

MOUNT SCENERY NATURE PARK MANAGEMENT PLAN

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About this document

This document has been prepared in response to the call for the establishment of the Mount Scenery Nature Park by the Island Government and people of Saba. This document outlines the management provisions for the park and makes recommendations for management of the Park, which is to be overseen by the Island Government and implemented by staff of the Saba Conservation Foundation (SCF) and Saba Archaeological Centre (SABARC).

This management plan was prepared by Drs Duncan MacRae (Coastal Zone Management UK) and Drs Kalli De Meyer (Nature 2) in close cooperation with the local Project Team and other local and international experts. The management plan structure, format and process were developed by Drs MacRae and De Meyer in 1994 using the IUCN guidelines for protected area management planning. This template has been reviewed and endorsed by the World Commission on Protected Areas (WCPA).

The final draft management plan was delivered in July 2018. Some additional information became available after said date and were incorporated into this document up and until December 2018 (free of charge).

Acknowledgements

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Mount Scenery Nature Park

The Mount Scenery Nature Park extends across the northern part of the island of Saba and includes the island's highest point, Mount Scenery after which the park has been named. The Park protects approximately 26% of the total land area of Saba stretching from the shoreline to the highest point of the island and including the most biologically diverse, remotest and most pristine vegetation on the island. The Mount Scenery Nature Park is predominantly wilderness and includes all of the naturally occurring vegetation zones and the topography on the northern side of the Park, is particularly rugged and steep where the island slopes precipitously down to sea level.

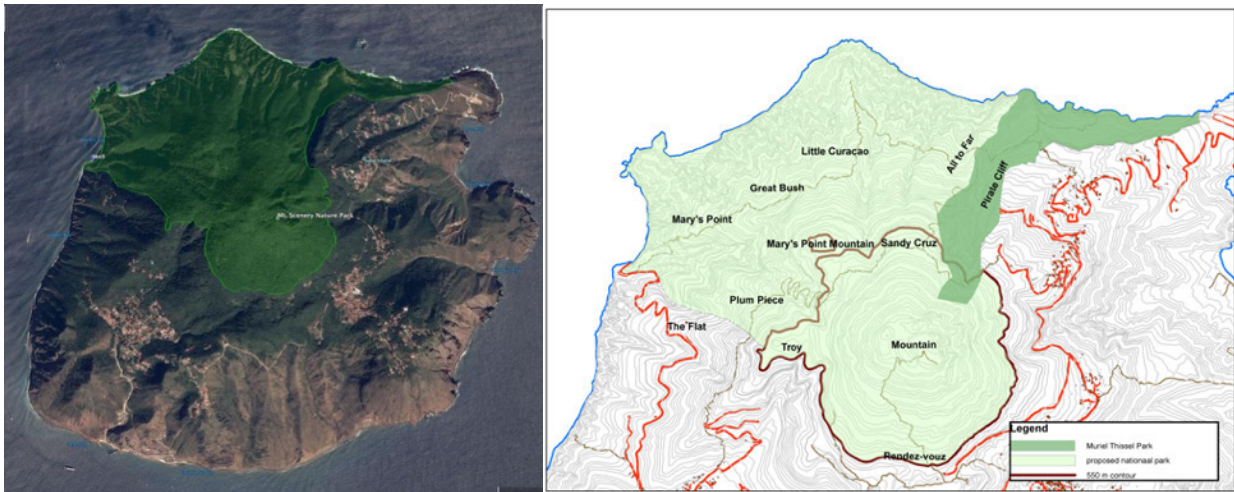


Figure 1 Mt Scenery Nature Park location

Outstanding biological attributes

Ecosystems

All of the island's vegetation zones are represented within the Mount Scenery Nature Park, from the dry croton thickets on the dry lowest slopes of the mountain, through dry evergreen forest, secondary rainforest and ravine primary rainforest, tree-fern brake, palm brake and montane cloud forest or 'elfin forest' on the top of the mountain.

The Mount Scenery elfin forest is unique in the Caribbean region due to its relatively low elevation (825-870 m), which allows the characteristic Mountain Mahogany (*Freziera undulata*) to grow much taller and form a much higher canopy than in other similar cloud forests in the region.

Plants:

- 2 threatened plant species (*Nectandra krugii*, *Guaiaecum officinale*) both considered endangered by IUCN
- 20 endemic plant species, including 4 species restricted to only a few islands of the Lesser Antilles (*Chromolaena macrantha*, *Begonia retusa*)
- Elfin forests are characterized by Mountain Mahogany (*Freziera undulata*), a plant species restricted to the Lesser Antilles.

Invertebrates:

- 3 butterflies and 4 orthoptera endemic to the Lesser Antilles

Reptiles:

- 3 endemic reptiles: the Anolis lizard (*Anolis sabanus*) found only on Saba and *Alsophis rufiventris* (considered endangered by IUCN) which is endemic to Saba and St. Eustatius.
- Lesser Antillean whistling frog (*Eleutherodactylus johnstonei*), Annex II SPAW

- The Saban iguana (*Iguana iguana*) is an endemic subspecies.

Birds:

- 3 bird species are restricted to the Lesser Antilles and Puerto Rico.
- Presence of important populations of Audubon's Shearwater (*Puffinus lherminieri*).
- Largest known Caribbean breeding population of the Red-billed Tropicbirds (*Phaethon aethereus*).

Mammals:

- 7 species of bat, of which the St. Vincent fruit-eating bat (*Brachyphylla cavernarum*) and the free-tailed bat (*Tadarida brasiliensis antillarum*) are listed in Annex II of the SPAW Protocol.

Cultural and traditional attributes

The area includes the remnants of the traditional small-scale subsistence agriculture plots that are an important part of the island's heritage.

The park protects the historical ruins of an abandoned settlement of Mary's Point, which is a part of the island's colonial history and an archaeological site. There are also several Archaic Amerindian sites of interest.

Socio-economic attributes

Mount Scenery Nature Park includes a large part of the island's historical trail network (the historical 'roads' connecting the small settlements of the island) and is currently one of the main tourism attractions of the island. The Mount Scenery Nature Park will ensure maintenance and improvement of these hiking trails and allow the further development of tourism such as guided bird tours and orchid and fern tours on the trails and innovative initiatives such as '*shinrin yoku*' or forest bathing, which is fast becoming a cornerstone of health care and healing in the far east.

Management plan

The Mount Scenery Nature Park management plan consists of four sections as outlined below:

Part 1: Background Information.

The physical, social and political environment within which the management takes place greatly influences the operations of the protected area. Those using the management plan may not be aware of the circumstances of the Mt. Scenery National Park and can refer to this section for background information. Technical terms are explained in the text and names of plants and animals are given as the common name in English, followed by local and scientific names where appropriate.

Part 1 can be used as a stand-alone introduction to the island and the Mt. Scenery National Park and has been written with a range of audiences in mind.

Part 2: Management Environment.

This is the first part of the working document which states the significance, mission and goals for the Saba Conservation Foundation. Resources available to the SCF are described, including the legal instruments, institutional arrangements and human and physical resources. The main issues facing the Mt. Scenery National Park are detailed and described before being summarised.

Part 2 will be of interest to those wishing to develop a more in depth understanding of the operational management and issues likely to face the Mt. Scenery National Park.

Part 3: Management Plan.

Management strategies and goals are clarified for Saba Conservation Foundation and others involved in park management.

Part 3 is of concern to those with an interest in the current activities of SCF and the Mt. Scenery National Park and the rationale behind actions being taken.

Part 4: Additions and Developments.

The final part of the plan is intended to act as a place marker for updates, where management actions have led to outcomes that can be described or there has been a change in the tools available to the protected area. This section needs to be kept up to date so that staff can work from the proposed actions and work schedule, and so any interested party can pick up the whole plan and have a thorough understanding of the Mt. Scenery National Park from the context through to the most recent management actions.

Part 4 is to be used by the management body to keep the management plan up to date; its contents are unlikely to be available until the plan has been formally updated.

Appendix

Additional information which would otherwise disturb the flow of the document, is provided in the appendix.

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Part 1: Background information

The island of Saba

The Dutch Caribbean island of Saba is located in the North Eastern Caribbean (17°38'N, 63°14'W) close to sister islands of St Eustatius and St. Maarten, which are also part of the Dutch Caribbean, the U.S. Virgin Islands, British Virgin Islands and 20 other inhabited islands. Together these form the Lesser Antillean Island Arc, which stretches from Puerto Rico in the north to the South American coastline of Venezuela in the south.

Saba, with its land area of 1,300 hectares (3,212 acres) is the smallest of the six islands that make up the Dutch Caribbean. The Windward Islands of Saba, St Eustatius and St Maarten all lie within line of sight of one another, Saba is 28 kilometres (17 miles) from St. Eustatius and 44 kilometres (27 miles) from St. Maarten. The longest axis of the island (5 kilometres /3 miles) runs northeast-southwest, whereas the shorter northwest-southeast axis is 4.3 kilometres (2.5 miles) long ("DCNA | Islands," 2018).

Saba is volcanic in origin and the island is dominated by the dormant volcano, Mount Scenery, which rises 887 metres (2,910 feet) above sea level and is the highest point within the Kingdom of the Netherlands. There are also numerous e.g. Booby Hill, Bunker Hill, Great Hill, giving the island a very irregular topography. Much of the island is covered by relatively dense vegetation, especially on the upper slopes of Mount Scenery.

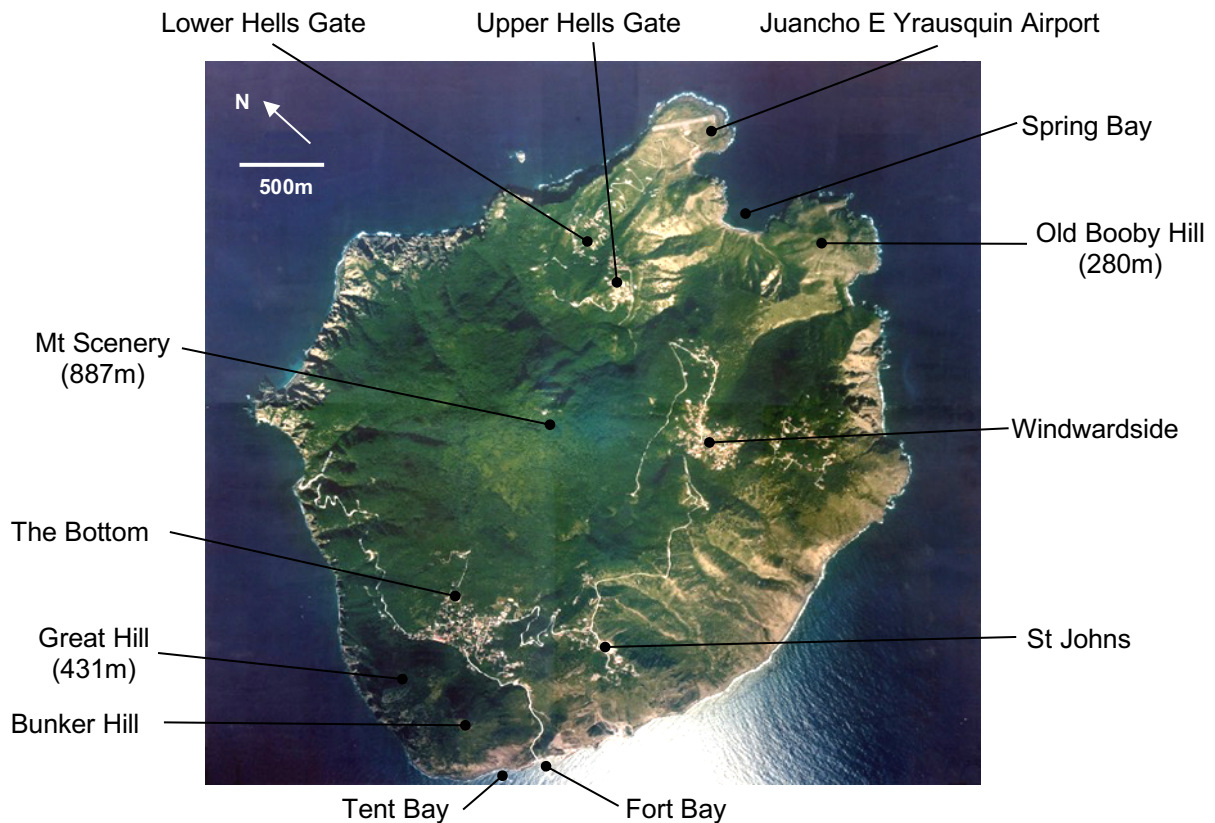


Figure 2 Main features of Saba

The major settlements on Saba include The Bottom, Windwardside, Hell's Gate and St. Johns (Figure 2). The administrative capital of the island is The Bottom, located on the southwest side of the island just above the harbour at Fort Bay. There is one road, called "The Road". The first section from Fort Bay to The Bottom was completed in 1943 by Josephus Lambert Hassell and a crew of local people. In 1951, the road to Windwardside and St. Johns was opened, and in 1958 the road was completed.

History and culture

Although most Saban's are of English or Irish descent, the Dutch laid claim to the island in 1632 and in 1640 sent a party of colonists from nearby St. Eustatius to form a permanent settlement west of Fort Bay. In the past agriculture was practiced on any accessible and fertile land across the island and this only lost its importance when food started to be imported. Small-scale agriculture is still being practised in several locations around the island (Rojer, 1997).

The northern part of the island includes a former sulphur mine, which was operated up until the end of the 19th century. Production ceased at the start of the 20th century due to poor yields. What remains are the tunnels leading into the mountain and the sulphur oven. On the shoreline there is an attachment point for the cable which used to transport the sulphur from the mine to the waiting ships (De Palm, 1985).

In 1963 a 400 metre (1,312 feet) landing strip was built and this became the Juancho E. Yrausquin Airport. It is the shortest commercial runway in the world. Since 2006, Windward Island Airways (Winair) have operated daily flights to Saba. In 1972 the Leo A. Chance pier was built in Fort Bay for fishing boats, sailboats and small cruise ships. The airport together with two ferry services operating every other day to Saba from St Maarten have put Saba on the tourism map.

Dutch customs are still important throughout the Netherlands Antilles, but US influences are becoming dominant on Saba. Whilst Dutch is the official language, English is used in schools and is the majority language on the island.

Population

The total population of Saba has increased from 1,471 individuals in 2006 to 2,010 individuals in 2017. These population figures do not accurately represent the number of persons staying on Saba at any one time. Saba receives approximately 20,000 visitors per year, the majority of whom stay for between one and seven nights on the island (CBS, 2017). Recent population growth and increasing visitation place extra pressure on the natural resources and infrastructure of the island.

Governance

The island has an elected Council (*'Bestuurscollege'*) and Executive Council as well as a Governor, nominated by the Dutch crown.

Saba was formerly part of the Netherlands Antilles with its own island government and representation within the Central Government for the islands on Curacao. A referendum led to constitutional change and since the 10th October 2010 (referred to locally as '10-10') Bonaire, Saba and St Eustatius became "special municipalities" with a direct link to the Netherlands, whilst Curacao and St Maarten joined Aruba as islands with *'status aparte'* within the Kingdom of the Netherlands. This has had significant consequences for the island including:

- Dutch legislation is replacing Antillean law
- There is now a National Office for the Caribbean Netherlands (Rijksdienst Caribisch Nederland) which houses representatives of the various Dutch ministries on the island.
- There is a single police force, fire department and ambulance service for Bonaire, Saba and St Eustatius
- There is a Joint Public Prosecutions Service and Common Court of Justice for Aruba, Curaçao, St Maarten, Bonaire, St Eustatius and Saba.

Economy

Tourism

Since the late 1960's tourism has been an integral part of Saba's economy, with visitor numbers generally increasing¹. Since the mid-1980s visitor numbers have remained steady at around 20,000 visitors per year.

Visitors to Saba arrive either by plane from St. Maarten or by day ferry from St. Maarten. There is also some visitation by small cruise ships, which stop for the day in Saban waters. These boats carry up to 150 passengers. The majority of visitors come to the island for nature based tourism such as hiking, sightseeing as well as shopping (van de Kerkhof, Schep, Beukering, van, & Brander, 2014).

Agriculture

Cultivated plots of land still exist on the steep slopes of Upper Hell's Gate and there are some small plots within the Mount Scenery Nature Park. The main crops are banana, onion, garlic, sweet potato, tannia, yam, white potato and cucumber. The small plot size and limited space for agriculture (due to the steep slopes) means there is little surplus produce for export. Animal husbandry includes raising chickens, pigs, goats and sheep. Agricultural produce is consumed locally or occasionally sold wholesale to local grocery stores and restaurants (EcoVision, 2016).

Fisheries

Nine small fishing vessels operate from Saba, contributing significantly to the island's economy. The majority of commercial fishing takes place on the Saba Bank, where trap fishing is used to target lobster and red fish. Trolling, long lines and hand lining for pelagic species account for the remainder of the fishing effort.

Most of the red fish and lobster catch is exported for consumption on St Maarten. The total annual value of the fisheries on Saba is estimated to be around \$1.3 million. In order to assess fish stocks on the Saba Bank, a monitoring program is currently in place (TEEB, 2014).

Other activities

The location and height of Mount Scenery makes Saba a good vantage point for telecommunication. In 1972 Cable and Wireless built a microwave relay station at the top of Mount Scenery, renting the land from the local Government, which is now owned and operated by the Government of Saba.

There are a few offshore companies on Saba. In the past, communications logistics, shipping costs and a lack of trained local personnel restricted the development of offshore companies on Saba and only five offshore companies currently exist;

- 3 dive operations owned and run by foreign interests.
- A company acting as a broker for US food distribution companies.
- A medical school established since late 1993 with approximately 200 students and faculty (TEEB, 2014).

¹ Visitor numbers include tourists and any other visitor without Saban residency.

Geology

Saba is the northernmost volcanic island in the Active Arc of the Lesser Antilles. The highest point of the central peak is Mount Scenery at 882m. The island has the appearance of a deceptively simple stratovolcano, but this is not the case as it has been built up of a large number of Pelean domes with their aprons of coarse pyroclastic deposits that form a distinctive shoulder on the island at about 450 to 500 m above sea level. Mount Scenery is a younger volcanic cone perched somewhat eccentrically on this foundation of Pelean domes.

The volcano was active during the middle or late Pleistocene era about 500,000 years ago and the last eruption took place during the Holocene about 5,000 years ago. During later periods of activity, the crater of the volcano was filled by a huge basalt rock plug so there is no trace of a typical volcanic crater at the summit of Mount Scenery (Roobol & Smith, 2004)

The slopes of the peaks and domes are steep, in places exceeding 60 degrees. Several V and U shaped valleys (locally called "guts") run down the slopes of the mountain to the sea. The island's airstrip is built on the flat end of a lava flow. This provides the foundations for the main access road up to Hell's Gate village which zig zags up the main flow channel between the lava levees.

In a number of places lava domes form hills including Bunker Hill, St. John's Flat, Booby Hill and The Level which have short, thick, steeply-dipping lava flow extensions orientated down slope (seaward) or radially. These were formed when smaller areas erupted around the peak of Mount Scenery. The higher areas are mainly andesitic lavas, whilst low-lying areas are primarily made up of agglomerates and tuffs (Westerman, 1961).

The so-called 'Behind the Ridge' formation is a deposit specific to the area of the Sulphur Mine Property, which is a result of the volcano's most recent eruption. This layer forms a steep rock face around 100m high and is an impressive sight. Sulphur and gypsum layers were formed at the same time as the Behind the Ridge formation. The sulphur and gypsum were mined towards the end of the last century, the network of tunnels of the former Sulphur Mine.

Higher up the slopes of Mount Scenery from the Sulphur Mine Property deeply eroded gorges dominate the landscape e.g. Gut/Deep Gut which is flanked by two ridges; the 'All too far Ridge' in the west and the 'Pirate Cliff' in the east. In the low-lying areas of The Sulphur Mine Property the Behind the Ridge formation dominates the landscape. At the coast high sea cliffs with colourful volcanic deposits slope into the water, giving rise to panoramic views of the sea (Roobol & Smith, 2004).

A geothermal spring occurs on the shoreline (opposite Green Island), with temperatures in the spring reaching 80°C. This is the only obvious 'volcanic' activity on the island (Roobol & Smith, 2004).

Soil

The soil at the top of Mount Scenery is 'clay loam', followed by various intergrading degrees of 'very stony loam' and 'cherty sandy loam', down to the shore.

Other protected areas on Saba

Saba National Marine Park

The Saba National Marine Park was established in 1987 with the objective of preserving and managing Saba's marine resources and to ensure the continued quality of an extraordinary resource for the benefit and enjoyment of everyone. The Marine Park encircles the island of Saba from the high-water mark to a depth of 60 metres, including the seabed and overlying waters. A zoning plan divides the Marine Park into areas designated for various uses. A system of permanent mooring buoys facilitates diving and prevents anchoring which would otherwise destroy corals. One of the few self-sustaining marine parks anywhere in the world, the Marine Park raises revenue through visitor fees, souvenir sales, in addition to project funding, grants, donations and income from a regional trust fund run by the Dutch Caribbean Nature Alliance (MacRae, Wulf, & De Meyer, 2018).

Saba Bank National Park

Saba Bank National Park lies just 5 kilometers (3 miles) south west of the island of Saba but extends almost 70km from the Saba coastline. It covers an area of 268,000 hectares (662,000 acres) making it roughly the size of the Dutch part of the Waddenzee or about the same size as Luxembourg (2,679 km² / 850 mi²). The Saba Bank was created in 2010 and was recognized as a protected area of regional importance under the SPAW-protocol (Protocol Concerning Specially Protected Areas and Wildlife of the Wider Caribbean) in 2012. In the same year it was declared a National Park, making it the largest National Park in the Netherlands (DCNA, n.d.).

The Saba Bank is a flat-topped carbonate seamount rising 1,800 metres (5,905 feet) above the sea floor, crowned by a ring of growing coral reef along its fringes. It is the second largest submerged carbonate platform of its kind in the world (Church et al. 2004), and its rich biodiversity includes coral reefs, patch reefs, sand flats, as well as limestone pavements overgrown with uniquely diverse algal assemblages. It is entirely submerged and most of it lies at water depths of 20 to 50 meters (66 to 164 feet). It is thought that the southwestern part of the Bank contains the healthiest reefs.

Mount Scenery Nature Park.

Box 1 Mt Scenery Nature Park statement of significance

The Mount Scenery Nature Park includes the highest point within the Kingdom of the Netherlands (882m) and protects the natural wealth of over one quarter of the land of Saba. The Saba Sulphur Mine Property, Muriel Thissel Park (established 1999) and trails consist of 43 hectares of land form part of the Mount Scenery Nature Park. Habitats within the park include dry forest, unique Elfin forest. The system of hiking trails is of considerable historical, cultural and ecological value and include the oldest archaic Indian remains of the Caribbean (Plum Piece). The Park is a home or an important migratory stop over and breeding site for two IUCN Red List species, one CITES Appendix 1 species and 37 CITES Appendix 2 species as well as the endemic Saban Anole. The entire island is recognised as an Important Bird Area by BirdLife International. The Park and trails attract many local and international visitors every year and contribute significantly towards the local economy as well as employment for the island population (MacRae et al., 2018)..

Nature Park Boundaries

The Mount Scenery Nature Park includes the top of the Mount Scenery from the 550 m altitude line, running to the north coast of the island, along the eastern border of the site owned by the Saba Conservation Foundation (SCF), also known as Muriel Thissel Park and in the west of Troy Hill along the gut directly south of the Wells gut (Figure 3) (Saba, 2018).

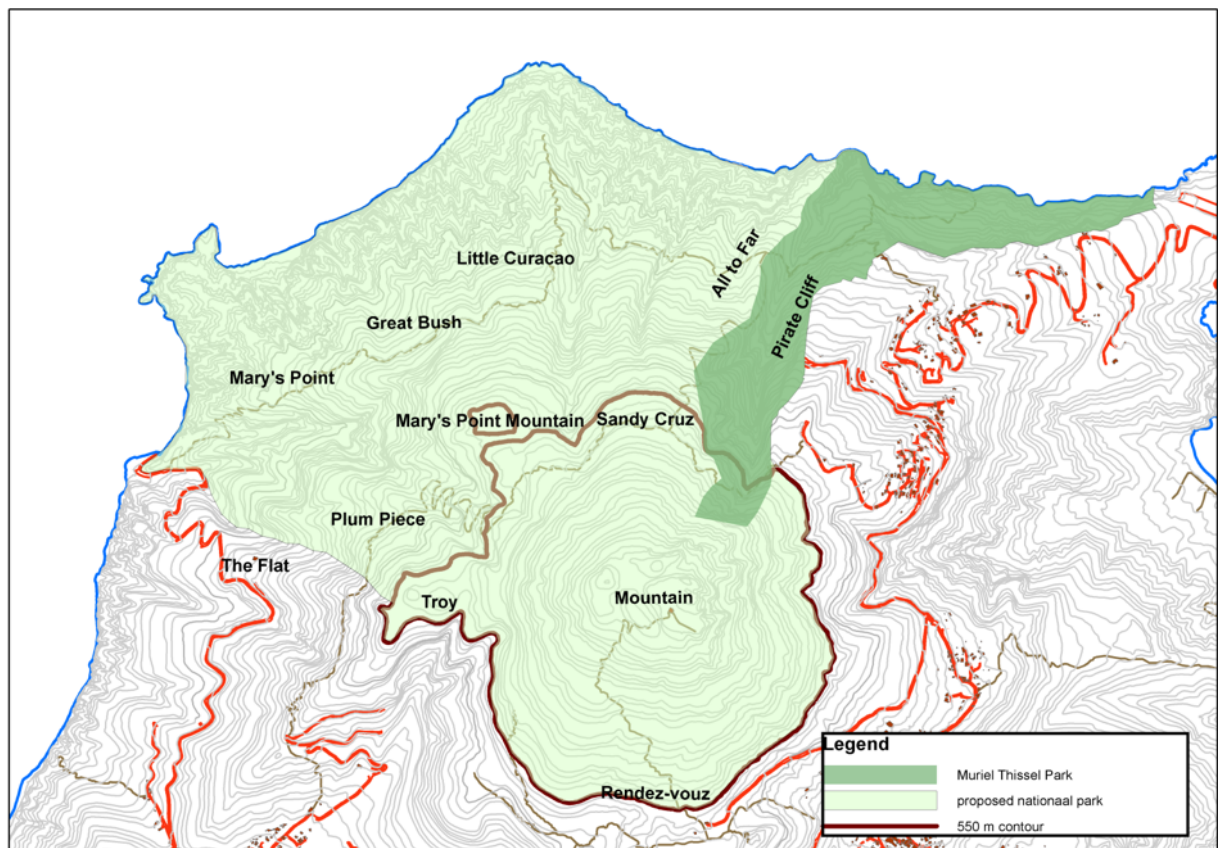


Figure 3 Boundaries of the Mt Scenery Nature Park

Extending from the summit of Mount Scenery to the shoreline Mount Scenery Nature Park connects directly with the protected waters of the Saba National Marine Park providing continuous protection from the top of the island to the 60m depth contour. This is exceptional and allows for complete 'ridge to reef' conservation and watershed management for the island.

Description

The Mount Scenery Nature Park covers 26% (3.4 square kilometres) of the island, consisting of dry tropical forest, tropical rainforest and cloud forest whose ecosystems offer a living environment for a variety of animal and plant species. Mount Scenery is covered with dense vegetation, including the unique cloud forest around the top with a wide variety of orchids, ferns and the rare mountain mahogany. Key animal species include birds such as the, Red Billed Tropicbird, Audubon's Shearwater, Bridled Quail Dove and Brown trembler as well as 7 (potentially 8) species of bat and the red bellied racer snake.

In addition to the rich biodiversity, the Nature Park also includes a number of exceptional archaeological sites, including a historic Saban settlement (Mary's Point or Palmetto Point) and the oldest archaic Indian remains of the Caribbean (Plum Piece).

The Muriel Thissel Park belonged to the McNish Sulphur Mining Company and the land was donated to Saba Conservation Foundation (SCF) in 1998, on the condition that it would forever remain wild and be managed as a National Park. The area covers 43 hectares (106 acres) and is located on the northern side of Saba. It consists of a deep gorge, which runs from an altitude of 820 metres (2,690 feet) on Mount Scenery down to the shoreline. The upper half of the gorge is known as Island Gut, the bottom is called Deep Gut. Two ridges form Island and Deep Gut; the eastern ridge is known as 'Pirate Cliff' and the western ridge 'All Too Far Ridge'. The area contains biologically diverse rainforest, montane forest and drought resistant habitats.

Saba has a network of trails that circle the island from the summit of Mount Scenery to the coast, which are maintained by the Saba Conservation Foundation with the support of the Island Government. These 27.05 kilometres (16.8 miles) of trails offer some of the best hiking in the Dutch Caribbean with views of neighbouring St Eustatius and other islands through pristine forest that clings to the slopes of the Mount Scenery (Saba, 2018).

Legal Protection

The draft "Island Ordinance for the establishment of the National Park Mt Scenery and protection of animal, plant species and artefacts" (AB 2018.1) was received on September 18th 2018 (Box 2).

Box 2 Summary of Articles of Ordinance AB 2018.1

<p>Articles of the Ordinance AB2018.1 include</p> <ol style="list-style-type: none"> 1. Boundaries of the nature park 2. Access to the nature park 3. Management of the Nature park 4. Prohibition and permits <p><i>Protection of species</i></p> <ol style="list-style-type: none"> 5. Designation of protected and vulnerable species 6. Prohibitions of protected species 7. Prohibitions of vulnerable species <p><i>Protection archeological heritage</i></p> <ol style="list-style-type: none"> 8. Prohibited excavation of artifacts <p><i>Permits and dispensation</i> Articles 9-14</p>

With this ordinance Saba aims to legally secure and preserve nature within the border of the Park for future generations, while protecting the island's special plants and animals. In doing so, access to the area for residents and tourists will remain assured and the small-scale use of the area, for example for artisanal agriculture, can be continued. Limited sustainable development of the area below the 550 Meter topographic contour line is also possible (Saba, 2018).

The Mount Scenery Nature Park was nominated as a SPAW Site in 2018 and is protected under the ordinance "Nature Conservation and protection BES". The legislation is presented in full in Appendix 1.

International recognition

There are several regional and international initiatives to recognise protected areas. These includes SPAW Protocol, World Heritage Site, National Park status and IUCN Green List amongst others. Achieving recognition recognises local conservation effort and adds tourist value to protected areas.

Birdlife International: Important bird areas

The IBA Programme of BirdLife International aims to identify, monitor and protect a global network of IBAs for the conservation of the world’s birds and other biodiversity. To be recognised, IBA sites have to meet certain criteria, based on the occurrence of key bird species that are vulnerable to global extinction or whose populations are otherwise irreplaceable (Box 3). Birds have been shown to be effective indicators of outstanding biodiversity in other animal groups and plants – especially when used to define a set of sites for conservation (Geelhoed et al., 2013). Although the IBA network is defined by its bird fauna, the conservation of these sites is intended ensure the survival of a correspondingly large number of other animals and plants.

Box 3 Extract from Important Bird Areas in the Caribbean (Collier & Brown, 2008)

Of the 87 species of bird recorded from Saba, just 26 breed, and 36 are regular Neotropical migratory birds (although Saba is too small to hold significant populations of these migrants). Eight (of the 38) Lesser Antilles EBA restricted-range birds occur on the island, although none of these is endemic to Saba. A ninth restricted-range species, the Antillean Euphonia *Euphonia musica* has not been recorded on the island since 1952 and is probably extirpated. The Bridled Quail-dove *Geotrygon mystacea* may also be heading for extinction on the island, having declined dramatically as a result of hurricane impacts and predation. It is for the breeding seabirds—Red-billed Tropicbird (*Phaethon aethereus*) and Audubon’s Shearwater (*Puffinus lherminieri*) —that Saba is most noted. *Puffinus lherminieri* is the national bird of Saba and is familiar to residents across the island, although predation from rats and cats could be significantly impacting the population (as it could be with the population of *Phaethon aethereus*).

Whilst an initial assessment by Dr Adam Brown in December 2014 using sound recordings has provided a first population estimate of 450 birds, assessing the population of the shearwater on the island is difficult due to the extent of breeding habitat, the lack of an obvious peak breeding season (birds are known to be present between at least December and May) and the nature of the terrain (e.g. steep cliffs with loose rock that are unsuitable for rope work). The use of monitoring technology, such as autonomous audio recorders, has provided data in the past.

The Saba coastline IBA (AN006), the island’s site priority for bird conservation, has been identified on the basis of nine key bird species in Table 1.

Table 1 IBA data for Saba

	Saba	Saba IBA
IBA NUMBER	1	AN006
Protection	65%	N
Area (hectares)	2000	2000
Number of bird species	87	
IBA Recognised species	9	9
Restricted range birds	8	7
Congregatory birds	9	1
<i>Audubon's Shearwater</i>		✓
<i>Scaly-breasted Thrasher</i>		✓
<i>Red-billed Tropicbird</i>		✓
<i>Bridled Quail-dove</i>		✓
<i>Purple-throated Carib</i>		✓
<i>Antillean Crested Hummingbird</i>		✓
<i>Green-throated Carib</i>		✓
<i>Lesser Antillean Bullfinch</i>		✓
<i>Caribbean Elaenia</i>		✓

Flagship species

Saba is home to a number of flagship species that are used to help raise awareness about the need for nature conservation and a source of local pride, connecting people to nature.

These species may not appear on the IUCN Red List or on the CITES Appendices, yet they are worthy of highlighting as they may be migratory, keystone, charismatic, have significant populations or be of cultural importance to the island. Such Flagship species were identified by park staff and other conservation practitioners in 2012 (Box 4) (MacRae et al., 2018).

Box 4 Flagship species: Saba

Flagship species		
Terrestrial species		Marine species
<i>Animals</i>	<i>Plants</i>	Red Hind
Red-billed Tropicbird	Mountain Mahogany	Moon Fish / Black Durgon
All Hummingbirds	Mountain Cabbage	Frogfish
American Kestrel	Mountain Fuchsia	Sea Horses
Audubon's Shearwater	West Indian Mahogany	Spiny Lobster
Bridled Quail-dove	Bay Rum tree	Nassau Grouper
Brown Trembler	Balsam Tree	Tiger Grouper
Jamaican Fruit Bat	July Tree	Green and Hawksbill Sea Turtles
Red-bellied Racer Snake	Trumpetwood	Hammerhead Shark
Saban Black Iguana	Tree ferns	Tiger Shark
Saban Anole lizard	Bromeliads	Silky Shark
Saba Least Gecko	Bladderwort	Blue Shark
Purple Land Crab	Jumbie Beans	Spotted Eagle Ray
Hermit Crab	Lobsterclaw	Dolphins
Black Witch moth	Black-eyed Susan	Humpback Whale
	Giant Elephant Ear	Sperm Whale
	Mosses	Elkhorn Coral
	Orchids (22 species)	

Habitats

Mount Scenery Nature Park encompasses a variety of habitats. The elevation, soils, wind conditions, slopes, water availability and sunlight work together to define the range of the habitats and where they are found. The plants living in these areas are often exceptionally well adapted to thrive in their specific habitat and are very sensitive to change.

In 2016, John De Freitas et al., produced a Landscape Ecological Vegetation map of Saba. This identified two main and nine different sub-landscape types that were distinguished based on geology, geomorphology and vegetation (Freitas Nijhoff, B.S.J et al., 2016) (Appendix 2).

The 2016 study found that 'large vegetation changes have taken place on the island since the previous survey in the 1960's'. These changes appear to be due to a) hurricane impacts; b) natural succession made possible due to diminished agricultural activity and c) invasive plants and plant pest species.

Deep ravines, that form refuges for vegetation including primary rainforest, are etched into the steep slopes. More gradual slopes were farmed (small scale subsistence farming plots) until around the 1950s, after which most plots were abandoned. The Mount Scenery Nature Park contains all of the vegetation zones found on Saba, from sea level to the summit of Mt Scenery; dry coastal shrub, dry evergreen forest, secondary rainforest (with primary rainforest in the ravines), tree-fern brake, palm brake and elfin woodland (Figure 4) (Hoetjes & Wulf, 2018).

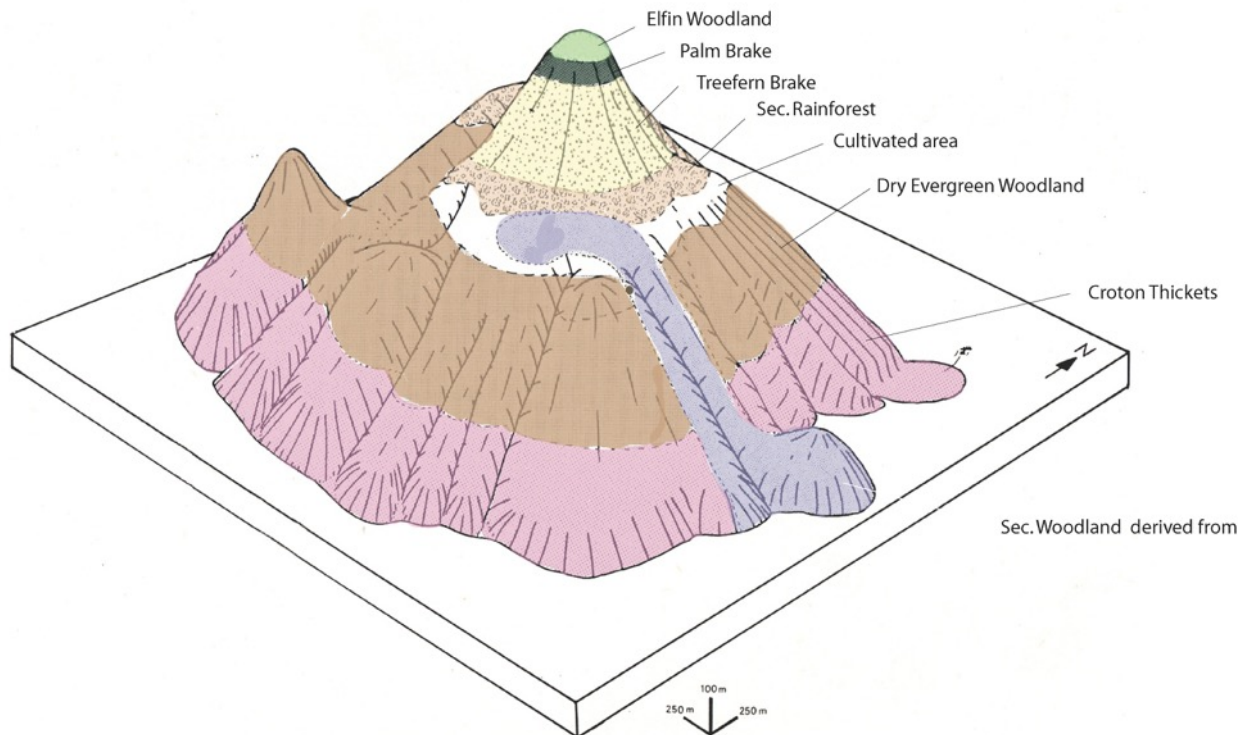


Figure 4 Schematic representation of the island of Saba with the various vegetation zones

Condition

The Cloud forest, or Elfin Woodland, is situated at the summit of Mount Scenery and is very vulnerable to hurricane damage. Hurricanes George (1998) and Lenny (1999) caused severe damage to the vegetation by stripping branches of leaves and uprooting trees including Mountain Mahogany. Hurricanes Irma and Maria in 2017 caused extensive and severe damage to the vegetation across the island with only isolated pockets being spared. In 2018 there were already signs of recovery, although full recovery will take decades (MacRae et al., 2018).

Vegetation on steeper slopes has had very little disruption from human activity since it is inaccessible. Goats only venture into the forest above 600 meters in times of drought. The tree Ferns largely avoid damage from grazing goats because of their height and shape.

In the past, small scale agriculture displaced the natural vegetation. Terraces and evidence of past agriculture including small banana plantations exist at Troy, Rendezvous, and Hell's Gate. Most areas where agriculture has been carried out are recovering and have semi-natural plant communities.

At lower altitudes goats have been responsible for overgrazing of the herb and shrub layers, removing the natural ground cover and increasing erosion potential.

Values

Saba's terrestrial habitats are biologically diverse and provide a hub for tourism with walkers and visitors enjoying the scenery, flora and fauna. The Mount Scenery Nature Park also provides an exceptional tool for education and research which can help to empower future generations. The habitats on Saba provide a home, food source and a breeding ground for numerous plants and animals. Parts of Saba are quite undisturbed, and have a value in the way they exist in people's imagination as wild places. The Nature Park can be expected to contain valuable information for agricultural and species of interest to pharmaceutical industries.

The Cloud forest is very important due to its regional rarity, the presence of unique species, and also because of its water capturing potential. The vegetation on the mid level slopes is recovering from past disturbance and has particular value due to the wealth of species, both of higher plants as well as mosses and liverworts.

The shrubland areas on lower slopes are essential in the control of erosion, and they also have scenic value, especially the parts between The Bottom and Well's Bay. Internationally, areas dry tropical forests have been seriously marginalised by human activity and have for instance practically disappeared in Central America and certain areas in South America (Rojer, 1997).

Aside from the biological values, the environments of Saba provide essential functions for the Island. The roots of trees and plants anchor soil in place and falling leaves and other organic matter add nutrients to the soil, maintaining the fertility of the soil in the future. The plants and soils of Mount Scenery absorb rainwater and act as a sponge, which helps to control the flow of water during heavy rainfall to the island's low-lying areas including Rendezvous and the villages of The Bottom, Windward Side and Hell's Gate (Augustinus, Mees, & Prins, 1985; Howard, 1974).

The roots systems help rain water to drain into the ground which ensures a supply of water for the islands inhabitants. Trees and other plants catch rainfall and stop it from running straight into the sea. This also prevents soil being eroded away and reduces the likelihood of flooding. Without plant cover on Mount Scenery water from rainstorms would run onto the flat land and into houses.

Soil entering the marine environment as land-based run off causes considerable damage. This includes smothering corals and other marine organisms, blocking light by making the water cloudy and carrying other chemicals and nutrients into the water. All of these result in the degeneration and potential death of coral reef organisms which are essential economically for tourism and fisheries. In many countries runoff from deforested hillsides has killed coral reefs and directly reduced the number of fish being caught in local fisheries. The plant and tree cover within the Mount Scenery Park is essential to Saba's fisheries and marine related tourism by keeping marine organisms alive.

Critical habitats

- The Black sweetwood tree (*Nectandra krugii*) (SPAW Annex I) occurs exclusively at high elevations within the Park.
- The Mount Scenery Nature Park contains significant breeding areas of the Red-billed tropic bird (*Phaethon aethereus*) and Audubon Shearwater (*Puffinus lherminieri*) (SPAW Annex II).
- The elfin forest and the ravine rainforest are essential habitat for seven restricted range (Lesser Antilles) bird species, including the Purple-throated carib (*Eulampis jugularis*) and the Brown trembler (*Cinlocerthia ruficauda pavidus*), SPAW Annex II).
- The endangered Red-bellied racer, (*Alsophis rufiventris*), (IUCN Red List endangered) is dependent on the dry evergreen forest and secondary rainforest on the slopes in the Mount Scenery Nature Park

Flora

Saba has 520 recorded species of flora including flowering plants, ferns, leaf mosses and liverworts (Stoffers, 1960). There are no known plant species endemic to Saba though 5% of Saba's floral species are endemic to the Lesser Antilles and the Virgin Islands (Table 2). In February 2006, Conservation International, together with the Saba Conservation Foundation, embarked on a project to survey the biodiversity of Saba. And in 2006 and 2007, The New York Botanical Garden participated in surveying the bryophytes, lichens, and vascular plants of the island (Mori, Buck, Gracie, & Tulig, 2007).

Table 2 Plants with a limited Geographical distribution on Saba

Name	Common name	Distribution	Status	Reference
<i>Mitracarpus polycladus</i>		Saba, Puerto Rico, Anegada BVI.	IUCN Red List Endangered	IUCN Red List 2018
<i>Bunchosia jamaicensis</i>		Saba and Jamaica	IUCN Red List Vulnerable	(Stoffers 1984)
<i>Eupatorium macranthum</i>		Saba, St. Eustatius, St. Kitts and Nevis		(Howard 1989b).
<i>Begonia retusa</i>		Saba, St. Eustatius, St. Kitts, St. Barth's and Montserrat		(Howard 1989a)
<i>Myrcia citrifolia</i> var. <i>imrayana</i>	Red Rodwood	Dutch Windward islands, St. Vincent, Grenada, Guadeloupe and Martinique		(Howard 1989a (part2)).
<i>Agave karatto</i>	Century plant	Saba, Antigua, Barbuda, St. Kitts, Montserrat and La Désirade		(Howard 1979).
<i>Charianthus purpureus</i> var. <i>crinitus</i>		Saba and St. Kitts		(Stoffers 1982).

Table 3 Other Red List plant species found on Saba (IUCN, 2018)

Name	Common name	Status
<i>Guaiacum officinale</i>	Commoner Lignum Vitae	IUCN Red List Endangered
<i>Nectandra krugii</i>	Bois Doux Avocat	IUCN Red List Endangered

Forty eight species of moss are known to exist on Saba (Wiersma, 1984) and 31 species of liverworts (Augustinus et al., 1985). Other plants in Saba that are of particular interest include the insect catching *Utricularia alpina* and the small, yellow *Voyeria aphylla* and ferns that grow in the moister conditions on the slopes of Mount Scenery (New York Botanical Garden, 2018).

Condition

Ferns thrive on Saba with 59 species found on the island, 40 of which favour higher elevations with moist surroundings. Many plants including the 10 species of Orchid found on Saba are collected from the wild illegally by enthusiasts and visitors (Rojer, 1997).

Value.

Saba is the northern most limit of the Mountain Cabbage (*Prestoea Montana*). Howard (1989) indicates the importance of the Mountain Mahogany (*Freziera undulata*) stands that grow on the top of Mount Scenery. Although Mountain Mahogany also grows on Jamaica and other islands of the Lesser Antilles the stands are not as well developed as they are on Saba.

The montane cloud forest (elfin forest) on top of Mount scenery is unique in the region because of its unusual elevation and characterized by the signature species, mountain mahogany (*Freziera undulata*) a species that is uncommon or absent in other cloud forests and has a limited distribution in the Lesser Antilles. Also, the cloud forest on Saba does not show the stunted or dwarfed growth form of trees that is

so characteristic of other cloud forests.

Fauna

The small size and isolation of Saba has led to relatively few species of fauna being found on the island. The only native mammals are seven species of bat. There is one endemic vertebrate; the Saban Anole (*Anolis sabanus*). A number of vertebrates are endemic to the Lesser Antilles and Virgin Islands, including several species of birds, reptiles and one amphibian. Very little is known about the invertebrate life on Saba, some of which, such as the scorpion, (*Oiclus purvesii sabae*) may be endemic.

Birds

There are 26 species of bird that breed on Saba including the endangered Bridled Quail-dove (*Geotrygon mystacea*), with a further 36 species using the island as a migratory stop over. Of the breeding populations 9 species or sub-species of forest dwelling bird are endemic to the Lesser Antilles and/or the Virgin Islands (Table 4). The shoreline is home to the Caribbean's largest breeding colony of Red-Billed Tropic Birds and Audubon Shearwater are known to frequent the island.

	Common name	Scientific name	Status
Land species	Purple-throated Carib	<i>Eulampis jugularis</i>	Endemic to the Lesser Antilles and/or the Virgin Islands
	Green-throated Carib	<i>Sericotes holosericeus holosericeus</i>	
	Scaly-breasted Thrasher	<i>Margarops fuscus</i>	
	Trembler	<i>Cinlocerthisa ruficauda pavida</i>	
	Lesser Antillean Bullfinch	<i>Loxigilla noctis coryi</i>	
	Zenaida Dove	<i>Zenaida aurita aurita</i>	
	Common Ground Dove	<i>Columbigalla passerina nigrirostris</i>	
	Antillean Crested Hummingbird	<i>Orthorhynchus cristatus exilios</i>	
Blue-crowned Euphonia	<i>Euphonia musica flavifrons</i> ²		
Sea birds	Audubon's Shearwater	<i>Phaeton aethereus mesonauta</i>	Breeding, Endangered
	Red-billed Tropicbirds	<i>Phaeton aethereus mesonauta</i>	Endangered
	White-tailed Tropicbirds	<i>Phaethon lepturus</i>	Breeding, Endangered
	Brown Booby	<i>Sula leucogaster</i>	Breeding, Endangered
	Magnificent Frigatebird	<i>Fregata magnificens</i>	Visitor, Endangered
	Brown Pelican	<i>Pelecanus occidentalis occidentalis</i>	Visitor, Endangered

Table 4 Endangered and rare bird species found on Saba (adapted from (Rojer, 1997))

Three birds of prey are resident on Saba: Red-tailed Hawk (*Buteo jamaicensis jamaicensis*) and The American Kestrel (*Falco sparverius caribaeum*), which is on the CITES Appendix II list and Peregrin Falcon. Saba's coastal areas including the shoreline of the Mount Scenery Nature Park and Green Island are home to a number of species of sea bird including 4 endangered species. The Brown Noddy (*Anous stolidus*), Sooty Tern (*Sterna fuscata fuscata*) and Bridled Tern (*Onychoprion anaethetus*) all breed on Green Island.

Reptiles and Amphibians

The only amphibian found on Saba is Johnstones Whistling Frog (*Eleutherodactylus johnstonei*). The 10 species of reptile found on Saba include five species of lizard and one species of tortoise (Powell & Henderson, 2012). The Red-bellied Racer snake (*Alsophis rufiventris*), is only found on Saba and St. Eustatius.

Other animals

A total of 86 species of invertebrate have been recorded for on Saba. These include the endangered Mountain Crab (*Gecarcinus ruricola*), 14 species of snail and 70 insect species, including 27 butterflies (Rojer, 1997).

² possibly extinct on Saba since it has not been spotted on the island since 1952

Condition

The Mountain Crab (*Gecarcinus ruricola*), Rednecked Pigeon (*Columba squamosa*), Bridled Quail Dove, Common Ground Dove, Audubon's Shearwater (*Puffinus lherminieri*), and the Saban Black Iguana (*Iguana iguana*) are all endangered with the main threats associated with hunting, predation by feral cats and egg gathering.

Overgrazing and land clearance are removing habitat and food for all of Saba's ground and tree dwelling animals, including the Saban Black Iguana. On St. Kitts the introduction of the Mongoose to control rats decimated the islands population of birds and small animals when the mongoose turned on prey that was easier to catch. The arrival of the mongoose on Saba is a constant threat to the health of the island's biodiversity.

The Saban Black Iguana is thought to be an endemic sub-species. Interbreeding with the non-native green iguana is known to be taking place and may result in dilution of the gene pool and a loss of this sub species.

The Red-Bellied Racer is already extinct on the islands of St. Kitts and Nevis, and only 10% of its original habitat remains on Saba and St Eustatius. The snake is listed on the IUCN's Red List as Vulnerable. The main threats facing the snake include loss of suitable habitat (as a result of goat overgrazing), being killed by humans, rats and feral cats. The possible introduction of the mongoose to the island would also pose a serious threat.

Sites of historical interest

There are several known archaeological sites within the Mount Scenery Nature Park. Most excavation work has taken place at Marys Point and at Plum Piece an Archaic-age Amerindian site (1,800BC – 500BC) located upslope from Mary's Point (Menno Hoogland and Corinne Hofman of Leiden University). There are other sites of interest in the Nature Park which have not yet been properly surveyed and there are likely to be other sites yet to be discovered.

Marys point

Archaeologically, Marys Point is no different to the other similar villages on Saba's periphery such as Middle Island, Hell's Gate, or Behind-the-Ridge.

Some Sabans claim that Marys Point is the "original" settlement on colonial Saba. However, there is no documentary evidence of this, and if there was an earlier settlement, it would have been located further downslope upon lands that have since collapsed due to the continually eroding cliffs that border the west of Mary's Point.

The village is also known local for being a "pirate's nest". Mary's Point is located directly above Wells Bay, which served as a drop-off point for ships captured by pirates during the early 19th century. Continual erosion of the steep cliffs around Marys Point threatened to destroy the village.

In the early 1900's the Governor of Curacao ordered that the village should be evacuated. By the early 20th century, poverty and poor hygiene were systemic problems for residents at Mary's Point. The Island Government of Saba was provided with funds to purchase land in The Bottom, and this was parcelled off and traded for land at Mary's Point in order to relocate all remaining residents in 1934.

During 2018 the trail to Mary's Point was upgraded and since August 2018 the site of the old village been accessible.

Wells Bay

Wells Bay has a colonial era well, for which it is named, and it formed part of an indigo plantation during the 18th century. There were a series of indigo vats present up to the early 1980's, which were probably destroyed during road construction.

Wells Bay was also a site for ship laundering by pirates during the early 19th century. Vessels would be left empty and at anchor, Saban carpenters would then erase evidence of the ship's original origins, and a merchant in St. Eustatius would then claim the ship as his own. Under the pretext that pirates had captured his ship and destroyed his ship papers, the merchant would request new documents from the Lt. Governor of Saba. Ships laundered in this fashion would be sent to St. Eustatius, and then brought to St. Thomas to be resold at auction.

Plum Piece

Plum Piece is one of very few known inland Archaic-age (1,800BC – 500BC) archaeological sites in the Caribbean. The site was occupied seasonally and used it as a base to collect crabs and birds. Trees were felled to make dugout canoes with axes and adzes made from conch shells. The site is remote, well preserved, and is not currently under threat from erosion or development.

Other sites

There are several other sites across the park that have not yet been properly surveyed. There is a ceramic-age (500BC – contact period) site on the lower portions of Great Point, but this is only known from a few ceramic sherds. There is a plastered structure higher up on Great Point that appears to date to the early colonial period. There are two sets of house foundations on the eastern end of the North Coast trail, which probably date to the 18th – 19th centuries. The local trail guide claims that there is also an Amerindian site upslope of the Sandy Cruz trail.

Tourism

Nature based tourism is the mainstay of the island economy. The tourism is dependent on the continued well-being of the natural environment for activities such as hiking and diving. To determine the tourism value of the Saba environment, an tourist exit survey was conducted in 2014, recording visitors' expenditure as well as their Willingness To Pay (WTP) for protection of the natural environment (TEEB, 2014).

The expenditure by tourists on Saba was estimated at approximately \$30 million per year and the value of the natural environment was estimated to be \$7.5 million. A value of, \$1.6 million was estimated for the Willingness To Pay of tourists for additional nature management (TEEB, 2014) .

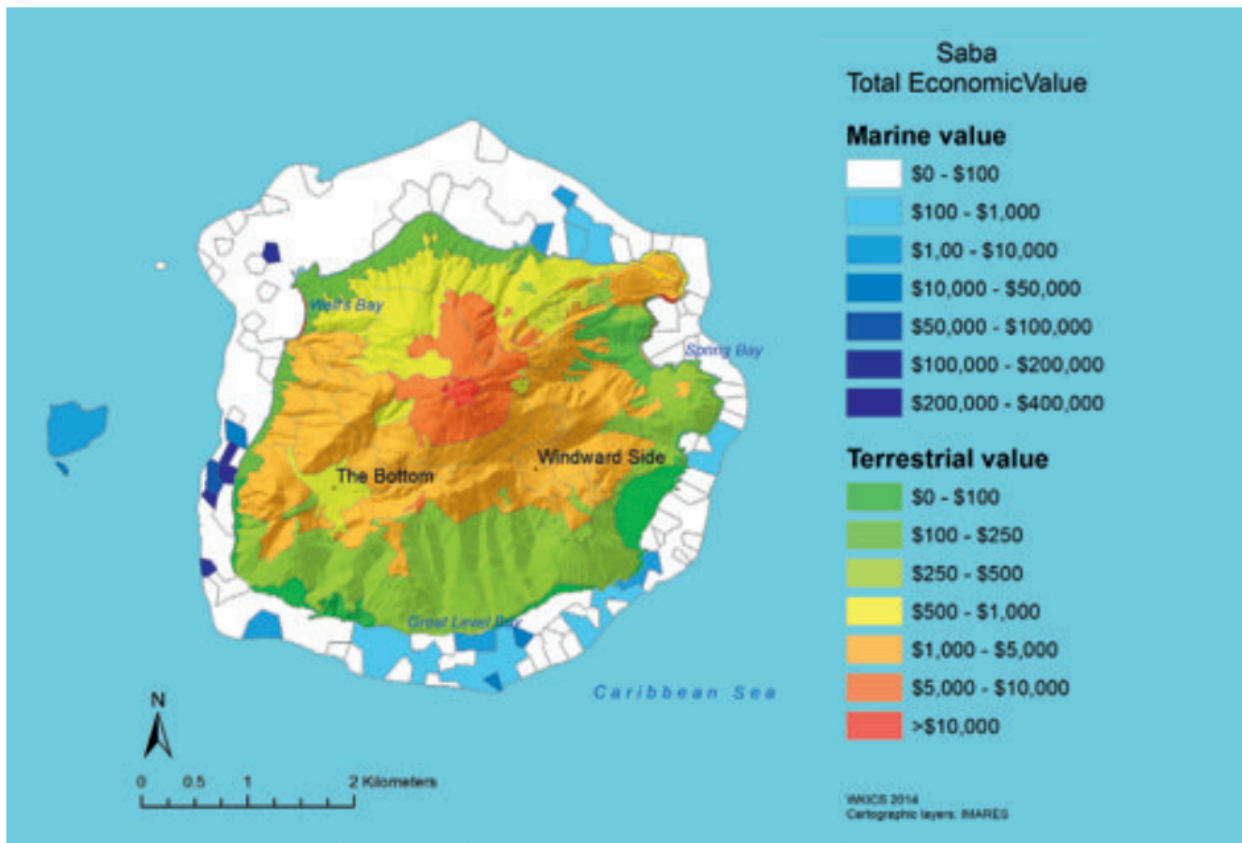


Figure 5 Economic values of the land on Saba (TEEB, 2014)

Tourists have also indicated that they would like to see archaeological heritage more actively managed on the island (van de Kerckhof et al., 2014).

Tourist numbers

Saba Conservation Foundation maintains a log of tourists using the protected areas on the island. In 2017 in the Marine Park there were 15,625 logged dives and 214 logged yachts. On land, 311 people took part in guided hikes and staff in the Trail Shop logged 240 hikers. The Mount Scenery Trail was the most popular trail with 212 persons logged as hiking the trail at the Saba Conservation Foundation Trail Shop. These figures do not include local hikers or hikers who do not register with the Trail Shop and these groups are likely to account for a significant number of users.

Part 2: Management environment

Mount Scenery Nature Park

Background and process

Recognising its responsibility to preserve the natural resources of the island, the Island Government of the Public Entity Saba under the leadership of Governor Johnson publicly announced in May 2016 its intention to establish a Nature Park in the northern part of the island.

The Government of Saba recognised that the proposed area harbours the richest biological diversity on Saba and includes an abundance of threatened and endemic species. They also noted that the area is mostly unused and much of it is inaccessible and that the establishment of a National Park would help to raise the profile of Saba as an eco-tourism destination and thereby valorize the biodiversity value of the park. They found that *“Mt Scenery is one of the most unique places in the Kingdom of the Netherlands, being its highest mountain, and deserves a special status.”*

The creation of the Mt. Scenery Nature Park is intended to:

- Protect the biodiversity whilst allowing ongoing traditional small-scale agriculture
- Improve access and safety of the trail system
- Restore, preserve and provide safe access to historical structures
- Promote small scale sustainable use in support of eco-tourism

In August 2018 the Government of Saba together with the Saba Conservation Foundation, the Saba Archaeological Centre and the Dutch Ministry of Agriculture and Fisheries held town hall meetings to inform the public of a renewed proposal to establish the Mt. Scenery Nature Park and to invite comment. The Government of Saba once again announced its intention to establish a Nature Park in the northern part of the Island in order to meet one of the sustainable development goals for Saba. Their position was that the northern part of the Island features an extensive network of hiking trails and the economy of Saba relies heavily on international nature-related tourism. The Executive Council stated its belief that Saba has the natural and cultural resources available to become a more attractive tourism destination and the establishment of a Nature Park would boost the tourism reliant economy.

During the town hall meetings the general public were able to voice their opinion and express any concerns. Land owners were reassured that the establishment of a park would not infringe on their property rights and that the establishment of a Nature Park on Mount Scenery had the potential to stimulate traditional agricultural use of the land and enhance non-vehicular access through upgraded walking trails to the northern part of the island.

The public on Saba were assured that the establishment of the Mount Scenery Nature Park would:

- Leave land owners' rights unchanged
- Not prevent any ongoing or traditional use of the land
- Not prevent access to the area
- Prevent visitors from causing damage by removing flora and fauna
- Prevent illegal export of endangered Saban species
- Protect important living areas of protected species
- Protect the integrity of the Mountain's buffering capacity
- Protect against erosion
- Protect the archaeological heritage of Saba
- Increase access to international and national funding

Designation

At an Island Council meeting on the 18th September 2018, the Executive Council of the Public Entity Saba approved the Island Ordinance for the establishment of the Mount Scenery Nature Park and protection of animal species, plant species, and artefacts (A.B 2018.003)

Boundaries

Mount Scenery Nature Park extends from the area around the top of Mt Scenery above the 550m contour eastwards along the eastern border of the property owned by the Saba Conservation Foundation, known as the Muriel Thissel Park to the waterline on the north coast of the island and in the west of Troy Hill along the deepest line of the area known as Island Gut, directly south of the Well's Gut to the waterline.

Legal and Policy Framework

The Mount Scenery Nature Park was established in fulfilment of a sustainable development goal for the island of Saba and conform various international obligations on the part of the Island Government of the Public Entity Saba such as:

- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Cartagena Convention)
- Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region (SPAW Protocol)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- Convention for the Protection of Archaeological Heritage of Europe (Malta Convention)

Of particular importance are the following International Conventions:

- ***Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region (SPAW Protocol) of the Cartagena Convention articles 4, 5 and 6***
- ***Convention for the Protection of Archaeological Heritage of Europe (Valletta or Malta Convention) articles 2, 3 and 4***

[Note: A full list of International Conventions and their relevance can be found in Appendix 1]

National legislation

International obligations and agreements are incorporated into the Nature Conservation Framework Act BES (*Wet grondslagen natuurbeschermer en bescherming BES*). This Act clearly stipulates the division of roles and responsibilities between the National Government and the island's governing bodies.

Other relevant National legislation effecting the islands of Bonaire, Saba and St Eustatius (BES islands) includes the Fisheries Act BES (*Visserijwet BES*), Maritime Management Act BES (*Wet maritiem beheer BES*) and Public Housing, Spatial Planning and Environmental Protection Act BES (*Wet VROM BES*).

The National Government bears the final responsibility for the protection of special areas and species as designated by the international treaties and conventions to which the Netherlands is signatory. This includes the SPAW protocol for the Caribbean.

Island legislation

Responsibility for the conservation and management of nature on the Dutch Caribbean islands lies primarily with the governing bodies of the islands.

In this capacity, on 18th September 2018, the Island Government of Saba passed the "*Island Ordinance for the establishment of the National Park Mount Scenery and protection of animal, plant species and artefacts*" (AB 2018.1) thereby creating the **Mount Scenery Nature Park**. In so doing the Government of Saba exercised its right to regulate the responsible use of nature and accessibility to archaeological heritage, to strengthen sustainable tourism whilst protecting endangered or special plants and animals, archaeological site and artefacts on the island

The Ordinance designates the park boundaries, addresses access, management, prohibitions and permits as well as the protection of species and artefacts.

The Mount Scenery Nature Park was established for the preservation, maintenance and restoration of special biological, ecological, educational, scientific, historical, cultural, recreational, archaeological, aesthetic and economic values and for the protection of biodiversity in accordance with the SPAW Protocol and Nature Conservation Act BES.

Box 5 Articles of Ordinance AB 2018.3 creating the Mount Scenery Nature Park

<p>Articles of the Ordinance AB2018.3 include</p> <ol style="list-style-type: none"> 1. Boundaries of the nature park 2. Access to the nature park 3. Management of the Nature park 4. Prohibition and permits <p><i>Protection of species</i></p> <ol style="list-style-type: none"> 5. Designation of protected and vulnerable species 6. Prohibitions of protected species 7. Prohibitions of vulnerable species <p><i>Protection archaeological heritage</i></p> <ol style="list-style-type: none"> 8. Prohibited excavation of artefacts <p><i>Permits and dispensation</i> Articles 9-14</p>
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Species described in Island legislation

Table 5 Protected species.

Name	Common name
<i>Freziera undulata</i>	Mountain Mahogany
<i>Iguana iguana</i>	Saba Black Iguana
<i>Geotrygon mystacea</i>	Bridled Quail Dove
<i>Phaethon aethereus</i>	Redbilled tropicbird
<i>Puffinus lherminieri</i>	Audubon's Shearwater
<i>Cinlocerthia ruficauda</i>	Brown Trembler
<i>Orthorhyncus cristatus, Eulampis jugularis, Eulampis holosericeus</i>	All hummingbirds
<i>Alsophis rufiventris</i>	Red-bellied racer snake
<i>Monophyllus plethodon, Ardops nichollsi, Tadarida brasiliensis, Molossus molossus, Brachyphylla cavernarum, Artibeus jamaicensis, Natalus stramineus</i>	All bat species

Table 6 Vulnerable species

Name	Common name
<i>Orchidaceae</i>	All Orchids
<i>Ophioglossaceae</i>	All Ferns
<i>Mahagoni swietenia</i>	West Indian Mahogany
<i>Anolis Sabanus</i>	Saban anole
<i>Sphaerodactylus sabanus</i>	Saba Dwarf Gecko
<i>Elaenia martinica</i>	Caribbean Elaenia
<i>Progne dominicensis</i>	Caribbean Martin
<i>Patagioenas squamosa</i>	Scaley Naped Pigeon
<i>Passerina cyanea</i>	Indigo Bunting
<i>Tiaris Bicolor</i>	Black-faced grassquit
<i>Vireo altiloquus</i>	Black-whiskered Vireo
<i>Mniotilta varia, Wilsonia citrina, Dendroica petechia</i>	All warblers
<i>Columbina passerina</i>	Common Ground Dove
<i>Allenia fusca</i>	Scaly Breasted Tresher

Management instruments

The Nature Policy Plan Caribbean Netherlands, 2013- 2017, developed by the Dutch Ministry of Agriculture, was presented to the Dutch Parliament in July 2013. Whilst it does not specifically address nature policy on the island of Saba it does provide a policy framework for the governing bodies of the Netherlands and the islands to ensure sound management and wise use of nature in the Caribbean Netherlands. The plan's objective is to ensure that nature on the islands is used in a sustainable manner such that the island's ecosystems and ecosystem services can be preserved. It is intended as a basis for sound decision making and embraces clear strategic objectives indicating areas of focus for the protection of nature.

The Island Government of Saba is required to draw up a Nature Policy Plan for the island as well as an Environmental Policy Plan and Global Zoning Plan. These management instruments on Saba have not yet been realised.

Management plans are required for all legally designated protected areas and species management plans are required where species conservation is not covered by an existing protected area.

Permits

Within Saba's protected areas, permits are required for research, collection and natural resource extraction. Tour operators and tour guides are also required to hold permits allowing them to operate within the protected areas. Permits can be obtained by submitting a signed and dated permit application and form alongside a copy of a current business license to the Island Government of Saba.

Guidelines

There are guidelines for the use of the Trails on Saba published in a leaflet 'The Nature of Saba' and distributed widely on island. The leaflet includes the following information for users:

Trail Manners

- Help to keep the trail clean. Please carry your own litter out to be properly disposed of in a trash container!
- Leave the trail cleaner than you found it by picking up any litter that other people have left behind!
- A picked flower soon dies. Please leave all plants and flowers for others to enjoy after you!
- Be considerate to others. Loud noises can disturb wildlife as well as other hikers wishing to enjoy the serenity of the area!
- All trails are on private land, and we are allowed to use the trails because of the landowners' generosity. Please respect the rights of the landowners and do not wander off the trails. Do not pick the fruits in the plantations!

User guidelines

- Hiking and other strenuous activities in extreme heat can be hazardous. Pace yourself and rest often!
- Carry plenty of drinking water with you. The heat of the tropical sun will force you to increase considerably your normal fluid intake!
- Protect yourself against sunburn or sunstroke by wearing a broad-brimmed hat and a high-strength sun-block lotion!
- Sturdy walking, running or tennis shoes are sufficient for the trails. However, hiking boots will provide an additional level of comfort and security on the more strenuous trails!
- As you gain elevation and enter the rainforest, the temperature may drop markedly. You may want to bring along a light jacket or anorak!
- Trails can frequently be slippery, especially in the rain forest. A hiking stick can provide an extra level of confidence and can be rented or purchased at the Trail Shop.

Governance and management bodies

The Island Government of the Public Entity Saba assigned the day to day management of the Mount Scenery Nature Park jointly to the Saba Conservation Foundation (SCF) and the Saba Archaeological Centre (SABARC) under a revolving 5 year management agreement. This management agreement has yet to be enacted. Under this management agreement:

- Saba Conservation Foundation is responsible for the management and conservation of nature and access within the Park.
- Saba Archaeological Centre is responsible for the conservation of areas and items of archaeological heritage

Additionally, the Mount Scenery Nature Park Management Team, consisting of representatives of the Island Government, Saba Conservation Foundation and Saba Archaeological Centre, will meet at least annually to discuss the overall management of the Mount Scenery Nature Park, to review progress and challenges towards achieving the management plan goals and objectives, to set an agenda for the coming year and to approve annual workplans and budgets.

Saba Conservation Foundation (SCF)



The Saba Conservation Foundation (SCF) is a non-governmental organisation established in 1987 with a mission to preserve and manage Saba's natural and cultural heritage. It is firmly committed to the belief that a stronger island economy will result from the sustainable use of Saba's rich and virtually unspoiled natural resources.

The SCF is the only organisation on Saba with a mandate for nature conservation and environmental protection. To achieve its goals, the SCF promotes the development and active management of parks and protected areas, manages a network of hiking trails, encourages the preservation of historic buildings, and promotes scientific research and education. The SCF manages the Saba National Marine Park and oversees the day to day operations of the Saba Bank National Park. It is also responsible for the Muriel Thissel Park (including the site of the former Sulphur Mine) and an extensive system of hiking trails. The SCF is responsible for meeting the major expense of nature management, and most funds are raised through user fees and private contributions.

The foundation is a non-profit, relying on fee-generated income, grants and government subsidies. Saba Conservation Foundation has its headquarters in Fort bay next to the harbour and has a Trail shop in the centre of Windward side near the trail head for Mt Scenery.

Box 6 Vision and Mission of Saba Conservation Foundation

Vision

The Saba Conservation Foundation (SCF, the Foundation) has a vision of an island and community where:

- nature is respected and protected;
- nature continues to play a central role in the life and the economy of the island, notably through tourism and fisheries;
- development is environmentally and economically sustainable, socially inclusive and culturally relevant;
- people can live peacefully and harmoniously, free of poverty and insecurity.

In this vision, Saba’s nature will be:

- respected, known and appreciated by all;
- well-preserved and protected, as much as possible, from internal and external sources of impact, including invasive species;
- used sustainably for tourism, recreation, fisheries, agriculture, animal husbandry and other forms of economic and social development.

In order to retain or regain its unique image of The Unspoiled Queen, Saba must therefore not only preserve its resources and promote sustainable economic development; it must also eliminate or minimise past and current negative impacts on the environment, and reverse some of the negative trends that currently threaten the delicate balance between nature conservation and human activities.

Mission

The mission of the Saba Conservation Foundation is:

- a. to preserve [and manage] the natural environment of Saba in general, both on land and in the water, and in particular of areas that are exceptionally scenic, host endemic species of plants and/or animals, or that have unique **ecological or** geological [, cultural or historical] values.
- b. to [exploit] **optimise** the economic, educational, recreational and scientific potential of such areas to the benefit of the people of Saba and that of foreign visitors, insofar **that** this is not in conflict with the [proper] objectives of conservation”.

Board

Saba Conservation Foundation has a permanent Board of up to nine Directors, who oversee the Saba National Marine Park, Saba Bank National Park and newly created Mount Scenery Nature Park as well as an extensive island wide system of hiking trails.

The Board is responsible for policy decision making, fiscal oversight as well as approving annual action plans and budgets. Elected Board members have additional responsibilities in accordance with their respective positions as Board Officers.

Table 7 The Board of Saba Conservation Foundation (2018)

Position	Name	Representing
Chair	Karen Hodge	General community
Secretary	Johanna van't Hof	Tourism operator
Vice Chair	Vacant	
Treasurer	Micheal Chammaa	Restaurant owner
Member	Carl Buncamper	NGO Sector
Member	Lynn Costenaro	Non-voting representative of the dive centers.
Member	Vacant	
Member	Vacant	
Member	Vacant	

The SCF Board leaves the day to day operations of its parks and hiking trails to the Parks Director and their full-time staff. The Executive Committee of the board is empowered to take urgent decisions between Board meeting. There were no formal Board meetings in 2017 or 2018, although members participated in an institutional review process lead by Yves Renard and attended 30 year celebrations and the launch of the SCF Strategic Plan.

Parks management

The Saba Conservation Foundation is responsible for the day to day management of:

- Saba National Marine Park: near shore marine ecosystems
- Saba Bank National Marine park: offshore marine ecosystems
- Mount Scenery Nature Park: (incorporating former Muriel Thissel Park) 3 square kilometres of tropical terrestrial ecosystems and hiking trails

The Dutch Ministry of Agriculture contributes towards the management of the Saba Bank National Park by providing a Saba Bank National Park Officer and a Science Coordinator who are responsible for the work within the Saba Bank National Marine Park.

The Government of Saba contributes towards the upkeep of the parks and the maintenance of the islands hiking trails through annual subsidies which go towards the cost of salaries, upkeep and maintenance. They pay for 6 trail wardens and a trail manager who fall under the administration of the Saba Conservation Foundation.

A Canadian volunteer program for the development and maintenance of the trails has worked with the Saba Conservation Foundation for more than twenty years and contributes annual visits by 20+ volunteers for up to a month who assist with trail maintenance and other field administration tasks.

The SCF Parks Manager has recently been sworn in as a special agent of police (BAVPOL) and, alongside the police and Koninklijke Marechaussee (KMar), is now able to enforce relevant island legislation.

Human resources

Throughout 2018 the Saba Conservation Foundation operated with up to 10 full time members of staff.

Table 8 Saba Conservation Foundation: current staffing

Position / Initial	Start year	Academic qualification
Manager	2009	Bachelors
Administrator	1997	School Leaver
Ranger	1995	School Leaver
Saba Bank Park Officer	2013	None
Saba Bank Science Officer	2016	Bachelors degree
Saba Bank National Park Officer & Science Coordinator	2017	Bachelors degree
Marine Park Ranger	2013	None
Education/Communications Officer	2015	Bachelors degree
Trail shop administrator weekends	2010	Higher School Leaver
Trail Shop Clerk	2015	Bachelors degree

Position	Descriptor
Management	Staff are concerned with the overall organizational management and coordination of the park activities in order to achieve defined objectives.
Administration	These are office-based positions focussed correspondence, filing, bookkeeping, accounting, organising invoices and payments. It also might include work planning and developing work schedules for staff, some basic project management, collecting and administering admission fees and the sale of souvenir items and similar.
Education	Education personnel provide systematic instruction inside and outside of the formal education (school) system
Outreach	Outreach personnel are concerned with the provision of outreach material including brochures, leaflets, signage and similar information about parks. They give presentations and frequently interact with stakeholders. In addition to delivering new information outreach staff also raise awareness about the park and need for protection.
Technical	Staff employed for their technical skills such as science coordination
Field	Positions where the majority of time is spent in the parks carry out maintenance and patrolling tasks as well as assisting users.

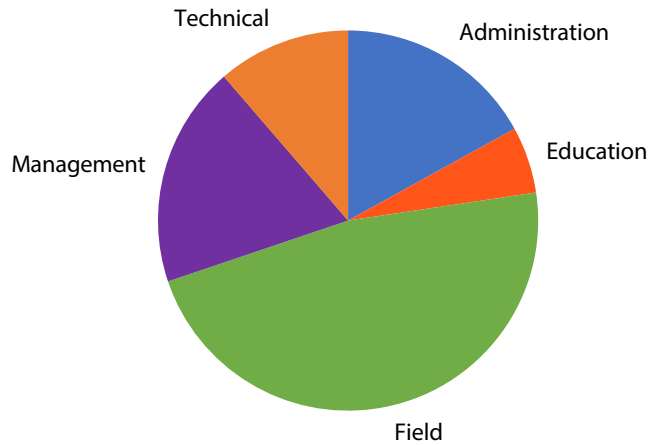


Figure 6 Division of staff full time positions (ftp) between employment positions (5.3 ftp)

SCF personnel divide their time between marine and terrestrial work, staff estimates of their time division are shown in the graphic below.

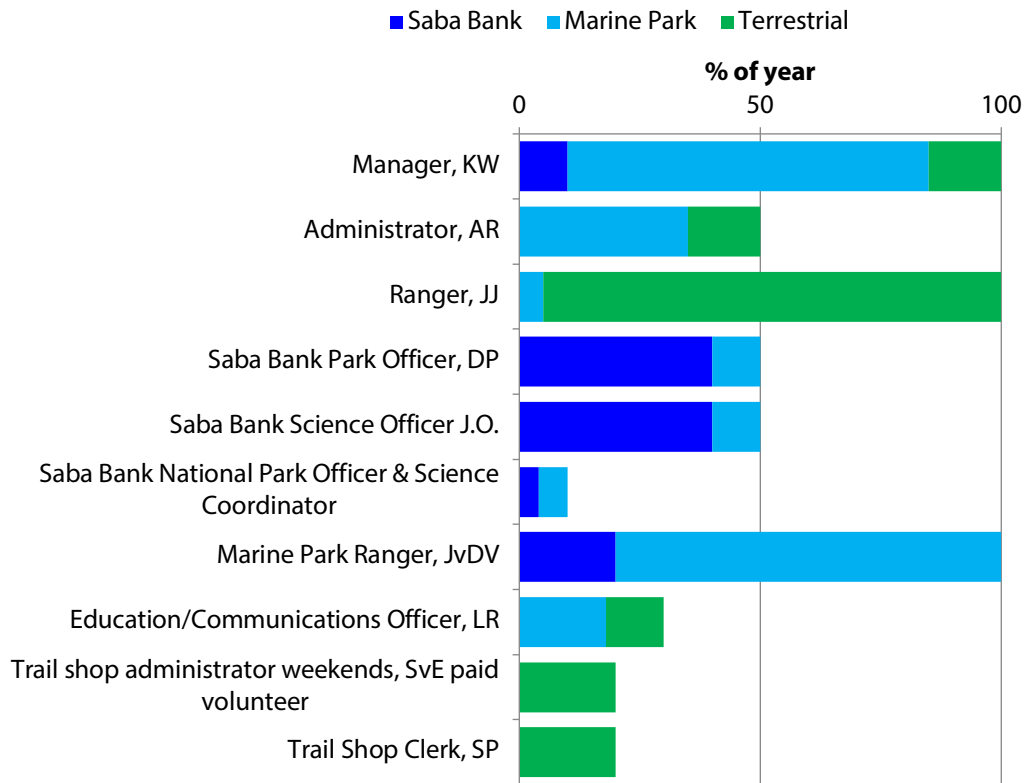


Figure 7 SCF staff time division between terrestrial and marine work.

Physical resources

Saba Conservation Foundation staff have access to a range of physical resources, some of which are shared between the Saba National Marine Park, The Saba Bank National Park and The Mt Scenery Nature Park.

Table 9 SCF physical resources

Sufficiency		Use	
Sufficient	■	All Parks	■
Insufficient	■	Marine and Terrestrial	■
Not available	■	Marine Park	■
		Terrestrial park	■
		Marine and Saba Bank	■

Buildings	Office(s)	■	■		
	Meeting room	■	■		
	Workshop	■	■		
	Boat shed				
	Ticket office / entrance	■	■		
	Research room	■	■		
	Lab room	■	■		
	Visitor centre	■	■		
	Museum				
	Public toilets				
	Accommodation				
	Transport	4*4 Truck	■	■	
4*4 Jeep (not open back)					
Van / 2WD Pick up		■	■		
Car					
Motorbike					
Boat: Hard Hull, in board engine					
Boat: Hard Hull, out board engine		■	■		
Rigid Inflatable, in board engine					
Rigid Inflatable, out board engine	■	■			
Comms.	Fax machine	■	■		
	Telephone (Land line)	■	■		
	Cell phones	■	■		
	Radios	■	■		
	VHF radio	■	■		
	Base station	■	■		
Infrastructure	Piers/docks				
	BBQ pits	■	■		
	Trails				
	Board walks				
	Car parks	■	■		
	Hides				
	Walls	■	■		
	Fences				
	Roads				
	Litter Bins	■	■		
	Picnic tables				
	Benches	■	■		
	Camping area				
	Information booths				
	Signboards	■	■		
	Marker stones				
	Trail markers	■	■		
	Plant markers				
	Other				
	Mooring	Private			
Public					
Specialised					
Yacht					
Fishing					
Electronic	Desk top Computer	■	■		
	Lap top Computer	■	■		
	Tablet				
	Camera	■	■		
	Video camera	■	■		
	Projector	■	■		
	Internet	■	■		
	GPS	■	■		
Scientific	Remote Operated Vehicle	■	■		
	Vessel Monitoring System	■	■		
	Drying oven	■	■		
	Microscopes				
	Fridge	■	■		
	Balance	■	■		
	Field glasses	■	■		
	CTD probe				
Dive	Other sensors e.g. HOBO				
	pH meter				
	Water quality test kit	■	■		
	Other field equipment	■	■		
	BC				
	Regulator(s)				
	Tank				
	Weights (sets)				
Wetsuits					
Other	UW Scooter				
	Mask	■	■		
	Fins	■	■		
	Snorkel	■	■		
	Maintenance equipment	■	■		
	Drill mooring equipment	■	■		
	Personal protective equipment	■	■		
	First Aid kit	■	■		
Oxygen kit	■	■			
Hyperbaric facility	■	■			

Table 8: SCF resources - detailed overview

Resources		How many/how much	Comments/description
Human resources	Permanent staff	4	Trail Manager, Trail Shop Associate, Communication/Education Officer, Administrator Yearly group of 20 volunteers for 2 weeks, trail cleaners work on contractual basis SABARC for archaeological work
	Volunteers	20	
	Trail Cleaners	6	
Physical resources	Equipment	Pick-up truck Chainsaws (3) Generator Demolition Jackhammer Electrical Hand Drill and Bits Powered Pruning Saw Hand Saw (2) Sawhorse Circular Saw Sledge Hammers (2) Rakes (4) Powered Weed Trimmers (2) Pruning shears (2) Anvil Loppers (4) Shovels (4) Pick Mattock (2) Machetes (10) Frame Carriers (2) Temperature/light gauges (5) Rain gauge Weather Station Wildlife Surveillance Cameras (7) Binoculars (4 pairs) Beekeeping Equipment Bat/bird nets (for monitoring) Plant presses Drying ovens (2) Microscope Desktop Computer Laptop Computer Printer POS System	Sulphur mine property owned by the Saba Conservation Foundation is part of park. Signage installed at all trails, Interpretive displays at 4 locations, rope railing installed at Mary's Point Trail, Pipe Railings installed on the upper part of the Mount Scenery Trail, 3 rest installed sheds on Mount Scenery Trail, rest benches on Sandy Cruz (2), Elfin Forest (1), Mount Scenery (1), Well's Bay (1) and Mary's Point (1) trails, weather station to be repaired
	Infrastructure	Trail shop, Trail signage, interpretive displays, rope and pipe railings, rest sheds, benches	

Financial resources

The Saba Conservation Foundation (SCF) is significantly underfunded. A recent study by the University of Wageningen indicates that the Saba Conservation Foundation has less than half of the income needed to adequately manage the parks in its care. This does not take into account the additional financial burden in 2018 of the Mount Scenery Nature Park.

The figures below are estimates based on SCF Financial Statements for the years 2015 and 2016. SCF's operating costs total approximately US\$ 530,000 per annum with staff costs accounting for around half of their annual expenditure (see below).

SCF has been receiving a subsidy from the Dutch Ministry of Agriculture of US\$ 150,000 per annum. Funds are earmarked to defray the cost of management of the Saba Bank National Marine Park. The Island Government of Saba provides an annual subsidy of approximately US\$ 88,000. For the past three years Wereld Natuur Fonds has subsidized one ranger staff position (US\$ 25,000/annum).

SCF generates income through user fees, specifically the sale of admission to divers (\$3.00 per diver/dive) as well as voluntary fees for visitors using the islands extensive system of hiking trail (US\$ 1.00/day), and yacht fees for the use of yacht moorings. SCF also charges visiting cruise vessels portage for ferrying their passengers ashore, sell merchandize and receives up to US\$ 50,000 per year in donations.

Figure 8 SCF income and expenditure (figures are approximate based on 2016/2015 Financial Statement)

Income		US\$	US\$
	Dutch Ministry of Agriculture subsidy	150,000	
	Saba Government subsidy	88,000	
	Grants	60,000	
	Dive fee	55,000	
	Nature fee	19,000	
	Yacht fee	7,500	
	Merchandise (sale of souvenir items)	15,000	
	Donations	45,000	
	Other	45,000	
Expenditure	Operational costs		
	Salaries		250,000
	Operational costs		178,000
	Administration		85,000
	Depreciation		25,000
Total		484,500	538,000

These figures do not include revenues generated by the Conservation Trust Fund set up and managed by the Dutch Caribbean Nature Alliance on behalf of the Dutch Caribbean parks. This Trust Fund currently provides SCF with an additional \$69,600 in non-earmarked funding annually until 2019.

Saba Archaeological Centre (SABARC)

SABARC

SABA ARCHAEOLOGICAL CENTER

Registered Under Saba & St. Eustatius Chamber of Commerce #1024



The Saba Archaeological Center (SABARC) was founded in 2012 by Dr. Jay Haviser and Dr. Ryan Espersen. SABARC is a non-profit organization based upon the island of Saba dedicated to preserving and promoting Saba's cultural heritage through archaeological research and outreach initiatives. SABARC actively seeks to involve island youth in aspects of archaeological research, which is carried out weekly on Saturday afternoons, and more often when projects and school scheduling allow. This provides hands-on exposure and experience in the sciences, social sciences, and humanities, and allows Sabans to participate in the discovery of their own history. SABARC staff also conduct Malta-compliant small-scale archaeological mitigation projects when necessary and promote Saba's history and cultural heritage. Through an active online presence and public presentations, SABARC makes sure the lives of Saba's ancestors are not forgotten.

Board

The Saba Archaeological Centre is governed by a Board of directors which includes:

The Board is responsible for policy decision making, fiscal oversight as well as approving annual action plans and budgets.

Management

SABARC is responsible for the management of archaeological artefacts on the island.

Human resources

Dr. Ryan Esperson has been Director of Sabarc since 2015. He is an award winning, community-oriented, and results-driven historical archaeologist who seeks to involve descendant communities in the discovery of their own history through archaeology. His research focuses thematically upon maritime archaeology and historical archaeology of the Caribbean, extending from the pre-Columbian to the post-colonial periods with a particular interest in slavery, poverty, power, and ideology, and how these are implicated in peoples' conceptions of landscapes and materials. His research has been published in several major archaeological journals including *Antiquity*, *Archaeometry*, *Historical Archaeology*, the *New West Indian Guide*, and the *International Journal of Historical Archaeology*.

Finances

Whilst the National Government is ultimately responsible for many aspects of nature conservation and management and provides some funding for the management of the Saba National Marine Park, it is the Island Government of the Public Entity Saba that has an obligation to provide the necessary legislation and annual subsidies to the SCF and SABARC as non-governmental, no profit organisations to support them in their work.

Funding situation

In December 2013 the Dutch Ministry of Economic Affairs and Wereld Natuur Fonds (WNF) funded a study into "The Financial Sustainability of Nature Parks in the Dutch Caribbean". This study was carried out in 2014 by conservation finance expert, Dr. Barry Spergel and aimed to provide a roadmap for the sustainable financing of terrestrial and marine protected areas in the Dutch Caribbean as well as recommendations for decision makers and others. The project goals were to:

- Assess the financial requirements for park management organisations
- Provide a gap analysis of financial requirements vs actual income
- Evaluate existing and potential new sources of funding
- Include an update on the status of the Trust Fund

The Dutch Ministry of Economic Affairs also contracted the University of Wageningen (then IMARES) to ascertain the 'funding gap' or difference between the actual income of park management organisations on Bonaire, Saba and St Eustatius and the amount of funding required for them to be able to meet basic management standards.

According to these studies Saba Conservation Foundation (SCF) is currently being run with approximately 50% of the funding actually required to fulfil their mandate. The total funding gap for SCF is estimated at between US\$ 740,000 and 840,000 per annum.

Suggestions in that report for additional sources of funding for conservation management include:

- Structural subsidies from the National Government
- Increased subsidies from the Saba Island Government

Nature Funds: project funding

Since October 2013 the Island Government of the Public Entity Saba has received project funding from the Dutch Government under their "Nature Fund" ("*Natuurgelden*") initiative to address the backlog of unmet nature conservation needs on the island.

Projects for which the Island Government has received approval include:

- Horticulture project
- Hiking trails
- Tent reef protection
- Goat buy-back project
- Yacht mooring project
- Crispeen trail project
- Saba National Park

Relevant to the Mount Scenery Nature Park, the Island Government of Saba received US\$ 269,498 to cover start-up cost for the establishment of the Park, which included an ambitious and comprehensive plan to improve the trail to Mary's Point, create a trail to Hells Gate, create a trail to The Bottom, build support amongst land owners for the park, train two trainee park rangers, organise an archaeological excavation of the Amerindian site at Mary Point, create trail information on the web with new signage and updated maps.

EU BEST funding: project funding

The Island Government of the Public Entity Saba received grant funding totalling Euro 98,807.91 from the EU BEST initiative to prepare legislation and a management plan for the establishment of the Mount Scenery Nature Park as well as to upgrade access to Mary's Point and safeguard the archaeological artefacts at that site, with the additional provision of tourism information and signage.

Conservation Trust Fund revenues

From 2017 the Conservation Trust Fund established and capitalized by the Dutch Caribbean Nature Alliance (DCNA) on behalf of the parks in the Dutch Caribbean began disbursing revenues from the fund in partial fulfilment of its original mandate to cover basic management costs for one land and one marine park on each island. The Trust Fund is an Endowment fund and will remain so for the foreseeable future. During the period 2017 – 2019 the Board of DCNA has approved an annual disbursement to the parks of US\$ 400,000 from the Trust Fund revenues which will be distributed according to the original Trust Fund capitalization formula. This provides the Saba Conservation Foundation with an additional income of US\$ 69,600 per year in non-earmarked funding.

The future for parks in the Dutch Caribbean remains bleak as long as the Trust Fund is not fully capitalized and no other sources of structural income have been secured. The immediate challenge is to ensure that the existing funding gap is met such that all parks are able to cover their basic management costs either through self-generated income, subsidies from their government or from other funding sources.

User fees

Under Island Ordinance, the Saba Conservation Foundation is able to collect admission fees from visiting divers (current US\$ 3.00/dive) and from visiting yachts which make use of the system of yacht moorings. There is a voluntary nature fee of US\$ 1.00 per day. SCF charges fees for service for visiting cruise boats to ferry their passengers ashore.

According to a recent ecosystem services study conducted by Wolffs Company (TEEB, 2014)), tourists visiting Saba have a high willingness to pay (WTP) for additional environmental protection on the island. With a discrepancy of \$1.6 million per year, this suggests that the current user fees for visitors to Saba could be increased without any negative effect on the number of tourists visiting the island. This finding is especially relevant for the newly established Mt Scenery Nature Park where no entrance fee system is currently in place. Although voluntary donations are asked for the maintenance of hiking trails on the island, no obligatory fee system is in place.

The Tourism Value of Nature on Saba.

'van de Kerkhof, S., Schep, S., Beukering, van, P., & Brander, L. (2014).

The total economic value (TEV) of the ecosystem services provided by the marine and terrestrial ecosystems of Saba is estimated at **\$29 million per year**. With the current pressure on Saba's ecosystem services, the TEV of the natural environment on Saba, will decrease from \$29 million today to around \$22 million in 30 years. After extensively analyzing different development scenarios for the value of future ecosystem services, one result prevails: Unsustainable short-term gains lead to long-term losses for the economy of Saba. In other words, economic progress on Saba is certainly feasible, yet excessive development will ruin the fundament of the Saban economy which is tourism. Furthermore, increased support of nature conservation proves to be a profitable investment.

The total revenue by the tourism industry of Saba is estimated to be almost 6 million USD per year. The results from the survey demonstrate that tourists are willing to pay an additional amount of 1.6 million USD for extra nature conservation efforts on the island.

Future funding opportunities

In collaboration with Wereld Natuur Fonds (WNF) and the Wolfs Company, SCF intends to acquire advice and technical support on the implementation of sustainable financing mechanisms for nature conservation for the Mt Scenery Nature Park. This exercise will be carried out early on in the implementation of this strategic plan and will provide the SCF with an assessment of its financial needs.

In the meantime SCF remains guided by the figures provided in the report on “The Financial Sustainability of Nature Parks in the Dutch Caribbean” authored by Barry Spergel (revised 2015).

SCF's goal is to diversify its sources of funding as much as possible, whilst remaining independent from political and economic pressures. Dependency on the tourism sector may cause a conflict of interests: more visitors may mean more income - but that might not be consistent with the mission and goals. Furthermore, fundraising efforts should support the core tasks of the SCF and should not become an end unto themselves.

Potential sources of additional financing include:

- Structural funding from the Dutch Government;
- Annual core subsidy and project-based subventions (e.g. for mooring refurbishment) from Island Government;
- DCNA Trust Fund annual contributions;
- Programmatic support from DCNA (e.g. staff exchanges, advocacy, etc.) and technical assistance provided by the DCNA;
- Project funding including grant proposals with overhead costs covered as much as possible;
- Fees for service / cost recovery (e.g. for supporting government responsibilities, special missions, emergency standby and assistance):
- Fees for supervision and logistical support of/for visiting researchers;
- Trail and bird-watching guiding fees
- User fees (considering options for online fee payment when possible):
 - a nature fee system that is effectively collected and assists with trail management and resource conservation – review the nature fee system
 - voluntary payment by temporary residents (e.g. medical students)
 - dive fee system – based on dives
 - yacht fee – needs to be revised and simplified, consistent with what is practised elsewhere in the region
- Donations, tax-free donations, 501(c)(3) and equivalent status in the Netherlands, directly or in partnership with other organisations;
- Sales and concessions, including the option to rent out the Trail Shop, and the continued sale of items such T-Shirts and publications (e.g. hiking/marine park guides, maps, postcards/posters of endangered species, etc.).

Stakeholders

Effective stakeholder relationships are essential for any well managed protected area and identifying stakeholders is an import first step towards building sound and productive relationships with both stakeholder as partners and stakeholder as target groups.

The maturity of the stakeholder relationship can be judged by the level of interaction between the park staff and the stakeholders. This includes the number of meetings with the stakeholders and the nature of the information exchanges.

Saba Conservation Foundation currently works with 40+ stakeholders on issues relating to the park management.

Table 10 SCF: General stakeholders

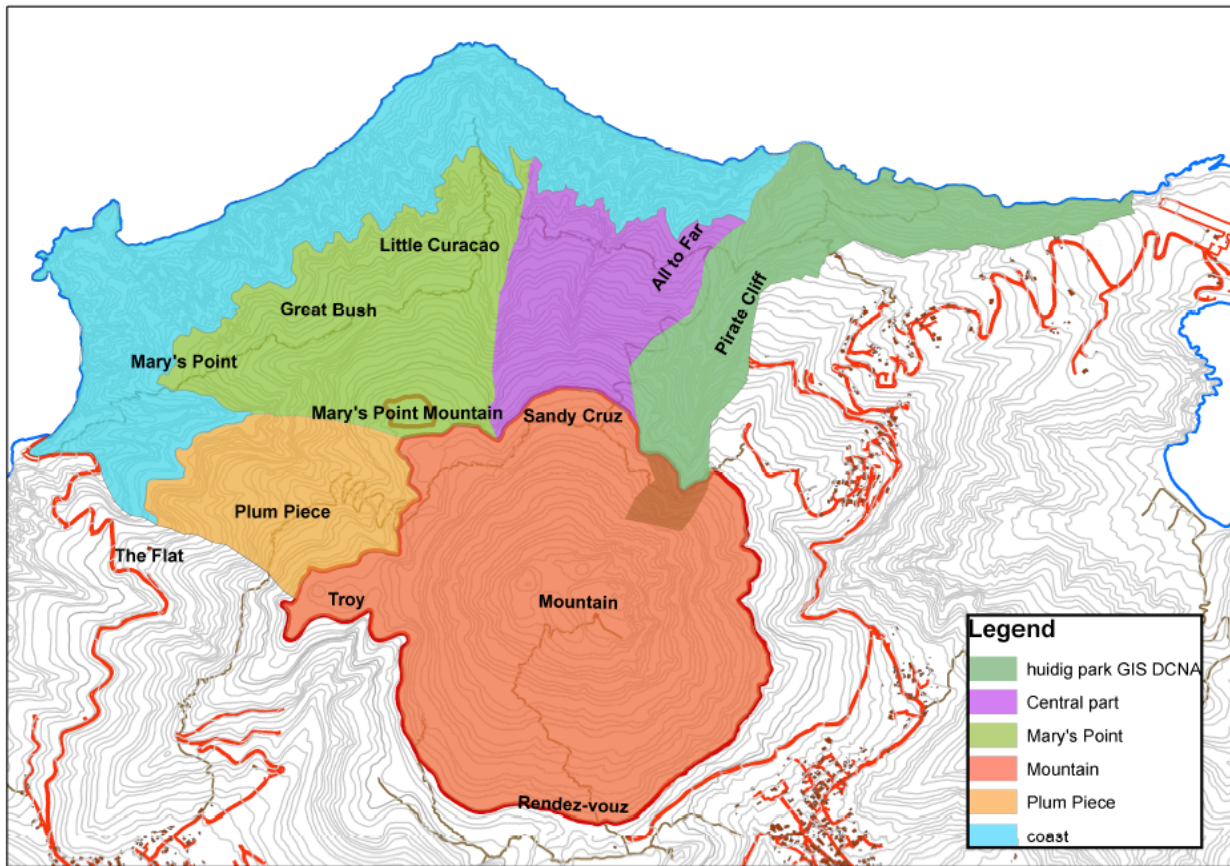
Stakeholders	Features of partnership
<i>Within the Island Government</i>	
Island Government of the Public Entity Saba	Governed by the Service Level Agreement, it gives the SCF its formal mandate, provides financial support, allows SCF to perform conservation, management and development functions on behalf of the Island Entity
<i>Local</i>	
Agriculture/Vector Control Unit	Management/control of invasive species, preservation of monumental flora, tree planting/ cutting advice
Customs	Prevention of entry of invasive species
Saba Tourist Bureau	Development and promotion of sustainable eco-tourism
Harbour Office	Boat traffic control in territorial waters
Private sector in tourism (dive operators, hotels, restaurants, others)	Fundraising/programme support, joint environmental campaigns, educational projects for schoolchildren and for visitors, orientation of visitors
Child Focus	After school programmes and summer school activities
Schools	Education campaigns, island/coastal clean-ups
Saba School of Medicine (SUSOM)	Volunteer services, financial support of activities
<i>Regional</i>	
Dutch Caribbean Nature Alliance	Main mechanism for collaboration with other organisations and protected areas in the Dutch Caribbean; source of support for capacity-building; financing through the Trust Fund; coordinator and manager of the Caribbean Biodiversity Database
Dutch Caribbean Parks	Partners in programme and project development and implementation, information exchange
<i>Netherlands</i>	
Committee for the Management of Marine Biodiversity and Fisheries in the Dutch Caribbean EEZ (EEZ Committee)	Governed by the Agreement between the State of the Netherlands and SCF for the management of the Saba Bank, it mandates the SCF to establish the Saba Bank Management Unit that implements the Saba Bank Management Plan, provides funding to the SCF for the implementation of the Agreement
Rijkswaterstaat	Disaster management, nearshore management
Wageningen University	Main partner in marine research, it provides expertise and technical support, SCF and supervises hosts students / interns
IUCN Netherlands	Capacity building, project development and financing
WWF Netherlands	Capacity building, project development on common goals, and financing
Prins Bernard Cultuur Fonds	Capacity building, project development and financing
Samenwerkende Fondsen	Capacity building, project development and financing
Nationaal Rampenfonds	Natural Emergency Relief funding and support
Vogelbescherming Netherlands (Birdlife Netherlands)	IBAs, endangered bird species, migratory birds
<i>Caribbean regional</i>	
UNEP CAR/RCU and CAR/SPAW	Capacity building, regional networking and coral reef monitoring (GCRMN), species protection
<i>International</i>	
Bruce Trail Canada	Trail construction/training and maintenance
Broadreach US	Volunteer services

Mount Scenery land owners

The Saba Conservation Foundation owns the Muriel Thissel Park which forms the eastern most boundary of the Mt Scenery Nature Park. Aside from this strip of land from the 550m contour to the shoreline, most of the remaining land within the Mt Scenery Nature Park is privately owned but has not been actively used for approximately 80 years. In many cases no clear ownership titles exist and most lands are undivided estates. These are not expected to be divided in the near future. By island ordinance the land above 550m on Mt Scenery may not be developed.

The Island Government of the Public Entity Saba has worked extensively to identify all owners of the parcels of land within the boundaries of the Mt Scenery National Park. Information on land ownership is presented below.

Figure 9 Information on landownership (Source: EcoVision report 2016)



Sub-area	Summary	Detail
Muriel Thissel Park	Owned by SCF	
Central	No deeds found	The majority of the land is suitable for grazing with major limitations and not suitable for cultivation. Eight deeds were found. In these 8 deeds many references are made to other properties in this sub-.area. However, of these referenced properties, no deeds were found.
Marys point	Seven government owned deeds	This area also comprises Mary's Point Mountain and The Great Bush/Little Cura.ao. As described in Chapter 2, some of the lands were farmable lands. Seven deeds were found that indicate that the Government is the most important property owner, if not the only property owner.
Plum Piece	Two deeds, one historical, one current (land used for agriculture).	Only one old deed was found in this subarea (Plum Piece, deed from 1865, unspecified boundaries, see Annex 5). One private user/owner is still active in agriculture in Plum Piece (see section 5.5). Small parts of this subarea are arable lands, suitable for cultivation of fruits, which was not indicated on older maps such as the Land capability map of Saba.
Coast	No deeds	This area is defined as the lands north of the 150 meters contour. The area is not suitable for agriculture (only grazing with major limitations, see chapter 2), steep slopes, with many cliffs and sparsely vegetated. There is a permanent risk for landslides. In this sub-.area no deeds were found. None of the deeds found (except for the properties of the Sulphur Mine) described boundaries extending to the sea, either.
Mountain (550m +)	Thirty deeds (legislation in place to prevent development above 550m)	Thirty deeds were found in this sub-area, with many references to other properties. The majority of the land is suitable for wildlife and recreation, some parts are suitable for cultivation and/or pastry. A communication tower is located in this area.

Box 7 Key notes from work with stakeholders

Land ownership and development

- Every community member has the opportunity to be actively involved in the planning process of the park and overall there has been strong support from the community.
- The park land on the north coast is considered “waste land” of no value and only the south part of Mount Scenery has potential for development, but this land is protected by the Island Ordinance restricting development above 550 meters.
- Much of the representative, critical habitats are owned by either the government (cloud forest) or the SCF (Muriel Thissel Park).
- Small scale agriculture takes place within the park; Cedric Hassell (banana farm on the Sandy Cruz trail), Benny Johnson (tannia plantation on the Buds Mountain Trail) and the rastafarian Iba (plantation on the Mount Scenery Trail, bordering the park).

Working with government

- SCF is currently working with the Island Government on;
 - visitor management,
 - permitting (all proposals are reviewed by the SCF in an advisory capacity to the Island Government),
 - interacting with regulatory agencies,
 - EIAs (e.g. Well's Bay cliff capping project) and other issues.

Tourism

- With regards to visitor management, transportation to the island by air and sea ferry is very limited and in itself pose a restriction on how many visitors the island can receive.
- Small cruise ship tourism is seeing the fastest growth, with hikes on Saba being amongst the most popular excursions offered. All hikes are guided by the SCF and there is a maximum amount of persons allowed per guide / hike. There are presently between 9,000 and 10,000 hikers a year within the park.
- The travel infrastructure and marketing of tourism on Saba may eventually attract double the number of hiking tourists to the island. This would be 20,000 individuals, an average of 55 hikers a day on the 27.05 kilometres (16.8 miles) of trails.
- The parks tourism assets are the historical trails which are public. Visitors are not permitted to venture off the established paths, keeping conflicts with inholdings minimal.

Threats and issues

Threats are any event or activity external to the park which directly degrades or causes an undesirable change to the abundance, distribution, composition or condition of the biodiversity within the park. Threats are caused or aggravated by human activity. Management 'pressures' such as finance, governance, human resources and administration are not included. Examples of threats include poaching, overgrazing, unregulated development and road construction.

Climate change

Aside from the potentially catastrophic damage caused by extreme weather events and particularly the increasing frequency and intensity of hurricane impacts on the island, the main concern emerging from the threat of climate change is the loss of the cloud cover over the forest at the top of Mt Scenery. Cloud cover is thought to be a key determinant of the presence of cloud forest on the summit of Mt Scenery and is in large part what maintains the forest as a unique habitat. Global warming may have an impact on the frequency of cloud cover. Loss of the cloud forest would have a strong negative impact on the retention of water downhill and across the island in general and therefore availability of water for the human population and agriculture.

Overview of threats

The Management Success project, funded by the Dutch Caribbean Nature Alliance, analysis of threats to protected areas uses a threat classification scheme based on the IUCN Red List descriptors and a rapid assessment protocol developed by WWF to rank threats on a log scale based on their extent, duration and intensity. The results for Saba's terrestrial ecosystems is shown below. (see Figure 4).

Invasive species

Feral cats and rodents, (rats and mice) are a threat to nesting birds and small animals. Free roaming goats are ubiquitous and selectively overgraze forested areas keeping regrowth in check and causing increased rates of erosion.

Although not a problem at this time, monkeys, civets, racoons and mongoose present threats to nature on neighbouring islands and need to be considered in management and future risk planning.

A number of bird, reptile, amphibian, insect and mollusc species have the potential to become invasives if they establish populations on Saba. The most likely pathways for the introduction of alien invasive species are a) containerized cargo transport, b) international trade in ornamental plants, c) international pet trade.

Refer to: van Buurt, G and Debrot, A.O. "Exotic and invasive terrestrial and freshwater animal species in the Dutch Caribbean" (2012).

Other threats

SCF staff have report the following additional threats:

Poaching animals

Saban iguana have been taken from the island for pet sales.

Poaching plants

Visitors have taken orchids and rare plant species from the park and the island.

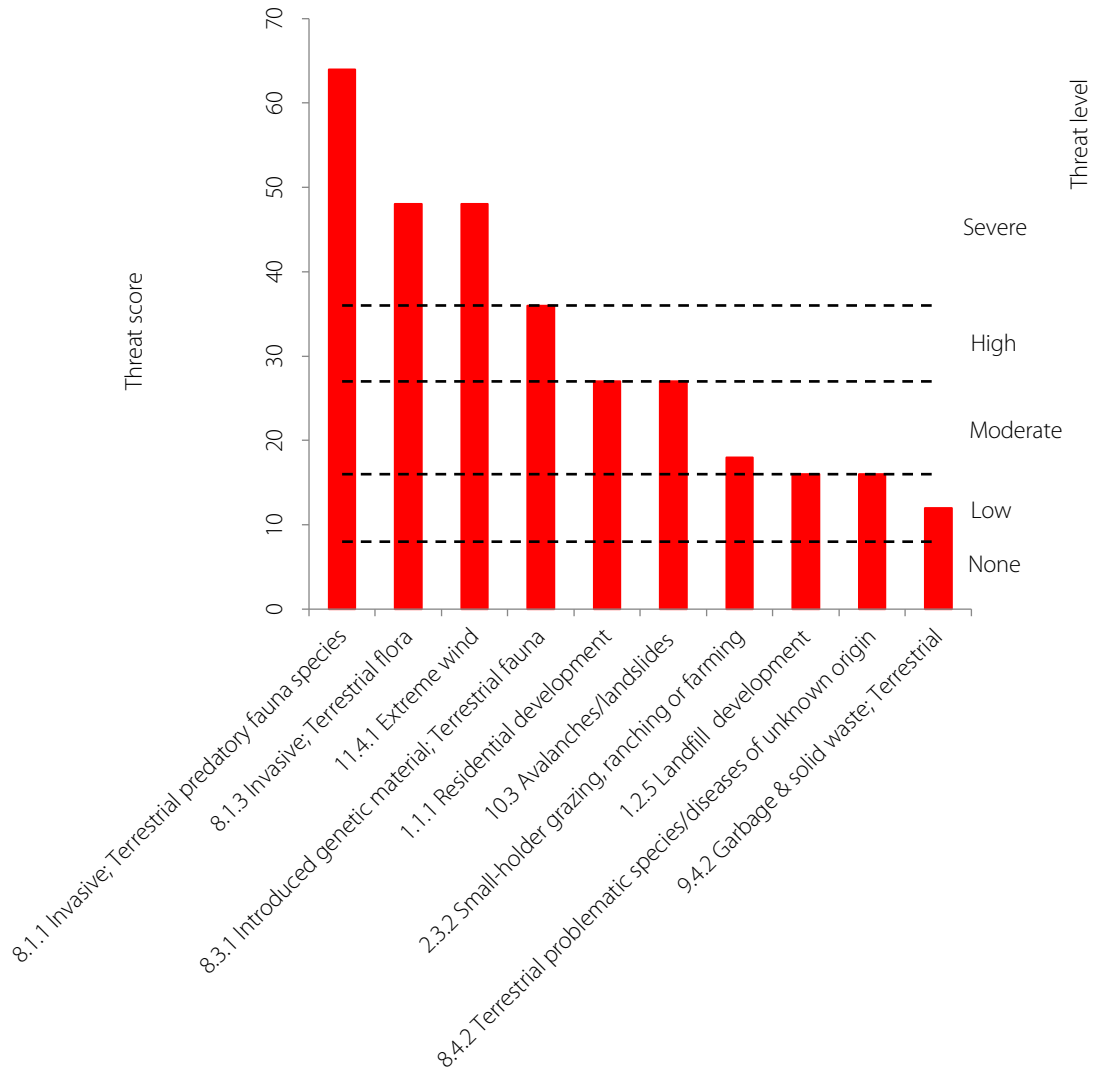


Figure 10 Threats facing the Mt Scenery Nature Park

Table 11 Threats facing Saba Nature Park

Level	Threat	Detail
Severe	Invasive; Terrestrial predatory fauna species	Cats and rats killing wildlife (tropic birds), goats - erosion eating ground cover plants
	Invasive; Terrestrial flora	Corallita, possibility that 80% of plants non-native.
	Extreme wind	Two hurricanes, Irma and Maria caused a variety of damage to the park and the islands terrestrial environment. Trails were blocked, walls were damaged by falling trees. Habitat loss is expected to impact frog, Pearly Eyed Thrasher and other bird populations. Some Mountain Mahogany trees were left in pockets on the summit of Mt Scenery. Some areas hit by associated tornados, others were left untouched. At higher elevations 90% of sites were damaged, at lower elevations there was less damage. With peak winds of 180 mph (285 km/h), Irma was the strongest Atlantic storm outside of the Gulf of Mexico or Caribbean Sea on record. Maintaining peak intensity for 37 consecutive hours, Irma is the only tropical cyclone on record worldwide to have had winds that intense for so long.
	Introduced genetic material; Terrestrial fauna	An introduced iguana species is breeding with the native species that is being investigated as possibly being an endemic sub species, resulting in hybridisation.
Moderate	Residential development	Hand over of part of the national park to heirs to the land. Some areas are likely to be developed.
	Avalanches and landslides	2016 bad year for landslides, trails re-routed , some problems caused by overgrazing. Droughts getting worse and increasing incidents of landslides. North coast, south coast, removes habitat.
	Small-holder grazing, ranching or farming	Cows and goats grazing and trampling vegetation.
	Landfill development	Spill over effects from pollution in the landfill, the rubbish also supports a population of feral cats (invasive predators).
	Terrestrial problematic species/diseases of unknown origin	An unidentified white fungus has been seen growing on and killing native plants.

Information resources

Decades of research have been carried out on Saba, much of it relating directly or indirectly to the Mount Scenery Nature Park. This includes mapping, bio-inventories, socio-economic research taxonomic and scientific research.

The most recent projects are summarised below.

Table 12 Recent monitoring and research
(from: Dutch Caribbean Biodiversity Database <http://www.dcbd.nl>)

Subject	Organisation(s): lead scientist	Year
High-resolution maps of invasive plant species, reptiles and amphibians	UU: Martin Wassen; Maarten Eppinga VU: Wendy Jesse (PhD student), Jacintha Ellers	2015-2018
Caribbean island biogeography meets the anthropocene	VU: Jacintha Ellers, Matt Helmus, Wendy Jesse (PhD. Student)** **Wendy Jesse did the fieldwork CNSI	2015-2018
Confronting Caribbean Challenges: Hybrid Identities and Governance in Small-scale Island Jurisdictions - Behavioral differences between/within the BES islands when it comes to nature conservation and cultural heritage.	KITLV, Leiden University: Gert Oostindie (Project director) KITLV, Leiden University: Stacey Mac Donald (PhD student)	2015-2018
Multifunctional approach harmful for harmful exotic species Caribbean Netherlands	IMARES: Dolfi Debrot	
Exotic plant species in the Caribbean: foreign foes or alien allies? (1) Socio-economic impacts of invasive plant species (2) Ecological impacts of invasive plant species-Utrecht University	(1) UU: Jetske Vaas (PhD student), Peter Driessen, Frank van Laerhoven and Mendel Giezen (2) UU: Elizabeth Haber (PhD student), Martin Wassen, Max Rietkerk, Maarten Eppinga. CNSI	2015-2018
Environmental Damage after Hurricane Irma and Maria	SCF: Kai Wulf	2017/2018
Assuring the adoption of soil conservation measures: The case of a small island	WUR: Jesse Opdam (student), Michel Riksen, Aad Kessler SCF Agriculture Department of Public Entity Saba	2017
Mapping erosion on Saba	WU: Pim Arendsen (student), Klaas Metselaar and dr. ir. Michel Riksen Kai Wulf and Randall Johnson	2017
The impact of hurricanes Irma and Maria on Coralita	UU: Maarten Eppinga	2017
Mosquito mapping	Naturalis: Klaas-Douwe Dijkstra, Maarten Schrama ECPHF: Teresa Leslie Students: Maud Kok, Sam Boerlijs, Loes Busscher, Delia Goilo, Jordy van der Beek	2018
Control methods for Corallita (<i>Antigonon leptopus</i>)	UU: Judit Planas Puig (Msc. student), Jetske Vaas	2018
Environmental Policies within the Kingdom of the Netherlands	Radboud University: Lisanne Coppel (student)	2018
Global Register of Introduced and Invasive Species GRIIS	IUCN Invasive Species Specialist Group ISSG: Shyama Pagad	2018
Overview endemic species	WUR: Dolfi Debrot, Oscar Bos, Rene Henkens Naturalis: Hannco Bakker	2018
Dutch Caribbean Species Register: Taxonomic knowledge system Dutch Caribbean (http://www.dutchcaribbeanspecies.org/)	Naturalis: Sander Pieterse, Hannco Bakker, Bert Hoeksema	2018

Dutch Caribbean Biodiversity Database

The Dutch Caribbean Biodiversity Database (DCBD) is an on-line repository for maps, data and information relevant to biodiversity and conservation in the Dutch Caribbean. The goal of the DCBD is to guarantee long-term data access and availability, to support nature management and to facilitate meeting international reporting obligations.

The DCBD hosts extensive datasets on key conservation species, such as sea turtles, flamingos, tropicbirds, parrots, butterflies, provides access to the most up to date GIS-based maps and a literature archive of both published and unpublished articles all supported by extensive meta data.

Table 13 Examples of monitoring and research on the DCBD (source xxx DCNA <http://www.dcbd.nl>)

- Breeding success of Red-billed Tropicbirds (*Phaethon aethereus*) on the Caribbean island of Saba- Boeken. M. (2016)
- The Wild Orchids of Saba, Netherlands Antilles – Chipkan S.A. (2009)
- A Permanent, Real-Time Monitoring Network for the Volcanoes Mount Scenery and The Quill in the Caribbean Netherlands- Zeeuw-van Dalfsen, E. de / Sleeman, R. (2018)
- An Annotated List of Orthoptera from St Eustatius and Saba, Dutch West Indies, with Descriptions of Two New Cricket Species (Trigonidiidae, Mogoplistidae)
- Bland, R.G. / Desutter-Grandcolas, L. (2003)
- Assessment of the Distribution of Seed Plants Endemic to the Lesser Antilles in Terms of Habitat, Elevation, and Conservation Status- Carrington, C.M.S. / Edwards, R.D. / Krupnick, G.A. (2018)
- Conservation of the herpetofauna on the Dutch Windward Islands: St. Eustatius, Saba, and St. Maarten- Powell, R. (2013)
- The Dynastinae of the island of Saba, Dutch Caribbean (Coleoptera: Scarabaeidae)- Gillett, C.P.D.T / Gillett, M.P.T. (2016)
- A landscape ecological vegetation map of Saba (Lesser Antilles)- Freitas, J.A. de / Nijhoff, B.S.J. / Rojer, A.C. / Debrot, A.O. (2016)
- A National Park for Saba - Ecovision (2016)
- Radar Surveys for Audubon's Shearwater on Saba, Netherlands Antilles (2014).
- Biological Inventory of Saba- Rojer, A.C. (1997)

Part 3: Management plan

Management recommendations have been developed using the following sources:

- Saba Conservation Foundation Strategic Plan
- Feedback from Town Hall meetings August 2018
- Island Council meetings
- Management Success initiative
- Project Team feedback
- EcoVision report (2016)

Mount Scenery Management Plan

The Island Government of the Public Entity Saba recognises that the Mount Scenery Nature Park harbours the richest biological diversity on Saba including an abundance of threatened and endemic species as well as valuable and unique sites and artefacts of archaeological interest.

Noting that the Mount Scenery Nature Park is mostly unused and much of it is inaccessible the government believes that the establishment of the Park will raise the profile of Saba as an eco-tourism destination and thereby valorize the biodiversity value of the area. The government finds that “*Mount Scenery is one of the most unique places in the Kingdom of the Netherlands, being its highest mountain, and deserves a special status.*”

Executive Council of the Public Entity Saba and approved the Island Ordinance for the establishment of the National Park Mount Scenery and protection of animal species, plant species, and artefacts (A.B 2018.003) at an Island Council meeting on the 18th September 2018.

The Mount Scenery Nature Park was established for the preservation, maintenance and restoration of special biological, ecological, educational, scientific, historical, cultural, recreational, archaeological, aesthetic and economic values and for the protection of biodiversity in accordance with the SPAW Protocol and Nature Conservation Act BES.

Vision statement

The vision statement aims to inspire and is the key component of the Management Plan, namely:

Mount Scenery Nature Park is treasured within the Kingdom of the Netherlands for its rich biodiversity and unique cultural heritage and is the cornerstone of sustainable development on the island of Saba.

Geographic scope

The boundaries of the Mount Scenery Nature Park are defined as:

Mount Scenery Nature Park extends from the area around the top of Mount Scenery above the 550m contour and from there eastwards along the eastern border of the property owned by the Saba Conservation Foundation, known as the Muriel Thissel Park to the waterline of the sea on the north coast of the island and in the best of Troy Hill along the deepest line of the area known as Island Gut, directly south of the Well's Gut to the waterline of the sea.

Thematic scope

Mount Scenery Nature Park has been established to conserve nature, protect and restore sites of cultural and historical interest and to raise the profile of Saba as an ecotourism destination by promoting sustainable use.

Management

The Island Government of the Public Entity Saba assigned the day to day management of the Mount Scenery Nature Park to the Saba Conservation Foundation (and the Saba Archaeological Centre under a revolving 5 year management agreement).

Saba Conservation Foundation (SCF) is responsible for the management and conservation of nature and sustainable use within the Park.

Saba Archaeological Centre (SABARC) is responsible for managing the conservation of archaeological sites, associated artifacts, and areas associated with Saban intangible cultural heritage.

Conservation targets

Conservation targets are the ecological systems and processes, habitats, communities and species that represent and encompass the full array of biological diversity found within the park. Conservation targets can include non-biological features. The conservation targets are the basis for setting conservation goals, carrying out conservation actions and measuring conservation success.

The conservation targets for the Mount Scenery Nature Park have been defined as:

- Dry forest, rain forest and cloud forest (flora, fauna including birdlife)
- Sustainable use (recreation, agriculture)
- Archaeological sites and artefacts

Threats

Direct threats are activities, caused or aggravated by humans, which have a negative impact on or degrade one or more of the conservation targets and can lead to their damage or loss. Threats cause undesirable changes to the abundance, distribution, composition and or condition of conservation targets.

The following criteria are used to assess the severity of the threat (high – medium – low)

- Scope: geographic extent of the threat across the conservation target
- Severity: level of damage to the conservation target
- Irreversibility: degree to which the effects of the threat cannot be restored

The following threats have been identified for the Mount Scenery Nature Park:

Threat/Target	Dry forest	Rain forest	Cloud forest	Sust. use	Archaeol. sites
Invasive fauna	High	Medium	Medium		
Invasive flora	High				
Introduced fauna	High				
Development	High			Low	Low
Landslides	Medium	Medium		Low	High
Agriculture	Low	Low			
Goat grazing	Medium	Medium			
Introduced disease					
Dumping/pollution	Low				
Poaching animals		Medium	Medium		
Poaching plants		Medium	Medium		
Extreme weather	High	High	High		High

Park operations: enabling conditions

In order for the management plan to be implemented the management bodies involved (SCF and SABARC) need to be strong, well managed organisations equipped with adequate resources including the human, physical and financial means to do their work.

Enabling conditions include:

- Governance
- Management
- Administration
- Field work
- Outreach and communication
- Education
 - Research and monitoring
 - Law enforcement

Conservation strategies

Well thought out conservation strategies and SMART objectives help to guide decision making, work planning, budgeting and promote sound conservation management of the park. Conservation strategies for the Mount Scenery Nature Park have been identified as:

- Improving sustainable recreation within the Mount Scenery Nature Park
- Improving non-vehicular access to the Mount Scenery Nature Park
- Reducing the impact of invasive species (fauna and flora)
- Promoting sustainable agriculture and animal husbandry
- Protecting and restoring archaeological sites
- Climate change readiness

Strategies have been defined as:

Park operations: enabling conditions

IF all criteria for enabling conditions are met and supported by the Island Government of the Public Entity, staff and board members of SCF and SABARC

THEN stakeholders on Saba will be fully engaged, the Mount Scenery Nature Park can be well managed, nature and archaeological sites and artefacts adequately protected and sustainable use of the Park realised

Strategy 1: Improving sustainable recreation in the Mount Scenery Park

IF park management focuses on improvement of recreational opportunities and expansion of recreational activities within the park and if there is sufficient capacity, effective outreach and enforcement and the number and variety of sites of interest are enhanced

THEN

The impact of visitors will be minimized, Park visitation will increase and eco-tourism will be enhanced supporting sustainable development on Saba

Strategy 2: Improving non-vehicular access to the Mount Scenery Nature Park

IF access to the park is improved through the creation and maintenance of a network of hiking trails with appropriate signage, outreach materials, guide training and orientations for visitors,

THEN

Visitor safety will be enhanced, Saba will be able to accommodate more tourist visitation without jeopardizing the intrinsic value of the Park thereby valorizing nature for the people of the island

Strategy 3: Reducing the impact of invasive species (fauna and flora)

IF customs and enforcement agents can be engaged, there is public awareness of the value of the park and Sabans support invasive species control, sufficient external support can be found to reduce and control invasive species of fauna and flora

THEN the natural vegetation, animals and especially bird populations will flourish enhancing the value of the park and increasing the natural robustness of the park.

Strategy 4: Promoting sustainable agriculture and animal husbandry

IF sustainable agricultural and animal husbandry practices can be adopted island wide and animal husbandry skills improved, regulations are enforced and markets are found for products

THEN sustainable agricultural and animal husbandry can provide a source of income for Sabans and contribute towards sustainable development on Saba

Strategy 5: Protection and restoration of archaeological sites

IF archaeological sites of interest are identified, excavated and adequately protected

THEN the rich and unique history of Saba can be protected and made accessible, thereby providing additional value to Saba as an eco-tourism destination and enhancing sustainable development.

Strategy 6: Climate change readiness

IF there is adequate information on the effects of climate changes, partners can be found and expertise is engaged and compelling messages focusing on climate change effects and mitigation are developed

THEN climate change guidelines, best practices and strategies can be implemented to mitigate and adapt to its most probable effects on Saba.

Park operations - enabling conditions

Basic park operations fall into one of the following categories:

- Governance
- Management
- Administration
- Income generation
- Field work and maintenance
- Education
- Outreach and communication
- Research and monitoring
- Law enforcement

Governance

During 2017 and 2018, Saba Conservation Foundation (SCF) undertook a strategic planning exercise under the leadership of Drs Yves Renard, which resulted in the development of a Strategic Plan for the organisation. This process did not involve stakeholders but did present a number of management strategies. One of the key goals was the establishment of the “Mount Scenery National Park” by 2020. The strategic planning 2017-2018 also included several strategies relevant to trail maintenance and communication.

Objective	Activity	Lead	Cost
By December 2019 a management agreement has been signed between Government of Saba and SCF/SABARC	Draft management contract including: <ul style="list-style-type: none"> - Strategy - Access - Tasks - Goals - Resources 	OLS	
	Review, discussion and signing	SCF SABARC	
By July 2019 a Steering Committee has been set up to oversee the management	Selection of Steering Committee representing OLS, SCF and SABARC	OLS	
	Mandate of Steering Committee established	OLS	
	Annual meetings to discuss progress, challenges, approve workplans and budgets	OLS, SCF, SABARC	
By December 2019 the NGO Boards have been strengthened and good governance improved	Organise workshop on good governance	OLS	
	Recruit board members and strengthen NGOs as necessary	SCF, SABARC	

Management

Objective	Activity	Lead	Cost
By July 2019 all significant stakeholders have been engaged in dialogue about the management plan	Identify stakeholders		
	Perform stakeholder analysis		
	Run stakeholder meetings and solicit feedback and buy in for management and zoning plan		
By 2020 KBAs and vulnerable sites within the Mount Scenery Nature Park have been identified and mitigation measures are in place	Map KBAs and other areas of high biodiversity or vulnerability and ensure these are off limits to visitors		
By 2020 vulnerable sea bird nesting sites need to be identified, are protected and off limits to visitors	Zoning plan developed with stakeholders identifies vulnerable sea bird nesting sites		
	Nesting sites are permanently or temporarily off limits to visitors		
By August 2019 a Management Plan for the Mount Scenery Nature Park has been approved by the Saba Government	Management plan presented to the Saba Government for approval		
	Management Plan submitted to Dutch Ministry of Agriculture		
By 2020 conservation requirements for endangered and locally important species assessed	Need for species management plans is assessed (for example for Audubon Shearwaters and Red-billed Tropic birds) and if necessary specific plans are developed		
By December 2019 annual action plans and budgets are being produced	Produce annual action plan and budget		
By 2021 Mount Scenery Nature Park has been accepted on the SPAW list	Submit nomination		
By 2020 Mount Scenery Nature Park has been given National Park status by the Dutch Government	Petition National Government for National Park status		

National Park Designation

The Island Government of the Public Entity Saba can adopt the IUCN definition of a National Park, the primary objective and aims. This will assist with future planning and National Park designation.

Category II National Park

Primary objective: To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.

- To manage the area in order to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources and unimpaired natural processes;
- To maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term;
- To contribute in particular to conservation of wide-ranging species, regional ecological processes and migration routes;
- To manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will not cause significant biological or ecological degradation to the natural resources;
- To take into account the needs of indigenous people and local communities, including subsistence resource use, in so far as these will not adversely affect the primary management objective;
- To contribute to local economies through tourism.

Administration

Having acquired another substantial park in the Mount Scenery Nature Park, SCF will need to upgrade its administration, financial administration and human resources.

Objective	Activity	Lead	Cost
By mid 2020 SCF and SABARC are adequately equipped to perform their work	Conduct office and administration scan to ensure SCF has capacity necessary to administer Mount Scenery Nature Park in addition to existing responsibilities	SCF	
	Improve office efficiency and IT	SCF	
	Develop work protocols to improve efficiency	SCF	
	Perform gap analysis and ensure all necessary physical resources have been acquired	SCF	
By 2020 staff exchanges are organised with other parks with similar visitation and trail systems	Identify suitable partner parks		
	Organise annual exchange programme for peer to peer learning		
By 2020 SCF staff have the training and have the capacity to manage the Mount Scenery Nature Park	Evaluate staff training capacity and needs		
	Organise staff training programmes		

Income generation

Generating additional income to cover the cost of basic management of the Mount Scenery Nature Park should be a matter of high priority and will significantly impact the future success of the park.

Objective	Activity	Lead	Cost
By June 2019 SCF has a funding strategy in place to ensure that the Mount Scenery Nature Park is self-sufficient with adequate funding, staff and materials	Develop funding strategy		
	Investigate opportunities to secure external funding sources		
By 2020 fee system has been reviewed and improved and SCF is collecting user fees from all visitors using the Mount Scenery Nature Park	Conduct willingness to pay surveys	SCF	
	Determine fee levels	OLS	
	Draft necessary legislation for collection of user fees from visitors accessing Mount Scenery Nature Park	OLS	
By June 2021 SCF is collecting visitor fees via an on-line system	Develop and implement on line payment system		
By December 2020 the National Government is providing structural funds to support management	Petition National Government for structural funds to cover income deficit for SCF	OLS	
By 2021 SCF has a membership programme and is actively soliciting donations from visitors	Develop membership programme		
	Set up Customer Management Database		
	Develop outreach material		

Fieldwork and maintenance

Objective	Activity	Lead	Cost
By June 2019 comprehensive procedures and standards for trail maintenance are in place	All trails are logged		
	Standards and procedures developed		
By June 2019 patrolling schedules for all trails are in place	Patrolling schedule developed		
	Log sheets developed and being used for all patrols		
	All necessary safety and trail equipment for patrolling acquired		
	Routine patrolling of trails in place		
By June 2019 a help line has been established to report necessary repairs			
Identifying, surveying, and documenting all archaeological sites within the National Park. Archaeological excavations to be done if necessary.			

Education

Objective	Activity	Lead	Cost
By 2020 an education box has been developed for Mount Scenery Nature Park	Evaluate education box content		
	Develop and produce		
By 2020 information on Mount Scenery Nature Park is presented to all school children	Develop school presentation for elementary school students		
	Develop out of school activities for Mount Scenery		
	Include Mount Scenery activities in summer camps		
By 2020 information on Mount Scenery is included in elementary school curriculum	Run annual workshop for elementary school teachers to compliment material in the education box		

Outreach and communication

The SCF considers communications and public education as integral and essential components of its strategy, serving two complementary purposes: (a) contributing to the implementation of the programme, and (b) strengthening the organisation. The SCF ensures that both purposes are considered in the work plans, project design and allocation of resources, and that all audiences are targeted with the relevant messages and the most effective media.

Objective	Activity	Lead	Cost
By December 2019 signage and leaflets inform users about the Mount Scenery Nature Park	Create inventory of all points of interest in Mount Scenery Nature Park		
	Collate all available information on trails		
	Provide signage and fliers for each hiking trail		
	Provide signage and fliers for all points of interest		
	Make information available on line		
By December 2019 SCF has a communication strategy and all outreach materials which include information on the Mount Scenery Nature Park have been reviewed and brought up to date	Develop communication strategy – set goals and objectives – identify key target audiences – identify means of communication		
	Develop and publish materials		
	Implement strategy		
By 2021 there is a comprehensive e-learning programme for guides and others using Mount Scenery Nature Park	Develop content for e-learning programme		
	Pilot test		
From 2019 onwards ongoing outreach and communication activities	On-going dissemination of information (especially to resources users) on management regimes, regulations and management activities		
	Compilation and release of a monthly trail advisory		
	Awareness raising and educational activities, focusing on: selected species (e.g. birds, iguana) and critical ecosystems (elfin forest); intrinsic and cultural value of terrestrial biodiversity and environmental heritage; impacts of human activities, Saba's IBA status and implications of climate change as well as the cultural and archaeological heritage within the park		

Research and monitoring

Objective	Activity	Lead	Cost
By 2019 monitoring protocols have been established for Mount Scenery Nature Park	Conduct initial conservation target evaluations		
	Identify key biodiversity indicators		
	Develop/acquire monitoring programmes for conservation targets		
	Conduct carrying capacity /LAC studies		
	Conduct socio economic monitoring of park users		
By 2020 a science agenda has been developed to answer any management questions	Identify and prioritize management knowledge gaps for habitats and species		
	Develop science agenda		
	Develop network of science partners		
	Inform Dutch Ministry of Agriculture of science and monitoring needs		
	Organise think tanks on two priority issues		
By 2020 full inventories of native flora and fauna have been conducted, KBAs have been identified	Up to date maps and inventories exist for all species and KBAs		
By 2019 keystone species such as Mountain Mahogany, Bearded moss and orchids, are being monitored with key environmental parameters (temperature, light intensity, rainfall, wind, humidity)	List of keystone species developed and basic monitoring programme in place		
By 2019 Important Bird Areas are being routinely monitored			
By 2019 mapping and monitoring of cloud forest (temperature, rainfall, etc.) is underway	Boundaries of cloud forest have been identified and monitoring protocols established		
	Routine monitoring of cloud forest in place		
By 2020 the Saban iguana has been recognised as a sub-species of the green iguana			
From 2019 onwards monitoring of geological and geomorphological features of the park	Volcanic activity at the hot springs monitored (including light intensity and temperature gauges installed at the hot springs)		
	Geological monitoring of land slides on the north coast		

Law enforcement

Objective	Activity	Lead	Cost
By 2020 Mount Scenery Nature Park is fully protected	Orchids are mapped and checked by regular patrols to deter poachers		
	SCF works closely with enforcement agencies		
	Police, Customs and other agencies are on the look-out for poached flora and fauna (particularly iguana)		
	CITES regulations are routinely enforced		
	Outreach material is available on island giving rules and warning of penalties		
	Help Line has been established for reporting (potential) offences		
	Public prosecutor is aware of the importance of enforcement of nature regulations		

Strategy 1: Improving sustainable recreation in the Mount Scenery Park

IF park management focuses on improvement of recreational opportunities and expansion of recreational activities within the park and if there is sufficient capacity, effective outreach and enforcement and the number and variety of sites of interest are enhanced

THEN

Park visitation will increase, the impact of visitors will be minimized and eco-tourism will be enhanced supporting sustainable development on Saba

Objective	Activity	Lead	Cost
By 2019 the negative impacts of tourist visitation in the Mount Scenery Nature Park have been identified and addressed	Inventory of negative impacts, such as littering, trail erosion, collection etc of visitation completed		
	Mitigation plans drafted and implemented to minimize negative impacts including guide training, outreach materials, registration, regular patrolling and obligatory visitor orientations		
By 2020 a complete inventory has been made of possible additional touristic development within the park	Investigate opportunities for increasing low impact touristic activities in the park such as bird watching, forest bathing, geo tourism, visiting cultural and archaeological sites and/or the establishment of a botanical garden		
	Analyse the impact of proposed activities including cost benefit analysis and environmental impact analysis (if applicable)		
	Draw up project plans for the most feasible options		
By 2021 the number and variety of sites of interest in the Mount Scenery Nature Park has increased by 20%	Implement projects for most feasible low impact options to create sites of interest		
	Create all necessary signage, outreach and communication materials for new sites and activities		
By December 2020 all visitors receive an orientation before visiting the Mount Scenery Nature Park	Develop short film orientation providing all essential safety and conservation information for visitors		
	Provide on line access to orientation at SCF offices, Trail Shop and via hotels and guest houses		
By 2020 carrying capacity limits have been established and limits of acceptable change are being implemented	Run research and monitoring studies to ascertain the physical carrying capacity of sites of interest within the park		
	Establish and implement limits of acceptable change		

By 2019 new trail guide has been published	Information on trails brought up to date		
	New hiking trail information included in trail guide		
	Layout design and publication of new trail guide completed		
	Interactive trail guide developed and marketed		
By 2019 access to the sulphur mines is safe and controlled	Map the mines and take decisions about areas which are safe for visitation		
	Provide signage, block of passages and include safety equipment on site		
	Provide interpretive materials and warning about the danger of not keeping to the trail		

Strategy 2: Improving low impact access to the Mount Scenery Nature Park

IF access to the park is improved through the creation and maintenance of a network of hiking trails with appropriate signage, outreach materials, guide training and orientations for visitors,
THEN

Saba will be able to accommodate more tourist visitation without jeopardizing the intrinsic value of the Park thereby valorizing nature for the people of the island

Objective	Activity	Lead	Cost
By December 2019 a complete inventory has been made of the existing hiking trails in the Mount Scenery Nature park	Complete inventory with key information on existing hiking trails		
	Detailed information has been compiled on essential improvements including viewing platforms, ropes, bridges, steps etc.		
	Ensure complete signage and information is available		
By December 2020 opportunities for new trails / trail improvements are in place with a total of 30km of hiking trails available.	Map Key Biodiversity Areas and any areas sensitive to disturbance or areas which provide particular hazards		
	Evaluate the opportunity to upgrade existing trails, create or link new trails		
By 2021 monitoring of visitor usage of hiking trails has establish physical carrying capacity	Run research and monitoring studies to ascertain the physical carrying capacity of sites of interest within the park		
	Establish and implement limits of acceptable change		
By December 2019 visitor safety has been significantly improved	Trails and look out points enhance visitor safety with steps, railings and ropes		

Strategy 3: Reducing the impact of invasive species (fauna and flora)

IF there is public awareness of the value of the park and Sabans support invasive species control sufficient external support can be found to reduce and control invasive species of fauna and flora THEN the nature vegetation, animals and especially bird populations will flourish enhancing the value of the park and increasing the natural robustness of the park.

Objective	Activity	Lead	Cost
By 2020 an invasive species control plan is in place to control existing populations of feral cats and rats on Saba	Invasive species control has been discussed with customs and the agriculture department and a joint plan of implementation developed		
	Use existing information and/or commission new studies to establish best course of action for feral cat and rat population control		
	Run extensive communication and outreach campaign on island to sensitize islanders regarding the need for control measures		
	Engage animal welfare organisations and sensitize them to the need for invasive species control		
By December 2020 control mechanisms are in place to control populations of feral cats and rats	Implement feral cat and rat population control mechanisms		
	Monitor the impact of the invasive species control plan		
By 2020 an invasive species plan has been drawn up for Saba flagging potential future invasive species and most likely routes	Develop an invasive species control plan identifying potential invasive species and most likely routes		
	Work closely with enforcement agencies and customs officers to put control mechanisms in place		

Strategy 4: Promoting sustainable agriculture and animal husbandry

IF sustainable agricultural and animal husbandry practices can be adopted island wide and animal husbandry skills improved, regulations are enforced and markets are found for products THEN sustainable agricultural and animal husbandry can provide a source of income for Sabans and contribute towards sustainable development on Saba

Objective	Activity	Lead	Cost
By December 2020 a full inventory has been made of historical and current agricultural practices in the Mount Scenery Nature Park and permitted agricultural practices have been established	Complete a full historical and current inventory of agricultural and animal husbandry practices		
	Work with stakeholders to develop a zoning plan to identify areas most suitable for small scale artesinal farming		
	Establish acceptable agricultural practices within the park		
	Work with stakeholders to agree on sustainable farming practices		
	Forum for dialogue with stakeholders has been established		
By December 2020 there is strong local support for the abolition of extensive animal husbandry practices	Agriculture department is responsible for identifying livestock owners and their stock	Agricult. dept	
	Agriculture department with SCF develops outreach and communication materials to sensitive livestock owners to sustainable practices		
	Provide training in sustainable livestock management practices		
	Develop markets for free range meat products		

Strategy 5: Protection and restoration of archaeological sites

IF archaeological sites of interest are identified, excavated and adequately protected
 THEN the rich and unique history of Saba can be protected and made accessible, thereby providing additional value to Saba as an eco-tourism destination and enhancing sustainable development.

Objective	Activity	Lead	Cost
By 2020 inventories have been made of all sites of archaeological and historical interest within the Mount Scenery Nature Park	Identify and map sites of interest		
By 2021 sites of interest have been excavated and recorded and graded according to their vulnerability	Excavate and record sites of interest and establish their vulnerability		

Strategy 6: Climate change readiness

IF there is adequate information on the effects of climate changes, partners are found and expertise is engaged and compelling messages focusing on climate change effects and mitigation are developed

THEN climate change guidelines, best practices and strategies can be implemented to mitigate and adapt to its most probable effects on Saba.

Objective	Activity	Lead	Cost
By 2019 the Saba Government, SABARC and SCF have well defined programmes and clear policies to reduce its carbon footprint organisation wide			
By mid year 2019 three key enabling partners have been identified to address climate change effects on Saba			
By 2020 relevant knowledge and information on climate change effects has been accumulated			
By 2020 five compelling messages have been created for key target audiences to address aspects of climate change mitigation			
By 2021 a best practice manual with guidelines has been developed for five key stakeholder groups			

Climate change poses a major threat to the ecosystems and ecosystem services in the Caribbean Netherlands. The main consequences of climate change we are likely to see this century include: increases in air and sea surface temperatures, an increase in sea level and ocean acidity, an increase in the frequency and intensity of storms and hurricanes, general aridification and greater overall unpredictability in weather (RCN, 2012).

The consequences for both terrestrial and marine areas are predicted to be far-reaching. The principal effects are likely to include further losses to the coral reef systems, erosion of coasts and beaches, salinification of groundwater sources, losses in hilltop vegetation and flora, soil humus losses and erosion, increases in various disease vectors, changes in ocean currents fish recruitment and migration and a stronger foothold for invasive species (RCN, 2012).

Table 14: Probably impacts of climate change on Saba (adapted from: www.unep-wcmc.org)










Landscape type	Key climatic variables	Implications for biodiversity
Low-lying islands	<ul style="list-style-type: none"> Relative sea-level rise Storm frequency and severity 	<ul style="list-style-type: none"> Loss of land area, seabird nesting colonies. Increased human demands on remaining terrestrial habitats
Forests (general)	<ul style="list-style-type: none"> Changes in rainfall, temperature and potential evapotranspiration. Increased frequency and intensity storms. 	<ul style="list-style-type: none"> Major changes in vegetation types, forests may disappear in certain areas at a rate faster than the potential rate of migration to, or re-growth in, new areas
Tropical Montane Forest	<ul style="list-style-type: none"> Changes in degree of cloud cover versus and sunlight hours Hurricane frequency and severity Drought frequency and annual rainfall distribution 	<ul style="list-style-type: none"> Drying out and invasion or replacement of montane species by lower montane or non-montane species
Arid and semi-arid areas	<ul style="list-style-type: none"> Precipitation patterns Minimum temperatures 	<ul style="list-style-type: none"> With a few exceptions dry areas are expected to become hotter and drier Increased salinisation Loss of grassland Loss of arable land
Coral Reefs	<ul style="list-style-type: none"> Sea-surface temperature, indirect chemical effects of higher CO₂ concentrations in the water 	<ul style="list-style-type: none"> Prolonged exposure to even minor (>1°C) rises in temperature causes coral bleaching and may result in coral death Impacts may be compounded by chemical effects of increasing CO₂ concentrations which could reduce calcification rates.

Part 4: Additions and Developments.

Appendices

Extensive Appendices are included with this document. They are intended as a snapshot of the existing information available for Mt Scenery Nature Park. They provide an essential reference point for current and future management.

Due to the file sizes, the Appendices are available as electronic documents from the relevant locations.

-  Appendix 1 Legislation
-  Appendix 2 Biological Information
-  Appendix 3 Stakeholder Consultation documents
-  Appendix 4 SCF Documents
-  Appendix 5 Key reports
-  Appendix 6 Designations
-  Appendix 7 Maps
-  Appendix 8 Background information
-  Appendix 9 Trails information

References

- Augustinus, P. G. E. F., Mees, R. P. R., & Prins, M. (1985). *Biotic and abiotic components of the landscape of Saba (Netherlands Antilles)*.
- CBS. (2017). *Trends in the Caribbean Netherlands*.
- Collier, N., & Brown, A. C. (2008). Important Bird Areas of the Caribbean - Saba. DCNA | Islands. (2018).
- De Palm, J. (1985). *Encyclopedie van de Nederlandse Antillen*. De Walburg Pers, Zutphen.
- EcoVision. (2016). *A National Park for Saba. Options for acquisition and management of the northwestern part of Saba*.
- Freitas Nijhoff, B.S.J, J. A. de, Rojer, A. C. C., Debrot, A. O. O., de Freitas, J. A., Rojer, A. C. C., Nijhof, B. S. J., & Debrot, A. O. O. (2016). *A landscape ecological vegetation map of Saba (Lesser Antilles)*. The Hague: The Ministry of Economic Affairs, Agriculture and Innovation.
- Geelhoed, S. C. V, Debrot, A. O., Ligon, J. C., Madden, H., Verdaat, J. P., Williams, S. R., & Wulf, K. (2013). *Important Bird Areas in the Caribbean Netherlands*.
- Hoetjes, P. C., & Wulf, K. (2018). *SPAW application report; Mt Scenery National Park*.
- Howard, R. A. (1974). *Flora of the Lesser Antilles. Orchidaceae*. Arnold Arboretum, Harvard University, Massachusetts.
- Howard, R. A. (1989). *Flora of the Lesser Antilles. Vol.2: Pteridophyta. Vol 3: Monocotyledoneae. Vol 4, 5, 6: Dicotyledoneae I, II, III*. Arnold Arboretum, Harvard University, Massachusetts.
- IUCN. (2018). IUCN Red List of Endangered Species. Retrieved from <http://www.iucnredlist.org/>
- Lazell, J. D. (1972). The Anoles (Sauria, Iguanidae) of the Lesser Antilles. *Bull.Mus.Comp.Zoo*, (143), 1–28.
- MacRae, D., Wulf, K., & De Meyer, K. (2018). *Management Success Data Reports 2006-2017*.
- Mori, S., Buck, W. R., Gracie, C. A., & Tulig, M. (2007). Plants and Lichens of Saba. A Virtual Herbarium of The New York Botanical Garden. Retrieved from Virtual herbarium
- New York Botanical Garden. (2018). Plants and Lichens of Saba. Retrieved from <http://sweetgum.nybg.org/science/projects/saba/>
- Powell, R., & Henderson, R. W. (2012). Island lists of West Indian amphibians and reptiles.
- Rojer, A. (1997). *Biological Inventory of Saba*. Curacao.
- Roobol, M. J., & Smith, A. L. L. (2004). *Volcanology of Saba and St. Eustatius, Northern Lesser Antilles*. Department of Geology, University of Puerto Rico, Mayaguez, Puerto Rico.: Koninklijke Nederlandse Akademie van Wetenschappen.
- Saba, I. T. Proposed Island Ordinance for the establishment of the National Park Mt Scenery and protection of animal-, plant species and artifacts. (AB 2018.001) (2018).
- Stoffers, A. L. (1960). *Vegetation on the Windward Islands of the Netherlands Antilles. The vegetation of Saba. The Vegetation of St. Eustatius*. Schakels.
- TEEB. (2014). *What is Saba's Nature worth?*
- van de Kerkhof, S., Schep, S., Beukering, van, P., & Brander, L. (2014). *The Tourism Value of Nature on Saba*.
- Westerman, J. H. (1961). *The Geology of Saba and St. Eustatius, with notes on the Geology of St. Kits, Nevis and Montserrat (Lesser Antilles)*. Uitgaven "Nat.Wet.Studiekr. Sur.& N.A.", Utrecht.
- Wiersma, P. (1984). Moss Flora and Vegetation of Saba and St. Eustatius (West Indies). *Proc.Kon.Ned.Akad.Wet.*, C, 337–369.