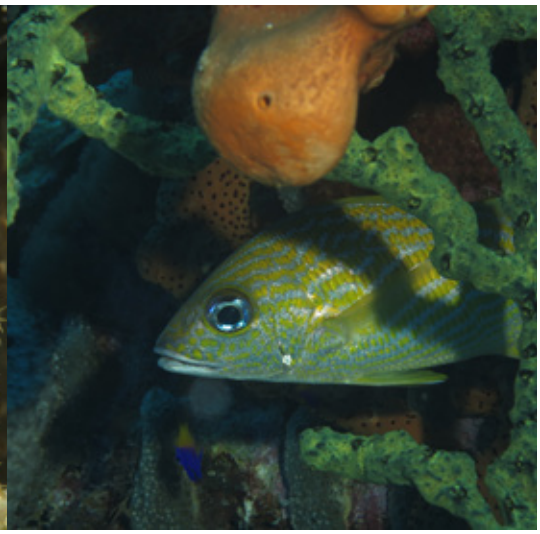
Visitor Services/Park Administration Zone

This zone will consist of buildings, grounds, docks and marina space leased or purchased for staging mainland park operations, education programs, access to parks, and other visitor services. It is also desirable to have an on-site lab/ breeding center (i.e. for ex-situ coral growing with the aim of in-situ coral farming) and marine life caretaking facility (e.g. for injured and recuperating sea turtles and sea mammals).

It is important to note that Parke Marino Aruba does not encompass any privately owned land. The areas being considered for the Administration Zone classification, however, are located adjacent to or outside of park boundaries, which ideally includes an administrative headquarters based in or near the Mangel Halto-Isla di Oro-Santo Largo area and will likely be situated in a leased building or purchased land.

NOTE: In terms of IUCN protected area classification, the conservation zone used by this plan is comparable to IUCN category #2, the sensitive resource zone is comparable to IUCN category #1a, and the visitor use/park administrative zone does not have a comparable IUCN category. Note that IUCN status still needs to be officially applied for and granted. This is critical for inclusion and possible future funding.





Marine Park profiles and strategies

There is a knowledge gap in environmental, ecological and anthropogenic data for Aruba. The following Marine Park Profiles and Strategies are preliminary and subject to change as more data is obtained through research, monitoring and stakeholder consultations. The underlying premises of these profiles and strategies are based on the 'Mother Document' Parke Marino Aruba Management Plan (April 2019) and field observations.

Each marine park profile includes a preliminary list of fundamental physical and biological resources. These resources are the features or attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Identifying these resources helps focus planning and management efforts on what is truly significant about the park. One of the most important responsibilities of FPNA is to ensure the conservation and public enjoyment of those qualities that are essential or fundamental to achieving the purpose of the park and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

1. MPA Arikok

Location

Located on the eastern coast and runs along an 8 km coastal stretch of the national park, Parke Nacional Arikok (PNA) (Figure 5). The border starts at Daimari beach and runs south to Vaderpiet. The MPA extends 2 km seawards and covers a total area of approximately 16.5 km2. MPA Arikok encompasses different zones varying from intertidal to pelagic areas.

Figure 5:
MPA Arikok boundaries

Geomorphology

The windward coastline of PNA forms a unique landscape with geological features that are formed by the volcanic Aruba Lava Formation (ALF) and the Pleistocene Limestone Terraces (PLT). This rock formation is of volcanic origin that was formed under water. The coastline alternates between ALF and PLT, the two geological formations, generating a landscape different from the neighboring islands Bonaire and Curaçao where the limestone terraces are more dominant on the windward side. Between the Natural Pool (Conchi) and Dos Playa there is a relatively low limestone terrace with a wide spray zone including sawah banks[10]. The sawah banks at the edge of the limestone terrace provide a habitat for different plants and animals. At certain locations, large drainage channels were eroded over time in the limestone terraces due to the run-off of rainwater. In some locations this lead to the development of bays. The rocky shores provide natural protection against storm waves.

[10] The name 'sawah'-bank refers to a terrace feature consisting of porous, young lime, which are deposited by organisms such as Serpula's (lime tube worms) and incrustating (crusting) lime algae. (de Buisonje & Zonneveld, 1960).

Physical Resources

- Bay Beaches (Daimari, Moro, Dos Playa and Boca Prins)
- Sand Dunes
- Natural Pool (Conchi)
- Sawah Banks

Biological Resources

- Turtle nesting beaches
- Shore birds nesting grounds
- Coral reefs
- Dolphin nursery corridor passes through this MPA

Existing Human Uses

- Hiking
- Fishing (fishing boats, shore fishing, spearfishing)
- Swimming
- Surfing
- Conchi
- UTV tours
- Horse Riding tours

Threats

- Lack of public awareness
- Data deficiency
- Oil spills
- Illegal trafficking
- Sargassum
- Spearfishing
- Invasive species
- Driving on beaches and other coastal breeding habitat
- Marine and coastal pollution
- Coral disease SCTLD / Bleaching

Management Strategies

(suggested; will be updated via stakeholder workshops during two-year transition phase)

- Public awareness campaigns
  - Schools, social media, traditional media
- Environment, ecology, human uses, and threats data & monitoring
- Area to be managed as IUCN category 1a nature reserve
- Artisanal fishing allowed but with phase out policy for known long time coastal fishermen
- Conserve and restore key habitats
  - White sand, Mangrove, Coral reef
  - Nursing, Nesting, Resting, Feeding
    - Arthropods, Sea Turtles, Sharks, Shore Birds, Dolphins, Whales
- Conserve key species
  - Reef Grazers, Sea Turtles, Sharks, Shore Birds, Dolphins, Whales
- Mitigation
  - Resource extraction
  - Recreation
  - Invasive species
    - Lionfish, Halophilia stipulacea
  - Sargassum
  - Oil spill
  - Coral disease

Purpose

The park protects the natural qualities and values by managing the area as a nature reserve with limited access and activities. Due to the relatively low local human impact, the area is in relatively good condition.

Management Zones

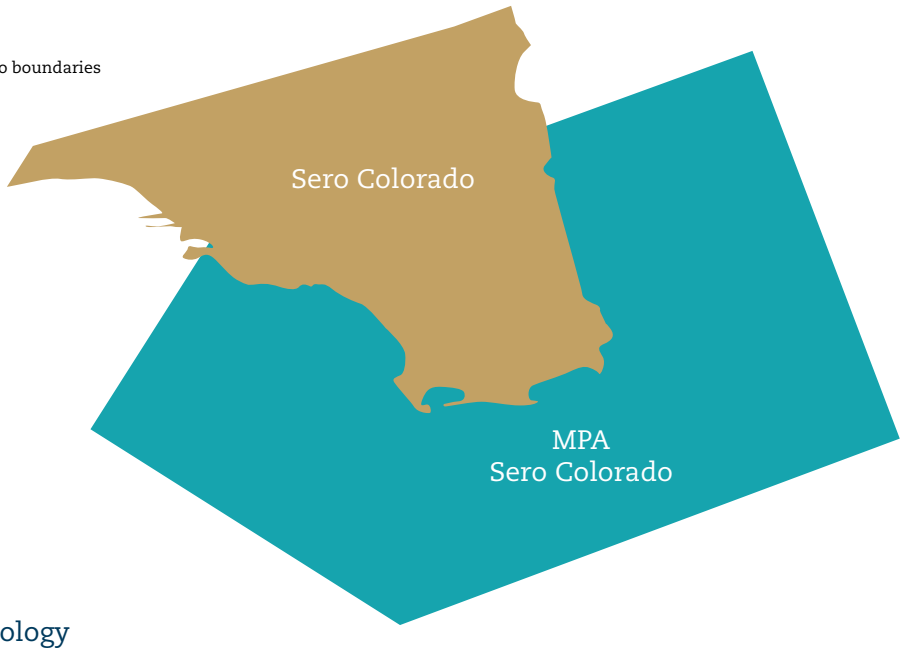
Zonations are to be determined at a later date due to lack of data for criteria based on a holistic zonation scheme.

2. MPA Sero Colorado

Location

Located on the eastern tip of the island and covers a coastal stretch of approximately 9.4 km from Bachelors Beach to the Refinery of Aruba (Figure 6). The MPA extends 2 km seawards and covers a total area of approximately 18.7 km2

Figure 6:
MPA Sero Colorado boundaries



Geomorphology

The coastline consists of Aruba Batholith near Punta Basora wherein a natural bridge has formed which attracts many tourists. The rest of the MPA consists largely of rubble ridges.

Baby Beach and Rodger's Beach are significant bays which are included within the MPA borders.

The east coast of Sero Colorado consists of sawah banks over a continuous stretch from Bachelor Beach to Sero Colorado point. The sawah banks on these limestone terraces provide a habitat for different plants and animals.

The San Nicolas Bay Reef Islands consist of five reef islets located off the south coast of Aruba. The islands are separated from the mainland by a shallow (3–15 m deep) lagoon adjacent to a large oil refinery and the town of San Nicolas.

Physical Resources

> Sawah banks
> Mooring buoys (need to be installed)

Biological Resources

> Turtle nesting beaches, nursery
> Shore bird nesting grounds

- Shark nursery
- Conch Habitat
- Coral reefs
- Reef Islands
- Historic Red mangrove forest
- Dolphin nursery corridor passes through this MPA
- Potential Manatee site

Existing Human Uses

- Refinery
- Maritime traffic
- Fishing (fishing boats, shore fishing, spearfishing)
- Swimming
- Snorkeling (shore, boat, and tours)
- Diving (shore, boat, and tours)
- Kayaking tours
- UTV tours
- Camping
- BBQ, Picnic

Threats

- Lack of public awareness
- Data deficiency
- Adjacent economic zone
- Adjacent tourism zone
- Coastal development
- Unregulated beach activities
- Oil spills
- Illegal trafficking
- Spearfishing
- Invasive species
- Driving on beaches
- Anchoring
- Land source pollution
- Maritime traffic
- Coral disease SCTLD / Bleaching

Management Strategies

(suggested; incl. public access and recreation; will be updated via stakeholder workshops during two-year transition phase)

- No anchoring policy
- Maintain mooring buoys system
- Align beach policy with MPA rules and regulation
- Public awareness campaigns
  - Schools, social media, traditional media
- Environment, ecology, human uses, and threats data & monitoring
- Conserve & restore key habitats
  - White sand, Mangrove, Sea grass, Coral reef
  - Reef island IBA
  - Nursing, Nesting, Resting, Feeding
    - Arthropods, Sea Turtles, Sharks, Shore Birds, Dolphins, Whales, Manatees (unconfirmed)
- Conserve key species
  - Reef Grazers, Sea Turtles, Sharks, Shore Birds, Dolphins, Whales, Manatees (unconfirmed)
- Mitigation
  - Pollution
  - Maritime traffic impact
  - Diver impact
  - Recreation
  - Resource extraction
  - Invasive species
    - Lionfish, Halophilia stipulacea
  - Oil spill
  - Coral disease

Purpose

The park protects the natural qualities and values by mitigating harmful impact of anthropogenic activity. The park protects diverse seabird nesting colonies. The park partially covers turtle and shark nursing and foraging habitat (Bay habitat not included).

Management Zones

Zonations are to be determined at a later date due to lack of data for criteria based on a holistic zonation scheme.

3. MPA Mangel Halto

Location

Located on the southwest coast and covers a coastal stretch of approximately 8 km from Santo Largo to Spaans Lagoen (Figure 7). The MPA extends 2 km seawards and covers a total area of approximately 16 km2.

Figure 7:
MPA Mangel Halto boundaries

Geomorphology

The vicinity of Mangel Halto consists of limestone cliffs of the Late Pleistocene Lower Terrace in combination with reef rubble.

Between Spaans Lagoen and Mangel Halto, the coastline borders the lagoon and consists of a cliff, formed of the Late Pleistocene Lower Terrace. The lagoon at Mangel Halto is connected to Spaans Lagoen, which is permanently filled with salt water. During the rainy season 'fresh' water flows into the lagoon through rooi Frances, rooi Bringamosa and rooi Taki.

There are beaches at Mangel Halto and Santo Largo.

The reef islands consists of several reef islets located off the southwest coast of Aruba. The islands are separated from the mainland by a shallow lagoon (approx. maximum depth 20 meters).

Physical Resources

- Mooring Buoys (need to be installed)
- Mangel Halto Revetments with channels for mangrove water circulation (needs to be fixed)

Biological Resources

- Mangrove Forests
- Coral Reefs
- Sea grass
- Reef Islands
- Mangel Halto Lagoon
- Sea turtle nesting beaches
- Shore birds nesting grounds
- Conch habitat
- Fish (incl. shark) nursery
- Crustacean nursery
- Dolphin nursery corridor passes through this MPA
- Dolphin refuge

Existing Human Uses

- Fishing (fishing boats, shore fishing, spearfishing, nets, hand collecting)

- Fishing Harbor (Spaans Lagoen)
- Swimming
- Wading
- Snorkeling (shore, boat, and tours)
- Diving (shore, boat, and tours)
- Kayaking tours
- Jet Skis
- Camping
- BBQ, Picnic
- Maritime traffic
- Illegal development on reef islands
- Construction of breakwater and groyne for protection of coastal development

Threats

- Lack of public awareness
- Data deficiency
- Adjacent economic zone
- Adjacent tourism development
- Increasing level of (tourism) recreation
- Land source pollution
- Coral disease SCTLD / Bleaching
- Leasehold property in Isla di Oro
- Seaward most public road bridge in Spaans Lagoen
- Revetments filled with sand
- Coastal development
- Invasive species
- Motorised vehicles on beaches at Santo Largo
- Anchoring
- Spearfishing
- Nets
- Trampling sea bed
- Construction on reef islands
- Maritime traffic

Management Strategies

(suggested; incl. public access and recreation; will be updated via stakeholder workshops during two-year transition phase)

- No anchor policy
- Maintain mooring buoys system
- Align beach policy with MPA rules and regulation
- Public awareness campaigns
  - Schools, social media, traditional media
- Environment, ecology, human uses, and threats data & monitoring
- Conserve & restore key habitats
  - White sand, Mangrove, Sea grass, Coral reef
  - Nursing, Nesting, Resting, Feeding
    - Arthropods, Sea Turtles, Sharks, Shore Birds, Sea Horses, Dolphins
- Conserve key species
  - Reef Grazers, Sea Turtles, Sharks, Shore Birds, Sea Horses, Dolphins
- Mitigation
  - Private properties
  - Recreation
  - Pollution
  - Maritime traffic impact
  - Dive impact
  - Resource extraction
  - Invasive species
    - Lionfish, Halophilia stipulacea
  - Coral disease

Purpose

The park protects the natural qualities and values by mitigating harmful impact of anthropogenic activity. The park protects diverse seabird nesting colonies. The park partially covers turtle and shark nursing and foraging habitat (Bay habitat not included).

Management Zones

Zonations are to be determined at a later date due to lack of data for criteria based on a holistic zonation scheme.

4. MPA Oranjestad Reef islands

Location

Located on the southwest coast next to the Oranjestad harbor area. The park border circles around the Oranjestad reef islands (Figure 8). The MPA extends 2 km seawards and covers a total area of approximately 9 km2 and borders the channels for maritime traffic to the harbor.

Figure 8:
MPA Oranjestad Reef islands boundaries

Geomorphology

The Oranjestad reef islands consists of several reef islets located off the southwest coast of Oranjestad The islands are separated from the mainland by a deep shipping lane adjacent to a cruise and cargo ship terminal.

[10] The name 'sawah'-bank refers to a terrace feature consisting of porous, young lime, which are deposited by organisms such as Serpula's (lime tube worms) and incrustating (crusting) lime algae. (de Buisonje & Zonneveld, 1960).

Physical Resources

- Mooring Buoys (need to be installed)

Biological Resources

- Coral reefs
- Reef islands
- Dolphin nursery corridor passes through this MPA

Existing Human Uses

- Diving
- Maritime traffic
- Industrial harbor

Threats

- Lack of public awareness
- Data deficiency
- Adjacent industrial harbor
- Coastal development
- Land source pollution
- Upstream anthropogenic activity
- Invasive species
- (Spear)fishing
- Maritime traffic
- Coral disease SCTLD / Bleaching

Management Strategies

(suggested; incl. public access and recreation; Will be updated via stakeholder workshops during two-year transition phase)

- No anchor policy
- Maintain mooring buoys system
- Public awareness campaigns
  - Schools, social media, traditional media
- Environment, ecology, human uses, and threats data & monitoring
- Conserve & restore key habitats
  - Mangrove, Coral reef
  - Nursing, Nesting, Resting, Feeding
    - Sharks, Shore Birds, Dolphins
- Conserve key species
  - Reef Grazers, Sharks, Shore Birds, Dolphins
- Mitigation
  - Pollution
  - Maritime traffic impact
  - Dive impact
  - Resource extraction
  - Invasive species
    - Lionfish, Halophilia stipulacea
  - Coral disease

Purpose

The park protects the natural qualities and values by mitigating harmful impact of anthropogenic activity. The park protects the reef islands.

Management Zones

Zonations are to be determined at a later date due to lack of data for criteria based on a holistic zonation scheme.

Research and monitoring

As this is the first marine park management plan of Aruba, it is important to acknowledge that there is currently insufficient baseline data present for Parke Marino Aruba areas or the marine environment in general. Therefore, it is important to focus research and monitoring on acquiring data on: Environment, Ecology, Human Uses, Threats, and Mitigation Strategies.

Possible research and long-term monitoring priorities, to be narrowed down and further determined during the two-year transition phase include:

1. Ecological monitoring & restoration
   a. Species diversity
   b. Species abundance, distribution, health
      i. Arthropods, reef grazers, sea turtles, sharks, shore birds, marine mammals
   c. c. Habitat abundance, dispersal, health
      i. Beaches, mangroves, seagrass beds, coral reefs
         1. Breeding, nursing, feeding, resting
   d. Water quality
   e. Coral disease

2. Issues monitoring & mitigation
   a. Maritime traffic
   b. Invasive species abundance, dispersal
      i. Lionfish, Halophilia stipulacea
   c. Sargassum influx
   d. Pollution (chemical, physical, light, noise)
   e. Resource extraction
   f. Recreation
   g. Coastal development

3. Mitigation and management impact monitoring

4. “Willingness to Pay” socio-economic assessment

Possible research and long-term conservation and monitoring programs include:

> Coral / fish / benthic organisms
   - Global Coral Reef Monitoring Network (GCRMN)
   - Baited Remote Underwater Video (BRUV)
   - Potential partners: Aruba Reef Care Foundation (ARCF), the Aruban Directorate of Agriculture, Livestock, Fisheries and Market Halls (DLVV), Dutch Caribbean Nature Alliance (DCNA)

- Sharks
  - BRUV
  - Tags (acoustic, satellite, FLOY)
  - Save Our Sharks (SOS) partnership
  - Potential partners: Aruba Reef Care Foundation (ARCF) and Directie Landbouw Veeteelt & Visserij (DLVV)
- Sea Turtles
  - Turtugaruba has a functional sea turtle program. FPNA can support Turtugaruba programs. Turtugaruba partnership
- Shore Birds
  - Bi-annual Point-Count
  - Nest site survey & conservation
  - Aruba Birdlife Conservation (ABC) partnership
  - San Nicolas Reef Island, IBA, Tern nest conservation program
- Marine Mammals
  - Aruba Marine Mammal Foundation (AMMF) has a functional marine mammal program. FPNA can support AMMF. AMMF partnership
  - Acoustic survey
- Lionfish
  - Aruba LionFish Initiative (ALFI) has a functional lionfish program. FPNA can support ALFI. ALFI partnership
- Sargassum
  - monitor influx and outflux, and a reporting mechanism for landings and advice on removal and beach maintenance
- Seagrass
  - Monitoring (SeagrassNet)
  - Reforestation
  - Restricted access in areas where seagrass can be trampled or otherwise physically impacted
- Mangroves
  - Reforestation
  - Create/reopen channels for water circulation
- Corals
  - ScubbleBubbles (SB) has a functional coral restoration nursery and transplant program. FPNA can support SB programs. SB partnership
- Water Quality
  - Abiotic factors, Nutrient concentration, Visibility, Pollution
  - Potential partner CARMABI & STINAPA
- Anthropogenic activity
  - Abundance and diversity
  - Literature study of known impacts

The above stated research and monitoring activities are applicable to some or all MPAs and should be frequently reviewed and adjusted as part of ecosystem-based adaptive management (EBM) inclusive of the latest available science and best practices. The extent and priorities of the research and monitoring programs will also change over time, as acquired data will start filling in the baseline gap.

Regulations, public access and recreation

FPNA, as the managing organization, will establish rules and regulations for each MPA and the different zones within an MPA within the two-year transition phase, and in consultation with the different (key) stakeholders. Regulation of public access and recreational behaviour is necessary to reach the goals and objectives of the marine park.

However, in order to determine such regulations and ensure a broad acceptance and practical enforceability it is crucial to execute extensive research, monitoring and stakeholder consultations beforehand. Therefore this document does not yet contain specific rules and regulations for the marine park apart from the existing national and international laws, which remain applicable and will be enforced throughout.

No new activities should commence in the MPA areas pending the rules and regulations in order to protect the areas from additional pressures while rules are being established through stakeholder engagement. Furthermore new activities may cause financial dependence on these activities for certain stakeholders that may no longer be allowed once regulations are in place if the activity is deemed unsustainable.

Legal protection and enforcement

Policy and enforcement are essential in regulating and preventing human behavior that may have adverse impacts on the marine environment. Aruba, as part of the Dutch Kingdom, does not only have local legislation in regard to the protection of natural resources, but also has international obligations as stipulated by treaties and conventions.

International Treaties and Conventions

Overview of treaties and conventions related to the environment of Aruba and the established MPAs:

CITES	Convention Of International Trade In Endangered Species
Cartagena	The Convention For The Protection And Development of The Marine Environment of The Wider Caribbean Region (with SPAW Protocol & Oil Spills Protocol)
CBD	Convention on Biological Diversity
Ramsar	Convention on Wetlands of International Importance
CMS	Convention on the Conservation of Migratory Species of Wild Animals
MarPol	International Convention for Prevention of Pollution from Ships
OPRC 90	International Convention on Oil Pollution Preparedness, Response and Cooperation

Local Legislation

Overview of local legislation with topics related to nature:

AB 1980 no. 18	Marien-milieuverordening (ingetrokken)
AB 1987 no. 51	Lham. t.u.v. art. 5 m.b.t. de schildpad
AB 1987 no. 52	Lham. t.u.v. art. 5 m.b.t. calco
AB 1987 no. 124	Landsbesluit openbare wateren en stranden
AB 1988 no. 52	Lham. t.u.v. art. 13, derde lid (bescherming koralen)
AB 1992 no. 70	Landsbesluit verbod jacht op koraalvissen (uitv. art. 6)
AB 1992 no. 116	Visserijverordening
AB 1992 no. GT 17	Verordening op het vissen met sleepnetten
AB 1993 no. 15	Visserijbesluit
AB 1993 no. 49	Zeester
AB 1995 no. 2	Natuurbeschermingsverordening (NBV)
AB 2000 no. 59	Landsbesluit Parke National Arikok
AB 2001 no. 115	Landsbesluit verboden onderwaterjachtmiddelen
AB 2017 no. 11	Landsbesluit aanwijzing Spaans Lagoen-gebied als natuurreservaat
AB 2017 no. 48	Landsbesluit bescherming inheemse flora en fauna
AB 2018 no. 77	Lham Parke Marino Aruba

Enforcement

While local and international legislation offers guidance for legal protection of the natural resources, it is the enforcement of these laws and treaties that will ensure their effectiveness.

There are multiple entities responsible for this enforcement within Parke Marino Aruba:

- The Dutch Caribbean Coast Guard (DCCG) and its Aruban support center
- Aruba Police Force (KPA), including Beach and Maritime Police Departments
- The Aruban Bureau of City Inspectors (BCI), formally recognized Law Enforcement Patrol
- Marine Park Rangers (formal training and recognition as (combined) Law Enforcement Rangers (Toezichthouder, BOA and/or BAVPOL/BAP - status yet to be acquired)

Whilst there is a legal framework for the protection of nature on Aruba it is not always consistently or effectively enforced. The assignment of the MPAs require that certain obligations are met at Government level in relation to this status.

Patrolling of the MPAs is necessary to enforce legislation and park regulations to prevent and stop illegal activities. The main items are:

- Deposit of waste (AB 1987 no. 124).
- Driving on the beach (AB 1987 no. 124).
- Vessel navigation zones (AB 1987 no. 124).
- Spearfishing (AB 2001 no. 115).
- Illegal types of Fishing (AB 1992 no. 116, AB 1992 no. GT 17, AB 1993 no. 15).
- Poaching of protected species (AB 1995 no. 2, AB 2017 no. 48).
- Marine park zonation once applicable.
- Reception facilities in ports for waste and sewage (LV voorkoming van verontreiniging door schepen, AB 1993 no.72).

During the two-year transition phase, protocol and policies will be developed together with the relevant enforcement entities.

Organizational structure and financial resources

Organizational and human resources

For the short to medium term (first five years) Parke Marino Aruba will be staffed according to the organizational chart below (see Figure 9). With the start-up organization some essential tasks can be executed such as raising awareness, the placement of mooring buoys and initial enforcement of park regulations and zoning. Within the two-year transition period, the organization model will be fully incorporated and embedded within the existing structure of FPNA.

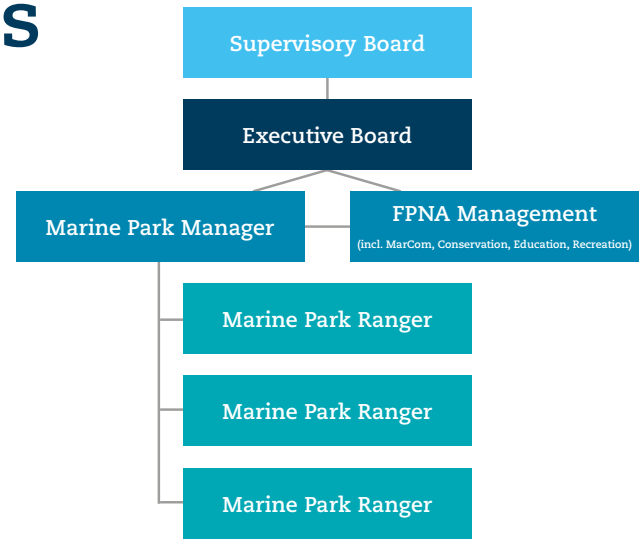


Figure 9:
Marine Park organogram (short to medium term).

Roles and responsibilities

Within the FPNA organization there will be dedicated staff to effectively manage Parke Marino Aruba. Key roles within FPNA for Parke Marino Aruba are described below.

FPNA Supervisory Board and Executive Board
In present times, good corporate governance demands a managing board to be under supervision. An effective and professional management and management structure for the Foundation would therefore include the collaboration of a professional Executive Board and Supervisory Board. FPNA has since January 2019 this two-tiered management structure in place.

Matrix organization: in-sourcing primary and secondary processes
A matrix organization is a structure in which there is more than one line of reporting managers with some individuals reporting to more than one manager, supervisor or leader. Although a complex structure, it helps achieve higher productivity and gives more flexibility in the organization; employees work with colleagues from different departments (often for temporary periods) who have their expertise in different functions. This structure also allows for solving problems in a more efficient way and is a structure used in organization which have diverse product lines and services.

FPNA functions as a matrix organization. The Marine Park, being part of the FPNA structure, will incorporate the matrix organizational structure in its primary processes, by 'in-sourcing' support in different areas such as research, conservation, education and recreation management as well as its support processes (such as human resources and other administrative functions).

Marine Park Manager
The Marine Park Manager is responsible for the development and implementation of the management plan and policies of each MPA. This includes but is not limited to writing and implementing annual and project plans, leading and coaching employees, managing daily control and operations, maintaining contact with various organizations and stakeholders, organizing stakeholder engagement, research and establishing baselines, monitoring, (marine) conservation education and public information, supported by the larger FPNA management team.

Marine Park Rangers
A Marine Park Ranger is responsible for executing field operations; enforcement; visitor management and control, to ensure safety and visitor experience; assist and execute research and education projects, and as may be required, interact effectively with MPA users and stakeholders in the field. Initially, MPA ranger capacity will be pooled over the 4 different MPAs instead of being dedicated to one area.

Estimated initial budget

Parke Marino Aruba's initial budget is a translation of the goals and objectives, defined in this report to the expected monetary outlays required for operational and capital expenditures to reach the aforementioned goals and objectives. Infrastructural and personnel requirements allowing sufficient capacity to conduct the Aruban Marine Park's operations are incorporated and includes such budgetary items as the staffing and training of Marine Park personnel, as well as, the housing, support and infrastructure required to ensure successful Marine Park operations.

Major expenditure categories related to sufficient capacity for effective Marine Park management are classified into 8 areas. The table below lists these categories and details the total budgeted amounts corresponding with each expense category. For purposes of the Aruba Marina Park budget expenditures are classified into capital- and operating expenditures; where capital expenditures consist of outlays for assets and other economic benefits with a utility extending over a time span of over a year and where operating expenditures extend for a period of one year or less.

Table 4: Operational and capital expenditures 2020-2021

#	Category	Capital expenditures 2020	Operating expenditures 2020	Operating expenditures 2021
1	Staffing and training	23.000	373.000	375.000
2	Logistical and administrative support	-	240.000	237.000
3	Housing	14.000	63.000	60.000
4	Information technology	33.000	18.000	15.000
5	Waterborne infrastructure	272.000	68.000	60.000
6	Diving equipment	13.000	6.000	6.000
7	Research and monitoring equipment	35.000	12.000	12.000
8	Financial sustainability	-	15.000	15.000
	Totals	390.000	795.000	780.000

Action plan priorities*

The objectives and their associated action lists are relatively long, containing a large number of potential actions. They mostly require funding and it is therefore important to develop a prioritized, short-term action plan setting out the necessary actions which have the most importance for the coming 24 months as seen in the table below. This plan can provide the basis for bidding for government and other funding sources.

Table 5. Critical short-term priorities for the two-year transition phase

Year	2019	2020				2021			
Activity / Quarter	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Stakeholder involvement and consultations	x	x	x	x	x	x	x	x	x
Publish preliminary management plan	x								
Introductory meetings		x	x	x					
Stakeholder input, surveys and meetings				x	x	x	x		
Follow up meetings, presentations and dialogues						x	x	x	
Peer review								x	
Publish management plan 2022-2026									x
2. Capacity Building		x	x	x	x	x	x	x	x
Staff acquisition		x	x						x
Staff training		x	x	x	x	x	x	x	x
Facility and equipment capital investment		x	x					x	x
3. Outreach and awareness		x	x	x	x	x	x	x	x
4. Research and monitoring		x	x	x	x	x	x	x	x
Surveys to establish baselines		x	x	x	x	x	x	x	x
Accessing local knowledge		x	x	x	x				
5. Advocating further marine protection	x	x	x	x	x	x	x	x	x
6. Financial sustainability	x	x	x	x	x	x	x	x	x

*Action plan priorities and planning may change due to unpredictable circumstances.

Stakeholder involvement and consultations

Stakeholders must always be properly informed of the importance of protecting certain areas and the benefits they will gain by proper marine conservation. This enhances the support of the entire community to the project. While stakeholder consultations have taken place in the government-led designing process of the marine park, evaluations and continued stakeholder engagements throughout the further management process will remain a priority to build upon to form a long term working relationship.

It is widely known that the involvement of (key) stakeholders leads to greater ownership for the solutions and the likelihood of a commitment to their delivery either in relation to policy or practice. Stakeholder involvement should therefore be a significant part of the future protection and management of Parke Marino Aruba and is an activity that will be driven and taken forward by FPNA.

Most of the areas that comprise Parke Marino Aruba are widely used by a range of stakeholders such as the local community, government, fishermen, tourism operators, cultural and natural heritage and wildlife enthusiasts. In order to assess current adverse impact and find alternatives or solutions, it is important to first identify key stakeholders.

A stakeholder identification using FPNA's network of expertise and/or the GCRMN SOCMON manual is crucial, followed by the development of a program to engage the key stakeholders in one-on-one and small group / focus group meetings with the specific purpose of providing them with:

- increased awareness of the values and issues around the site;
- an opportunity to input their views and opinions on the present and future protection and management of the areas;
- a common, agreed vision for the site;
- ownership of the solutions; and
- a commitment to being part of their delivery.

All stakeholders can be divided into three categories:

1. Government and Authorities, including but not limited to: The Governor, Ministeries, Parlament, Governmental departments (DNM, DLVV, DIP, Police, Coastguard, etc.), ATA, AHATA, APA, educational institutions;
2. Experts, including but not limited to: local, regional and global nature NGOs and research institutions;
3. Users, including but not limited to: fishermen, divers, watersports, marinas, visitors, local population.

Table 6: Planning of stakeholder involvement and consultations

Year	Quarter	Targeted area or stakeholder group	Type of communication / involvement	Purpose
2019	Q4	All	Press release	Publish preliminary marine park management plan
		All upon request	Introductory meetings & communication	Meet FPNA management team and address questions or concerns
2020	Q1	All upon request		
			Meetings upon request	Covid-19 related delay in engagement
	Q2	All		
	Q3	All	Introductory 'Townhall' sessions	Introduce Parke Marino Aruba, the preliminary management plan and transition phase and lay the foundation for long term collaborations
	Q4	Sessions per MPA Area	Stakeholder input, surveys and meetings (incl. SWOT-analysis)	Gather values, interests, potential threats, considerations, priorities and conflicts
2021	Q1	Sessions per MPA Area and meetings upon request	Follow up meetings	Clarify and focus stakeholder interests
	Q2	Sessions per MPA Area and meetings upon request	Follow up meetings Presentations and dialogue	Discuss potential conflicts of interests and alternatives; Present results, conclusions and receive feedback Present overview of first draft 4 year management plan (2022-2026) and present potential impacts / considerations per stakeholder group and discuss potential alternatives
	Q3	All	Peer review	Stakeholders and experts review and provide feedback on Management Plan
	Q4	All	Press release, Landcourant	Publish marine park management plan 2022-2026

Capacity building

To effectively manage Parke Marino Aruba, FPNA will need to evaluate the current staff and organization structure as well as promote the necessary additional training for park staff. FPNA might also need to hire additional staff in order to fulfill the many tasks involved in managing four separate small MPAs.

Necessary trainings will include, but are not limited to:
- Enforcement & legislation 'Toezichthouder/BOA/BAvPol'
- General water related maintenance and operating skills
- PADI (Advanced, Search & Rescue, AWARE, Specialties)
- Boating licence 'Vaarbewijs' (and general boat handling skills)
- Work exchange with other marine parks (mooring system, dive tag system, etc.)
- Emergency Response
- Tour Guide course
- Communication and interpretation course
- IT for rangers

Besides enhancing staff capacity, FPNA will also need to invest in the necessary facilities and equipment in order to effectively operate Parke Marino Aruba.

Necessary facilities and equipment include but are not limited to:
- Office site, building(s), facilities and equipment
- Vehicle and vessel
- Research and monitoring equipment
- Awareness, outreach and marketing tools and facilities

Outreach and Awareness

Parke Marino Aruba is a new concept for Aruba. The general population is supportive of marine conservation, but most are not aware of how they can impact or contribute to the success of the MPAs. There are several aspects that can be addressed with consistent, continuous and open communication about marine resource management, its importance and possible implications for all involved.

It is therefore crucial that especially in the first two-year transition phase there is an emphasis on outreach and awareness, including developing an extensive communication plan, formal and informal education, workshops, lectures, volunteer programs, signage, etc.

Many of the activities and potentially damaging operations that take place in the marine environment are likely to be carried out because of a lack of awareness. This low awareness relates to a number of factors including 1) the wildlife interest and its sensitivity to a range of impacts 2) the legal protection for the site and 3) the importance of the site at both national and regional level. With an increased understanding and awareness of the issues and other factors surrounding the site, people are likely to change their behavior in order to reduce the impact of their activities.

Awareness raising can form part of an organized campaign under the general heading of 'communication'. A wide range of media and activities can be used to increase awareness and to reach all members of the community. Tools and methods for raising awareness can include, but are not limited to the following: educational program, leaflets, (short) videos, events (volunteering, tours,

lectures, workshops, etc.), website, Facebook, Twitter, Instagram, a mobile app, newsletters and news articles.

A communication plan will be developed within the first months of operation.

Research and monitoring: Baseline studies and local knowledge

As there has not been structural scientific data collection for the marine environment around Aruba, there is no existing comparative information to use as a baseline to measure conservation success. A monitoring program to regularly assess the overall state of the marine environment within the marine park needs to be established. Incidental research with specific conservation oriented goals can also contribute to further enhance insights in particularly sensitive resources and conservation strategies to determine the best practices for the definite management plan.

Local knowledge can also give great insights into the past, present and possible future state of nature. Fishermen and other stakeholders hold the key to this information. By conducting (video) interviews a significant portion of this oral history can be mapped out to help trigger the community's sense of ownership as well as gain insights in historical numbers and values.

Advocating further marine protection

The current design of the marine park encompasses several small areas that are considered to be KBAs (Key Biodiversity Areas) on Aruba. Due to the small size (less than 1 hectare for all 4 MPAs combined) and the location of these areas respectively, there are some crucial elements missing that would be necessary for ecosystem-based management (EBM). An island-round marine park with designated zoning is the only way to effectively conserve marine biodiversity and ecosystems.

In the 4 areas designated as MPAs, not all habitats or crucial KBAs are included. The following habitats are not sufficiently represented or missing entirely and should ideally also receive protection:

- A significant seagrass area (such as Eagle-Palm Beach-Arashi and /or Rogers Beach Bay; Map 4.9, ROP 2009);
- More mangrove forests (such as Santo Largo);
- Breeding and recovery grounds for dolphins (4 species) at Arashi, Malmok and Palm Beach ;
- Crucial nest areas for terns and other seabirds (Reef Islands and Sero Colorado);
- Crucial nesting beaches (KBAs) for sea turtles (such as Arashi to Fishermen's Huts, Eagle Beach and Grapefield). Note, however, that all of Aruba's beaches have sea turtle nesting activity, but do not qualify according to international KBA standards.

Recreational, economical and touristic use of the beaches and waters outside the MPAs should ideally be regulated everywhere around the island to prevent further damage to this valuable natural resource (and should also include an island-round Beach Policy). The concrete regulation and enforcement per zone should be indicated in the ROPV and the Marine Park management plan. In determining regulation, safety and socio-economic sustainability must be included in addition to natural durability or resilience.

Financial Sustainability

The effective management of Parke Marino Aruba requires adequate resources to implement the actions outlined in the management plan. The primary issue with regard to the management of any protected area is financial sustainability. Therefore, extra focus should be placed on this aspect of the management plan. FPNA's aim is to ensure the long-term financial sustainability of all our operations to be able to maintain and improve the value of assets and make meaningful and measurable investments in conservation - now and for the future. This plan should therefore initiate Willingness to Pay (WTP) studies that will ensure the financial sustainability for the park, whether it is through user fees or another financing mechanism separate from Government funds.

Supplementary financing mechanisms with high potential such as fiscal and financial instruments long used in other sectors of the economy, such as taxes, subsidies and credit schemes, and devolution of cost and benefit-sharing mechanisms for MPA management and facilities should be explored. Alternatively, incentive-based approaches that are increasingly used to guide broader development processes, e.g. developing new markets for MPA goods and services and setting prices according to market principles. Financing mechanisms which stimulate (and reward) private sector and community participation in MPA management are especially promising. Payments for ecosystem services also have high potential as mechanisms to generate funding for MPAs and biodiversity conservation generally.

Efforts to enhance MPA funding should capitalize on the growing diversity of funding sources. MPA managers and authorities should particularly seek to mobilize increased resources from (and to) private and non-government sources,through commercial and extra-budgetary channels. Indeed, this diversification of funding may be seen as a prerequisite for ensuring the long-term financial sustainability of MPAs.

[11] Source: Sustainable Financing of Protected Areas. A global review of challenges and options https://portals.iucn.org/library/efiles/documents/PAG-013.pdf

Appendices

Appendix A: Acronym Glossary

AB	*Algemeen Besluit (decree)*
ABC	*Aruba Curacao Bonaire (islands)*
ABC	*Aruba Birdlife Conservation (foundation)*
abundance	*the quantity or amount of an animal or plant species, present in a particular area, volume, sample, etc.*
ALF	*Aruba Lava Formation*
AMMF	*Aruba Marine Mammal Foundation*
anthropogenic	*of, relating to, or resulting from the influence of human beings (on nature)*
APA	*Aruba Port Authority*
Ar	*Arikok*
ARCF	*Aruba Reef Care Foundation*
artisinal	*in limited quantities by an artisan through the use of traditional methods*
BAvPol/BAP	*Buitengewoon Agent van Politie*
BEST	*Voluntary scheme for Biodiversity and Ecosystem Services in Territories of European overseas BEST 2.0 BEST Grant program*
BEST 3.0	*BEST Regional ecosystem profile - Caribbean Region (2016)*
biodiversity	*the variety of life in the world or in a particular habitat or ecosystem.*
BOA	*Bijzondere Opsporing Ambtenaar*
BRUV	*Baited Remote Underwater Video*
CaMPAM	*regional network created in 1997 under the framework of the Caribbean Environment Program of the UN Environment Programme (UNEP-CEP) and the Specially Protected Area and Wildlife (SPAW) Protocol of the Cartagena Convention activities. This initiative brings together MPA researchers, administrators, managers, and educators from governmental entities and non-governmental organizations as well as the private sector in an inclusive network to exchange ideas and lessons learned through a variety of mechanisms*
CAPEX	*Capital expenditure*
CoE	*Center of Excellence*
CC	*Climate Change*
CCA	*Climate Change Adaptation*
CITES	*Convention on International Trade in Endangered Species of Wild Fauna and Flora*
conservation	*preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife.*
DCNA	*Dutch Caribbean Nature Alliance*
DLVV	*Directie Landbouw, Veeteelt en Visserij en Markthallen (Directorate of agriculture, livestock and fishery)*
DNM	*Directie Natuur en Milieu (Directorate of nature and environment)*

DIP	*Directie Infrastructuur en Planning (Directorate of infrastructure and planning)*
DOW	*Dienst Openbare Werken (department of public works)*
ecosystem	*a biological community of interacting organisms and their physical environment.*
ecosystem services	*the many and varied benefits that humans freely gain from the natural environment and from properly-functioning ecosystems.*
EEZ	*Exclusive Economic Zone*
FAO	*Food and Agriculture Organization of the United Nations*
FPNA	*Fundacion Parke Nacional Aruba (Aruba National Park Foundation)*
GCFI	*Gulf and Caribbean Fisheries Institute*
GCRMN	*Global Coral Reef Monitoring Network*
GDP	*Gross Domestic Product*
habitat	*the natural home or environment of an animal, plant, or other organism.*
Hadicurari	*Fisheries Center is operated by a not for profit foundation which aims for the wellbeing of fishermen and their family in a sustainable manner*
IBA	*Important Bird Area*
ICZM	*Integrated Coastal Zone Management*
IUCN	*International Union for Conservation of Nature*
IUCN Red List	*IUCN List of Threatened Species*
KBA	*Key Biodiversity Areas*
LV	*Landsverordening (national act)*
marine park	*part of the ocean protected by the government to preserve a threatened ecosystem or habitat. Marine parks usually allow recreational activities, such as boating, snorkeling, and sport fishing. Most marine parks also include zones for commercial fishing, sometimes called open zones. They may also include no-take zones, which prohibit extractive activities, such as fishing, mining, and drilling.*
marine protected areas	*Marine Protected Areas (MPAs) are protected areas of seas, oceans, estuaries or large lakes. MPAs restrict human activity for a conservation purpose, typically to protect natural or cultural resources.*
maritime	*adjective; connected with the sea, especially in relation to seafaring, commercial or military activity.*
MH	*Mangel Halto*
MinROIM	*Ministerie van Ruimtelijke Ontwikkeling, Infrastructuur en Milieu (Ministry of Spatial Development, Infrastructure and Environment)*
monitoring	*observe and check the progress or quality of (something) over a period of time; keep under systematic review*
MPA	*Marine Protected Area*
NIOZ	*Royal Netherlands Institute for Sea Research*
OPEX	*Operating expense*

PADI	*Professional Association of Diving Instructors*
PLT	*Pleistocene Limestone Terraces*
PNA	*Parke Nacional Arikok (terrestrial national park)*
Ramsar site	*A wetland site designated of international importance under the Ramsar Convention.*
Reef Check	*A standardized method for monitoring coral reefs.*
research	*the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions*
resilience	*toughness and elasticity, the capacity to quickly recover from - or withstand - difficulties and threats.*
ROP	*Ruimtelijk Ontwikkelings Plan (zoning plan)*
SC	*Sero Colorado*
SCTLD	*Stony Coral Tissue Loss Disease*
SIDS	*Small Island Developing States*
SOCMON	*Socio-economic Monitoring for Coastal Management*
SPAW Protocol	*The Protocol Concerning Specially Protected Areas and Wildlife*
TNO	*Technisch Nederlands Onderzoeksinstituut*
Toezichthouder	*a government-appointed, independent and impartial institute or person that monitors compliance with laws and regulations by organizations or individuals*
Turtugaruba	*NGO for the conservation of sea turtles*
UA	*University of Aruba*
USD	*United States Dollar*
WWF-NL	*World Wildlife Fund Netherlands*

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Appendix C: Sustainable Development Goals (SDGs)

In 2015 all United Nations Member States adopted the 2030 Agenda for Sustainable Development, which provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

The Netherlands, together with the Kingdom's Dutch Caribbean BES-islands and the three autonomous island-nations of Aruba, Curaçao, and St Maarten are all committed to the SDGs. While each autonomous country within the Kingdom has its own political reality and is in a different phase of SDG implementation, all of them are committed to the 2030 Agenda for Sustainable Development as a whole and to achieving the Sustainable Development Goals (SDGs) at home as well as contributing to their worldwide implementation.

At the heart of the 2030 Agenda for Sustainable Development are 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth - all while tackling climate change and working to preserve our oceans and forests.
In accordance with the overall vision for the island-nation of Aruba, FPNA and therefore Parke Marino Aruba also strive to contribute towards meeting the

Sustainable Development Goals (SDGs) as set forward by the United Nations. The SDGs are considered a powerful framework that can further strengthen regional and International collaborations.

Aruba chose to implement the SDGs by using SDG accelerators. See 'A Roadmap for SDG Implementation in Aruba' (2017) and Nature and Environment Policy 2018-2021 (2018). See http://dnmaruba.org/docs/beleidsnota2018.pdf

Parke Marino Aruba will play a crucial role in achieving the SDGs[12] for Aruba.

A focus is set on meeting targets related to goals 2, 6, 8, 12, 16 and 17, with a specific emphasis on SDG 13, 14 and 15.

SDG 2: Zero Hunger

Target 2.3: By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.

SDG 6: Clean water and sanitation

Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

SDG 8: Economic Growth

Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

SDG 12: Responsible consumption and production

Target 12.2: By 2030, achieve the sustainable management and efficient use of natural resources.

Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

SDG 13: Climate action

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Target 13.2: Integrate climate change measures into national policies, strategies and planning.

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

[12] See https://unstats.un.org/sdgs/metadata/

SDG 14: Life below water

Target 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution.

Target 14.2: By 2020, sustainably manage and protect 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.

Target 14.3: Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.

Target 14.4: By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.

Target 14.5: By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information.

Target 14.6: By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation.

Target 14.7: By 2030, increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

Target 14.a: Increase scientific knowledge, develop research capacities and transfer marine technology taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular SIDS and LDCs.

Target 14.b: Provide access of small-scale artisanal fishers to marine resources and markets.

Target 14.c: Ensure the full implementation of international law, as reflected in UNCLOS for states parties to it, including, where applicable, existing regional and international regimes for the conservation and sustainable use of oceans and their resources by their parties.

SDG 15: Life on land[13]

Target 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.

SDG 16: Peace, justice and strong institutions

Target 16.6: Develop effective, accountable and transparent institutions at all levels.

Target 16.7: Ensure responsive, inclusive, participatory and representative decision-making at all levels.

SDG 17: Partnerships for the goals

Target 17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.

[13] Life on land is both directly/indirectly related to life below water. For example there is nutrient exchange between habitats and multiple and habitat (land, air, water) exchange for use by birds and turtles.

Appendix D: Blue Economy

The Blue Economy is a developing world initiative pioneered by Small Island Developing States (SIDS) but relevant to all coastal states and countries with an interest in waters beyond national jurisdiction. SIDS have always been highly dependent upon the seas for their well-being but the Blue Economy, whilst encompassing the concept of ocean-based economies, goes far beyond that. The Blue Economy conceptualizes oceans as "Development Spaces" where spatial planning integrates conservation, sustainable use, oil and mineral wealth extraction, bio-prospecting, sustainable energy production and marine transport. The Blue Economy breaks the mold of the business as usual "brown" development model where the oceans have been perceived as a means of free resource extraction and waste dumping; with costs externalized from economic calculations. It incorporates ocean values and services into economic modelling and decision-making processes. The Blue Economy paradigm constitutes a sustainable development framework for developing countries addressing equity in access to, development of and the sharing of benefits from marine resources; offering scope for re-investment in human development and the alleviation of crippling national debt burdens.

The Blue Economy espouses the same desired outcome as the Rio +20 Green Economy initiative namely:

"improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP 2013)

The Blue Economy endorses the same principles of low carbon, resource efficiency and social inclusion, but it is grounded in a developing world context and fashioned to reflect the circumstances and needs of countries whose future resource base is marine.

Fundamental to this approach is the principle of equity ensuring that developing countries:

- Optimize the benefits received from the development of their marine environments e.g. fishery agreements, bioprospecting, oil and mineral extraction.
- Promote national equity, including gender equality, and in particular the generation of inclusive growth and decent jobs for all.
- Have their concerns and interests properly reflected in the development of seas beyond national jurisdiction; including the refinement of international governance mechanisms and their concerns as States proximate to seabed development.

The mainstreaming of equity at international and national levels offers scope for developing countries to realize greater revenue from their resources and reinvest in their populace, environmental management, reduce national debt levels and contribute to the eradication of poverty and hunger.

At the core of the Blue Economy concept is the decoupling of socioeconomic development from environmental degradation. To achieve this, the Blue Economy approach is founded upon the assessment and incorporation of the real value of the natural (blue) capital into all aspects of economic activity (conceptualization, planning, infrastructure development, trade, travel, renewable resource exploitation, energy production/ consumption).

Efficiency and optimization of resource use are paramount whilst respecting environmental and ecological parameters. This includes the sustainable sourcing and usage of local raw materials and utilizing "blue" low energy options to realize efficiencies and benefits (as opposed to the business as usual "brown" scenario of high energy, low employment, and industrialized development models).

The Blue Economy approach recognizes and places renewed emphasis on the critical need for the international community to address effectively the sound management of resources in and beneath international waters by the further the development and refinement of international law and ocean governance mechanisms. Every country must take its share of the responsibility to protect the high seas, which cover 64 % of the surface of our oceans and constitute more than 90% of their volume.

The government of Aruba advocates contributing towards the development of a Blue Economy in which marine resources are utilized in a sustainable way for the preservation of healthy ocean ecosystems and industries are stimulated to adopt responsible business practices.

Parke Marino Aruba[14] *will play a crucial role in achieving a sustainable Blue Economy for Aruba, which can also be related to SDGs 2, 8, 12, 13 and 14.*

The government of Aruba as yet needs to develop a Blue Economy Strategy as an integrated approach to ocean based sustainable development, which brings together economy, environment and society, consistent with the Sustainable Development Agenda 2030 (SDG's), Aichi Target 11 of the Convention on Biological Diversity (CBD) and the Paris Agreement on Climate Change (2015).

[14] On the prerequisite of a national Blue Economy strategy and policy which includes an island-round marine park in the foreseeable future.

2018 no. 77

AFKONDIGINGSBLAD VAN ARUBA

LANDSBESLUIT, houdende algemene maatregelen, van 20 december 2018 houdende instelling van het Parke Marino Aruba (Landsbesluit Parke Marino Aruba)

Uitgegeven, 21 december 2018

De minister van Justitie,
Veiligheid en Integratie,

A.C.G. Bikker

IN NAAM VAN DE KONING!

DE GOUVERNEUR van Aruba,

In overweging genomen hebbende:

dat het ter bescherming van de mariene flora en fauna in de kustwateren van Aruba wenselijk is om bepaalde gedeelten van die kustwateren aan te wijzen als natuurreservaat in de zin van artikel 10, eerste lid, van de Natuurbeschermingsverordening (AB 1995 no. 2);

Gelet op:

artikel 10 van de Natuurbeschermingsverordening (AB 1995 no. 2);

Heeft, de Raad van Advies gehoord, besloten:

§1. Algemeen

Artikel 1

In dit landsbesluit en de daarop berustende bepalingen wordt verstaan onder:

Park:	het natuurreservaat, bedoeld in artikel 2;
beheerder:	de instantie, bedoeld in artikel 3, eerste lid.

§2. Het Parke Marino Aruba

Artikel 2

De gebieden, met inbegrepen van de bijbehorende zeebodems, zoals aangegeven op de kaarten in bijlage I en met coördinaten op bijlage II, worden gezamenlijk onder de naam Parke Marino Aruba aangewezen als natuurreservaat in de zin van artikel 10, eerste lid, van de Natuurbeschermingsverordening (AB 1995 no. 2).

Artikel 3

1. Bij landsbesluit wordt een instantie aangewezen die belast is met het beheer van het Park.
2. De beheerder draagt zorg voor het behoud van de biodiversiteit, het natuurlijk milieu en het natuurschoon van de afzonderlijke delen van het Park door middel van bescherming, beheer en eventuele ontwikkeling of verrijking van de daarin aanwezige flora en fauna en de onderlinge ecologische verbanden, alsook voor het behoud van de geologische kenmerken van het Park.
3. De beheerder houdt toezicht op het behoud van een zo ongestoord mogelijke staat van de natuurlijke kenmerken en waarden van het Park.
4. Ter verwezenlijking van de taken, genoemd in het tweede en derde lid, stelt de beheerder een beheersplan op. Dit beheersplan bevat in ieder geval een lijst van de natuurlijke waarden en kenmerken, bedoeld in het derde lid. Voorts bevat het beheersplan voorschriften met betrekking tot het vissen, met dien verstande dat zij wel dat het bedrijfsmatig vissen niet is toegestaan. Voor zover nodig wordt rekening gehouden met de bijzondere waarden en kenmerken van elk afzonderlijk deel van het Park, waartoe onder meer gebieden kunnen worden aangewezen waar ter bescherming van het aldaar aanwezige koraal niet geankerd mag worden. Het beheersplan wordt algemeen bekendgemaakt.

Artikel 4

1. Het Park is in beginsel voor een ieder toegankelijk.
2. De beheerder, in overleg met de Minister, kan de toegankelijkheid van het Park volgens door hem te stellen regels beperken voor zover dat met het oog op de verwezenlijking van de doelstellingen van het Park wenselijk is. Daarbij kan worden afgeweken van een of meer voorschriften van de Hoofdstukken III tot en met VI van het Landsbesluit openbare wateren en stranden (AB 1987 no. 124).
3. De beheerder kan de toegang tot bepaalde delen van het Park verbieden, indien dat met het oog op de doelstellingen en het beheer van het Park noodzakelijk is. De delen, bedoeld in de eerste volzin, worden op voor het publiek duidelijke wijze bekendgemaakt.

Artikel 5

1. De beheerder is bevoegd om personen die zich herhaaldelijk en opzettelijk hebben schuldig gemaakt aan overtreding van de voorschriften van dit landsbesluit of een daarop berustende ministeriële regeling, permanent of voor een bepaalde periode de toegang tot het Park te ontzeggen.
2. Degene die onbevoegd in het Park wordt aangetroffen, wordt verzocht om het Park onmiddellijk te verlaten.
3. Indien niet wordt voldaan aan een verzoek als bedoeld in het tweede lid, kan de betrokkene met behulp van de sterke arm uit het Park worden verwijderd.

Artikel 6

1. De bezoekers van het Park volgen de aanwijzingen die door of namens de beheerder worden gegeven stipt op.
2. Artikel 5, derde lid, is van overeenkomstige toepassing.

§3. Bijzondere beschermingsbepalingen

Artikel 7

Onverminderd de bij of krachtens de Natuurbeschermingsverordening gestelde voorschriften, is het verboden om in het Park voorkomende planten of delen van planten uit te steken, te plukken, of te beschadigen, of onder zich te hebben een plant of een deel of product daarvan, die op de wijze als hiervoor omschreven is verkregen.

Artikel 8

Onverminderd de bij of krachtens de Natuurbeschermingsverordening gestelde voorschriften van de Natuurbeschermingsverordening, is het binnen het Park, met uitzondering van de voorschriften in het beheersplan ten aanzien van het vissen, verboden:

a. exemplaren van daar voorkomende, in het wild levende diersoorten te vangen of te doden, dan wel een zodanig dier zonder noodzaak te storen, of zijn woon, rust- of voortplantingsplaats te verstoren, te beschadigen, te vernielen of te bemachtigen;
b. daar aangetroffen eieren te rapen of vernielen, of een binnen het Park aangetroffen dood lichaam, ei, foetus of larve van een binnen het Park voorkomende diersoort, al dan niet geprepareerd of een deel of product daarvan onder zich te hebben.

Artikel 9

Het is verboden:

a. de geologische structuren van het Park, alsmede de gedeelten daarvan die een archeologische waarde hebben, te beschadigen;
b. rotsen, gesteente, steenslag, zand, stof of andere bodemcomponenten van of uit de bodem los te maken, uit te graven, te beschadigen, te verplaatsen of buiten het Park te brengen;

c. in de wateren van het Park die in het beheersplan zijn aangewezen te ankeren.

Artikel 10

Het is verboden zonder toestemming van de beheerder en anders dan ten behoeve van het Park bouwwerken van welke aard dan ook op te richten of in stand te houden.

§4. Inwerkingtreding en citeertitel

Artikel 11

1. Dit landsbesluit treedt in werking op de eerste dag van de maand volgende op die van zijn plaatsing in het Afkondigingsblad van Aruba.
2. Het kan worden aangehaald als Landsbesluit Parke Marino Aruba.

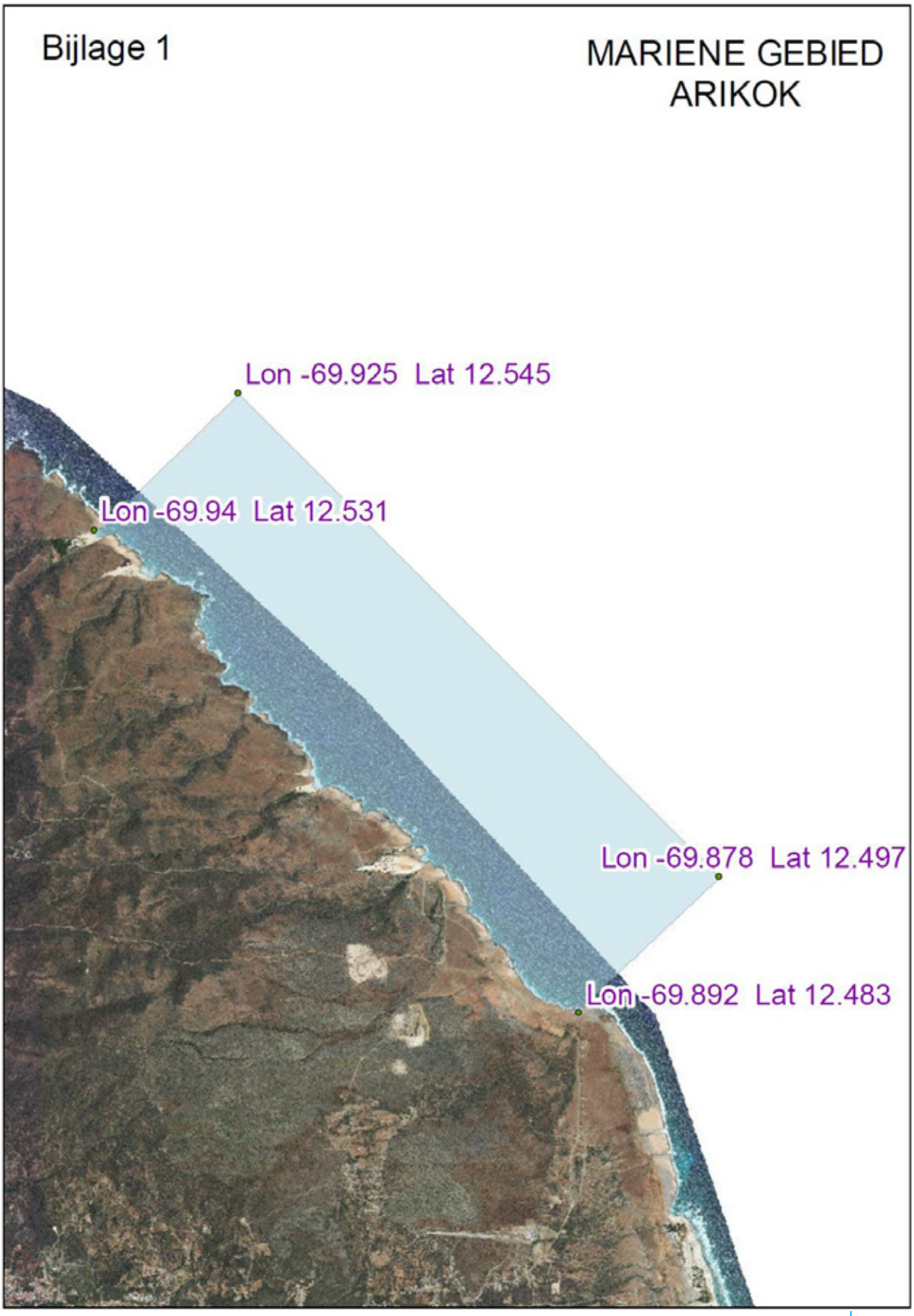
Gegeven te Oranjestad, 20 december 2018
J.A. Boekhoudt

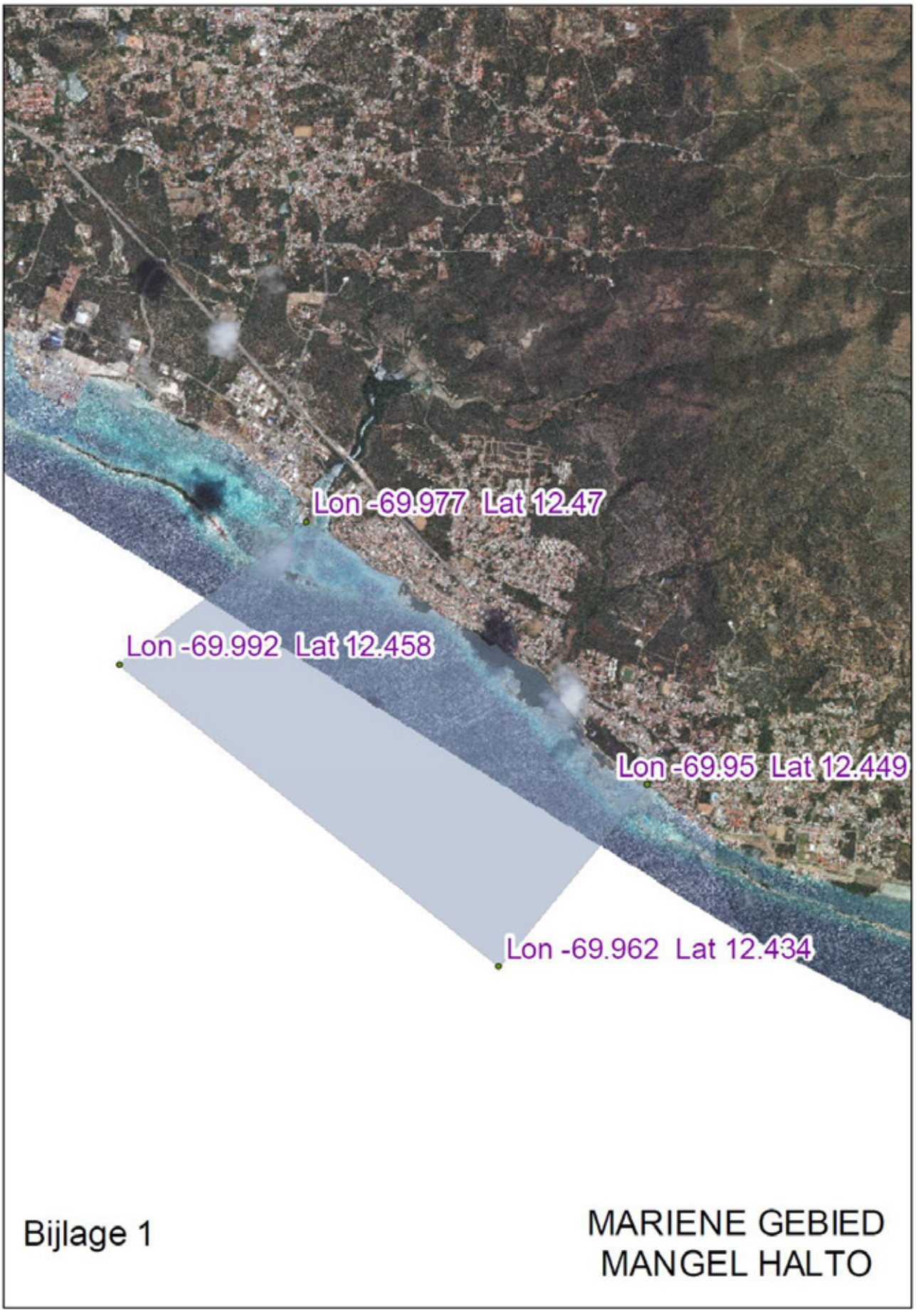
De minister van Ruimtelijke Ontwikkeling, Infrastructuur en Milieu,
O.E. Oduber

De minister van Justitie, Veiligheid en Integratie,
A.C.G. Bikker

Bijlage 1

MARIENE GEBIED
ARIKOK

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Lon -69.992 Lat 12.458
Lon -69.95 Lat 12.449
Lon -69.962 Lat 12.434
Bijlage 1
MARIENE GEBIED
MANGEL HALTO


Lon -70.084 Lat 12.539
Lon -70.063 Lat 12.539
Lon -70.086 Lat 12.532
Lon -70.08 Lat 12.527
Lon -70.051 Lat 12.527
Lon -70.074 Lat 12.522
Lon -70.051 Lat 12.522
Lon -70.042 Lat 12.515
Lon -70.044 Lat 12.499
Bijlage 1
MARIENE GEBIED
ORANJESTAD


Lon -69.854 Lat 12.44
Lon -69.872 Lat 12.434
Lon -69.902 Lat 12.423
Lon -69.891 Lat 12.423
Lon -69.894 Lat 12.419
Lon -69.912 Lat 12.408
Lon -69.842 Lat 12.407
Lon -69.885 Lat 12.391
Bijlage 1
MARIENE GEBIED
SERO COLORADO

BIJLAGE II

GPS-Coördinaten Parke Marino Aruba (in decimale graden) van de zee- en landgrenzen van het Parke Marino Aruba

Gebied	LON_GPS_1	LAT_GPS_2	GPS_Punt_Ligging
Arikok	-69.925	12.545	Zee
Arikok	-69.94	12.531	Land
Arikok	-69.878	12.497	Zee
Arikok	-69.892	12.483	Land
Sero Colorado	-69.854	12.44	Zee
Sero Colorado	-69.842	12.407	Zee
Sero Colorado	-69.885	12.391	Zee
Sero Colorado	-69.912	12.408	Zee
Sero Colorado	-69.902	12.423	Land
Sero Colorado	-69.894	12.419	Land
Sero Colorado	-69.891	12.423	Land
Sero Colorado	-69.872	12.434	Land
Mangel Halto	-69.962	12.434	Zee
Mangel Halto	-69.95	12.449	Land
Mangel Halto	-69.977	12.47	Land
Mangel Halto	-69.992	12.458	Zee
Oranjestad I	-70.044	12.499	Zee
Oranjestad I	-70.042	12.515	Land
Oranjestad I	-70.051	12.522	Land
Oranjestad I	-70.074	12.522	Zee
Oranjestad II	-70.08	12.527	Zee
Oranjestad II	-70.086	12.532	Zee
Oranjestad II	-70.084	12.539	Zee
Oranjestad II	-70.063	12.539	Land
Oranjestad II	-70.051	12.527	Land

Appendix F:

Threatened and Protected Species List (preliminary list)

The MPA columns in table 7 below denoted with an asterisk (*) indicate if the species is present and will be filled in as soon as more data becomes available.

Note that:

> the Threatened and Protected Species table will be updated as soon as more data becomes available

> a full species inventory - also a living document - will be added to the management plan as soon as more data becomes available.

Table Abbreviations

MPA A	Arikok	LC	Least Concern	I	Annex 1
MPA SC	Sero Colorado	NT	Near Threatened	II	Annex 2
MPA MH	Mangel Halto	VU	Vulnerable	III	Annex 3
MPA O	Oranjestad	EN	Endangered	app	Appendix
		CR	Critically Endangered		
		DD	Data Deficient		

Table 7: Threatened and Protected Species

Common name	Species name	Art 4	SPA W	CITES	CMS	IUCN	MPA A*	MPA SC*	MPA MH*	MPA O*
Aruban Burrowing Owl	Athene cunicularia arubensis	X		II		NE				
Atlantic Bluefin Tuna	Thunnus thynnus	X				EN				
Atlantic Goliath Grouper	Epinephelus itajara	X				CR				
Atlantic Spotted Dolphin	Stenella frontalis		II	II		DD				
Audubon's shearwater	Puffinus Iherminieri		II			LC				
Basking Shark	Cetorhinus maximus					VU				
Bigeye Thresher Shark	Alopias superciliosus					VU				
Bigeye Tuna	Thunnus obesus					VU				
Black Cora spp.	Anthozoa, Antipatharia, all spp.	X	III							
Black mangrove	Avicennia germinans	X	III			LC				
Blue Marlin	Makaira nigricans					VU				
Bottlenose dolphin	Tursiops truncatus		II	II	II	LC				
Boulder star coral	Montastraea/ Orbicella annularis		II	II		EN				
Bridled tern	Sterna anaethetus					LC				
Brown pelican	Pelicanus occidentalis	X	II			LC				
Brown-throated Parakeet	Aratinga pertinax arubensis		II	II		LC				
Bryde's Whale	Balaenoptera edeni		II	I	II	DD				
Buttonwood	Conocarpus erecta	X	III			LC				
Caribbean crown conch	Melongena melongena	X								
Caribbean Spiny Lobster	Panulirus argus	X	III			DD				
Cayenne tern	Sterna sandvicensis eurygnatha					LC				
Cetacea spp.	Mammalia, Cetacea, all spp.	X								
Clymene dolphin	Stenella clymene		II	II	II	DD				
Common Dolphin	Delphinus delphis		II	II	II	LC				
Common tern	Sterna hirundo		App			LC				

Common name	Species name	Art 4	SPA W	CITES	CMS	IUCN	MPA A*	MPA SC*	MPA MH*	MPA O*
Common Thresher Shark	Alopias vulpinus					VU				
Cotuero Toadfish	Batrachoides manglae					VU				
Crustacean sp.	Arubolana imula					VU				
Cubera Snapper	Lutjanus cyanopterus					VU				
Cuvier's beaked whale	Ziphius cavirostris		II	II		LC				
Dwarf sperm whale	Kogia sima		II	II		DD				
Echinoderm sp.	Nemaster grandis									
Elkhorn coral	Acropora palmata		II	II		CR				
Elliptical Star Coral	Dichocoenia stokesii		III	II		VU				
False killer whale	Pseudorca crassidens		II	II		DD				
Fighting Conch	Strombus pugilis	X								
Fin whale	Balaenoptera physalis		II	I	I/II	EN				
Gervais' beaked whale	Mesoplodon europaeus		II	II		DD				
Giant Manta Ray	Manta birostris	X				VU				
Great Hammerhead	Sphyrna mokarran	X				EN				
Green turtle	Chelonia mydas	X	II	I	I/II	EN				
Hard Coral spp.	Anthozoa, Scleractinia, all spp.	X	III							
Hawksbill turtle	Eretmochelys imbricate	X	II	I	I/II	CR				
Hawk-wing Conch	Strombus raninus	X								
Hieroglyphic Cone	Conus hieroglyphus	X				VU				
Hogfish	Lachnolaimus maximus					VU				
Humpback Whale	Megaptera novaeangliae		II	I	I	VU				
Lamarck's Sheet Coral	Agaricia lamarcki		III	II		VU				
Least tern	Sterna antillarum antillarum	X	II			LC				
Leatherbacks	Dermochelys coriacea	X	II	I	I/II	VU				
Lined Seahorse	Hippocampus erectus					VU				
Loggerhead turtle	Caretta caretta	X	II	I	I/II	EN				
Masked Hamlet	Hypoplectrus providencianus					VU				
Melon-headed whale	Peponocephala electra		II	II		LC				
Milk Conch	Strombus costatus	X								

Common name	Species name	Art 4	SPA W	CITES	CMS	IUCN	MPA A*	MPA SC*	MPA MH*	MPA O*
Mountainous star coral	Montastraea/ Orbicella faveolata		II			EN				
Mutton Snapper	Lutjanus analis					VU				
Nassau Grouper	Epinephelus striatus	X				EN				
Northern Crested Caracara	Caracara cheriway	X	II	II		LC				
Oceanic Whitetip Shark	Carcharhinus longimanus					VU				
Olive ridley sea turtle	Lepidochelys olivacea	X	II	I	I/II	VU				
Orca killer whale	Orcinus orca		II	II	II	DD				
Osprey	Pandion haliaetus		II	II	II	LC				
Pantropical spotted dolphin	Stenella attenuata		II	II		LC				
Parrotfish spp.	Scaridae, all spp.	X								
Peregrine falcon	Falco peregrinus	X	II	I		LC				
Pillar Coral	Dendrogyra cylindrus		III	II		VU				
Piping plover	Charadrius melodus		II			NT				
Poey's Grouper	Hyporthodus flavolimbatus					VU				
Pupfish sp.	Cyprinodon dearborni									
Pygmy Sperm whale	Kogia breviceps		II	II		DD				
Queen Conch	Strombus gigas	X	III	II		NE				
Queen Triggerfish	Balistes vetula					VU				
Ray-finned fish spp.	Actinopterygii, Perciformes, all spp.	X								
Red Algae spp.	Florideophyceae, Corallinales, Corallinaceae, all spp.	X								
Red cushion sea star	Oreaster reticulatus	X								
Red hind	Epinephelus guttatus					LC				
Red mangrove	Rhizophora mangle	X	III			LC				
Red Porgy	Pagrus pagrus					EN				
Risso's dolphin	Grampus griseus		II	II	II	LC				
Rooster Conch	Strombus gallus	X								
Roseate tern	Sterna dougallii	X	II			LC				
Rough Cactus Coral	Mycetophyllia ferox		III	II		VU				
Scalloped Hammerhead	Sphyrna lewini	X				EN				
Sea Anemone spp.	Anthozoa, Actiniaria, all spp.	X								

Common name	Species name	Art 4	SPA W	CITES	CMS	IUCN	MPA A*	MPA SC*	MPA MH*	MPA O*
Sea Snail sp.	Conus curassaviensis	X								
Sea Snail sp.	Conasprella wendrosi	X								
Shortfin Mako	Isurus oxyrinchus					VU				
Short-finned pilot whale	Globicephala macrorhynchus		II	II		DD				
Smooth Hammerhead	Sphyrna zygaena					VU				
Snowy Grouper	Hyporthodus niveatus					VU				
Soft Coral spp.	Anthozoa, Alcyonacea, all spp.	X	III							
Southern sennet	Sphyraena picudilla									
Sperm Whale	Physeter macrocephalus		II	I	I/II	VU				
Spinner Dolphin	Stenella longirostris		II	II	II	DD				
Staghorn coral	Acropora cervicornis		II	II		CR				
Star Coral	Montastraea franksi		III			VU				
Striped dolphin	Stenella coeruleoalba		II	II	II	LC				
Tarpon	Megalops atlanticus					VU				
Triton's trumpet	Charonia variegata		App							
Turtlegrass	Thalassia testudinum	X								
Van de Poll's Molly	Poecilia vandepolli									
Warsaw Grouper	Hyporthodus nigritus					CR				
West Indian Manatee	Trichechus manatus		I			VU				
Whale Shark	Rhincodon typus					VU				
White mangrove	Laguncularia racemosa	X	III			LC				
White Marlin	Tetrapturus albidus					VU				
Yellow-shouldered parrot	Amazona barbadensis		I	I		VU				
Yellowmouth Grouper	Mycteroperca interstitialis					VU				

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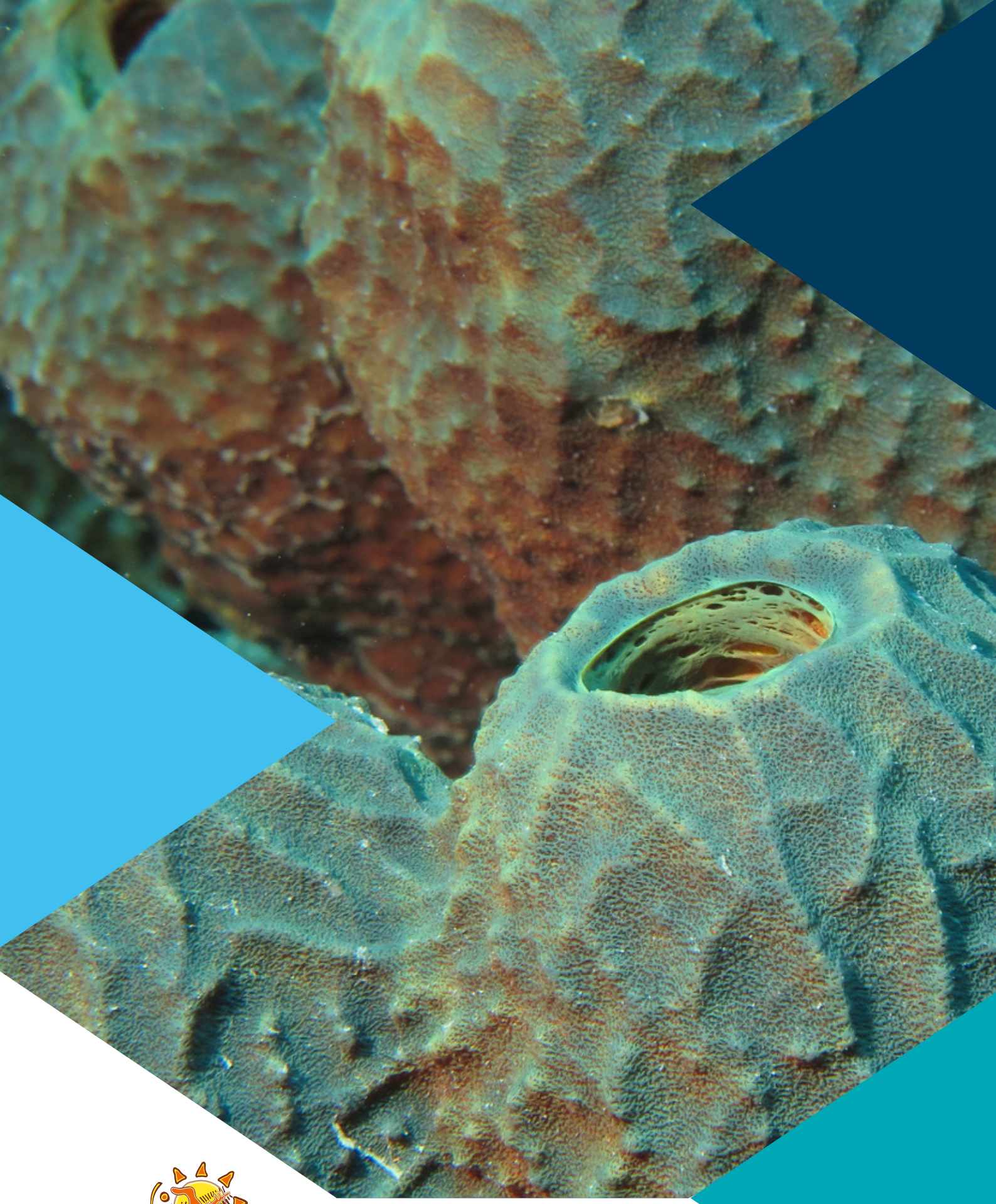
Natasha Silva
Sietske van der Wal

Design:
Freeway Creative Agency



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