

# Curaçao

## Proposed Ramsar area “Northwest Curaçao”

### Photographic impressions and map of the proposed Ramsar Area

1. Boka Ascencion, one of the three larger inland bays included in the proposed Ramsar area which are used as nesting and foraging sites for three threatened sea turtle species.
2. Large numbers of critically endangered Elkhorn coral (*Acropora palmata*; Koral kachu grandi) are found along the north shore and provide shelter to a variety of fish species.
3. Nectar-feeding bats pollinate cacti flowers which then form fruits that provide food for several animal species during the dry season.
4. The Caribbean flamingo (*Phoenicopterus ruber*, Chochoغو) uses the saline lagoon of Boka Grandi (shown here) as a resting and foraging area.
5. Boka Patrick on the north shore of the island is the only place where two pocket beaches (“bokas”) are found directly next to one another.
6. Several man-made dams lie in the area and create temporary freshwater lakes that are used by water birds but also the Curaçao White-tailed deer (*Odocoileus virginianus curassavicus*, Biña).
7. The Christoffel Park is home to no less than 50 rare plant species that are exclusively found within the park’s boundaries.
8. Boka Grandi is the largest “boka” within the boundaries of the Christoffel Park.
9. The entire north shore receives fresh continuously water as oceanic waters are forced towards land by the trade winds.
10. The Christoffel Park includes the buildings of the former Savonet plantation originally built in the 17th century, and presently the best-conserved and most complete plantation house on Curaçao. The plantation house was recently restored and is now a museum.
11. At the western tip of the island a blow hole is carved out of the limestone terraces, which is locally referred to as the “Eye of Curaçao”.
12. Coral cover in many locations approaches 100%, which exceeds even historic baselines for the Caribbean region.
13. The area shelters the largest population of endemic Curaçao White-tailed deer (*Odocoileus virginianus curassavicus*, Biña).
14. View over the north coast terraces.
15. Boka Ascencion.
16. Boka’s like Boka Ascencions are used as nesting and foraging sites for three threatened sea turtle species. Nestlings have frequently been observed in the existing Shete Boka Park.



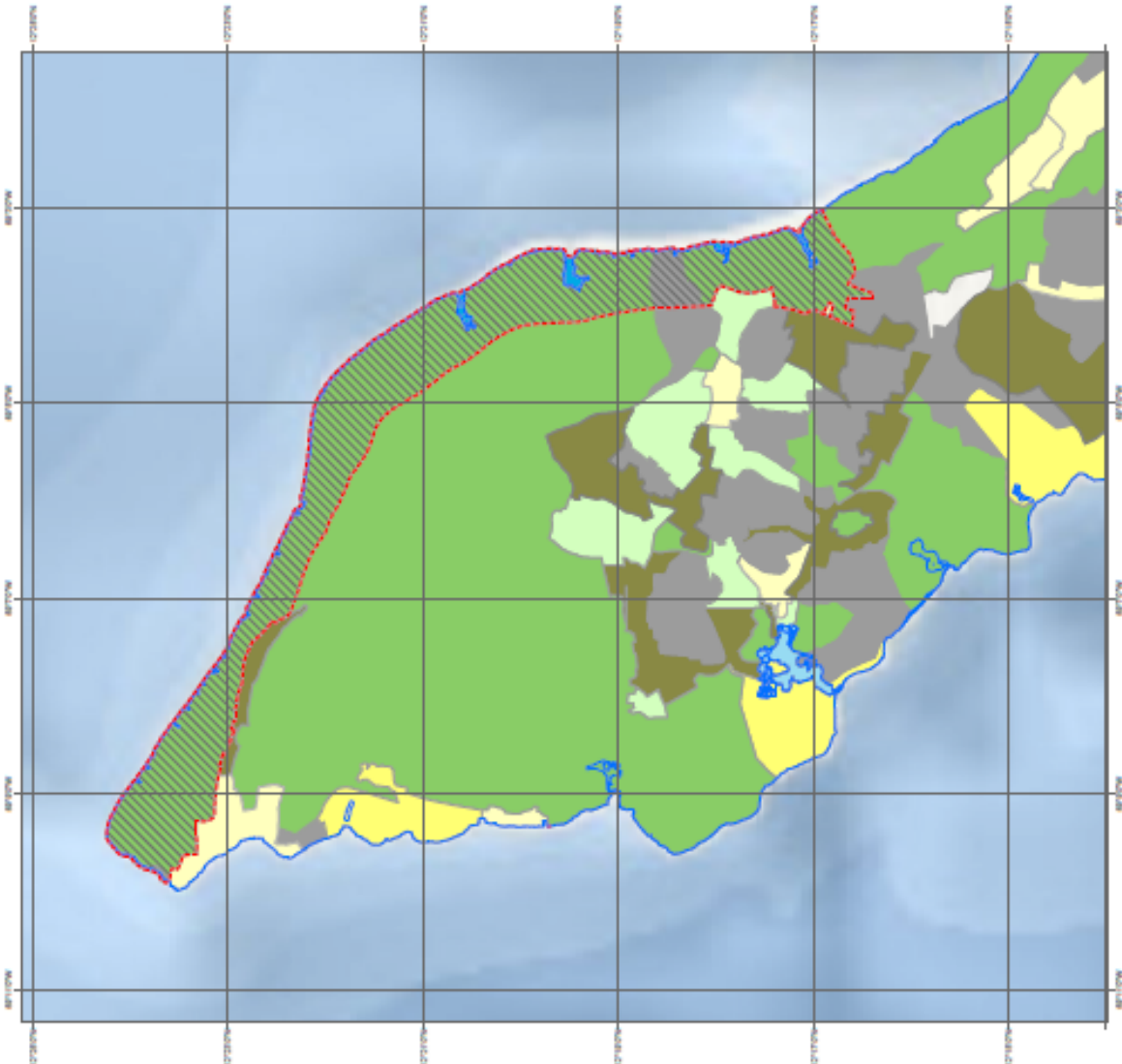


















# Northwest Curaçao

SCALE 1 : 75 000



## LEGEND

-  Ramsar
-  Coastline
-  Buffer zone
-  Waters down to 60 m depth
-  Urban areas
-  Industrial areas
-  Touristic areas
-  Agriculture areas
-  Conservation areas
-  Rural areas
-  Open land
-  Water



# Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from [http://www.ramsar.org/ris/key\\_ris\\_index.htm](http://www.ramsar.org/ris/key_ris_index.htm).

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

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Designation date

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Site Reference Number

**2. Date this sheet was completed/updated:** November 11 2012

**3. Country:** Curaçao, Kingdom of the Netherlands

**4. Name of the Ramsar site:** Northwest Curaçao

**5. Designation of new Ramsar site or update of existing site:**

**This RIS is for** (tick one box only):

a) **Designation of a new Ramsar site** ; or

b) **Updated information on an existing Ramsar site**

**7. Map of site:**

a) **A map of the site, with clearly delineated boundaries, is included as:**

i) **a hard copy** (required for inclusion of site in the Ramsar List): ;

ii) **an electronic format** (e.g. a JPEG or ArcView image) ;

iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** .

b) **Describe briefly the type of boundary delineation applied:** The area is located on the north coast of the western side of Curaçao, starting at the most western tip of the island. It comprises the shores of the existing Shete Boka Park and Christoffel Park and extends along the coast to Boka Ascencion. The delineation of the wetland follows the shore line, from 60 m deep to include the coral reef and includes the

adjacent lands up to the highest point, in order to protect all running waters which travel downstream towards the coast.

**8. Geographical coordinates:**

Southwest: Latitude: 12°23'N Longitude: 69°09'W

Northeast: Latitude: 12°16'N Longitude: 69°02'W

Approximate central coordinate: 12°21'11"N 69°05'00"W

**9. General location:** Curaçao is an oceanic island in the Southern Caribbean Ecoregion. It lies approximately 70 km north of Venezuela and is part of the Leeward Antilles. The proposed Ramsar area covers about 20 km of the island's northwestern coast, starting from the western tip of the island and extends on the coast to include Boka Ascension. The western tip is less than 1 km north from the village of Westpunt (751 inhabitants), and Boka Ascension is about 3 km west from Barber (2325 inhabitants), the nearest town. The proposed Ramsar area includes large areas of undeveloped land within two existing parks, i.e., the Shete Boka Park, known for its nesting turtles and the Christoffel Park, the largest natural park on Curaçao.

**10. Elevation:** Minimum: 0 m, Maximum: approximately 60 m (ASL)

**11. Area:** (in hectares): 2441

**12. General overview of the site:** The area comprises coral reefs, coastal lagoons with sea grass beds and mangroves, coastal limestone terraces, inland hills supporting evergreen woodland, freshwater dams, natural springs and dry deciduous shrublands. The Ramsar site includes parts of two existing natural parks (Shete Boka and the Christoffel Park). The proposed Ramsar site covers approximately 20 km of the rocky, wave-exposed northcoast of the island, including 10 pocket beaches (bokas) and 3 inland bays. These bokas and bays are used as nesting and foraging sites for three threatened sea turtle species. The area is also regionally renowned for its breeding colony of more than 500 individuals of Least Tern and was designated as an Important Bird Area in 2007.

**13. Ramsar Criteria:**

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

**14. Justification for the application of each Criterion listed in 13 above:**

**Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.**

**Coral reefs-** The world has effectively lost 19% of its coral reefs; 15 % are seriously threatened with irreversible loss expected to occur in the next 10-20 years; and 20% are under threat of loss in 20-40 years (Wilkinson 2008). Hence, coral reefs systems in general are critically threatened ecological communities. The northwestern coast of Curaçao locally harbours a luxuriant fringing coral reef, locally characterized by more

than 50% coral cover and the presence of threatened coral species, i.e., *Acropora* spp. (Vermeij, unpubl. data). In places coral cover approximates 100% which is well above historic baselines for Caribbean reefs.

**Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.**

Table 1 provides an overview of all Migratory, Threatened, Vulnerable, Endangered, and Critically Endangered marine species that are found in the proposed Ramsar area (“Northwest Curaçao) following international guidelines and protocols designed by or resulting from the following organizations and conventions: International Union for Conservation of Nature (IUCN), Convention on International Trade in Endangered Species (CITES), Convention on Migratory Species (CMS).

**Table 1. Curaçaoan species listed under the IUCN Red List, CITES and CMS**

<p><b><u>Critically endangered (IUCN Red List)</u></b>                      Elkhorn coral (<i>Acropora palmata</i>) (CITES II)                      Staghorn coral (<i>Acropora cervicornis</i>) (CITES II)                      Leatherback sea turtle (<i>Dermochelys coriacea</i>) (CITES I)                      Hawksbill sea turtle (<i>Eretmochelys imbricata</i>) (CITES I)                      Goliath grouper (<i>Epinephelus itajara</i>)</p>	<p><b><u>Endangered (IUCN Red List)</u></b>                      Boulder Star coral (<i>Montastraea annularis</i>)                      Mountainous Star coral (<i>Montastraea faveolata</i>)                      Green sea turtle (<i>Chelonia mydas</i>) (CITES I)                      Loggerhead sea turtle (<i>Caretta caretta</i>) (CITES I)                      Nassau grouper (<i>Epinephelus striatus</i>)</p>
<p><b><u>Vulnerable (IUCN Red List)</u></b>                      Pillar coral (<i>Dendrogyra cylindrus</i>) (CITES II)                      Lamarck's Sheet coral (<i>Agaricia lamarcki</i>) (CITES II)                      Elliptical Star coral (<i>Dichocoenina stokesii</i>) (CITES II)                      Olive Ridley sea turtle (<i>Lepidochelys olivacea</i>) (CITES I)                      Mutton snapper (<i>Lutjanus analis</i>)                      Cubera snapper (<i>Lutjanus cyanopterus</i>)                      Yellowmouth grouper (<i>Mycteroperca interstitialis</i>)                      Snowy grouper (<i>Epinephelus niveatus</i>)                      Queen triggerfish (<i>Balistes vetula</i>)                      Hogfish (<i>Lachnolaimus maximus</i>)</p>	<p><b><u>Migratory species (CMS)</u></b>                      Leatherback sea turtle (<i>Dermochelys coriacea</i>) (App. I/II)                      Hawksbill sea turtle (<i>Eretmochelys imbricata</i>) (App. I/II)                      Olive Ridley sea turtle (<i>Lepidochelys olivacea</i>) (App. I/II)                      Green sea turtle (<i>Chelonia mydas</i>) (App. I/II)                      Loggerhead sea turtle (<i>Caretta caretta</i>) (App. I/II)                      Spinner dolphin (<i>Stenella longirostris</i>) (App. II)                      Humpback whale (<i>Megaptera novaeangliae</i>) (App. I)</p> <p><b><u>CITES only</u></b>                      Queen conch (<i>Strombus gigas</i>) (CITES II)</p>

**Sea turtles (*Chelonioidae* & *Dermochelyidae*)-** Curaçao’s northwestern coast is, together with the small island of Klein Curaçao, the most important sea turtle nesting area within Curaçao’s jurisdiction (Debrot & Pors 1995), especially for the Critically Endangered Hawksbill turtle (*Eretmochelys imbricata*, Turtuga karèt) and the Endangered Green turtle (*Chelonia mydas*, Turtuga blanku) (Debrot et al. 2005). Nesting occurs foremost during the months October and November (Debrot et al. 2005). Anecdotal evidence suggests that nesting by Endangered Loggerhead (*Caretta caretta*, Turtuga kawama,) also occurs. Critically Endangered Leatherback (*Dermochelys coriacea*, Turtuga drikil) and Vulnerable Olive Ridley (*Lepidochelys olivacea*, Warana) are frequently encountered. The five species all have a protective status under international conventions (IUCN Red List, CITES Appendix I, CMS Appendix I/II) and are protected nationally by the “Eilandsbesluit bescherming



zeeschildpadden” (PB 1996, 8). Hawksbill and Leatherback turtles are categorized as Critically Endangered (IUCN Red List), Green and Loggerhead turtles as Endangered (IUCN Red List) and Olive Ridley turtles as Vulnerable (IUCN Red List).

**Birds (Aves)-** The Caribbean flamingo (*Phoenicopterus ruber*, Chochogo), which is listed as Conserved Through Agreements under appendix II of the CMS, uses the saline lagoon of Boka Grandi as a resting and foraging area (W Samboe, Christoffel Park Ranger, pers. comm.). On the coasts near Watamula, at the western tip of the island, the Brown booby (*Sula leucogaster*, Bubi bruin) uses the limestone terraces as roosting habitat (Prins et al. 2009; Debrot & Wells 2008). The Brown booby has suffered a 59% population decline throughout the Caribbean since 1984 and was therefore made a Caribbean At-Risk Species by Bradley and Norton (2009) and a Species of High Concern by the North American Waterbird Conservation Plan (NAWCP) (*Kushlan et al.* 2002). The area is furthermore noteworthy for its population of nesting Least terns (*Sterna antillarum*, Meuchi chikitu) (Debrot & Wells 2008). The Caribbean population in 1984 was estimated at 6,000 individuals (Halewyn & Norton 1984) and has declined by 25% to 4,500 in 2007 (Bradley & Norton 2009). Therefore, this species was also given the status of Caribbean At-Risk Species by Bradley and Norton (2009) and a Species of High Concern by the NAWCP (*Kushlan et al.* 2002).

**Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.**

The area comprises coral reefs, coastal lagoons with sea grass beds and mangroves, coastal limestone terraces and caves, inland hills supporting evergreen woodland, freshwater dams, natural springs and dry deciduous shrublands. The diversity of habitats found within the north western part of Curaçao creates an assemblage of ecological niches supporting an enormous biodiversity typical for the Southern Caribbean Ecoregion.

The Christoffel Park is home to no less than 50 rare plant species that are exclusively found within the park’s boundaries and of which 4 are endemic to Curaçao and Bonaire (*Chloris suringari*, *Maytenus versluysii*, *Myrcia curassavica* ♂, *Paspalum bonairensis*) (BirdLife International 2011; Debrot 2006). Seven rare mammal species and 11 rare or uncommon butterfly species live within the boundaries of the Christoffel Park (Debrot & Wells 2008; Debrot et al. 1999). Land snails, endemic to the Dutch Leeward Islands are also found within this area (Reijns 1984). In total, 10 of the 11 endemic subspecies of birds that occur on the ABC islands (i.e., Curaçao, Bonaire and Aruba) breed in this proposed Ramsar site (Debrot & Wells 2008). The Shete Boka National Park, also included in this Ramsar proposal, is a nesting and feeding area for three globally threatened sea turtle species (Debrot et al. 2005). Curaçao’s rare endemic Barn owl subspecies (*Tyto alba*, Palabrua) is found in the proposed Ramsar area and roosts and nest sites are almost exclusively limited to escarpments of limestone plateaus and caves, which occur in a narrow band circling the island.

The northwestern coast of Curaçao locally harbours a luxuriant fringing coral reef, locally characterized by more than 50% coral cover and the presence of threatened coral species, i.e., *Acropora* spp. (Vermeij, unpubl. data). In places coral cover approaches 100% which is well above historic baselines for Caribbean reefs.

**Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.**

**Sea turtles (*Chelonioidae* & *Dermochelyidae*)-** Nesting female sea turtles, eggs and hatchlings are particularly exposed and vulnerable to biotic and abiotic threats. Dow *et al.* (2007) identified seven main factors that lead to the death of nesting females, eggs and/or hatchlings (e.g., killing of nesting females by humans or predators, nest loss to abiotic factors or predators, egg collection by humans, harassment by humans, artificial lighting, pollution, beach erosion/accretion, beach armoring/stabilization, beach nourishment, beach obstacles, mechanized beach cleaning, sand mining, loss of native vegetation, livestock on the beach). In the National Park of Shete Boka, with the possible exception of human disturbance, most of these threats are presently absent and/or very rare which effectively makes this area an particularly suitable habitat for the Green turtle (*Chelonia mydas*, Turtuga blanku), the Loggerhead (*Caretta caretta*, Turtuga kawama) and the Hawksbill (*Eretmochelys imbricata*, Turtuga karèt) during their most sensitive life stages. The sheltered pocket beaches of the area are some of the most important remaining sea turtle nesting habitat on Curaçao and within the former islands of the Netherland Antilles (Sybesema 1992; Debrot *et al.* 2005). Three inner bays (i.e., Bartolbaai, Playa Grandi, Boka Ascension) included in this proposal harbor seagrass beds dominated by Turtle-grass (*Thalassia testudinum*, Yerba di sinta) that are used as foraging areas by sea turtles on the north coast of Curaçao, especially the Green turtle (*Chelonia mydas*, Turtuga blanku).

**Birds (Aves)-** The area shelters a globally significant population of nesting Least tern (*Sterna antillarum antillarum*, Meuchi chikitu) (Debrot & Wells 2008). With 619 breeding pairs, Curaçao has the highest concentrations of breeding Least terns in the Caribbean (Bradley & Norton 2009). Curaçao's rare endemic Barn owl subspecies (*Tyto alba*, Palabrua) is found in the proposed Ramsar area and roosts and nest sites are almost exclusively limited to escarpments of limestone plateaus and caves, which occur in a narrow band circling the island. Breeding and roosting sites tend to be used over many generations. The population size on Curaçao is low and estimated at 31 pairs between 1987 and 1990 (Debrot *et al.* 2001). The undisturbed habitats preferred by this species in the proposed Ramsar area are therefore of critical importance for this species.

**Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.**

Playa Grandi, an inland bay included in this proposal is a significant nursery habitat on the northwest coast of Curaçao due to the presence of mangroves and seagrass beds. Juvenile fish, mostly juveniles of the Schoolmaster (*Lutjanus apodus*, Bers) and the Yellowtail snapper (*Ocyurus chrysurus*, Grastelchi di piedra), use these habitats for shelter and eventually migrate to the reef, so that the presence of bays such as Playa Grandi, ensure a relatively large influx of juvenile reef fish to adjacent reefs (Nagelkerken & Van der Velde 2004; Huijbers 2012).

## 15. Biogeography

**a) biogeographic region:** Realm: Tropical Atlantic, Province: Tropical Northwestern Atlantic, Ecoregion: Southern Caribbean.

**b) biogeographic regionalisation scheme:** Marine Ecoregions of the World (MEOW) (Spalding *et al.* 2007)

## 16. Physical features of the site:

**Geology & Geomorphology-** The proposed Ramsar site is rimmed by carstic Tertiary limestone terraces at its seaward side. From the coast inland, these terraces are the Lower Terrace, the Middle Terrace, the Higher Terrace and the Highest Terrace (De Buisonjé 1974). This section of Curaçao, stretching from Boka Ascension to Westpoint, is similar to the rest of the wave-exposed north coast of the island in having steep, rocky, wave-swept shores. The coastal zone is characterized by an emergent, arid, coralline-rock terrace rising approximately 5 m above sea level (De Buisonjé 1974). On its seaward edge the terrace is traversed by gullies which carry the seasonal run-off to sea after heavy rainfall. Small pocket beaches set back typically 80-100 m from the wave-exposed coast are found in all but the smallest gullies. Compared to the rest of the northeast coast, the western section has by far the highest concentration of pocket beaches (Debrot & Pors 1995). Dissolution of calcium carbonate by rain-water has led to the formation of limestone caves and karst systems in all coastal terraces. At the western tip of the island a blow hole is present which is locally referred to as the “Eye of Curaçao”.

Several manmade dams occur within the area and can retain freshwater for several months, depending on precipitation levels.

Three inland bays are found within the proposed Ramsar area (i.e., Boka Ascension, Playa Grandi, Bartolbaai). Boka Ascension is the most eastern of these 3 bays. It is a 800 m long and 100 m wide inland bay with turbid waters (2.1 m, horizontal Secchi disk visibility). Salinity is approximately 35 ppt and annual water temperatures average 30°C. Playa Grandi is an inland bay 4 km north from Boka Ascension and has turbid waters as well (1.3 m, horizontal Secchi disk visibility). It stretches approximately 700 m inland and its maximum width is approximately 400 m. The salinity and water temperature of Playa Grandi are similar to that of Boka Ascension. Bartolbaai lies 2 km north from Playa Grandi and stretches approximately 600 m inland. Salinity averages 35.5 ppt and water temperature 30°C. The water clarity of Bartolbaai is very poor (0.4 m, horizontal Secchi disk visibility) (Nagelkerken & van der Velde 2004).

The fringing coral reefs in the area are characterized by a wide submarine terrace (<350 m wide) which is dominated by wave-resisted brown algal species. Below approximately 15 m, the reef gradually slopes to a sandy plain at depth between 50 to 90 m (Bak 1975). At intermediate depths (15-50m), pockets of extremely well developed coral communities are found whose benthic cover exceeds that of historic baselines for the Caribbean. Curaçao’s daily tidal range is very limited (30 cm) though annual fluctuations are generally larger depending on local wind conditions and reaches about 70 cm (de Haan & Zaneveld 1959). The predominant easterly wind direction hits the island perpendicularly to the coast and brings clear and high quality ocean water to the reef and inland bays. Mean seawater temperature and salinity are of 28°C and 35 ppt, respectively.

**Climate-** Based on the mean annual rainfall (573 mm), the climate on the island qualifies as semi-arid. Annual variations in temperature are small and average around 28 °C. Precipitation levels differ throughout the year and in the period between October and January rainfall is higher than all other months and generally referred to as the wet season (Meteorological Services of the Netherland Antilles and Aruba 2008).

**17. Physical features of the catchment area:** see: previous section

**18. Hydrological values:** Numerous man-made dams lie in the area that retain freshwater for several months after the wet season has passed. The availability of fresh water is of crucial importance to sustain populations of the endemic Curaçao White-tailed deer (*Odocoileus virginianus curassavicus*, Biña) and several species of waterbirds. Most pocket beaches (bokas) of the area lay downstream of gullies, where rainwater travels downhill thereby recharging local groundwater reservoirs (Beers et al. 1997). Subterranean groundwater reservoirs in turn sustain local vegetation types year round which are used by several bird species, pollinating bats and mammals to survive during Curaçao's dry season.

## 19. Wetland Types

a) presence:

Marine/coastal: **A** • **B** • **C** • **D** • **E** • F • G • H • I • J • K • **Zk(a)**

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp Ts • U • Va •  
Vt • W • Xf • Xp • **Y** • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • **6** • 7 • 8 • 9 • Zk(c)

b) dominance: D-C-A-E-B-Zk(a)-6-Y

**20. General ecological features:** The main habitats of the area include the shrublands, the coastal limestone cliffs, the pocket beaches, the inner bays and the coral reef, creating a diverse network of interconnected habitats. This ecological system supports a wide representation of the local biodiversity, especially due to the near absence of human disturbance as large areas are already within the boundaries of existing parks.

**Terrestrial habitats-** The north western coast of Curaçao has sparse vegetation directly near the coast (due to saltspray of large incoming waves) and is mostly covered by sparse vegetation consisting mainly of herbs (10-30 cm high) dominated by a *Lithophila-Euphorbia* vegetation. The vegetation is strongly structured by wind and spray (Beers et al. 1997). Many birds of prey species, such as the American kestrel (*Falco sparverius*, Kinikini), use this open area to hunt and the limestone cliffs on the coast are used by numerous bird species and iguanas as shelter or nesting sites (Debrot & de Freitas 1991). Several caves in the area harbor at least four species of bats (Reijns 1984). Nectar-feeding bats strongly depend on availability of cacti flowers, for which they are the main pollinators. Columnar cacti are conspicuous elements of arid vegetation on Curaçao and provide food for several animal species during the dry season, when other plant species are non-productive (Petit 1995). Up from most pocket beaches a *Hippomane* vegetation type is found, where vegetation is luxuriant due to rainwater that flows through gullies and recharges ground water reservoirs (Beers et al. 1997). Several man-made dams lie in the area, that create temporary freshwater lakes that are used by water birds but also the Curaçao White-tailed deer (*Odocoileus virginianus curassavicus*, Biña).

The lands included in the Ramsar site represent 21 vegetation types of the 22 that are present Curaçao (Beers et al. 1997).

**Marine habitats-** The pocket beaches are used by several sea turtle species for nesting. The three inland bays contain seagrass beds and Playa Grandi also harbours mangroves (Nagelkerken & van der Velde 2004). These



ecological communities are important nursery habitats for reef fish and as foraging grounds for sea turtles. Locally, the reef flat and crest harbour extensive populations of the endangered Elkhorn coral (*Acropora palmata*, Koral kachu grandi). Elkhorn coral contributes enormously to gross reef calcification rates in shallow water communities and provide protection to a large variety of other reef organisms through this species' ability to dissipate wave energy during storms (Mumby et al. 2008). Due to its abundance and branching morphology, the Elkhorn coral also plays an essential role in the maintenance of healthy and productive fish and invertebrate populations by providing shelter to these reef organisms (Gladfelter & Gladfelter 1978), especially to these organisms' earliest life stages (Nagelkerken 1974). The fringing coral reefs in the area are characterized by a wide submarine terrace (<350 m wide) which is dominated by wave-resisted brown algal species. Below approximately 15 m, the reef gradually slopes down and is dominated by species of the *Montastraea* spp. complex (Vermeij MJA, pers. obs.), which positively contribute to biogeochemical and physical processes on reefs such as community calcification, nitrogen fixation and wave energy dissipation. *Montastraea* reefs also provide essential habitat to support high densities of reef associated fish species (Mumby et al. 2008).

**21. Noteworthy flora:** As mentioned previously, the Christoffel Park exclusively harbors no less than 50 rare plants and 26 other more widely distributed rare plant species (BirdLife International 2011). The area also supports one of largest continuous areas of shrubland remaining on island (Debrot & Wells 2008). 21 of the in total 22 vegetation types that can be found on Curaçao are present in the area (Beers et al. 1997).

**22. Noteworthy fauna:** The terrace cliffs and open lands bordering the coast provide important nesting habitat to the Curaçaoan subspecies of the Caribbean parakeet (*Aratinga pertinax pertinax*, Prikichi), the Brown booby (*Sula leucogaster*, Bubi), the Crested caracara (*Polyborus plancus*, Warawara), the American kestrel (*Falco sparverius*, Kinikini), the rare endemic Curaçao barn owl (*Tyto alba*, Palabrua) and at least four species of bats, and large populations of the Green iguana (*Iguana iguana*, Yuana) (Debrot & de Freitas 1991). The shrubs and herbs of the Lower Terrace are habitat for the very rare South Caribbean Grasshopper sparrows (*Ammodramus savannarum*) which is endemic to Bonaire and Curaçao (Voous 1983). The Christoffel Park is further home to seven rare mammal species including the rare mouse species Hummelinck's Vesper Mouse (*Calomys hummelincki*) and the endemic Curaçao White-tailed deer (*Odocoileus virginianus curassavica*, Biña). Large populations of land snails (*Cerion uva*), endemic to the ABC Islands are also present within the area (Reijns 1984).

**23. Social and cultural values:** Some of the caves in the area were used for spiritual rituals in the past. Indian drawings are found in a cave in the Christoffel Park and are estimated to be more than 5000 years old. They were made in pre-Columbian times by the Indians living on the Dutch Leeward Islands. At that time, the Indians were still living in a Stone Age culture (Reijns 1984). At the Christoffel Park, the Landhuis Savonet was recently restored and transformed into a museum about Curaçao's history. The proposed Ramsar area already (partly) overlaps with two existing natural parks that are regularly visited by tourists and locals, but also by school children during educational field trips. The area is considered to be of significant scenic value by the local community. Access to the parks is only granted after an entrance fee is paid. These earnings are then used for maintenance and management of the area. The north coast of Curaçao is regularly visited by local fishermen.

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? YES

If Yes, tick the box  and describe this importance under one or more of the following categories:

The Christoffel Park includes the buildings of the former Savonet plantation, including the former plantation house called “landhuis”. Plantation Savonet is unique since it is the best-conserved and most complete plantation house on Curaçao. The landhuis was originally built in the 17th century (1662-1664) and is one of the oldest on the island. The Savonet plantation consisted of a great amount of buildings such as slave huts, a milk house, storage places, extensive irrigation system, animal corrals and the large plantation house itself (Carmabi 2012). These buildings give insights into the lives of the former inhabitants of the area. The ecological landscapes of the Christoffel Park were greatly modified in the past, mostly for agricultural purposes. Old wells and dams still remain in the park. Overgrazing of vegetation by livestock in the past has also greatly influenced the ecological character of the wetland, though all livestock has been removed from the park causing plant species to return (W Samboe, Christoffel Park Ranger, pers. comm.).

#### **24. Land tenure/ownership<sup>1</sup>:**

**a) within the Ramsar site:** The coastal waters of the area are part of the Territorial Sea of Curaçao and the waters sheltered within the pocket beaches and Boka Ascension are Internal Waters of the island. The lands of the Ramsar site are state-owned from the tip of the island to the south east boundary of the Christoffel Park. The area of Wacao, including Bartolbaai and Playa Grandi, is private property and belongs to one owner. The land surrounding Boka Patrick is state owned and Ascencion is private property.

**b) in the surrounding area:** most of the lands surrounding the Ramsar site are state owned as they are part of the two National Parks.

#### **25. Current land (including water) use:**

**a) within the Ramsar site:** Most of the lands adjacent to the coast were attributed a “Conservation” status in the island’s zoning plan locally known as the EOP (“Island Development Plan”; AB 1995 no. 36), which became effective on May 23, 1997. The conservation destination is attributed to areas with a scientific, historic, cultural or scenic value. A small fraction of the area was designated as “Open land” in the EOP. Open lands have no special designation at present, but could be assigned one in the future. The waters surrounding the area are occasionally visited by a few fishermen. Due to very rough waters and limited public access, fishing and diving pressures are minimal along the north coast of Curaçao. The terrestrial part of the proposed Ramsar site is mostly uninhabited and undeveloped and comprises sections of both Christoffel and Shete Boka Parks. The parks are regularly visited by tourists and locals, but also by scientists for research and monitoring of the area.

**b) in the surroundings/catchment:** Most lands surrounding the Ramsar site are also conservation areas under the EOP. Small rural areas are nearby the site. Hofi Pastor (Priest’s Orchard), is a 30 acres area east from the Christoffel Park and is operated by Friends of the Earth, a non-governmental organisation and comprises hiking trails and camping surface. The private terrain of Wacao is occasionally rented by the Dutch marines for shooting exercises.

#### **26. Factors (past, present or potential) adversely affecting the site’s ecological character, including changes in land (including water) use and development projects:**

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<sup>1</sup> needs formal confirmation from Curaçaoan planning department (DROV)

**a) within the Ramsar site:** The tern colonies are threatened by human disturbance and disturbance/predation from feral dogs and cats. Free-ranging goats have impacted the vegetation in Christoffel National Park, but eradication measures have led to a subsequent recovery of once rare vegetation types. Elsewhere, illegal livestock rearing and dumping is increasing. The several man made dams in the area lack maintenance and most of them have become seriously overgrown by the surrounding vegetation.

**b) in the surrounding area:** Large parts of the north coast reefs are already heavily affected by pollution, mainly the washing up of floating debris. The reefs and bays downstream of Hato (e.g. Boka Ascencion, also known as 'Plasticbaai') are to a certain extent polluted with PCB's, heavy metals and other anthropogenic contaminants due to years of municipal dumping at Hato (Debrot & de Freitas 1991).

#### 27. Conservation measures taken:

**a)** The Ramsar site includes part of the Christoffel and Shete Boka National Parks, established and managed by Carmabi Foundation since 1978 and 1994, respectively. The coastline concerned was legally designated as conservation area by means of the land-use zoning ordinance locally known as the EOP ("Island Development Plan") (A. B. 1995, no.36) The area was also designated as an Important Bird Area (IBA AN0017) in 2007 (Debrot & Wells 2008). The Ramsar site overlaps parts of all of these different conservation areas.

**b)** If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate): Christoffel & Shete Boka National Parks

Ia ; Ib ; II ; III ; IV ; V ; VI

**c)** Does an officially approved management plan exist; and is it being implemented?: An official management plan for the Christoffel Park was implemented in 1978 and is revised annually. An official management plan including the entire Ramsar area needs to be prepared following the designation of the area as a Ramsar site

**d)** Describe any other current management practices: Uniek Curaçao, a local non-profit association carries out maintenance activities in the area of Ascencion. See Appendix "An overview of specific rules and regulations to protect Curacao's marine life"

**28. Conservation measures proposed but not yet implemented:** An official management plan including the entire Ramsar area needs to be prepared following the designation of the area as a Ramsar site. The current management plan for the Christoffelpark could serve as a start to compile such document.

**29. Current scientific research and facilities:** Extensive research on all aspects of the ecology, biology and geology of this area has been carried out by Carmabi Foundation and visiting scientists.

**30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:** The Ramsar site encloses part of the Christoffel and Shete Boka Parks, established and managed by Carmabi Foundation since 1978 and 1994, respectively. They are both opened to the public and include hiking trails and scenic car routes. The Natuur en Milieu Educatie (NME) is a separate branch within Carmabi which implements various educational programs for schools and other groups since the 1980s. Excursions take place in both the Christoffel and Shete Boka National Parks and are part of a mandatory program at all Primary and Secondary schools. The organization also prepares teaching material, information booklets and many other activities meant to help children and teachers to get involved in nature conservation. The area of Ascencion is managed by Uniek Curaçao, a non-profit organization which aims to maintain and

improve the physical and social environment of the island and secure the livability of Curacao for both locals and visitors. Uniek Curacao's mission is to promote the island of Curacao in the most ecological and sustainable way

**31. Current recreation and tourism:** Recreation and tourism are mainly consisting of visits to the Christoffel and Shete Bok Parks, where most people participate in guided tours, hike or mountain bike. Scenic roads are found in both parks.

**32. Jurisdiction:** The Ramsar area is under the territorial jurisdiction of the Curaçao Government; the functional jurisdiction falls under the **Minister of Public Health, Environment and Nature of Curaçao**.

**33. Management authority:**

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