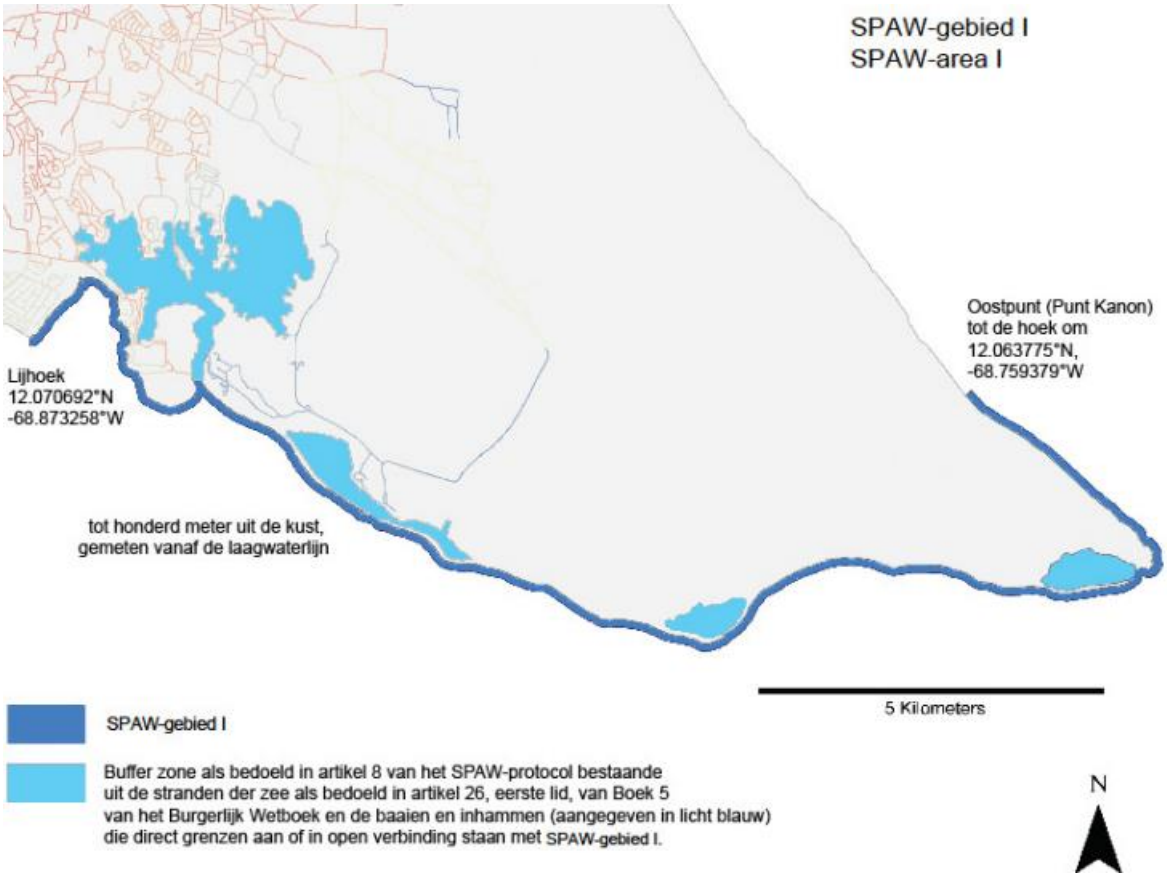
MANAGEMENT PLAN 2023
CURACAO MARINE PARK (SPAW-area 1)



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INTRODUCTION

The Government of Curacao has jurisdiction with regard to the territorial sea. The Government of Curacao has designated an area of the territorial sea as a SPAW-area 1 according to the regulations of the SPAW Protocol. The Government of Curacao has signed an Agreement of Engagement (Overeenkomst van Opdracht) with Carmabi on the 27th of November 2020 to execute certain tasks in the SPAW-area 1. In this Agreement of Engagement, the SPAW-area 1 has been referred to as the "Management Area" (Beheergebied). In the agreement certain tasks are stipulated to be carried out by Carmabi. In the meantime, the aforementioned "Management Area" has been "baptized" the "Curacao Marine Park" for public relations purposes. All three names are used in this document.

Properties and biogeographic classification

Curaçao lies between latitudes 12°2'80" to 12°23'30"N and longitudes 69°10'00" to 68°44'30"W. The island is 61 km long and 12 km wide at its widest point. The surface area measures 444 km^2. The Curaçao SPAW Area 1 is located off Curaçao's southeast coast. It stretches from Lijhoek (12.070692°N, -68.873258°W) at Jan Thiel along 21.7 kilometers (13.5 miles) of shoreline from the low-water mark (or the openings of inland bays) to a distance of 100 m from shore, to and around the most eastern tip of the island at Oostpunt to a location with coordinates 12.063775°N, -68.759379°W. The SPAW Area 1 includes 217 hectares of pristine fringing reefs.

History of the SPAW Area 1

The present Marine Park is in fact the second marine park that is established on Curacao. The first Curaçao Marine Park was established, but not officially decreed by law in 1983, and originally stretched along 20 km offshore from the most eastern tip of Curaçao towards the west. The Park covered a total surface of 600 hectares offshore and 436 hectares of inland bays. The Curaçao Marine

Park was managed by the Carmabi Foundation. The park ceased to exist when subsidies were no longer provided around the turn of the century and an adequate legal basis for management was still missing.

Despite this, the government of Curacao has always expressed interest in the creation of a new Marine Park on Curacao and imposed additional legislation to protect its marine resources as stated in the "Memorie van Toelichting (2008. no. 3) which accompanies the proposed island ordinance "Eilandsverordening marien natuurbeheer en –bescherming Curacao). The government based its support on a report entitled "Curacao Marine Management Zone" (Van't Hof et al. 1995), which showed that community support existed to establish a marine park on Curacao and that visitors would be willing to pay for the services rendered by a to be formed entity managing such a park. The government's desire to safeguard its coastal resources (e.g., coral reefs, mangroves, saliñas, seagrass beds and inland bays) was also earlier expressed in Curacao's Tourism Master Plan (1995) compiled by the Curacao Tourism Development Bureau (CTDB): "In order to conserve the coastal strip, both shore and sea, the Government will support the creation of a coastal protection zone around the island of Curacao, through the introduction of legislation to extend the existing marine park and to protect and conserve the foreshore, sea and the natural flora and fauna (Section 12.4, p. 119)". The government states that tourism is crucial to the island's economy and tourism depends to an important degree on "healthy" natural resources. As a consequence, nature protection is of economic importance as well. The possibility to create protected areas is also included in the Maritime Ordinance (LvMB [18], art. 29) following the stipulations mentioned in article 4 from the SPAW protocol which is underwritten by Curacao.

The present Curacao Marine Park came about because of the construction of a second Mega Pier by the Curaçao Ports Authority N.V. (CPA). A certain degree of damage to local coral reefs due to the construction was expected and two reports were compiled earlier to estimate the degree of this damage (Vermeij 2015, Van den Brink 2016). Due to the relatively healthy state of reefs at this location, the damage would be severe and consequently the Curacao Government decided to compensate this damage by creating a marine protected area (SPAW-area 1) protecting 20 kilometers of extremely healthy reefs along the island's eastern side. Such mitigation is required under the SPAW protocol of the Cartagena Convention

In 2015, after an island wide reef survey, the Curacao Government renewed its ambition to legally install the Spaw Area 1. To include some newly discovered areas with coral reefs with coverage exceeding 60% and avoid areas that have suffered from recent coastal development (e.g., the Jan Thiel area), the original park boundaries were moved to form the new SPAW Area 1.

The new SPAW-area 1 was approved by the Council of Ministers in August 2016 and officially announced in 2018. It has been the intention of the Curacao Government to nominate the SPAW-area 1 as a protected area listed under the International Protocol for Specially Protected Areas and Wildlife (SPAW Protocol) of the Cartagena Convention. The presence of a protected area, as well as the presence of a management authority, management plan and budget, are required to qualify for listing as a SPAW area.

SPAW Area 1 Goals

The Government decision (Landsbesluit) SPAW-area 1 mentions the need for an area manager (Gebiedsbeheerder) and an annual management plan aimed at realizing the goals of the SPAW protocol and the Biodiversity Treaty and considering legal regulations. This management plan should encompass:

The first management plan for the SPAW area 1 is aimed at achieving the objectives of the SPAW protocol (LB. A° 2018 N° 74) and the Convention on Biodiversity with due observance of the applicable legal regulations; these regulations include:
a. the requirements and obligations for protected areas as included in the National Ordinance on Maritime Management and the National Ordinance on the Foundations of Nature Management and protection and the measures in force under the laws and regulations in the SPAW area 1;
b. a vision regarding the multi-year development of the SPAW area 1;
c. directions for tourist and recreational users and fishermen in SPAW area I, including any zoning, and for diving and snorkeling activities in particular;
d. the construction and maintenance of marker and mooring buoys in SPAW area 1;
e. monitoring the effectiveness of the management on the flora and fauna in the SPAW area I in a general sense;
f. if applicable, a general description of the intended scientific research activities in the SPAW area 1
g. the provision of information to, consultation and cooperation with target groups, users, direct stakeholders and the public in general, as well as the promotion of public awareness of the value of the SPAW area 1;
h. cooperation with government services and other supervisors;
i. gathering information for the purpose of reporting on SPAW area 1, if referred to in Article 19 of the SPAW protocol;
j. the way in which the area manager will implement the provisions under c to with i;
k. a description of the impact of activities in the buffer zone on SPAW area 1;
l. the costs involved in the implementation of, in any event, the provisions under c to with e, and g;
m. if possible, proposals for the self-supporting financing of the SPAW area I.

MANAGEMENT TASKS DELEGATED TO CARMABI

In order to bring into formal operation, the management of the SPAW-area 1, the Government of Curaçao entered into an Agreement of Engagement Relating to the SPAW-area 1 (Overeenkomst van Opdracht) with the Caribbean Research and Management of Biodiversity Foundation (CARMABI). On November 27, 2020 the agreement was signed by the then Minister of Traffic, Transport and Urban Planning and the president and secretary of the Carmabi Board. The below paragraphs further discuss the Curaçao Spaw Area 1 governance structure and institutional arrangements.

Tasks

Based on the aforementioned agreement between the Government of Curaçao and CARMABI, CARMABI is appointed as the Spaw Area 1 Manager for a period of five years starting November 27, 2020, whereby CARMABI has been given the following 8 tasks:

1. Conduct surveillance of the protected area;
2. Document possible infractions or breeches of the law to authorized governmental agencies;
3. Communicate possible infractions or breeches of the laws to authorized governmental agencies;
4. Cooperation with government departments, supervisors and investigative officers
5. Position and maintain designation and mooring buoys;
6. Remove underwater discarded fishing gear and rubbish;
7. Describe the effects of activities conducted in the buffer zones for the management area.
8. Monitor the effectiveness of the management on the flora and fauna concurrent with the management plan.

Funding

The initial investments and operations of the Marine Park for the first five years are funded by the Curaçao Authority N.V. (CPA), which has earmarked an amount of ANG 1.6 million for these activities. The funding arrangement among CPA and Carmabi and the related terms and conditions are formalized in an Agreement for the contribution of project costs (Overeenkomst Projectkosten Bijdrage). This agreement was also signed on November 27, 2020. Required funding is provided by CPA to CARMABI by means of advances to be provided in a timely manner, or by means of the provision of resources and/or equipment required for the start-up and management of the Marine Park.

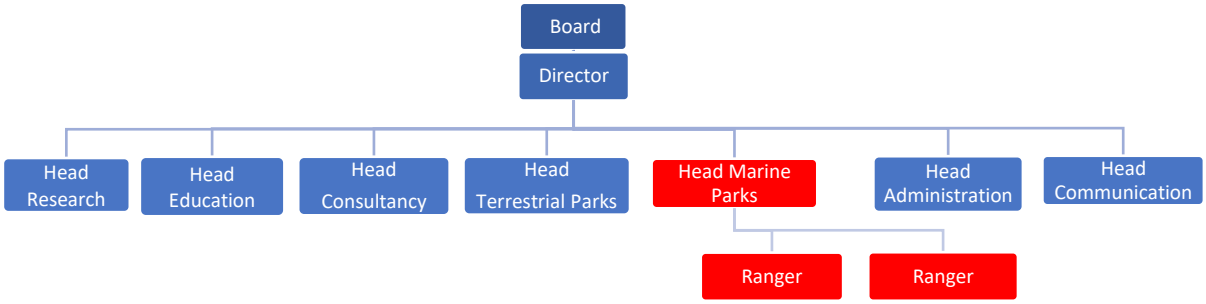
Periodic reporting

CARMABI is required to report to the Minister of Traffic, Transport and Urban Planning on a quarterly basis. Furthermore CARMABI is required to submit a management plan annually to the aforementioned ministry on or before October 1st of every calendar year.

MANAGEMENT PLAN (BEHEERPLAN)

Introduction

The Agreement of Engagement was signed on November 22, 2020. The first step within Carmabi after the signing of the agreement has been to adapt the organizational structure to accommodate the management of the marine park. A new department within Carmabi was established for this purpose. This is the Department Marine Parks. See the organizational structure below with the new department of parks in red.



Because of Covid related delays we only managed to recruit a new department head on the 9th of June 2021. On this date a labor agreement was signed with Duvan Rios, previously acting captain at a Metal Shark at the Coast Guard. The first assignment of the new department head has been to recruit two rangers. On the 1st of October 2021 a labour agreement was signed with two rangers for one year.

Stakeholders

The second assignment for the new department head was to do a stakeholder analysis. The following stakeholders were identified:

1. The Government of Curacao

Carmabi will report to the Ministry of Transport, Traffic and Urban Planning on a quarterly basis.

2. Curacao Ports Authority (CPA)
The CPA will fund the park for 5 years

3. The Harbor and Safety Inspection (HVI);
Under the authority of the Harbor Master, the HVI is responsible for the safety and environment in all ports and territorial waters of Curaçao.

4. Maritime Authority of Curaçao (MAC);
MAC oversees maritime activities in the territorial waters of Curaçao and supports industry partners committed to the goals of maritime safety and care for our environment.

5. Fishermen and affiliated fishery organizations;
Fishermen are traditional and frequent users of the park.

6. Diving schools
Diving schools are frequent users of the park

7. Coast Guard, and other law enforcement agencies
Law enforcement agencies are vital partners in enforcement of rules and regulations

8. Santa Barbara Plantation
The boat of the marine park is moored at Seru Boka Marina at Santa Barbara Plantation.

9. Proteus Ocean Group
The Proteus Ocean Group (Fabien Cousteau) is in the process of developing an underwater research station in the marine park, which is expected to be operational in 2025. CARMABI advises the Proteus Ocean Group.

Carmabi's department of Marine Areas expects to frequently engage the above stakeholders in connection with its regular operations.

Planned activities 2023

A number of activities to make a start with the management of the marine park are planned for 2023. Some of these activities were started already end of 2021 and 2022. The overall goal is to continue with the marine park operationality in 2023.

The planned activities for 2023 are:
- Training of Marine Park Rangers
- Maintenance of Marine Park Boat
- Equipment
- Conduct surveillance
- Development and testing of prototype buoy
- Maintenance of the buoys
- Consultation with user groups marine park
- Determination location buoys
- Financial budget
- Education and public awareness
- Cooperation with Proteus Ocean Group

- Monitoring nature
- Rules and guidelines

Training Park Rangers

The initial training for all operational employees will be aimed at improving seamanship, water safety, diving skills and search and rescue if necessary. All Marine Park Rangers are required to be First Aid Certified, possess a commercial boater license and diver certification as well as be knowledgeable of applicable laws and regulations relating to the marine park according to article 5 of the (Overeenkomst van Opdracht). These skillsets and background knowledge will be honed and kept ready to be applied in practice.

To improve good seamanship the park rangers will be taken the VHF certificate exam and the Red Cross First Aid exam (EHBO). With these two exams they are eligible for the commercial boater license. They will be trained by the HVI (Harbour and Safety Inspection) about the rules and guidelines that need to be followed on sea. Additional on the job learning will be performed by the head of the marine park department.

To improve good diving skills the park rangers will be taking courses to obtain the open water, advance open water and the rescue diver PADI diving license. Additional on the job learning will be performed by the head of the marine park department.

In addition, on the job learning will be critical on subjects such as marine biology and points of interest relating to various habitats in the protected area. We believe a mentorship program with the Dutch Caribbean Nature Alliance and STINAPA in Bonaire to considerably augment knowledge in these areas.

In addition, we will be trained in presentation skills and public speaking, in order to effectively achieve learning objectives on the importance of maintaining our marine ecosystems to school going youth and the public in general of the marine park.

Maintenance of the Marine Park Boat

One of CPA's contributions will be in the form of resources and/or equipment required for the start-up and management of the Marine Park (Overeenkomst Projectkosten Bijdrage). CPA has a vessel called "Port Security" of the brand Eduardoño, more than 10 years at their disposal. The vessel has 2x150 hp outboard Yamaha engines. The deck and length of the vessel is large enough for the work to be carried out in the Marine Park (e.g. placing, maintenance of buoys and patrols).

Our maintenance plan is set for every year. We first start with the preparation for the inspection of the vessel, next we will do some minor maintenance on the 2 outboard engines, steering system, bilge pump system and anode replacement.

Equipment

In (Appendix XVI: CPA vessel and equipment) the Management Plan provides a detailed listing on the resources received by Carmabi as recipient by Curacao Port Authority. Ahead of the date of this Management Plan, Carmabi has received equipment donations from the CPA in the form of use of an equipped Surveillance boat, twelve buoys and related supplies. With the financial contribution of CPA, we are able to buy a 4WD vehicle and 22 moorings buoys for the necessary

work that need to be done in the marine park. Diving and underwater salvage equipment will also be needed for the placing and maintenance of the mooring buoys.

Conduct surveillance

Surveillance of the SPAW Area 1 is necessary to enforce legislation and park regulations to prevent and stop illegal activities. Therefore, we will be conduct surveillance of the protected area (Appendix XX: Surveillance schedule). The park manager and rangers will not have special police powers. Instead they will be the eyes and ears of the authorized governmental agencies by documenting and communicating of possible infractions or breeches of the laws.

Development and testing of prototype buoy

With our existing knowledge and experience of the Curaçao seabed, the head of the Marine Parks department have made adjustments to the design of the mooring buoys for the marine park. The mooring buoys have been designed in such a way that they cannot become dislodged and won't be a load on the environment and for navigation. The prototype has been tested in the rough waves of the marine park. Here we will continue to observe the behaviour of the buoy, the buoyancy of the buoy with the adjustments, the way the buoy reacts with the sea state, the visibility of the protruding pipe, the strength of the rope, the strength of the ring, the condition of the helix anchors and the way the buoys react when the boat is tied to it.

Mass production buoys

The buoys have been painted white for divers and yellow for fishing. They will have a protruding pipe with a height of 70 cm for better visibility. Furthermore, these buoys have been equipped with reflective tape for visibility in the dark. The mooring buoys will be provided with a yellow rope with a loop to which the boats can be tied. The mooring buoys will be set up in such a way that everyone can use them. We will be placing 25 buoys in the Marine Park, 2 marking buoys for the indication of the park boundaries, 13 of these buoys will be placed for the divers, 10 of the buoys will be placed for the local fishermen and the rest of the buoys are kept as spares.
In the future, helix anchors will be used. The reason for this is that these anchors do not cause damage when installed and unlike the concrete blocks are not towed when a larger vessel is moored.

Consultation with user groups marine park

The Marine Parks Department has consulted with different stakeholders (Federashon Kooperativanan Uní di Produkshon (KUP), the Harbor Master, maritime authority curacao (MAC) and the Divers industry) and will continue to do so. The aim here is to place safely (by the standard of the MAC and the Harbour and Safety Inspection) several extra mooring buoys to offer local fishermen and other park visitors the opportunity to fish from these mooring buoys, so that own anchors are not necessary.

Determination location buoys

The Marine Parks department has started with the inventory of all the existing anchorages in the marine park. With this inventory we will know what the condition is and at what depth the already existing concrete blocks and helix anchors are located.

The existing moorings, although not in a good condition, are still being used by local fishermen or dive boats (Appendix XV: Existing mooring locations). The Department of Agriculture, Animal Husbandry and Fisheries (Dutch: Department Landbouw, Veeteelt and Visserij, LVV) now known

as AVB (Agricultural and Fisheries Management), started to use in 2014 de Helix anchors in some areas. The holding power of the helix anchor is far superior to concrete blocks and other dead weight systems. These anchors have far greater holding power than conventional mooring anchors, allowing vessels both large and small to use them. Having seen that the old concrete blocks can be dragged by big boat and damaging even more the coral reef it is recommended to start replacing the old concert blocks by the helix anchors (Appendix XVII: Helix Anchor).

Financial budget

The table below outlining budget realization and expected inflows and outlays for the year of 2023.

Budget	
	2023
Investments	
Boat modification	-
Vehicle	-
Bouys	16,388
Dive equipment	-
	16,388
Personnel	
Salaries and remuneration	170,709
Other personnel expense	2,000
Training and education	7,500
	180,209
Fuel and maintenance	
Boat maintenance	6,000
Fuel boat	13,000
Insurance boat	3,500
Marina	7,500
Safety materials	3,000
Vehicle maintenance	1,500
Fuel vehicle	3,000
Road tax	1,240
Vehicle insurance	5,722
Bouy maintenance	4,800
	49,262
Other	
Charged salaries	25,000
Charged expenses	20,000
Communication and PR	6,000
Depreciation	21,400
	72,400
Total investments and expenses	**318,259**

In order to secure a sustainable source of income, especially for the years succeeding the initial five year operational period funded by the Curacao Ports Authority, CARMABI will initiate initiatives geared towards a self sustainable park.

Education and public awareness

Our Nature and Environment Education Department (NME) is responsible for educational programs for primary school children and secondary education students. Education courses are

running during the whole school year. The activities of Carmabi's education program presently include:

- Terrestrial Education Program (TEP): tours to teach children about our terrestrial nature at Savonet, Christoffel Park, Shete Boka Park and the area of Daaibooi.
- Marine Education Program (MEP): tours to teach children about Curacao's marine nature at the Marine Education Center (MEC) at Piscadera.
- School visits supporting education. For primary education we have lessons with microscopes ('microworld') and the program 'environmental challenges' for secondary education.
- Providing teaching materials for primary schools (FO) and high schools (VO).
- Support high school students with their thesis/ paper/ practical assignments on topics related to(marine) biology.
- Various other activities to increase general awareness, such as Shark Week, Moon Walks, Marine Education Center Open House and participating in school projects and interviews.

The Department of Marine Parks along with the Department of Education of Carmabi have introduced now a new Youth Ranger Program specifically for the marine park. This program is for a whole school year and started on October 1, 2022 with 31 youth rangers. This will be coordinated by a supervisor from the education department with support from the marine park ranger.

As part of the protection of the marine park, the Marine Parks department together with the marketing and communication department has also started making awareness videos. Several informative videos on the importance of protecting the coral reef and also highlighting the proper use of the mooring buoy.

Cooperation with Proteus Ocean Group

Proteus Ocean Group, Ltd. ("POG") will build and operate PROTEUS, a sustainable habitat and observatory platform for scientists, innovators, and global customers in Curaçao Marine Park at a depth of 20 meter. For this reason, we will be assisting the Proteus Ocean Group in the future by making our boat and staff available. We will work to ensure that the local fisherman and park visitors are not adversely affected.

The first phase of the Proteus Ocean Group's will start with the site mapping mission of the entire marine protected area (SPAW-Area 1). Here we will gain a bigger picture of the ecosystem and seafloor. it's imperative to understand the seafloor, prior to determining the precise location of Proteus' future home. Second phase will be A Deeper Data Dive, here they will continue to dive deeper and create a database of physical and chemical data about the region designed to accelerate knowledge and facilitate innovation in advance of the arrival of Proteus.

Monitoring nature

The Marine Parks Department will assist the Research Department in several future projects.
Three environmental monitoring programs are currently running within the SPAW Area 1 (Appendix XIV. monitoring locations):

- Coral reef fish survey and coral transects for all species using the highest resolution option of the GCRMN Protocols (see Appendix XIX.) at 29 sites, each 700m apart within the SA1. Surveys occur once every 5 yrs. since 2015 (Appendix XIV. monitoring locations).
- Presentence of sewage water at the same 29 sites and frequency as above.

- Coral growth measurements in 4 10 x10m areas (“photomosaics”) at 5 yr. intervals at four locations (Appendix XIV. monitoring locations).

Future research needs may include:

- Reef restoration programs
- SEALINK project, linking terrestrial pollutants and inputs to nearshore coral reef growth to identify novel conservation options for the Dutch Caribbean

Rules and guidelines

While direct action against breeches of rules and regulations of the marine park are not part of our mandate, The park manager and rangers will instead serve as the eyes and ears for law enforcement (e.g., coastguard, police, environmental inspectors).

The rules and guidelines (Appendix XI: Legal status and Appendix XII: Legal framework for protection) to be followed within the SPAW Area 1 will be distributed through a wide array of media, such as the socialmedia website: signage at strategic locations as well as information campaigns through newspaper advertisements, radio, social media and television programs. SPAW Area 1 user engagement also forms an integral part of a program to inform and ensure park rules are adhered to. In addition, information on the SPAW Area 1, its ecosystems, species, endangered species and other attributes will be furnished to the general public as part of an educational program (Appendix XVIII Overview of protected marine species within the SPAW Area 1 and Appendix XIX GCRMN Monitoring protocols).

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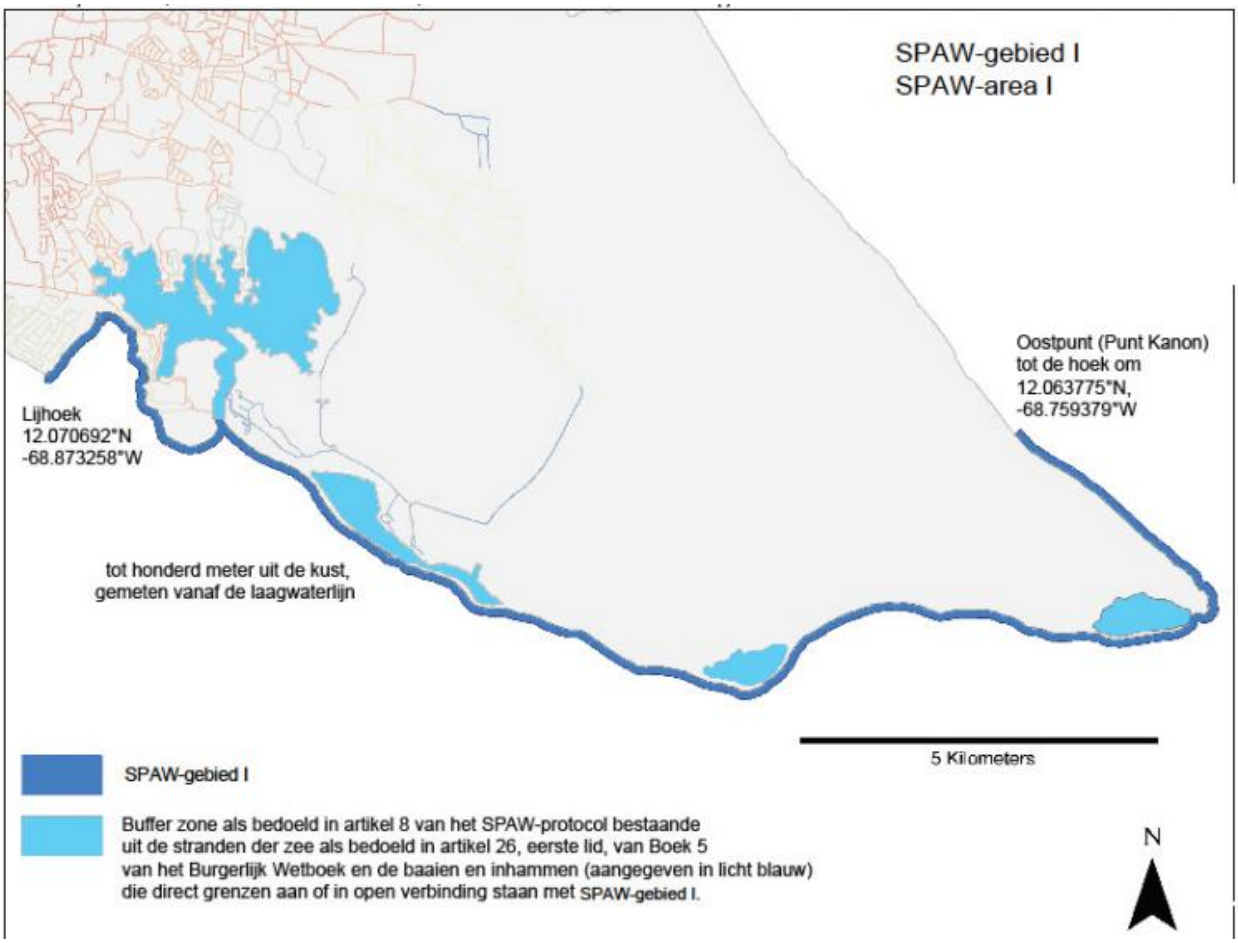
Appendix I: SPAW Area 1 Location



Appendix II: Geological setting

The coastal area of the Eastern part of Curaçao consists entirely of a Quaternary Limestone terrace, which is locally bordered by recent coral shingle, beach rock and/or sand ramparts at its seaward edge (de Buisonjé 1974). A fringing reef extends along the entire coast from Fuik Bay to Punt Kanon and starts only a few meters offshore (1-50 m). Underwater a submarine terrace gradually slopes to a drop-off at a depth between 7 to 11 m. Beyond the drop off, the reef slopes down steeply, sometimes interrupted by a small sandy terrace at depths around 50 to 60 m, and ends in a sandy plain at depths between 80 to 100 m (Bak 1975, Strawbridge & Sybesma 1989).

The main oceanic current travels from east to west and reaches Curaçao at Punt Kanon, where clear, oceanic water hits the island. Curaçao's daily tidal range is small (30 cm), only during strong winds the tidal range can be bigger with a maximum of about 70 cm (De Haan & Zaneveld 1959). Mean annual water temperature and salinity are 28°C and 35 ppt, respectively.

General description of the marine ecosystems in the SPAW Area 1

The SA1 harbors a functional ecological network of three ecosystem types: coral reefs, mangroves and seagrass beds. A well-developed coral reef community supporting high levels of marine biodiversity is found within the SA1. Seagrass beds and/or mangrove habitats are found within the three inland bays included in the SA1 which are connected to the open ocean, i.e., Fuik Bay (0.55km^2), Lagun Blanku (0.23 km^2), and Awa di Oostpunt (0.40 km^2). Turtle-grass (*Thalassia testudinum*) is by far the most abundant sea grass species in all three inland bays. Fuik Bay also supports a well-developed forest of red mangroves (*Rhizophora mangle*). Seagrass and mangrove communities are ecologically strongly connected to coral reef communities as many reef organisms, especially juvenile fish spend at least one phase of their life cycle (generally their juvenile life stage) within these habitats before moving to coral reefs for their adult life phase (Nagelkerken 2000, Nagelkerken et al. 2002, Verweij et al. 2008).

The area constantly receives fresh input of oceanic water and is located upstream from all land-based sources of pollution such as the Schottegat Harbor and the capital city Willemstad. Furthermore, the reefs are found along an undeveloped and uninhabited coastline which has been private property since the 18th century. The owners allow no one access to their property, so it is basically free of virtually all forms of human-related disturbances. Sea conditions are generally rough, which, in combination with limited public access over land, has resulted in low visitation by fishermen and divers with correspondingly low impact low negative impacts from these user groups. Favorable environmental conditions and the absence of human activities in the area make that the marine

ecosystems in the SA1 remain among the last few examples of functional reefs left at present in the Caribbean.

Coral reef communities

The reefs within the SA1 harbor about 68 reef building coral species and high coral coverage compared to other sites in the Caribbean (Jackson et al. 2013). Curaçao is one of the most species-diverse areas in the Caribbean together with the Cayman Islands and nearby Aruba and Bonaire, (Miloslavich et al. 2010). The shallow reef harbors extensive populations of the endangered Elkhorn coral (*Acropora palmata*). Because fish and invertebrates use its branching colonies for shelter, *A. palmata* plays an essential role in the maintenance of healthy and productive populations of a large number of marine species (Nagelkerken & Nagelkerken 2004). The forereef is dominated by species of the *Orbicella* spp. complex (formerly *Montastraea*) (Bruckner & Bruckner 2003), which contribute significantly to reef formation.

The shore consists mostly of steep cliffs and pebble beaches. From there, a 50-100m wide shallow reef flat gradually slopes to a drop-off starting between 7-15m depth (Bak 1975). From here the fore reef slopes steeply downward at 45-90° to a second drop-off around 80-90m. In most locations, the first drop-off often turns into a sandy terrace around 50-60m that gently slopes to deeper water until the second drop-off begins. In general, coral cover and diversity increase from the high-water mark towards the first drop-off. Coral cover and diversity remain high crossing the drop-off down to mesophotic depths (below 30m), after which both decrease to around 80m where coral growth becomes extremely sparse (Bak 1975, Bruckner & Bruckner 2003).

Historically (and still in many places within the SA1), there exist six distinct coral zones from the shoreline to a depth of 50 m (Bak 1977). These are: a Shore Zone (0-1 m), characterized by knobby brain coral *(Diploria clivosa);* an Elkhorn Zone (1-4 m), dominated by elkhorn coral *(Acropora palmata),* fire coral *(Millepora* spp.), and crustose coralline algae; a Staghorn zone (4-7 m), characterized by staghorn coral *(Acropora cervicornis)* interspersed with yellow pencil coral *(Madracis mirabilis),* boulder brain coral *(Colpophyllia natans),* and boulder star corals *(Montastraea annularis)* and bordered by gorgonians at its seaward edge; a Drop-off Zone (7-12 m), characterized by gorgonians, star corals *(Montastrea annularis*, *M. faveolata),* yellow pencil coral *(Madracis mirabilis),* and smooth flower coral *(Eusmilia fastigiata);* an Upper Reef Slope (12-25 m), characterized by massive star corals *(Montastrea annularis*, *M. faveolata)* and lettuce coral *(Agaricia* sp).; and finally a lower reef slope (25 m +), dominated by *Agaricia* spp. and some flattened forms of star corals *(Montastraea spp.),* great star coral *(Montastraea cavernosa),* and blushing star coral *(Stephanocoenia michelinii)* but with few other abundant corals.

In terms of reef-building corals Curaçao is one of the most species-diverse areas in the Caribbean together with the Cayman Islands and nearby Aruba and Bonaire (Miloslavich et al. 2010). Curaçao is therefore often considered a hotspot of biodiversity in what is already one of the five richest hotspots for biodiversity and endemism on earth (i.e. the Caribbean) (Stehli & Wells 1971, Bak 1977). Reefs within the SA1 are ranked among the best three reef systems left in the Caribbean (Jackson et al. 2013) and act as a source for coral larvae for reefs elsewhere on Curaçao. Corals inside the SA1 produce on average 3 to 5 times more larvae per square meter of reef compared to corals on reefs near developed coasts elsewhere on the island (Hartmann et al. 2018). The same is true for fish (Huijbers et al. 2013).

Mesophotic coral communities in Bonaire and Curaçao are typically dominated by agariciids, with *Agaricia lamarcki* and *A. grahamae* covering a substantial proportion of the substrate at upper mesophotic depths (30–60 m), while the lower mesophotic (>60 m) consists predominantly of *A. grahamae* and *A. undata* (Frade et al. 2019). Although much of the habitat is dominated by sediment with only patchy coral growth, in some location's coral assemblages can cover up to 100% of the seafloor down to depths of 70–85 m. Recent biodiversity studies, mostly focusing on fishes, sponges, and corals, documented only limited overlap between shallow and mesophotic reef communities, and that mesophotic reef biodiversity is strongly structured by depth.

Fish communities

The reef communities of the SA1 harbor 358 fish species which corresponds to approximately 61% of all fish species that occur in the Caribbean. There are no endemic fish species reported for Curaçao. The biomass of reef fishes on Curaçao is highest between Klein Curaçao and Kaap Marie (average: 175 g m^{-2}), which is relatively high for Caribbean standards, but still lower than values associated with proper ecosystem function elsewhere (WaittInstitute 2017), i.e., 270 - 510 g m^{-2} (Sandin et al. 2008). The biomass of herbivorous fishes is relatively high in the SA1 (average: 70 g m^{-2}). On healthy Caribbean reefs, biomass of herbivorous fish should be at least 70 g m^{-2}, but preferably above 100 g m^{-2} (Edwards et al. 2014). Apex predators (e.g., large groupers and jacks) are mostly absent due to their regional sensitivity to overfishing, making up only 5.8% of total reef fish biomass (Sandin et al. 2007). Large schools of predatory fishes are however frequently observed (Newman et al. 2006) as well as spawning aggregations of many fish species, including yellowtail snappers, dog snappers and multispecies parrotfish spawning aggregations (Carmabi, unpubl. obs.).

Sea turtles

Three sea turtle species regularly nest on Curaçao's beaches and are common in the SA1: Green turtles (*Chelonia mydas),* hawksbills (*Eretmochelys imbricata*) and more occasionally loggerheads (*Caretta caretta*). The Olive Ridley and Leatherback are rare visitors. Green turtles predominantly feed in the seagrass beds in the island's inland bays, including those in the SA1 (Sybesma 1992, Hoetjes 2006).

Inland bays

The inland bays within the site receive no freshwater input from rivers and thus have never experienced severe brackish conditions, like those observed in Curacao's saliñas. During heavy rains there is a limited influx of freshwater through the porous limestone and run-off from the low surrounding hills. The bottom of all bays consists of marine sediment with grain sizes ranging between 53 and 600 µm (Nagelkerken & Van der Velde 2004). Fuik Bay is the most western inland bay of the area. It is 2.9 km long and 600 m wide at its maximum width. A 24 m deep canal runs through the central part of Fuik Bay (Nagelkerken & Van der Velde 2004) and a 150 m wide opening connects the bay to the open sea. The water inside the bay is generally clear and its salinity is slightly below that of the open sea due to local influx of fresh ground water. Lagun Blanku is situated 3 km east of Fuik Bay and is 1 km long and 400 m wide at its maximum width. Together with another inland bay, i.e., Awa di Oostpunt, Lagun Blanku is situated near the eastern tip of the island. Awa di Oostpunt lies 5 km east of Lagun Blanku and is 1.2 km long and 500 m wide. The entrance to the sea is about 80 m wide. The waters in the bay are the clearest of all inland bays on Curacao and are a little below average sea water

salinity (Nagelkerken et al. 2000). Three hyper-saline lagoons are also found along the coast and water exchange occurs largely subterraneous through the porous coral rubble accumulations that separates these lagoons from the sea. The largest of these hyper-saline lagoons is Awa Blanku, just east of Lagun Blanku, whereas the two other small hyper-saline lagoons are found 2 km east of from Awa Blanku.

An average of 13 fish species dominates the fish community in the inland bays. Of these species, 60% are highly dependent on seagrass beds and/or mangrove for nursery habitats (Nagelkerken & Van Der Velde 2002). In addition, the three inland bays harbor high densities of juvenile reef fish that obligatorily spend their earliest life stages inside the bays before they move to the nearby coral reefs where they spend their life as adults (Nagelkerken et al. 2000, Nagelkerken 2000). The main reef fish species that highly depend on these habitats are the Yellowtail snapper (*Ocyrus chrysurus*; Grastelchi di piedra), Striped parrotfish (*Scarus iserti*; Gutu), Sailors choice (*Haemulon parrai*, Korkor pretu), Bluestriped grunt (*Haemulon sciurus*, Gròns), Schoolmaster (*Lutjanus apodus*, Bers), Gray snapper (*Lutjanus griseus*, Karañitu), Redtail parrotfish (*Sparisoma chrysopterum*, Gutu rab'i gai,) and Barracuda (*Sphyraena barracuda*, Baracuda) (Nagelkerken et al. 2000). Preserving these nursery habitats for both ecologically (e.g., parrotfish) and economically important species (e.g., grunts, snappers and barracudas) is critical as stocks for all these species have been greatly depleted throughout the Caribbean due to overfishing (Van't Hof et al. 1995, Bruckner & Bruckner 2003, Vermeij et al. 2019).

Current usages of the SA1

The (inland) waters of the proposed Ramsar site “Eastern Curaçao: Fuik to Punt Kanon” are regularly visited by pleasure boats and some fishermen. The coral reefs are occasionally visited by divers. Because the area is characterized by relatively rough sea conditions and limited public access, fishing and diving pressures are minimal compared to those along the southwest coast of Curaçao (Van't Hof et al. 1995, Van Veghel 1997). Commercial fishing activity in the park is very limited as most of it is focused offshore. The sheltered bay of Fuik is frequently visited by boaters, swimmers and wake surfers for recreational purposes. Fuik Bay shelters a sandy beach (approximately 250 m long) that is frequently used by boaters and is only accessible by boat. Fuik bay was also used as a loading terminal by the Curacao Mining Company for shipment of phosphate rock. Nowadays phosphate is not exported anymore but limestone is sometimes shipped for building purposes while quartz river sands are imported from Surinam and Guyana.

Caracasbaai

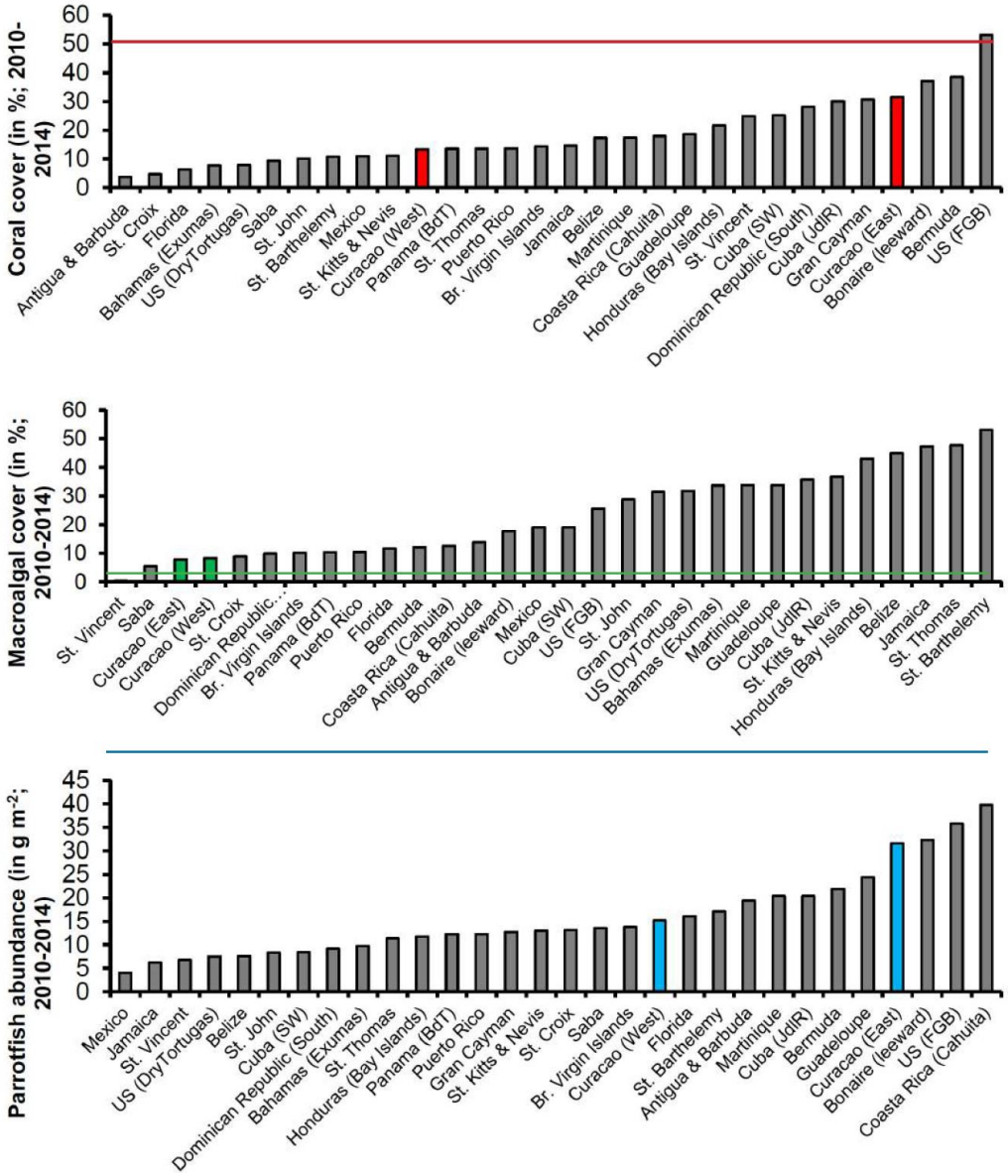
Caracasbaai is one of the largest and deepest bays in Curacao. Located east of Jan Thiel, Caracasbaai abuts the western edge of the Spaanse Water. The beach comprising of coarse rock and pebbles is a popular swimming and watersport recreation area. Caracasbaai offers mooring facilities for local fishing vessels. The surrounding area which contains a number of historical structures is also widely used for recreational hiking. Because of its deep waters, Caracasbaai is also home to a maintenance terminal for offshore drilling platforms, oil tankers and other large vessels. The eastern part of this area is zoned as a conservation area whereas the western part is designated as a tourist zone.

Spaanse water

Spaanse water (Dutch for Spanish water) is an irregularly shaped lagoon on the southeast coast of Curacao measuring about 3 square kilometers.

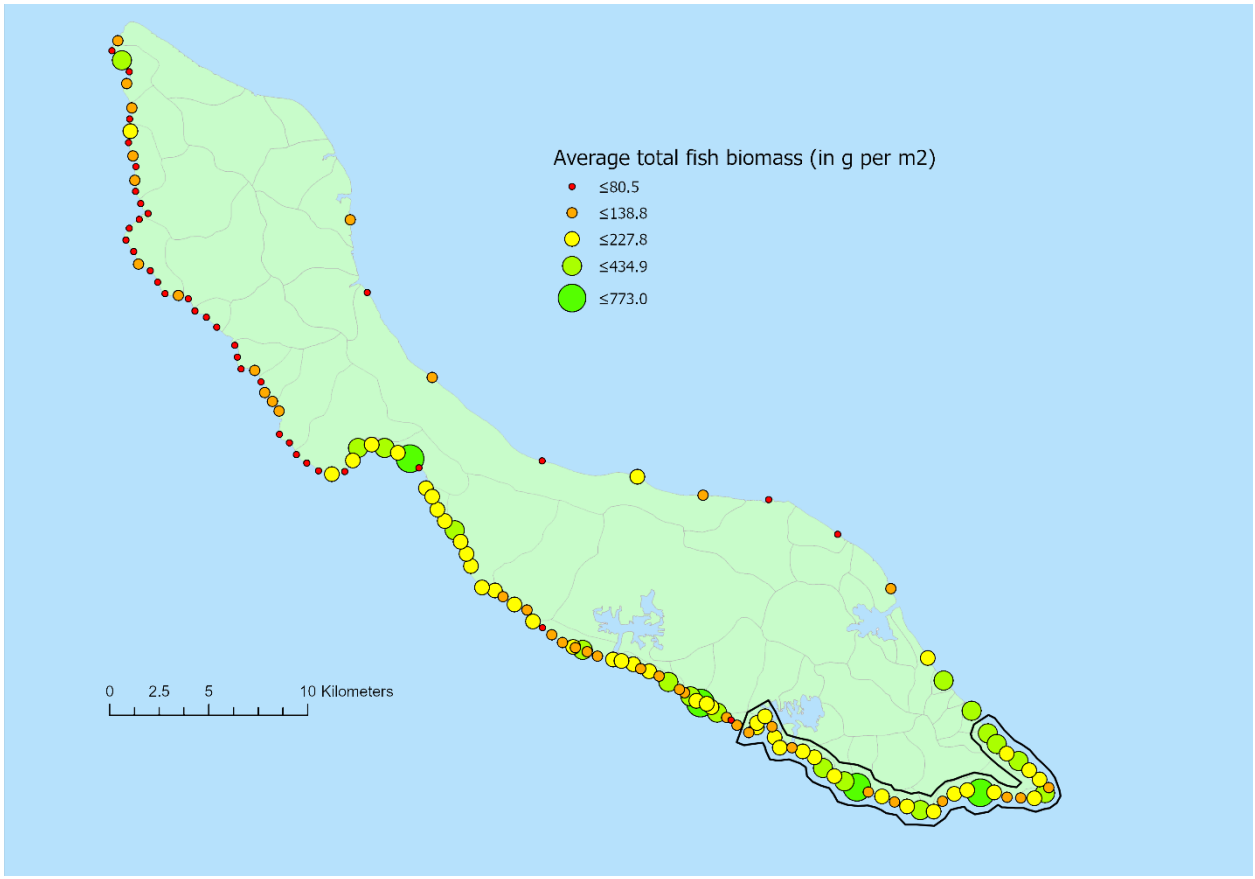
Surrounding the bay are many homes, marinas and resorts. Spaanse water is intensively used for recreational watersport activities. There is a designated anchorage site for vessels visiting from abroad; during storm warnings however, boats are permitted to move elsewhere in the bay's sheltered areas

Appendix III: Caribbean reef health

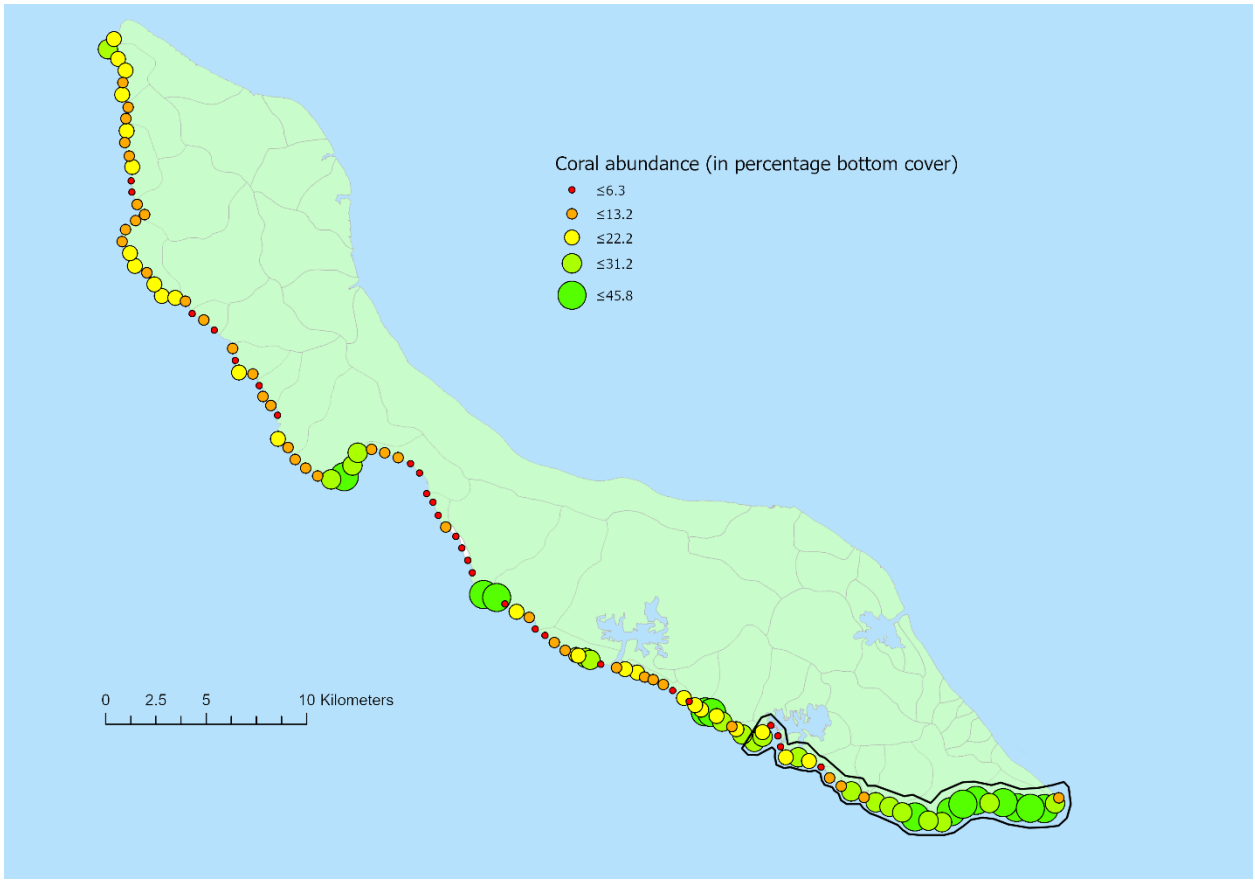


Overview of commonly used metrics for coral ecosystem health of Curaçao's coral reefs in comparison to other Caribbean islands and nations. Horizontal lines indicate accepted values for healthy reefs. Note that in the middle panel algal abundance should be under the horizontal line for a reef to be considered healthy. High coral cover and high abundance of parrotfish are considered signs of functional reef communities, whereas high macroalgal abundance is indicative of degraded reefs (Note: the more common turf algae are not included in this comparison).

Appendix IV: fishes on Curacao



Appendix V: corals on Curacao



Appendix VI: Value of the SPAW Area 1

The SA1 harbors many rare and endangered species

The marine environment of Curacao is unique in the Caribbean being one of only four true oceanic islands separated from the South American mainland by a deep-water trench. The SA1 was established in 2018 and active management will start in 2021. The reefs in the SA1 have been recognized by the United Nations Environmental Program as one of three locations where the "healthiest" reefs in the Caribbean are found (Jackson et al. 2013). It includes 217 hectares of globally threatened coral reef, seagrass and mangrove ecosystems all of which are considered to be in excellent condition. The reefs inside the SA1 are home to 430 globally threatened or endangered species including 10 critically endangered species on the IUCN Red list, 15 species on CITES Appendix XVIII (containing species facing extinction), and 47 on SPAW list II (species requiring full protection, also under Curacao Law which automatically protects all species listed on SPAW II). See **Appendix XVIII** for an overview of all species.

The reefs in the SPAW Area 1 act as a coral and fish nursery

Coral populations inside the SA1 produce up to four times more larvae per square centimeter of tissue, resulting in up to 200 times higher larval production per square meter of reef compared to other locations on the island (Hartmann et al. 2018). The functional reefs inside the SA1 therefore likely act as source populations that support dwindling coral communities elsewhere on the island. Such "nursery function" of marine communities inside the SA1 has also been found for fishes (Huijbers et al. 2013).

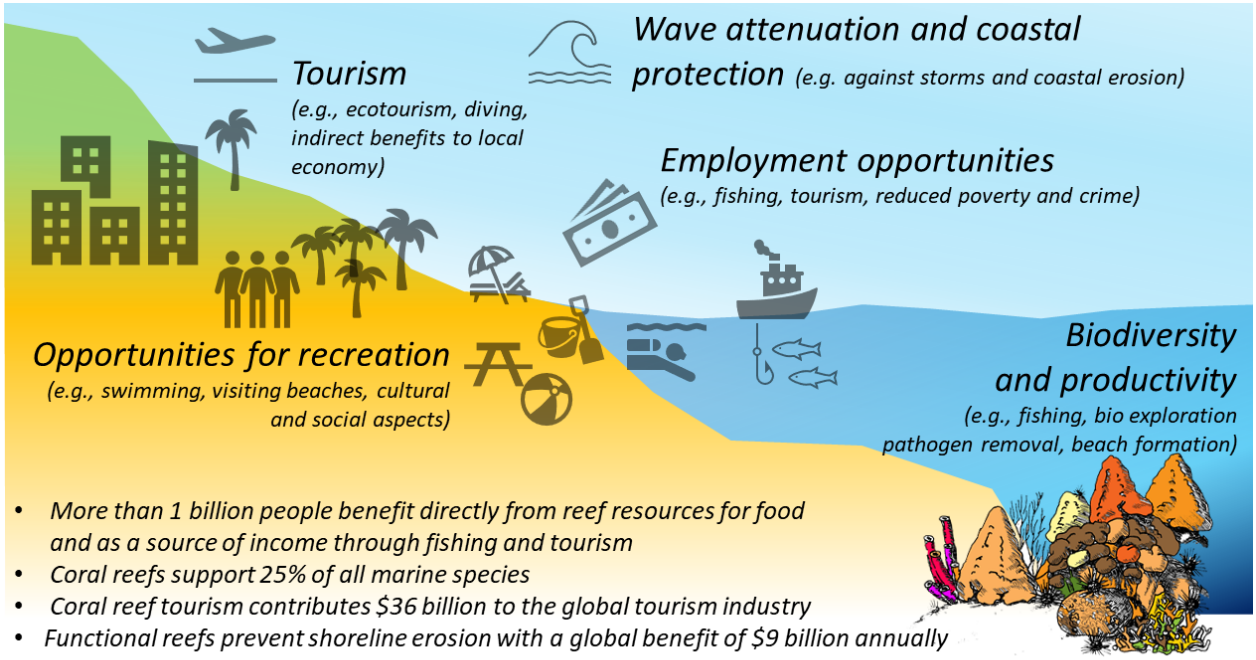
Healthy marine ecosystems generate million US$ annually

Coral reefs, mangroves and seagrass beds are globally endangered ecosystems. Despite recent impacts such as bleaching events and storm damage, coral reefs in the SA1 are considered among the most diverse and healthiest in the Caribbean (Jackson et al. 2013). Healthy coral reefs, seagrasses and mangroves provide the increasing number of people visiting and living on Curacao with a wide range of products and services (**Appendix VII. Ecosystem benefits**) resulting in an annual revenue of US$400 Million to the Curacao economy from reef dependent economic activities (**Appendix VIII. Economic Value**).

Healthy systems support a wide variety of local usages

Curaçaoans highly value the ocean (WaittInstitute 2016). Almost all respondents (98%, n= 1405) of the Waitt surveys in 2015 described the sea as important, in particular with respect to their culture (60%) and nutrition (59%). When asked about their favorite thing about the sea, most mentioned the ocean's natural beauty (32%) or its value as a place to relax (18%) showing that people have diverse interests in the ocean beyond fishing (**Appendix IX. Ocean usages on Curacao**).

Appendix VII: Ecosystem benefits



- *More than 1 billion people benefit directly from reef resources for food and as a source of income through fishing and tourism*
- *Coral reefs support 25% of all marine species*
- *Coral reef tourism contributes $36 billion to the global tourism industry*
- *Functional reefs prevent shoreline erosion with a global benefit of $9 billion annually*
- *The prospect of finding a new drug is 300 to 400 x higher for reef organisms compared to terrestrial species*
- *A functional reef reduces wave energy by up to 97%*

Appendix VIII: Economic Value

SUSTAINABLE FISHERIES GROUP UC SANTA BARBARA BLUE HALO CURAÇAO WAITT INSTITUTE

Economic Valuation of Curaçao's Marine Resources

June 2016

Executive Summary

- Curaçao's marine resources contribute substantially to the island's economy.
- Marine tourism contributes $373.5 million to Curaçao's economy annually. Hotel expenditures by tourists who visit beaches or participate in marine recreation activities comprise 91% of this value, while the rest stems from spending directly related to snorkeling, diving, and sport fishing. Caribbean-wide, dive tourists spend more money than the average tourist, heightening the economic importance of this sector.
- Cruise ship tourism contributes $57.5 million to the economy each year. Yacht tourism is another area for future growth, with the potential to add further value to the economy.

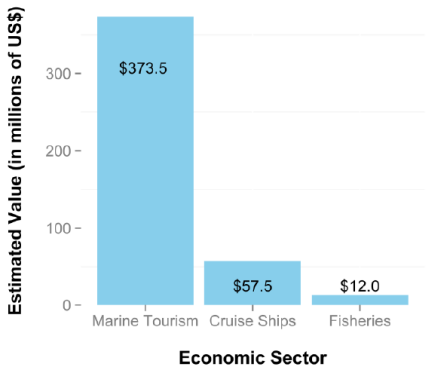


Figure 1. Estimated values of economic sectors relying on marine and coastal resources, including marine tourism and associated expenditures in the hotel sector; cruise tourism; and fisheries.

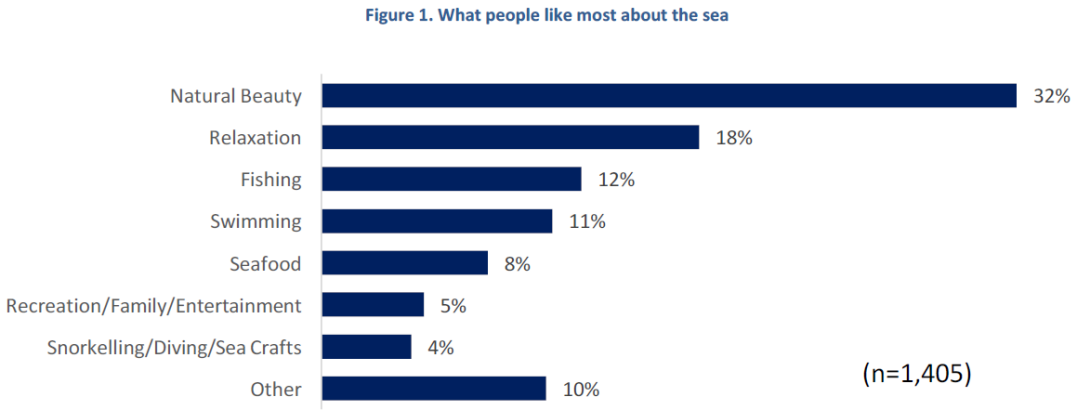
- Curaçao's fishing industry adds an additional $12 million to the economy each year. Local for-sale fisheries account for 85% of the total value, with the remaining value from subsistence fishing (7%), local recreational fishing (4%), and processing and cleaning (4%).
- Healthy marine and coastal ecosystems provide direct and indirect economic benefits such as shoreline protection and improved nearshore water quality. Curaçao's coral reefs generate about $57,500/hectare in direct and indirect value each year, while mangroves and seagrass beds generate $30,600/ha/yr and $35,500/ha/yr, respectively.

Habitat	Direct Value ($/ha/year)	Indirect Value ($/ha/year)	Total Value ($/ha/year)
Coral Reefs	$28,300	$29,200	$57,500
Mangroves	$500	$30,100	$30,600
Seagrasses	$6,200	$29,300	$35,500

Table 1. Estimated values of three coastal marine habitats in Curaçao. Direct values refer to values captured in the formal economy; indirect values are those that support human and economic health but are not formally reflected in the

- Some terrestrial and marine industries pose threats to marine resource health. Without appropriate resource management, environmental degradation may lead to economic losses.
- Comprehensive ocean zoning is a tool for reconciling the different uses of Curaçao's coastal and marine resources, promoting economic growth while preserving ecological health. Ocean zoning will help Curaçao "use the ocean without using it up."

Appendix IX: Ocean usages on Curacao



Appendix X: Local support for marine conservation

Based on a survey of 1343 Curaçaoans in 2015, the Waitt Foundation found enormous support for conservation action to better preserve and use the island's marine resources (Waitt Institute 2016). Two-thirds (66%) of the interviewees felt there is not enough ocean management on Curaçao in 2015 and the vast majority of ocean users, including fishers, would support new conservation measures (**Table local support**).

Table 1. People's Support for Conservation Measures

Measure	Non fishers in support (n=1,078)	Fishers in Support (n=265)
Protect sea turtle nesting beaches	95%	96%
Protect mangroves and lagoons	94%	92%
Better protect coral reefs	92%	91%
Create marine reserves	87%	87%[1]
Protect critically endangered fish	87%	85%

[1] The number of respondents who answered these questions was n=253

Appendix XI: Legal status

The park manager and rangers will not have special police powers or take punitive measures to enforce SPAW Area 1 rules and guidelines. They will instead serve as the eyes and ears for law enforcement (e.g., coastguard, police, environmental inspectors). Nonetheless there a considerable item to be addressed in order to ensure the objectives. Below is a listing of these known issues.

Conversion of land use

Building developments for tourism are often carried out near to the water's edge (e.g., near Lijhoek or Caracasbay Peninsula) resulting in an increase in a large variety of pollutants (e.g., sewage, pesticides, run-off, toxins, pathogens, debris, waste, sediments) entering the Spaw Area 1. Other changes in land use such as new car parks, golf courses etc. can increase the amount of pollutants entering the sea through increased run-off and other changes in hydrology. The SPAW Area1 management does not address land-use issues directly and only serves in an advisory role regrading such issues when plans are proposed that might affect the SA1.

Eutrophication/ pollution

Leaking or suboptimal sewage infrastructure is the main source of nutrient pollution on Curacao's coral reefs. Corals usually thrive in nutrient poor environments and elevated levels of nutrients around coral reefs result in microbial and algal growth resulting in coral mortality and reduced recruitment. Increased algal abundances due to eutrophication results in higher microbial abundances, including that of pathogens that can also affect humans.

Poaching/ overfishing

Poaching of conch, fish, and turtle species from several locations takes place. The removal of such animals is often illegal (i.e., small individuals are collected or protected species) or even internationally prohibited). Poaching causes a depletion in overall stocks resulting in over- or unsustainable harvesting practices and negatively impacts on the marine ecosystems within the SPAW Area 1.

Artisanal fishing

There are some issues with local fishermen taking undersized fish (or lobsters/ conch), poaching or using illegal fishing methods (e.g., spearguns, gillnets).

Anchoring

Anchoring is prohibited in the SPAW Area 1 (except in emergency situations). However, anchors are still used by local boat users and damage the reef.

Diving / snorkeling

Recreational SCUBA diving and snorkeling are often considered a non-extractive use of coral reefs causing relatively little environmental damage. With the continued growth in popularity, divers and snorkelers can have a considerable effect on the reef. This comes from the direct contact of people and their equipment with reef organisms.

Artificial beach creation

Tourists visiting Bonaire often prefer to have a beach to sit and relax on near the water's edge. The geology of the leeward shore provides very little space for beaches near to the main human settlements. Artificial beaches have been created in some places and can cause sedimentation of the reef as the sand dumped is washed into the sea.

Collecting

Some species found in SPAW Area 1 are collected by people for pets, or by tourists as souvenirs. This includes many of the species on the CITIES species list, such as hard corals.

Protected and endangered species within the SPAW Area 1

Reef communities within the SPAW Area 1 harbor numerous threatened marine species (e.g., marine mammals, Scleractinia corals, sea turtles etc., for a detailed overview of all species, see: **Appendix XVIII: Overview of protected marine species within the SPAW Area 1**.

Appendix XII: Legal framework for protection

Zoning

The bays of Awa di Oostpunt, Awa Blanku, Lagun Blanku and Fuik Bay were designated as "Water" areas by means of the land-use zoning ordinance locally known as the EOP ("Island Development Plan"). The EOP (AB 1995 no. 36) became effective on May 23, 1997. The designation "water" is given to inlets, bays and other waters that are surrounded by land with the island's coastline and stipulates rules and regulations for navigation, recreation, water management and are of scenic importance. The lands along the coast starting east from Fuik Bay and ending at Punt Kanon were designated as "Conservation area" in the island's zoning plan (EOP). This zoning plan was recently changed (**Appendix XIII: EOP**) though the proposed changes are disputed in an ongoing court case (ongoing in 2021). This designation is only given to areas with scientific, historic, cultural, or scenic value. The lands directly adjacent to the north-western coast of Fuik Bay were designated as "Touristic" area, whereas its eastern side serves as a small shipping terminal for a nearby mining company. The lands adjacent to the Ramsar site are uninhabited and undeveloped.

Most relevant laws and regulations

Visserijeilandsbesluit (Island Fishing Decree)
Published on May 27th 2009, as: Fishing decree (2009, no. 48), implementing articles 13, 14, 15 and 20 of Fishing Ordinance (Visserijverordening Curacao, 2004; A.B. 2007, no. 117).

Visserijverordening Curacao 2004 (Fishing Ordinance Curacao 2004)
Published December 3th 2007, as: Fishing Ordinance Curacao 2004 (2007, no. 117) implementing articles 2.3 and 4 of the National Fishing Decree (Visserijlandsverordening; P.B. 1991, no. 74) in order to further regulate the economic exploitation of fish in Curacao's territorial waters and to protect the marine environment and preserve fish species therein.

Visserijlandsverordening (National Fisheries Decree)
Published July 11th, 1991, as: National Fisheries Decree (1991, no. 74) to provide fishing rules and regulations in the territorial waters of Curacao and its fishing zone as defined by Stb. 1977, no. 345. Made effective on November 22nd, 1993 (1993, no. 110).

Rifbeheersverordening Curacao (Reef ordinance Curacao)
Published August 19th, 1976, as: Reef ordinance Curacao (aka ROC; 1976, no. 48) to further protect corals, certain marine species and to maintain the natural balance within Curacao's territorial waters. This ordinance later slightly modified to allow the collection of corals for education, scientific purposes or for the general benefits of society (A.B. 1989, no. 21).

Eilandsbesluit bescherming zeeschildpadden (Island decree for the protection of sea turtles)
Published June 9th, 1996, as: Island decree for the protection of sea turtles; (A.B. 1996, no.8) to specifically protect and prevent the disappearance of sea turtles from Curaçaoan waters. This decree was later amended to also include the nesting grounds and eggs of sea turtles (A.B. 1996, no. 13. These were mostly located on land, i.e., outside the scope of the original Reef Ordinance Curacao.

Landsverordening Maritiem Beheer aka, LvMB, (Maritime Ordinance)
Published March 2nd, 2007, as: Maritime Ordinance (A.B. 2007, no. 18) to ensure safe ship traffic, to protect the marine environment and maritime archaeological resources of Curacao.

All fishing rules and regulations apply to territorial waters and inland bays of Curacao ([117], art. 2.1). Before Curacao became an independent country within the Dutch Kingdom these territorial waters concerned the territorial waters of the Netherlands Antilles as defined in Stb. 559, P.B. 1985, no. 174 (October 23rd, 1985). In locations where the distance between the islands Bonaire and Curacao is less than 24 nautical miles, this distance is divided by two to separate the areas within the former territorial sea of the Netherlands belonging to each island ([117], art. 2.2). Inland bays were defined as those areas located within the island contours of Curacao and Klein Curacao as defined by Royal Decree on December 12th, 1985 (P.B. 1985, no. 73).

According to Curaçaoan law, fishing also includes the harvesting and collecting of shellfish, corals, sea stars, sea urchins, invertebrates in general, algae, marine mammals and sea turtles, as well as eggs of fish and shellfish species ([117], art. 1.2). The Reef Ordinance Curacao 1976) additionally defines "corals" as nearly all marine species forming a calcareous skeleton, i.e., species belonging to the Scleractinia (stony corals), Antipatharia (black corals), Gorgonaceae (gorgonians), Milleporina (fire corals) and Corallinaceae (calcareous algae).

The Curaçaoan government is allowed to regulate fishing practices and methods in its territorial waters through e.g. permits ([117], art. 3). Such permits, can come with certain restrictions and conditions ([117], art. 4) and detailing the period for which the permit is valid with a maximum of 12 months after which the permit needs to be renewed ([117], arts. 4.1, 4.2). When existing permits are renewed, restrictions and conditions can be changed or added ([117], art. 4.5) or a renewal can be refused if the proposed activities are expected to irreversibly impact local fish stocks ([117], art. 4.6). Permits are nontransferable from person to person ([117], art. 4.8) and can be redrawn under certain conditions ([117, art. 5). Details on permitting procedures and requirements are given in [117] chapter II arts. 4-7 and chapter III arts. 12-16. For the provision of permits the Curaçaoan government is allowed to ask for monetary compensation (detailed in [117] arts. 10, 21-23). Procedures to follow when regulations are violated or when one disagrees with decisions taken in these regards are overviewed in [117] arts. 24 – 52.

Responsibilities

The Department of Agriculture, Animal Husbandry and Fisheries (Dutch: Department Landbouw, Veeteelt and Visserij aka. LVV) now known as AVB (Agricultural and Fisheries Management), part of de ministry of GMN (Dutch: Gezond mulieu natuur) is responsible for the sustainable management of the marine resources in Curacao's territorial waters in general ([117], art. 8) as well as for fish stocks of certain species for which a temporal fishing ban or size limits are deemed necessary to ensure its long-term survival ([117], arts. 9, 12, 13). LVV is also responsible, on behalf of the Curaçaoan government, to issue, control and supervise all matters related to the permitting procedures described above ([117], art. 10). Enforcement of all rules occurs by those appointed by the government as described in art. 183 of the "Wetboek van Strafrecht van de Nederlandse Antillen" (e.g., police officers) or those specifically appointed by the government specifically for this task ([117], art. 40). Similar procedures pertain to the Reef Ordinance Curacao and are described in ROC [48), arts. 4, 5, 8-14, some of which were later amended (A.B. 1996, no. 13).

No take zones

At present (June 2021), there are no no-take zones within Curacao's inland bays and territorial waters, though the possibility to appoint such zones to ensure the long-term survival of marine species exists within the existing laws ([117], art. 17). In such areas, fishing other than with traditional gear types (i.e., lines, throw nets and fish traps) and the placement of any object and/ or facility would be forbidden ([117], art. 18).

Gear restrictions

Fishing without a permit in the territorial waters of Curacao is generally forbidden ([74], art. 2.1) but does not apply to those fishing from boats smaller than 12m in length or weighing less than 6 bruto tons ([74] art. 2.2) and those fishing with four fishing lines or less ([74], art. 2.4). The former exception can be retracted in the future ([74], art. 2.3).

In the territorial waters and inland bays of Curacao it is forbidden to fish with the following gear types ([no. 48],art. 2): (a) dragnets2 (Dutch: Schrobnetten); (b) fish traps (Dutch: visfuiken) with a mesh size less than 38mm; (c) fish traps that are not equipped with an escape opening (measuring at least 15 x 15cm) that is closed with a biodegradable material that can be expected to decay in approximately 20 days; (d) fish traps that are not equipped with a vertical escape opening measuring at least 20 x 2.5 cm to allow small by catch to escape at all times; (e) chemical substances other than Quinaldine that can only be used to catch fish for the aquarium trade; (f) explosives and (g) gear using bait derived from marine mammals.

Within the territorial waters of Curacao, it is forbidden within the 60m depth contour and inside the inland bays to fish with gill or trammel nets ([no. 48], art. 6.1. Within the territorial waters of Curacao, it is forbidden to fish outside the 60m depth contour and outside the inland bays with the following gear types: (a) gill nets longer than 500m; (b) gill nets that are left unattended and (3) trammel nets, i.e., gillnets consisting of two or more layers (Dutch: trammel net) ([no. 48], art. 7).

Inside the inland bays and within the territorial waters along the south side of Curacao from Watamula to Oostpunt and around the island of Klein Curacao it is forbidden to fish with bottom long-lines ([no.

[2] Nets equipped with steel rings or cables predominantly used to drag sessile organisms such as selfish from the bottom

48], art. 8) or beach seines ([no. 48], art. 10). The use of the beach seines can be allowed only when fishermen apply for a permit from the government ([no. 48], art. 10.1) that can come with certain restrictions and/ or conditions ([no. 48], art. 10.2).

Fishing with spear guns, harpoons or similarly shaped or used objects is forbidden at all times (ROC [48], art. 6.1) and are considered weapons similar to firearms as guns or pistols. Hence, their use and possession are regulated under the Firearms Ordinance which came into effect in 1930 (P.B. 1930, no.2). In addition, it is forbidden to possess, to have for sale, sell and transport organisms that were caught with spear guns or equivalent equipment (ROC [48] art. 6.2). At present one exemption is in effect, i.e., the use of a specially modified spear gun designed to kill the invasive lionfish (*Pterois* spp.). Persons using this modified spear gun are provided with a written permit by the government that exempts them from the aforementioned regulations pertaining to the use of spear guns in Curaçaoan waters.

Means to harvest of any sea organism that is somehow damaging to the marine environment are generally forbidden (ROC [48], art. 7.1). Only when the government deems a certain organism damaging to the environment (e.g., lionfish) can the aforementioned means of harvesting be allowed (ROC [48], art. 7.2), but only after consultation with all relevant stakeholder groups (ROC [48], art. 7.3).

Restrictions on fishing for other marine organisms: marine mammals

Within the territorial waters of Curacao it is forbidden to catch marine mammals without a permit from the government ([no. 48], art. 9.1) that can come with certain restrictions and/ or conditions ([no. 48], art. 9.2) and will only be provided when the catching of marine mammals is necessary for education or scientific purposes or is deemed necessary for the benefit of society as a whole ([no. 48], art. 9.3).

Restrictions on fishing for other marine organisms: sea turtles and lobsters

In the territorial waters and inland bays of Curacao it is forbidden to catch any sea turtle species ([no. 48], art. 3a) and lobsters (*Paniluris argus*) if these carry eggs or are in the process of molding ([no. 48], art. 3b). Furthermore, it is forbidden to remove the eggs from lobsters mentioned in [no. 48], art. 3a ([no. 48], art. 4). When gravid or molding lobsters are unintentionally caught in fish traps they are to be released immediately ([no. 48], art. 5.3).

It is forbidden to possess, kill or sell sea turtles and lobsters referred to in [no. 48], arts. 3 and 4, regardless of whether these organisms are dead or alive ([no. 48], art. 5.1). Sea turtles that were caught by accident or became entangled in fishing gear should be freed and released immediately ([no. 48], art. 5.2). Wounded sea turtles are to be transported immediately to a veterinarian and relevant government agencies are to be informed ([no. 48], art. 5.2). The Curaçaoan government executed the right provided by the Reef ordinance Curacao (ROC [48], art. 3.1) to appoint certain species for additional protection, which led to additional legislation to protect all sea turtles (Island decree for the protection of sea turtles; A.B. 1996, no.8) meaning that the killing, possessing, processing, selling, offering for sale, having and transporting of six sea turtle species, dead or alive, is explicitly forbidden. These six species are: (1) *Dermochelys coriacea* (en: leatherback turtle, du: leerschildpad, pa: drikil), (2) *Caretta caretta* (en: loggerhead turtle, du: onechte karetschildpad, pa: kawama); (3) *Chelonia mydas* (en: green turtle, du: soepschildpad, pa: Tortuga blanku); (4)

Eretmochelys imbricata (en: hawksbill turtle, du: karetschildpad, pa: karet); (5) Lepidochelys kempii (en: Kemp's Ridley turtle, pa: tortuga bastardo) and (6) Lepidochelys olivacea (en: olive Ridley turtle, pa: tortuga bastardo). In 1996 (A.B. 1996, no. 13), the disturbance and destruction of sea turtle nests as well the collection, possession, destruction, transporting or selling of their eggs was specifically forbidden.

Restrictions on fishing for other marine organisms: corals

In Curacao, it is forbidden to remove corals from the bottom at all times or to possess, to have for sale, sell, steal, transport corals that were derived from Curaçaoan waters (ROC [48], art.2). The same goes for certain species that can be appointed by a special government decree (ROC [48], art.3). Exceptions to the latter measure are possible in the form of temporary bans on harvesting or through size restrictions (ROC [48], art.3). The Curaçaoan government is allowed, under strict formal procedures and after consultation with all relevant stakeholder groups, to provide individuals or organizations permission to collect aforementioned organisms for e.g. education or scientific purposes (ROC [48], arts.4-5). Such permits can be withdrawn at all times, when reasonable doubt arises about the permitted action (ROC [48], arts.4-5).

Construction in the marine environment

It is forbidden to have or erect any form construction in the territorial waters of Curacao, including the creation of new land and the laying of cables unless one has a permit from the government (LvMB [18], arts. 20-21, 23). To obtain such permit, the effects of the proposed construction on local ship traffic, the marine environment and archeological sites of potential interest need to be evaluated (LvMB [18], art. 21). Procedures, rules and regulations are all found in the Maritime Ordinance (LvMB [18], arts. 51-85).

Relevance of International Treaties

Obligations from international treaties to which the former government of the Netherlands Antilles was an underwriting party are carried over to the new Curacao government. As a result, Curacao is party to several conventions and treaties. These include the RAMSAR Convention (since 1980), the Bonn Convention on migratory species (since 1983), the Cartagena Convention (since 1985), and the SPAW Protocol (since 1990), Convention on Biological Diversity as well as the CITES Convention. The national legal framework for nature management and conservation, enacted in 1998 (Landsverordening Grondslagen Natuurbeheer), still requires implementation at the island.

An overview of the most important treaties and conventions that Curacao is party:

Oil Pollution Preparedness, Response and Co-operation (OPRC) London, 1990; (Trb. 1992, 1); included in LvMB chapter 4.2 (arts. 35-39).

The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990 provides a global framework for international co-operation in combating major incidents or threats of marine pollution. A protocol to this convention (HNS Protocol) covers marine pollution by hazardous and noxious substances.

The SPAW (Specially Protected Areas and Wildlife) Protocol of the Cartagena Convention, (Trb. 1990, 115).

The Protocol concerning Specially Protected Areas and Wildlife (SPAW Protocol) has been internationally recognized as the most comprehensive treaty of its kind. Adopted in Kingston, Jamaica by the member governments of the Caribbean Environment Program on 18 January 1990, the SPAW Protocol preceded other international environmental agreements in utilizing an ecosystem approach to conservation and entered into force on 18 June 2000. The Protocol acts as a vehicle to assist with regional implementation of the broader and more demanding global Convention on Biological Diversity (CBD). The Protocol also assists with the promotion and linkage of the Ramsar and CITES Conventions.

1996 Protocol to the Convention on the prevention of marine pollution by dumping of waste and other matter, 1972; (Trb. 1998, 134).

The 1996 Protocol reflects a more modern and comprehensive agreement on protecting the marine environment from dumping activities than the original 1972 Convention and reflects the broader aims to protect the environment in general. The 1996 Protocol introduces (in Article 3) what is known as the "precautionary approach" as a general obligation. This requires that "appropriate preventive measures are taken when there is reason to believe that waste or other matter introduced into the marine environment is likely to cause harm even when there is no conclusive evidence to prove a causal relation between the input and its effects." The Curacao government has worked out the obligations following from the 1996 Protocol in the Maritime Ordinance (LvMB [18], arts. 44-48) which (amongst other) forbids the general disposal of any form of waste, other than ways and forms addressed in the Marpol Treaty (see: art. 6, P.B. 1993, no. 108) in its territorial waters and the sinking of ships or planes. The government is allowed to exempt persons from these laws through a permit (LvMB [18], arts. 45-46).

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention)

This Convention aims to conserve terrestrial, marine and avian migratory species throughout their range. It is an intergovernmental treaty, concluded under the aegis of the United Nations Environment Program, concerned with the conservation of wildlife and habitats on a global scale. Migratory species threatened with extinction are listed on **Appendix XVIII** of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. Besides establishing obligations for each State joining the Convention, CMS promotes concerted action among the range states of many of these species. Migratory species that need or would significantly benefit from international co-operation are listed in **Appendix XIX.** of the Convention. For this reason, the Convention encourages the range states to conclude global or regional Agreements. In this respect, CMS acts as a framework Convention. The agreements may range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding, and can be adapted

to the requirements of particular regions. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS.

The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention

This Convention is an international legally binding treaty. The Convention has three main goals: (1) conservation of biological diversity (or biodiversity); (2) sustainable use of its components and (3) fair and equitable sharing of benefits arising from genetic resources. In other words, its objective is to develop national strategies for the conservation and sustainable use of biological diversity. It is often seen as the key document regarding sustainable development. The convention, recognized for the first time in international law, states that the conservation of biological diversity is "a common concern of humankind" and is an integral part of the development process. The agreement covers all ecosystems, species, and genetic resources. It links traditional conservation efforts to the economic goal of using biological resources sustainably. It sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources, notably those destined for commercial use. It also covers the rapidly expanding field of biotechnology through its Cartagena Protocol on Biosafety, addressing technology development and transfer, benefit-sharing and biosafety issues. Importantly, the Convention is legally binding; countries that join it ('Parties') are obliged to implement its provisions. The convention reminds decision-makers that natural resources are not infinite and sets out a philosophy of sustainable use. While past conservation efforts were aimed at protecting particular species and habitats, the Convention recognizes that ecosystems, species and genes must be used for the benefit of humans. However, this should be done in a way and at a rate that does not lead to the long-term decline of biological diversity. The convention also offers decision-makers guidance based on the precautionary principle that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat. The Convention acknowledges that substantial investments are required to conserve biological diversity. It argues, however, that conservation will bring us significant environmental, economic and social benefits in return.

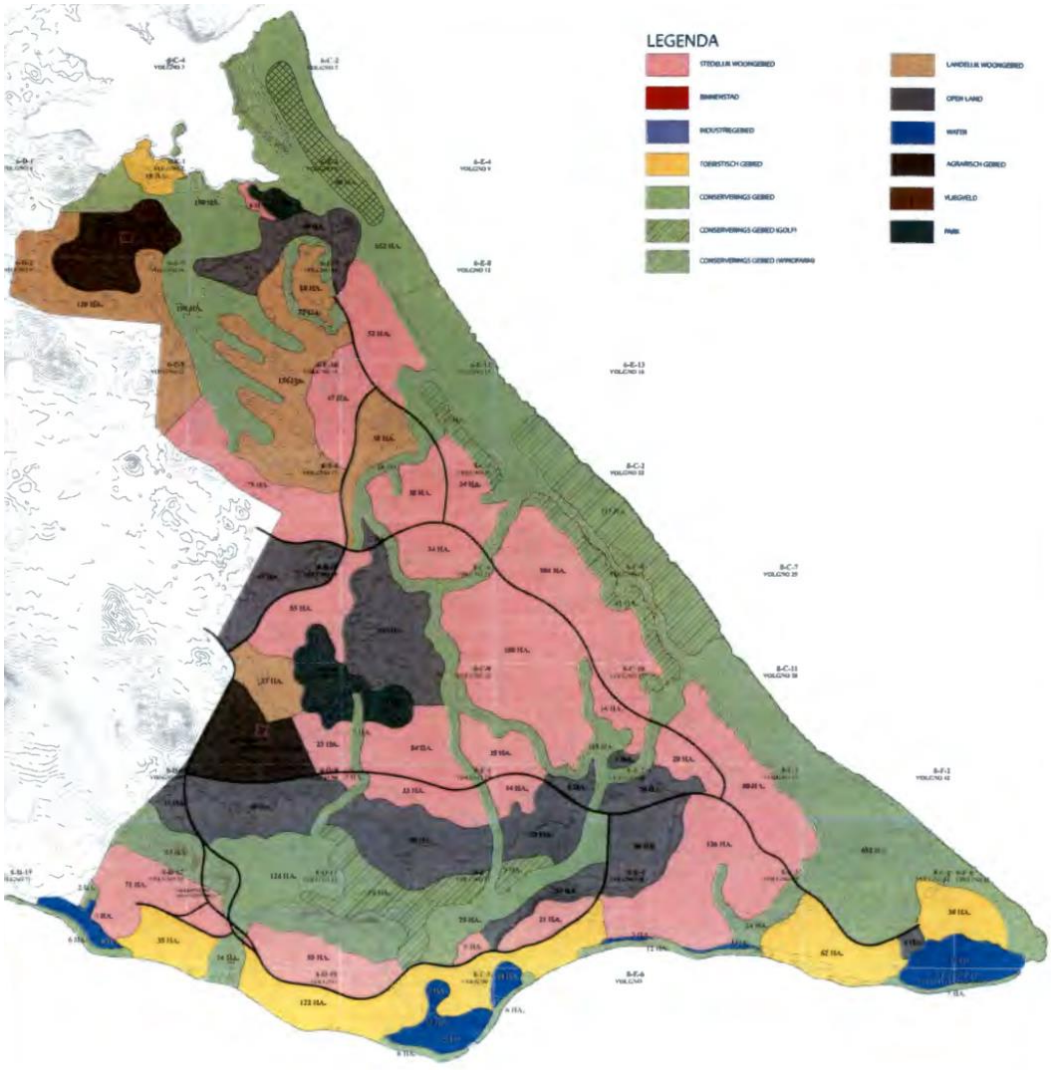
The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention)

This convention is a multilateral treaty, drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature (IUCN). The convention entered into force on July 1, 1975. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild, and it accords varying degrees of protection to more than 33,000 species of animals and plants. CITES is one of the largest conservation agreements in existence. Participation is voluntary, and countries that have agreed to be bound by the Convention are known as Parties. Although CITES is legally binding on the Parties, it does not take the place of national laws. Rather it provides a framework respected by each Party, which must adopt their own domestic legislation to implement CITES at the national level. Often, domestic legislation is either non-existent, or with penalties incommensurate with the gravity of the crime and insufficient deterrents to wildlife traders. As of 2002, 50% of Parties lacked one or more of the four major

requirements for a Party: designation of Management and Scientific Authorities; laws prohibiting the trade in violation of CITES; penalties for such trade; laws providing for the confiscation of specimens.

The Spaw Area 1 management will therefore draft rules and regulations to be adhered to within the protected area. Given the current mandate however the SA1 manager enforcement of these rules and regulations will remain limited to observation, documentation and informing authorities of any and all breaches of these rules.

Appendix XIII: EOP



Appendix XIV: monitoring locations

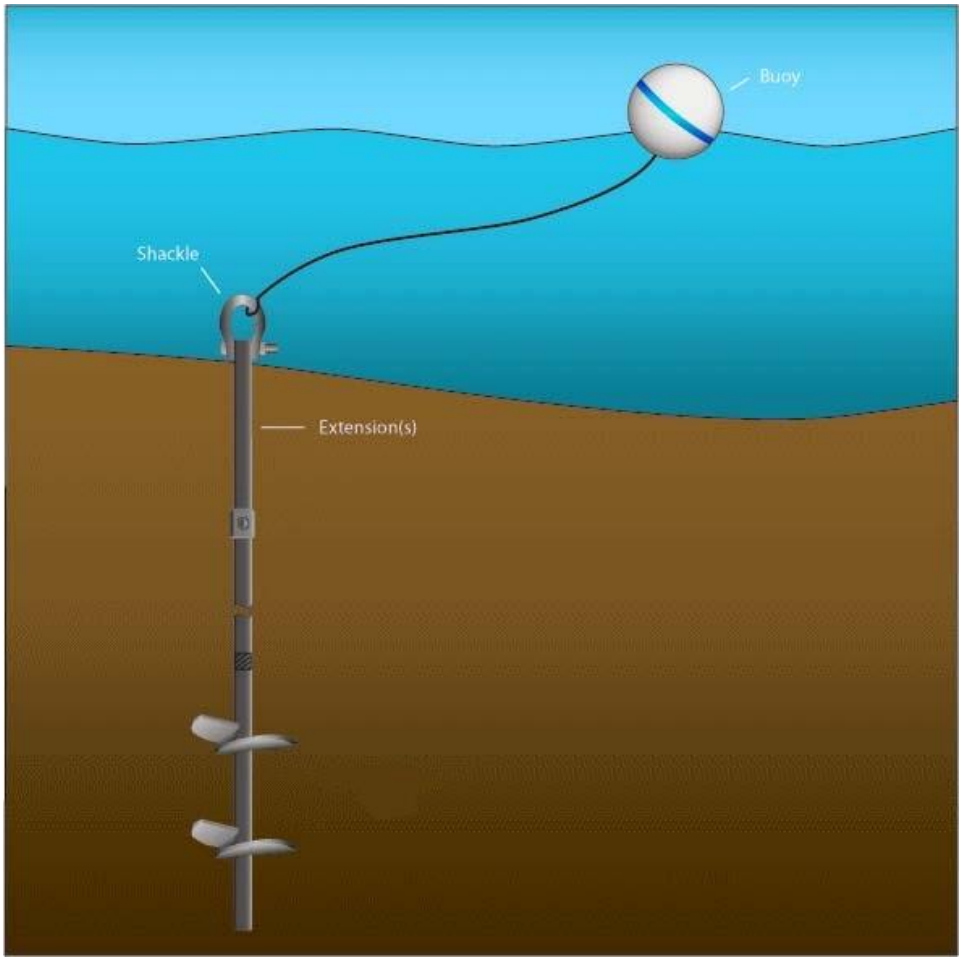
Appendix XV: Existing mooring locations

Appendix XVI: CPA vessel and equipment

The vessel has the following equipment and resources onboard:

- Vhf radio
- Gps system
- Depth gauge
- Navigation lights
- 2 fire extinguishers
- 8 lifejacket
- Oxygen case
- 2 lifebuoy
- 2 battery
- Searchlight
- 3 fenders
- Horn
- 2 bilge pump
- 2 anchors
- Binoculars
- Diving ladder
- Signal flares
- Floating anchor
- First aid kit

Appendix XVII: Helix Anchor



Appendix XVIII: Overview of protected marine species within the SPAW Area 1

Note: Names of certain species might have changed and as a consequence, older, maybe more familiar names are not listed in this table. Check original sources as names and protection levels will change through time. Current as of 06-2021.

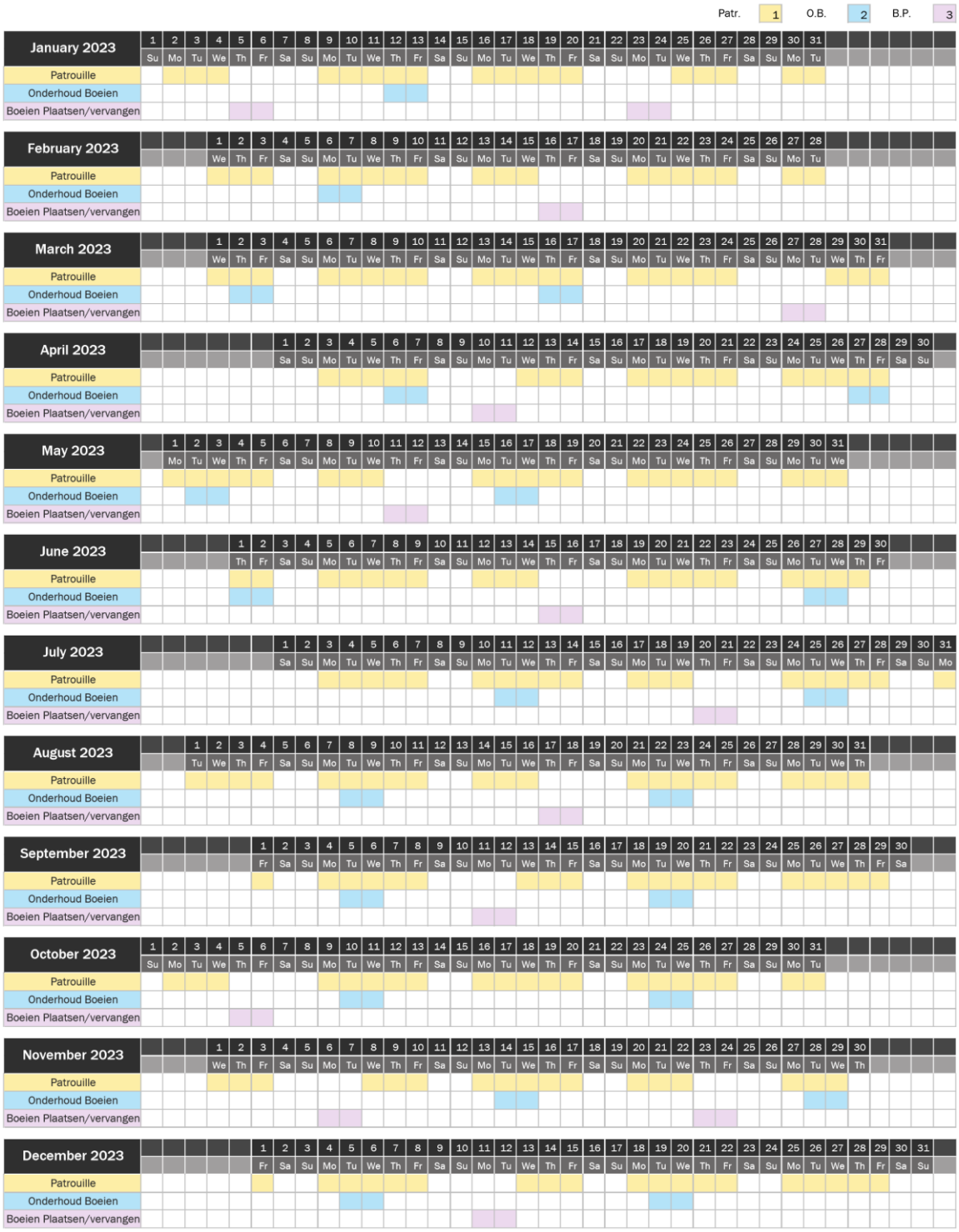
[LINK APPENDIX XVIII]

Appendix XIX: GCRMN Monitoring protocols

[LINK APPENDIX XIX]

Appendix XX: Surveillance schedule

Patrouille en Onderhouds schema 2023



Toelichting:

Patrouilles duren 3 uren lang.

Aanvang patrouille (tijd) kan flexibel zijn.

Documenteer alle werkzaamheden en activiteiten.