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Proposed areas for inclusion in the SPAW list

ANNOTATED FORMAT FOR PRESENTATION REPORT FOR:

Saba Bank National Park

Netherlands

Date when making the proposal : ***July 5th, 2012***

CRITERIA SATISFIED :

Ecological criteria	**Cultural and socio-economic criteria**
Representativeness	Productivity
Conservation value	Cultural and traditional use
Rarity	Socio-economic benefits
Naturalness	
Critical habitats	
Diversity	
Connectivity/coherence	

Area name: Saba Bank National Park

Country: Netherlands

Contacts

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SUMMARY

ANNEXED DOCUMENTS

- Map of Saba Bank nature park
- Contract SCF-Sababankbeheer. Overeenkomst tussen de Staat der Nederlanden en Saba Conservation
- Literature - Saba Bank National Park Proposal for Listing under SPAW
- Management plan for the natural resources of the EEZ of the Dutch Caribbean
- Saba Bank Fisheries Resources Study, Report II: Methods to Assess the Saba Bank Commercial Fishery and Preliminary Results
- Saba Bank Management Unit - Terms of Reference
- Saba Bank MPA Decree
- Saba Bank Special Marine Area Management Plan 2008 - Shelley Lundvall

Chapter 1. IDENTIFICATION

a - Country:

Netherlands

b - Name of the area:

Saba Bank National Park

c - Administrative region:

Saba

d - Date of establishment:

12/12/10

e - If different, date of legal declaration:

not specified

f - Geographic location

Longitude X: -63.458586
Latitude Y: 17.422422

g - Size:

2679 sq. km

h - Contacts

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Website:
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i - Marine ecoregion

64. Eastern Caribbean

Comment, optional

none

Chapter 2. EXECUTIVE SUMMARY

Present briefly the proposed area and its principal characteristics, and specify the objectives that motivated its creation :

The Saba Bank National Park is a unique and highly significant area for the entire region. Biophysically it is a submerged atoll, the largest actively growing atoll in the Caribbean, and one of the largest atolls in the world, measuring 1,850 km^2 (above 50m depth contour). The area is significant in terms of its unique ecological, socio-economic, scientific and cultural characteristics. Its extensive coral reefs, fishing grounds and algae beds are very vulnerable to damage from international shipping, in particular anchoring of tankers and other cargo ships. Large ships also pose a hazard to the artisanal fishery practiced on the Saba Bank. In addition some of the shallowest areas of the Saba Bank pose a hazard to navigation. The area is extremely fragile to damage by international shipping (anchoring) and poses a risk to navigation and fishery in the area. Because of its rich biodiversity that needs protection an dmanagment, the Saba Bank was declared a protected area by the Dutch Government (15 Dec 2010) and an application to IMO has been submitted requesting for a PSSA status for the Bank, a decision is expected in 2013.

Explain why the proposed area should be proposed for inclusion in the SPAW list

The Saba Bank is a an area of regional significance because of its uniquely rich biodiversity, unique geological characteristics (large submerged atoll), and as a source of recruitment for fisheries as well as for biodiversity in the northeastern Caribbean.

The area has been identified as having the greatest diversity of algae species in the Caribbean (Littler et al);

it is bordered on its eastern edge by a 55 km long fringe of coral reefs;

it is presumed to be an important feeding ground for hawksbill and green seaturtles, and

it is an important area for humpback whales and other cetaceans.

Because of its size the Saba Bank National Park presents unique challenges for effective management. The experiences of this management are therefore important to share with the region, while at he same time the area can greatly benefit from regional cooperation.

According to you, to which Criteria it conforms (Guidelines and Criteria B Paragraph 2)

Representativeness
Conservation value
Rarity
Naturalness
Critical habitats
Diversity
Connectivity/coherence

Cultural and socio-economic criteria

Productivity
Cultural and traditional use
Socio-economic benefits

Chapter 3. SITE DESCRIPTION

a - General features of the site

Terrestrial surface under sovereignty, excluding wetlands:

0 *sq. km*

Wetland surface:

0 *ha*

Marine surface:

2679 *sq. km*

Global comment for the 3 previous fields (optional):

This is exclusively a marine area situated far from land. The closest land is the island of Saba at a distance of about 5 nautical miles, and separated by a channel of more than 500 m deep.

b - Physical features

Brief description of the main physical characteristics in the area:

The Saba Bank is an undersea elevation with a flattened top, a bank, 3 - 5 km Southwest of the island of Saba and 25 km west of St. Eustatius. It is raised about 1000m above the general depths of the surrounding sea floor and its shape is approximately square or slightly elliptical, the long axis trending ENE-WSW. With a length of 60 to 65 km and a width of 30 to 40 km, the total surface area is approximately 2200 km2 (measured to the 200 m isobath). The platform is somewhat tilted with the north-western part of the surface being deeper than the south-eastern part. The largest part of the bank is between 20 and 50 m depth, but a substantial eastern part (app. 225 km2) is between 10 and 20 m depth. On its western rim depths are around 50 m, while on the eastern and south-eastern edges, where a prominent coral ridge system (55 km long) runs along the platform, depths vary between 7 and 15 m (Van der Land 1974, MacIntyre et al. 1975).

Geology:

The Saba Bank is located at the intersection of three different types of geological activity. It is near the eastern end of the tectonically active Greater Antilles island chain, at the north end of the Aves Ridge and just to the west of the north end of the volcanic island arc chain near the north-eastern boundary of the Caribbean Sea. The Saba Bank has intrigued many scientists dating back to the beginning of the century. Spencer (1904; p. 357) considered the Bank to be "a remnant of the coastal plains on the mountainous backbone of the Antillean ridge". He concludes that the Bank "has been levelled by coral growth and the sands derived from them". Vaughan (1919) viewed the Bank as a submarine plateau, levelled by planation agencies, which almost certainly were both subaerial and submarine, which has been submerged in recent geologic time. Vaughan already indicated that the Bank essentially duplicates the atolls in the Pacific. This was later verified by Van der Land

(1977) who considers the Bank to be an actively growing atoll, although it is completely submerged, and ranks it among the largest atolls in the world. Davis (1926) viewed the Bank as "an atoll lagoon floor, deprived of its original reef and probably somewhat planed down by low-level abrasion in the post glacial epoch" (Davis 1926, p. 138). Differences of opinion on the formation of Banks such as the Saba Bank have caused heated debate. Vaughan stated that infilling behind barrier reefs could never be the reason for the existence of the Bank, whereas Davis thought this was an essential process.

Soil:

N.A.

Topography:

On the Saba Bank the reef zonation pattern follows a sequence from shelf edge to central Bank. On the eastern portion of the Bank, known as Overall Bank, reef zones occur in the following sequence as one moves from east (windward, open ocean) to west (leeward, towards central Saba Bank): seaward slope, fore reef (with one or more “front reefs”), reef flat, backreef slope (“escarpment”), lagoon, and patch reef (located within the lagoon). The fore reef zone is a steeply sloping and topologically variable region. Van der Land (1977) observed a “front reef” rising from a “reef terrace” at 30-40 m depth. High-resolution bathymetry confirmed the presence of at least one front reef feature at Overall Bank. To the west (leeward) of the front reef, an area resembling a spur-and-groove reef is found. For the purposes of this management plan, these various reef features are considered elements of a single zone - the fore-reef zone.

Westward (leeward) of the fore reef zone, the reef rises to ~ 15 m depth and forms a wide (> 1000 m) level expanse. Van der Land (1977) identified this area as the reef flat and suggested that it comprised an inner and outer zone distinguished by bathymetry. Examination of recent highresolution bathymetry data did not differentiate inner and outer reef flat zones within the area of Overall Bank.

The lagoon zone extends eastward (leeward) from the reef flat and backreef slope zones. Van der Land considered the lagoon a single zone, although he distinguished “patch reef’ formations within it. Bathymetry confirmed the presence of patch reef-like features within the lagoon.

Bathymetry:

see topography

Hydrodynamics:

The Saba Bank and the neighbouring islands are affected by The Antilles Current and possibly the Caribbean current. The Antilles Current flows northward east of the Antilles joining the Florida Current past the outer Bahamas. Its waters are concentrated into a strong northward jet about 80-100 km wide centred at 400 m depth. Mooring studies have indicated that the Antilles Current has mean transport speeds of 3.2 Sv (*sverdrup*) northwards in the upper 800m of water.

The narrowly spaced chain of islands, Banks, and sills of the Antilles Islands Arc, including Saba and the neighbouring islands, separate the Caribbean from the Atlantic Ocean and act as a sieve for the inflow of Atlantic water to the Caribbean Basin. Water flows into the Caribbean Sea through the narrow passages between the islands and continues westward as the Caribbean Current, the main surface circulation in the Caribbean Sea.

Waves, known as ground swells, are produced by low pressure weather systems at sea. Waves produced by the wind are generally highest from June to July and from December to March when the wind speeds are highest. The dominant easterly wind drives waves towards the west. During swell wave conditions there is likely considerable impact on the communities on the Bank.

Volcanic formations:

The entire Saba Bank is thought to have a core of volcanic rock, completely capped by fossil reefs. and without volcanic activity. The northwestern part of the Saba Bank is thought to be the result of relatively recent volcanic activity and may still have some remaining activity.

Sand dunes:

N.A.

Underwater formations:

see topography

c - Biological features

Habitats

Brief description of dominant and particular habitats (marine and terrestrial)*: List here the habitats and ecosystems that are representative and/or of importance for the WCR (i.e. mangroves, coral reefs, etc):

The marine habitats represented within the Saba Bank can be categorized as follows:

- ❒ Open water: supporting planktonic and pelagic sea creatures including fish and migratory species such as whales, dolphin, and sea turtles,
- ❒ sea bed (benthos): supporting coral reefs, algae (and possibly sea grass beds), and infauna (burrowing creatures like mollusks and worms), benthic invertebrates and fish.

There is regular exchange of water, energy and materials between each of these habitats. Organisms also move freely between the different environments for feeding and reproduction. As the waters around the Saba Bank are very deep the Bank has very little, if any, exposure to terrestrial influences. This includes freshwater runoff, sediments, nutrients and any form of coastal pollution, which all stress and eventually kill marine organisms.

Open Water

The open water supports pelagic fish populations, most of which are highly migratory such as Tuna (*Thunnus sp*.), Dolphin (Dorado / *Coryphaena hippurus*) and Wahoo (*Acanthocybium solandri*) as well as Marlin (*Makaira* sp.) and swordfish (*Xiphias gladius*) which are found primarily around the edges of the Bank.

While there is little documented information of Caribbean species of turtle that can be found on Saba Bank, there have been several confirmed sightings of Hawksbills (*Eretmochelys imbricata*) during the 2007 survey, indicating the Bank is a foraging area for them. It is quite likely that the Bank is an important foraging are for Green Turtles (*Chelonia mydas*) as well due to the large algae fields. Leatherbacks (*Dermochelys coriacea*), and Loggerheads (*Caretta caretta*) have been seen on the Bank so it is quite likely that they also use the Bank for foraging, though the leaterbacks were likely only migrating through.

A number of Cetaceans are present on the Saba Bank, including; Humpback Whales (*Megaptera novaeangliae*), Sperm Whales (*Physeter macrocephalus*), Spinner Dolphins (*Stenella longirostris*), and Bottlenose Dolphins (*Tursiops truncatus*). Humpback whales, migrating north to their mating grounds, are occasionally seen in the channel between Saba and the Bank. A humpback whale with calf was seen on the Bank in the area known as Moonfish Bank during the 2006 expedition. During dives in February 2002 and in January 2006, humpback whale song was heard.

There are a number of birds that live almost exclusively in the open ocean environment, using Saba as a breeding ground or migratory stop over. These include Frigate Birds (*Fregata magnificens*), Red Billed Tropicbirds (*Phaethon aethereus*), Brown Pelicans (*Pelecanus occidentalis*) and Audubon's Shearwater (*Puffinus lherminieri*).

Pelagic zone

With the exception of the seabed, everything in blue water beyond the 30m depth contour can be considered the pelagic zone. The pelagic environment is commonly thought of as being made up of number of different ecological zones; most importantly, the epipelagic, mesopelagic and the bathypelagic; we will only be discussing the epipelagic zone.

- Epipelagic: The epipelagic zone stretches from the surface down to 200 meters. This is where most plants and animals (flora and fauna) live due to the abundance of light and nutrients. Pelagic fish species are found in this part of the sea around the edges of the Saba Bank. This includes small bait fish such as Herring (*Clupea harengus*) – a major food source for marine mammals, and larger, predatory fish such as the blackfin tuna (*Thunnus atlanticus*), Wahoo (*Acanthocybium solandri*) and Dolphin (Dorado - *Coryphaena hippurus*) all of which are commercially important species.

Healthy and abundant migratory pelagic fish stocks of Tuna, Dolphin and Wahoo are critical to support Saba's small scale local fishing industry. Globally endangered cetaceans and sea turtles regularly migrate through Saba waters.

Sea Bed

Deep sea bottom

Soft-bottom habitats make up some of the deep areas along the south east edge. The sediments are usually comprised of a mixture of biologically fixed silica and calcium carbonate, as well as silts, and sand sediments.

There is little known about the deep water environments on the Saba Bank which are beyond the reach of SCUBA divers. However, with the use of a remotely operated vehicle (ROV) it was possible to examine a number of deeper sites on the Bank. Observations made from the ROV indicate that substrate and benthic communities show consistent zonation patterns along the depth gradient of the front reef slope. A transition in the reef fish assemblage was also evident, though less pronounced, along this same depth gradient. Fish diversity was greatest in the reef crest zone and declined with depth, however sightings of commercially important lutjanid species such as silk and blackfin snapper increased with depth.

Some experimental deep water fishing was conducted during the October survey. Some of the fish caught included the snowy grouper (*Epinephelus niveatus*), saddled moray (G*ymnothorax conspersus*), sharktooth moray (*Gymnothorax maderensis*), grey conger (*Conger esculentus*), and a deep body boarfish (*Antigonia capros*).

In addition to the surveys at Overall Bank, four ROV surveys were made at two other Saba Bank areas: Poison Bank and Grapplers Bank. The substrate at Poison Bank was comprised of coralline algal nodules or “rhodoliths” which formed extensive rhodolith beds. At Grapplers Bank, a steep rocky escarpment was explored. The near-vertical rocky scarp began at 120 m depth and extended down slope beyond the limits of the ROV survey (157 m depth). Observations made from ROV at Overall Bank suggested a continuous reef system that is relatively uniform and predictable at mid-depths in terms of its structure, substrate composition, and community zonation patterns. In contrast, the few observations made by ROV at Poison Bank and Grapplers Bank revealed habitats that were quite different from those at Overall Bank. This implies that explorations to new areas of Saba Bank are likely to reveal still greater diversity in mid-depth habitat types.

Research voyages in the Florida Keys which have explored deep water environments have recorded considerable numbers of new invertebrate and fish species. There is every reason to believe that the same would be true of the deep water benthic environment on the Saba Bank. In 2007 two new species of gorgonians were discovered with 8 dives with the ROV. With further sampling it is quite possible that more new species would be discovered.

Coral reefs

The coral reefs are found primarily along the east and southeast edges of the Bank and are rich in terms of cover and diversity of reef-building corals. There are a variety of reef types on the Saba Bank, from patch reefs through spur and groove type reefs with sandy channels. Each of these provides a hard substrate for coral and other animals to settle on, which in turn attracts fish and an abundance of other invertebrates.

The coral reefs are home to many fish species including, Angelfish (*Holocanthus* sp. and many others), Groupers, Triggerfish, Scorpionfish, Moray eels (e.g. *Gymnothorax moringa*), Wrasses and Chromis, Parrotfish, and roaming schools of Blue Tangs (*Acanthurus coeruleus*). In sandy areas Garden eels (*Heteroconger halis*), Peacock Flounder (*Bothus lunatus*), Stingrays (*Dasyatis Americana*) and Flying Gurnard

(*Dactylopterus volitans*) can all be seen. Near to the reefs in the blue water, Black Jacks (*Caranx lugubris*), Bar jacks (*Caranx ruber*), Barracuda (*Sphyraena* sp.) and schools of Horse-eye jacks (*Caranx latus*) and Wahoo (*Acanthocybium solandri*) roam around looking to feed off the smaller reef fish.

The value of the coral reef of the Bank is not based on tourism, as is the case with the reefs of the Saba Marine Park, with respect to their economic importance to Saba, but its value is in the biodiversity and the habitat they provide for many animals and plants, which commercial and artisanal fisheries depend on. The coral reefs provide a habitat for a wide variety of creatures other than fish and coral. Countless species of crustaceans, worms, anemones, jellyfish, mollusks, echinoderms (sea-cucumbers and starfish), bryozoans, and sponges live on the reefs.

In addition to all of the animals and plants usually seen around the reefs and other marine habitats, some less frequently spotted species exist. Two turtle species use the waters as a foraging and breeding ground; Hawksbill Turtles (*Eretmochelys imbricata*) and Green Turtles (*Chelonia mydas*).

Sharks are often spotted on the Bank, nurse shark, reef shark (Carcharhinus perezi), blacktip shark, (Carcharhinus limbatus), and tiger shark (Galeocerdo cuvier).

Colonized pavement

Distributed throughout the remaining available habitat, wherever there is hard substrate available, there are communities dominated by algae, sponges and/or gorgonians. These communities typically have a less complex substrate with almost no slopes, varying amounts of sand cover, and a moderate energy regime.

Although the structural heterogeneity that supports reef biodiversity is absent, these areas do provide food, refuge, and much sought after space to numerous invertebrates such as lobster, queen conch, and fishes. These communities provide linkages to surrounding marine communities. According to preliminary benthic habitat maps, these communities dominate the seafloor of the central area of the Bank.

Detail for each habitat/ecosystem the area it covers:

Marine / coastal ecosystem categories ***Detail for each habitat / ecosystem the area covers***	Size (estimate)		Description and comments
	unit	Area covered	
Coral reefs			
Eastern and Southern fringe	ha	1750	
Other marine ecosystems			
hard bottom macro-algal communities	ha	not given	Main ecosystem of the Saba Bank. Variously characterized by presence of large gorgonians or sponges in addition to the dominance of macro-algae
Terrestrial ecosystems	Size (estimate)		
	unit	Area covered	

Flora

Brief description of the main plant assemblages significant or particular in the area:

During a ten day expedtion in 2006 three hundred sixty specimens of macrophytes were collected and a preliminary estimate of the number of macrophyte species collected from Saba Bank ranges upward from 150 to 200. However, the present annotated checklist of 98 taxa includes 43 Rhodophyta, 26 Chlorophyta, 26 Phaeophyceae, and 3 Cyanophyta (Cyanobacteria). The species accrual curve for the collections was steadily inclined after the 17 dive sites, and showed no clear asymptote, indicating Saba Bank has many more species to be collected. It is important to note that there were few filamentous and thin sheet forms indicative of stressed or physically disturbed environments observed. Three sites surveyed were dominated by previously unknown unique algal communities. These included:

(1) ‘‘Field of Greens’’ (N 17u30.6209, W 63u27.7079) characterized by an abundance by green seaweeds (Chlorophyta) as well as some filamentous reds,

(2) ‘‘Brown Town’’ (N 17^{o}28.0279, W 63^{o}14.9449) dominated by large brown algae (Phaeophyceae), and

(3) ‘‘Seaweed City’’ (N 17^{o}26.4859, W 63^{o}16.8509) with a diversity of spectacular fleshy red algae (Rhodophyta). Possibly 12 new species of brown algae may be named following further scientific investigation. All of these macroalgae and their collection locations can be viewed as a virtual herbarium (http://sweetgum.nybg.org/saba/algae.html), where users can search for any combination of phylum, family, genus, species, infra-specific rank, author, collector, collector number and precise location as a satellite map and longitude/latitude. Searching for a given parameter generates information associated with the specimens collected by the project under that parameter. Images taken of in situ living plants from the field are attached at the bottom of the label data.

Prior to this survey, the two most diverse areas for algae reported in the Caribbean had been Diamond Rock, Martinique and Pelican Cays, Belize, a mangrove, seagrass, and coral complex. Habitats on Saba Bank have far exceeded both of these places for species diversity per unit collection effort. A major reason for this uniqueness and richness is the sheer size and habitat range of the seamount/atoll.

The rim habitats range from windward pristine coral reefs to extensive leeward rhodolith (coralline algal spheres) beds (N 17^{o}25.8329, W 63^{o}40.9629) containing a high diversity of small epiphytic algal taxa. The Relative Dominance Model is useful for characterizing the health of any given coral reef. According to this model, healthy coral reefs are dominated by reef-building (hermatypic) corals, crustose coralline algae, and high populations of herbivorous fishes – all characteristic of Saba Bank’s windward eastern rim and fore-reef slope.

Vast sedimentary environments with some interspersed bedrock create relatively unstructured interior plains behind the rim communities, where seagrass beds would normally abound. However, seagrasses are absent (presumably due to excessive depths and insufficient light). Here vast plains of various groups of large and robust algal forms provide the three-dimensional structural heterogeneity. These are many of the rhizophytic (i.e., rooted) Bryopsidales forms typical of healthy seagrass beds in the sedimentary habitats. The seagrass model indicates that these sand plains of robust large epiphyte-free green algae, as in Field of Greens, indicate pristine oligotrophic conditions. The same can

be said in the cases of Brown Town and Seaweed City, where especially clean robust macroalgal forms predominate on hard bottom. Few filamentous and thin sheet forms indicative of stressed or physically disturbed environments were observed.

List of plant species within the site that are in SPAW Annex I

List of species in SPAW annex I	Estimate of population size	Comments if any

List of plant species within the site that are in SPAW Annex III

List of species in SPAW annex III	Estimate of population size	Comments if any

List of plant species within the site that are in the IUCN Red List. UICN red list : http://www.iucnredlist.org/apps/redlist/search You will specify the IUCN Status (CR:critically endangered; EN:endangered; VU:vulnerable).

List of species in IUCN red list that are present in your site	IUCN Status	Estimate of population size	Comments if any

List of plant species within the site that are in the national list of protected species

List of species in the national list of protected species that are present in your site	Estimate of population size	Comments if any

Fauna

Brief descript° of the main fauna populations and/or those of particular importance present (resident or migratory) in the area:

A total of 33 coral species were documented on the Saba Bank in a rapid assessment of only 17 sites during the 2005 expedition. More species of coral remain to be found. Most species are rare, so an asymptotic curve indicates that most of the common species were collected. Undocumented coral species are likely to be found through more exhaustive sampling effort in coral dominated reef habitats, at remote sites, and in deeper depths.

Biodiversity surveys were conducted on Saba Bank in 2005 and 2007, to assess ichthyofaunal richness and to compare with published surveys of other Caribbean localities. The primary objective was to estimate the total species richness of the Saba Bank ichthyofauna. A variety of sampling techniques was utilized to survey the fish species of both the visually accessible megafauna and the camouflaged and small-sized species comprising the cryptic ichthyofauna. The number of species known on Saba Bank was increased from 42 previously known species to 270 species. Expected species-accumulation curves demonstrate that the current estimate of species richness of fishes for Saba Bank under represents the actual richness, and our knowledge of the ichthyofauna has not plateaued. The total expected fish species richness may be somewhere between 320 and 411 species. The Saba Bank ichthyofaunal assemblage is compared to fish assemblages found elsewhere in the Caribbean. Despite the absence of shallow or emergent shore habitats like mangroves, Saba Bank ranks as having the eighth highest ichthyofaunal richness of surveyed localities in the Greater Caribbean. Some degree of habitat heterogeneity was evident. Fore-reef, patch-reef, and "lagoonal" habitats were sampled. Fish assemblages were significantly different between habitats. Species richness was highest on the fore reef, but 11 species were found only at "lagoonal" sites. A comprehensive, annotated list of the fishes currently known to occur on Saba Bank, Netherland Antilles, is available at http://www.ploscollections.org/article/info%3Adoi

%2F10.1371%2Fjournal.pone.0010676 including color photographs of freshly collected specimens for 165 of the listed species of Saba Bank fishes to facilitate identification and taxonomic comparison with similar taxa at other localities. Coloration of some species is shown for the first time. Preliminary analysis indicates that at least six undescribed new species were collected during the survey and these are indicated in the annotated list.

In addition to all of the animals usually seen around the reefs and other marine habitats, some less frequently spotted species exist. Two turtle species use the waters as a foraging and breeding ground; Hawksbill Turtles (*Eretmochelys imbricata*) and Green Turtles (*Chelonia mydas*). Sharks are often spotted on the Bank, nurse shark, reef shark (Carcharhinus perezi), blacktip shark, (Carcharhinus limbatus), and tiger shark (Galeocerdo cuvier).

Large areas of the Saba Bank are characterized by hard substrate with communities dominated by algae, sponges and/or gorgonians.

The 2007 survey results added 28 species and 7 genera to the list of gorgonian octocorals known to occur on Saba Bank. Surveys resulted in a four-fold increase in knowledge of gorgonian species richness. Richness was higher than other sites in the region, but the species composition was not significantly different from other Western Atlantic and Caribbean sites. Our data indicate we cannot assume we collected all of even the most common species. Most species are rare, so an asymptotic function implies only that the most common species were collected. Our species accrual curve did not approach asymptote, so both rare and common species remain to be discovered. This is remarkable, considering the shallow gorgonian assemblage is already rich when compared to other places. Saba Bank has at least 43 zooxanthellate octocoral species, compared to Florida (S = 39), Providencia Island, Colombia (S = 32), and Puerto Rico (S = 38). It would be useful to compare species accrual curves at each of these localities.Two previously undescribed species were discovered: one *Pterogorgia* sp in shallow water and a *Lytreia* sp. in 130 m depth

A first review of the existing knowledge and a quick field survey of the Bank was completed in 1996. While confirming that little was known about Saba Bank, this study concluded that it was an area of great interest, both geologically and biologically. The review reports that, although different views exist, the most recent conclusion in 1977 by Van der Land is that Saba Bank is an actively growing, though submerged atoll, and as such it is the largest in the Caribbean and the third largest in the world. The Review also concludes that it is a regionally unique ecosystem, relatively pristine and remote from human influences, with high biological diversity and productivity, potentially an important source of fish and invertebrate larvae to the islands of Saba, Sint Maarten, the islands of the Greater Antilles and the Virgin islands. At the same time Meesters notes that there is a threat of overfishing and damage from anchoring by large tankers.

A first in-depth fisheries catch assessment was concluded in 2000 that provided solid data about the state of the fisheries. This study concluded that no new fishing permits should be issued until a long term fishery

With the help of Conservation International, a Rapid Assessment Program (RAP) of Saba Bank was organized in 2006. It was this survey of Saba Bank's biodiversity that more than anything demonstrated the richness of its biodiversity. Not only were many species of fishes, corals and sponges found that had not been reported before, but Saba Bank was found to have a uniquely diverse marine macro-algal flora; including many new species of marine macro-algae never described before. Reports of the findings of this RAP expedition were published a special volume dedicated to Saba Bank of the electronic journal Public Library of Science, PLoS One. The volume includes characterizations of Saba Bank's extraordinary macro-algae communities, as well as assessments of the sponges, hard

corals, and fishes.

In 2007 a high-resolution bathymetric GIS map of Saba Bank was produced. This map formed the basis for further study of Saba Bank, including a detailed characterization of some of the bottom habitats and associated fish assemblages of the Bank, also presented here in the special PLoS One Saba Bank volume. At the same time a second fisheries assessment was undertaken to follow up on the 2000 study. Another expedition was organized, this time to assess the crustacean and gorgonian fauna of Saba Bank. The gorgonian survey, also in the PLoS One volume, discovered two undescribed octocoral species and was able to distinguish two different shallow water gorgonian habitats.

In 2012 a long term fishery monitoring program started as well as visual surveys of marine mammals and sea birds in the area.

Because the Saba Bank is such a huge area, the available knowledge is far from complete. Future work will include further mapping and characterization of bottom habitats on the Bank, study of the health of the coral reefs, and acoustic surveys of marine mammals.

List of the main publications

Title	Author	Year	Editor / review

Briefly indicate in the chart if any regular monitoring is performed and for what groups/species

Species / group monitored (give the scientific name)	Frequency of monitoring (annual / biannual / etc...)	Comments (In particular, you can describe here the monitoring methods that are used)
Panulirus argus	continuously	monitoring of fishery landings
red snapper (Lutjanus spp.)	continuously	monitoring of fishery landings
coral reefs	annual	yearly monitoring of health, coral and algae cover using adapted AGRRA and Reef Check protocols
marine mammals	annual	visual and acoustic monitoring of marine mammals

Chapter 4. ECOLOGICAL CRITERIA

(Guidelines and Criteria Section B/ Ecological Criteria) *Nominated areas must conform to at least one of the eight ecological criteria. Describe how the nominated site satisfies one or more of the following criteria. (Attach in Annex any relevant supporting documents.)*

Representativeness:

Coral reefs:

Saba Bank meets the true definition of a seamount being isolated by deep water; in this case the nearest islands are Saba and St. Eustatius. Except for the fact that it does not break the water surface, Saba Bank is a classic atoll consisting of a submerged mountain crowned at the summit with a ring of actively growing coral reefs.The Saba Bank is considered to be a submerged coral atoll. A substantial eastern part (225 km2) is between

10 and 20 m depth consists of extensive coral reefs froming a fringe along the edge of the bank of 55 km.

Macro-algal communities:

The relatively unstructured interior plains of the Bank consist of hard substrate, bare or with a thin layer of sediment, covered with macro-algae and scattTeh coral reefs of the Sabered sponges and gorgonians. In depths of 25-30 m, the average depth of the Bank, particularly robust specimens of algae typical of shallower seagrass beds were found, but here in the total absence of any seagrasses (seagrasses generally do not grow below 20 m). Few filamentous and thin sheet forms indicative of stressed or physically disturbed environments were observed.

Littler et al states that "the two most diverse areas for algae reported in the Caribbean had been Diamond Rock, Martinique, and Pelican Cays, Belize, a mangrove, seagrass, and coral complHabitats on Saba Bank have far exceeded both of these places for species diversity per unit collection effort. A major reason for this uniqueness and richness is the sheer size and habitat range of the seamount/atoll."

Conch and lobster populations

The Saba bank provides important habitat for Caribbean spiny lobster (Panulirus argus) and Queen Conch (Strombus gigas)

Foraging area for sea turtles

As are other shallow areas in the Caribbean, the Saba Bank is presumed to be an important foraging area for sea turtles, rich as it is in sponges.

Humpback whale calving area

Like the Silver Banks near the Dominican Republic and other shallow banks in the Caribbean, the Saba Bank is likely an important area for humpback whales, that are sighted regularly or heard singing in groups during the last survey on the Bank, and the area may be a calving ground for the humpbacks.

Conservation value:

The Saba Bank National Park contains the whole of the Saba Bank and is large enough to be a self contained system for the ecosystems present within the National Park. There are indications that some of the new (sub)species of fish discovered on the Saba Bank may be endemic to the area.

In addition the Saba Bank National Park is:

- A source of recruitment for corals, fish, lobster and other species for the surrounding region.
- Important for endangered sea turtles as a foraging area for adults.
- Important for humpback whales as resting place in the winter months, and possibly as a calving area.
- A center of macro-algal diversity
- an important area for Queen Conch

Rarity:

The Saba Bank has been identified as having the greatest diversity of marine macro-algae of the Caribbean

A new gobioid fish species of the genus Starksia (*Starksia williamsi*) was discovered on the Saba Bank, other species of Starksia found on the Saba Bank had different genetic lineages than elsewhere in the region (Baldwin et al, 2011). A new species of gorgonian (*Pterogorgia* n.sp.) was discovered on the Saba Bank in shallow water. Since the shallow water gorgonian fauna in the Caribbean is quite well known and the new species was quite distinct from the other three species in the genus, this discovery was quite surprising. These findings may indicate that the Saba Bank may have its own endemic species, occurring only on the Saba Bank.

Etnoyer et al (2010) found that the gorgonian diversity of the Saba Bank was higher than in other areas in the Caribbean (Florida, Providencia Island Colombia, and Puerto Rico). The species accrual curve of the Saba Bank indicates that not even all the common species, let alone rare species, have been found, so the actual diversity will be even higher.

Naturalness:

The Saba Bank is a seamount separated from land by deep water. Human impact has only been from fisheries, so the area has been relatively free of disturbance by human influence. The coral reefs of Saba Bank are far removed from landbased sources of pollution or nutirents. since 1996 fisheries has been regulated and restricted to about 10 fishing permits for small (35-50 ft) fishing boats using only lines and traps

Although there has been a clear impact from fisheries, the area can still be considered quite natural, especailly compared with most other areas directly offshore of human populations.

Critical habitats:

As stated above the Saba Bank is a foraging area for endangered sea turtles (annex 2) and important for their survival.

Similarly it is presumed to be an important resting or possibly calving area for humpback whales (annex 2).

The Saba bank contains extensive coral reefs (annex 3) not only in need of protetion themselves, but providing critical habitat for endangered or vulnerable fish species such as several grouper species, *and Balistes vetula*, the Queen triggerfish.

The area also contains spawning aggregation areas for *Balistes vetula* (vulnerable) and other species such as *Epinephelus guttatus* (Red Hind)

The area contains Queen conch (*Strombus gigas*) populations (annex 3) that were severely overfished and are now recovering.

Diversity:

Because the Saba Bank National Park encloses the entire seamount with an area of over 2000 km2 and has been shown to have a unique diversity it is clear that it contains sufficient diversity for its long term viability

Connectivity/coherence:

Saba Bank may be considered an important Caribbean reef habitat because it has a large extent, and it is positioned in an upstream position relative to neighboring Puerto Rico (to the northwest) and the Meso-American Barrier Reef (to the far west), in relation to the direction of flow for the Caribbean current. The Caribbean current flows east to west along

the southern parts of the Antilles Ridge, turning to the northwest at higher latitudes. Long-lived invertebrate larvae (e.g. spiny lobster Panulirus argus, Queen conch Strombus gigas) could theoretically disperse from Saba Bank to downstream habitats.

As an important area for humpback whales Saba Bank is linked to other resting places of humpback whales in the Caribbean such as the Silver Banks area and the summer grou ds of the humpback whales in the Northern Atlantic.

As a foraging area for adult sea turtles it is clearly linked to the nesting beaches of these sea turtles, which have as yet not been identified.

Chapter 5. CULTURAL AND SOCIO-ECONOMIC CRITERIA

(Guidelines and Criteria Section B / Cultural and Socio-Economic Criteria) *Nominated Areas must conform, where applicable, to at least one of the three Cultural and Socio-Economic Criteria. If applicable, describe how the nominated site satisfies one or more of the following three Criteria (Attach in Annex any specific and relevant documents in support of these criteria).*

Productivity:

The Saba Bank is and has traditionally been an important fishery resource for the island of Saba, first documented early in the twnetieth century by Boeke (1907).There are two main types of fisheries. The lobster fisheries is relatively stable in terms of total landings, economic value and fishing methods (Toller and Lundvall 2008) with an annual catch of around 85 metric tonnes (mt) and a value of USD 1.3 million

The fish trap fishery targets deepwater snapper species, in particular silk snapper, blackfin snapper, and vermilion snapper. These three lutjanid species comprise > 91 % of fish trap catch. Average catch rate of redfish in fish traps is 10 pounds per trap-haul, and 291 pounds per trip. Projected annual fish trap landings of redfish are 90,800 pounds (41.3 mt) with an ex-vessel value of US $289,000 per year (Toller and Lundvall 2008).

The Saba Bank National Park aims to regulate these fisheries to ensure their sustainability.

Cultural and traditional use:

The Saba Bank has a high traditional value for Sabans. Historically the population of the island has always been dependent on fishery on the Saba Bank for its survival and fishermen have been fishing the Bank for centuries, rowing out in small boats many miles from land in open sea

Socio-economic benefits:

Saba Bank is an important economic resource for Saba with the fisheries on the Bank contributing about 8 % to the economy of the island and providing full time employment to 20 people and part time employment for an additional 30 people (Dilrosun, 2000). On a total population of about 1600 people this is substantial. Fishing has always been one of the main means of existence for the Saban population; the fish were consumed locally, and exported to the surrounding islands. (Dilrosun, 2000)

Chapter 6. MANAGEMENT

a - Legal and policy framework (attach in Annex a copy of original texts, and indicate, if possible, the IUCN status)

National status of your protected area:

Saba Bank is legally protected through a Ministerial Decree based on the National Act Nature Conservation Framework BES (Bonaire St. Eustatius and Saba).

A Saba Bank Management Plan was prepared in 2007. Full implementation of this plan started in 2012 with the formation of a Saba Bank Management Unit by the Saba Conservation Foundation

IUCN status (please tick the appropriate column if you know the IUCN category of your PA):

II

Comments:

National Park for the protection of ecosystems, but also for the sustainable management of the fisheries in the area (category VI)

b - Management structure, authority

Management falls under the responsiblity of the Minstry of Economic Affairs, Agriculture and Innovation (EL&I) and has been mandated by the Ministry to the Saba Conservation Foundation (SCF), which has formed the Saba Bank Management Unit for this task

c - Functional management body (with the authority and means to implement the framework)

Description of the management authority

The Saba Bank Management Unit (SBMU) is a separate unit within the Saba National Marine Park, with daily management by the Saba Conservation Foundation. A steering group consisting of SCF manager, EL&I and the island government is responsible for the overall management and planning. The unit will also report to the steering committee and the EEZ committee. The steering group will convene at least twice a year to evaluate and direct the program. Every two years the program will be evaluated externally. Activities outside of the program are at the discretion of the Saba Marine Park manager on advice by the steering group.

The Tasks of the SBMU are:

1. Surveillance of Saba Bank at least 3 times weekly (circumstances permitting at the discretion of the SCF manager)
2. Locate and remove lost traps (ghost traps)
3. Liaise, consult with fishermen in regular meetings and engage them in the

management
4. Monitoring of fish landings
5. Reporting on violations of the fishery regulations to the proper authorities (INCL. coastguard, police, public prosecutor)
6. Establishment and maintenance of database, administration and monthly reporting to steering committee on activities.
7. Boat and equipment maintenance
8. Monitoring of relevant parameters (e.g. marine habitats, marine traffic, fishing efforts etc.), in accordance with the Monitoring Plan for CN.
9. Establish and carry out public awareness and sensitization programs on better use of the natural resources of the Saba Bank.
10. Assist in the logistics of approved scientific research projects on the Saba Ban
11. Report twice a year to the steering committee and the EEZ Commission

Means to implement the framework

The SBMU will consist of a minimum of two staff members, one ranger and one program officer. The Unit will be housed in the Saba Marine Park offices and will be supported by teh Sab a Marine Park staff. Resources for the Unit include a patrol boat dedicated to the Saba Bank, dive equipment, and an ROV.

Scientific support from the Institute of Marine Research and Ecosystem Services (IMARES) wil be provided to the SBMU for coral reef, marine mammal and fisheries monitoring

d - Objectives (clarify whether prioritized or of equal importance)

Objective	Top priority	Comment
Protect and maintain the biological diversity and other natural values of the area for long term use	Yes	
Promote sound fisheries management practices for sustainable purposes	No	
Avoid conflicts between different users (e.g. shipping, fisheries)	No	
Protect the natural resource base from being altered by anchorage of shipping vessels or traffic that would be detrimental to the area's biological diversity	No	

e - Brief description of management plan (attach in Annex a copy of the plan)

The first Management Plan for the Saba Bank (SBMP) recognizes the value and uniqueness of the Bank and the need for a strategic document to guide management decision making and to define the mission, goals and objectives of the Saba Bank Management Unit.

The SBMP was prepared in close consultation with a considerable number of stakeholders and stakeholder group representatives on Saba.

The SBMP specifies management goals and strategies for the Saba Bank Management

Unit related to the *Mission:To conserve and manage the natural and economic resources within the Saba Bank National Park, allowing their sustainable use for the benefit of current and future generations.* It also identifies the major existing and potential threats and issues facing the Bank from ecological, social and cultural perspectives and includes substantial input from stakeholders. It is designed to be an adaptive management tool.

The SBMP fits within the broader context of the "Management Plan for the natural resources of the EEZ for the Dutch Caribbean" (EEZ Management Plan) which outlines the purposes and manner in which the Caribbean Exclusive Economic Zone and Saba Bank in particular may be used in a sustainable manner, based on a shared vision and common set of goals. It outlines the management objectives, as well as key policies, and strategies with which to achieve sustainable management. It also addresses the administrative structure, resource use, financial support, key information needs, and action points most urgently required to set sustainable management in place.

Management plan - date of publication

: 8/26/08

Management plan duration

: 5

Date of Review planned

: 2/15/13

f - Clarify if some species/habitats listed in section III are the subject of more management/recovery/protection measures than others

Habitats

Marine / costal / terrestrial ecosystems	Management measures	Protection measures	Recovery measures	Comments/description of measures
Mangroves	no	no	no	
Coral	no	no	no	
Sea grass beds	no	no	no	
Wetlands	no	no	no	
Forests	no	no	no	
Others	no	no	no	

Flora

Fauna

Species from SPAW Annex 2 present in your area	Management measures	Protection measures	Recovery measures	Comments/description of measures
Birds: Hydrobates pelagicus	no	no	no	

Birds: Puffinus lherminieri	no	no	no	
Birds: Sterna antillarum antillarum	no	no	no	
Birds: Sterna dougallii dougallii	no	no	no	
Mammals: Megaptera novaeangliae	no	no	no	
Mammals: Physeter macrocephalus	no	no	no	
Mammals: Globicephala macrorhynchus	no	no	no	
Mammals: Stenella frontalis	no	no	no	
Mammals: Stenella longirostris	no	no	no	
Mammals: Stenella clymene	no	no	no	
Mammals: Tursiops truncatus	no	no	no	
Mammals: Stenella coeruleoalba	no	no	no	

Species from SPAW Annex 3 present in your area	Management measures	Protection measures	Recovery measures	Comments/description of measures
Hydrozoa: Milleporidae	no	no	no	
Hydrozoa: Stylasteridae	no	no	no	
Anthozoa : Antipatharia	no	no	no	
Anthozoa : Gorgonacea	no	no	no	
Anthozoa : Scleractinia	no	no	no	
Molluscs: Strombus gigas	no	no	no	
Crustaceans: Panulirus argus	no	no	no	

g - Describe how the protected area is integrated within the country's larger planning framework (if applicable)

Saba Bank National Park management forms part of the management of the marine bioidiversity and fisheriesof the EEZ by the EEZ Committee. The Saba Bank Management Unit reports to the EEZ committee.

The EEZ management is part of the Nature Policy Plan of the Caribbean Netherlands which is currently being drafted for completion before the end of 2012

h - Zoning, if applicable, and the basic regulations applied to the zones (attach in Annex a copy of the zoning map)

Name	Basic regulation applied to the zone
No anchoring	Anchoring by ships other than fishing boats with a permit for fishing on the Saba Bank is prohibited

Comments, if necessary

Area to be avoided (ATBA) requested from IMO as part of the PSSA proposal to IMO. This is expected to be granted in 2013

i - Enforcement measures and policies

Coast Guard and Saba Bank Management Unit patrol the bank

j - International status and dates of designation (e.g. Biosphere Reserve, Ramsar Site, Significant Bird Area, etc.)

International status		Date of designation
Biosphere reserve	no	
Ramsar site	no	
Significant bird area	no	
World heritage site (UNESCO)	no	
Others: IMO PSSA	no	

Comments

PSSA status expected in 2013

k - Site's contribution to local sustainable development measures or related plans

not specified

l - Available management resources for the area

Ressources		How many/how much	Comments/description
Human ressources	Permanent staff	2	partner IMARES commisoned by the Ministry of EL&I provides researchers and expertise for monitoring and research work on the Saba Bank
	Volunteers	2	
	Partners	1	
Physical ressources	Equipments	boat 38 ft in board diesel engine dive equipment 2 Computers	
	Infrastructures	office space	
Financial ressources	Present sources of funding	Ministry of EL&I	
	Sources expected in the future		
	Annual budget (USD)	100	

Conclusion Describe how the management framework outlined above is adequate to achieve the ecological and socio-economic objectives that were established for the site (Guidelines and Criteria Section C/V).

The management framework as described above allows for co-management of the fisheries in the Saba Bank National Park with the fishermen to ensure sustainability, supported by monitoring of the fisheries landings in the harbor, and backed up by enforcement by the Dutch Caribbean Coast Guard and routine surveillance on the Bank by the Saba Bank Management Unit using the Saba Bank patrol boat. Surveillance on the Bank will also be used to monitor coral reefs, fish and lobster, to locate and retrieve lost traps, and to survey for marine mammals and sea birds, using the help of volunteers and researchers.

Regulation of the fisheries will ensure sustainability of lobster stocks, moratorium on conch fishing will allow full restoration of the conch populations.

The anchoring prohibition and enforcement by Coast Guard will prevent further scarring of the bottom by VLCC tanker anchors and chains and will allow natural recovery of the bottom

Chapter 7. MONITORING AND EVALUATION

In general, describe how the nominated site addresses monitoring and evaluation

The Saba Bank Management Unit steering group, consisting of representatives of the Ministry of EL&I, the island government and the Saba Conservation Foundation, meets twice a year to set the work program and evaluate its implementation;

Twice a year the SBMU reports to the steering group and to the EEZ Committee;

Every two years the work programme will be evaluated externally;

Management of the Saba Bank national Park will be subject to evaluation based on the yearly "Management Success" format developed by the Dutch Caribbean Nature Alliance (DCNA), providing indicators of efforts and effective direction of those efforts towards identified threats.

Monitoring, both fisheries dependent and independent, will provide clear indications of effectiveness of co-management with the fishermen and provide directions to adjust the management

What indicators are used to evaluate management effectiveness and conservation success, and the impact of the management plan on the local communities

Indicators by category	Comments
Evaluation of management effectiveness	
effort direction	indicator of percentage of effort directed at specified threats and other management objectives, allowing redirection of efforts if necessary

Evaluation of conservation measures on the status of species populations within and around protected area	
fisheries landings	will provide indications of sustainability of fishing pressure and will allow adjustment of fishery regulations
conch densities	will show rate of recovery of conch populations
Evaluation of conservation measures on the status of habitats within and around the protected area	
coral health	
Evaluation of conservation measures on the status of ecological processes within and around the protected area	
none	unclear what is meant with ecological processes
Evaluation of the impact of the management plan on the local communities	
number of attendance at yeraly public presentations	Yearly presentations will be provided to the community on the status of the Saba Bank. The interest in these presentations will give an indication of the local impact of the management

Chapter 8. STAKEHOLDERS

Describe how the nominated site involves stakeholders and local communities in designation and management, and specify specific coordination measures or mechanisms currently in place

Stackeholders involvement	Involvement	Description of involvement	Specific coordination measures	Comments (if any)
Institutions	yes	consultations with Institute of Marine Research and Ecosystem Services (IMARES)in the Netherlands regular updates of neighboring St. Eustatius island gov't	planning of research and monitoring activities	No institutions present on Saba
Public	yes	regular public presentations on activities and findings		
Decision-makers	yes	Island Secretary and Ministry of EL&I are both part of the steering group of the Saba Bank Mgt Unit. EEZ Committee provides input for yearly work plan	twice a year meeting of steering group to evaluate and plan activities twice a year report to EEZ Committee	
Economic-sectors	yes	regular meetings with fishermen to exchange information and viewpoints of management of fisheries on Saba Bank as part of their co-management of	to be developed with fishermen	

		the Saba Bank regular information provision to diveshops on the island		
Local communities	yes	Public equals local community		
Others	yes	regular meetings for information exchange and planning of joint activities	to be determined with each group	NGO partners: Dutch Caribbean nature Alliance (DCNA) Harbor masters Saba and St. Eustatius Law enforcement: Coast Guard, Police, and Public Prosecutor's office Tourism Office

Chapter 9. IMPLEMENTATION MECHANISM

Describe the mechanisms and programmes that are in place in regard to each of the following management tools in the nominated site (fill only the fields that are relevant for your site)

Management tools	Existing	Mechanisms and programmes in place	Comments (if any)
Public awareness, education, and information dissemination programmes	yes	Public presentations	
Capacity building of staff and management	yes	training for specific survey techniques with IMARES scientists, DCNA training workshops, and partnership of Marine Mammal Sanctuaries	
Research, data storage, and analysis	yes	IMARES researchers are commissioned by Ministry of EL&I for specific research projects identiified each year, and to receive, analyze, store and report on data from research and monitoring performed by SBMU staff and volunteers	
Surveillance and enforcement	yes	SBMU staff will peform surveillance on the Saba Bank and will reprot infractions of regulations to Coast Guard and or Police	
Participation of exterior users	yes	international research on the Saba Bank will be encouraged and facilitated	
Alternative and sustainable livelihoods	yes	regulations that would impact fishermen incomes will be discussed and jointly compensatory measures will be explored	
Adaptative management	yes	The management plan will be reviewed and adapted at least every year	

Chapter 10. OTHER RELEVANT INFORMATION

Contact addresses

	Name	Position	Contact adress	Email adress
who is submitting the proposal (national focal point)	HOETJES Paul	Policy Coordinator Nature		Paul.Hoetjes@rijksdienstcn.com
who prepared the report (manager)	WULF Kai	Parks Manager	paul.hoetjes@rijksdienstcn.com	paul.hoetjes@rijksdienstcn.com

Date when making the proposal

: 7/5/12

List of annexed documents

Name	Description	Category	
SabaBank-fisheries-reportII-Methods.pdf	Saba Bank Fisheries Resources Study, Report II: Methods to Assess the Saba Bank Commercial Fishery and Preliminary Results	Others	View
Map of Saba Bank nature park	map of Saba Bank nature park boundaries and TW and EEZ borders	Zoning map	View
contractSCF-Sababankbeheer.pdf	Overeenkomst tussen de Staat der Nederlanden en Saba Conservation Foundation voor de uitvoering van het project beheer Sababank	Publications	View
literatureSPAWlisting.pdf	Literature - Saba Bank National Park Proposal for Listing under SPAW	Others	View
MgtPlan_EEZDutchCarib-w-overleaf.pdf	Management plan for the natural resources of the EEZ of the Dutch Caribbean	Management plan	View
SabaBankMgtUnit_ToR-final.pdf	SABA BANK MANAGEMENT UNIT - Terms of Reference	Others	View
sababankMPADecree.pdf	Saba Bank MPA Decree	Others	View
SBMPfinaldraft_LR.pdf	Saba Bank - Special Marine Area Management Plan 2008 - Shelley Lundvall	Others	View
MapBoundariesSB.pdf	Saba Bank nature park boundaries	Geographical map	View