

APPLICATION FORM

1. MODALITY

AICOM (Area of Importance for Bat Conservation)

2. PROPOSED NAME

Complete name: Klein Bonaire Island **Abbreviated name**: Klein Bonaire

3. APPLICANT'S INFORMATION

Name of PCM responsible: PPRABC
Country: Islands of Aruba, Bonaire and Curaçao
Name and email of coordinator: Odette Doest. e-mail: odette@vetdoest.com

Authors of the proposal: Fernando Simal WILDCONSCIENCE BV

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Date of application: October 20th, 2018

4. JUSTIFICATION

Mark appropriate requirements:

x

Criterion 1. The area/site contains species of conservation interest at national or regional level (includes threatened and nearly threatened species in red lists of countries, species in IUCN Red List, endemics, migratory, rare, Data Deficient, important role in ecosystem functioning, species with small or restricted distributional ranges, or species present in their limit of distribution).



Criterion 2. The area/site contains roosts with one or several species of conservation interest and used temporarily or permanently, or during a significant part of their life cycle, as in the case or maternity roosts or sites of aggregation for migration (includes a system of caves, specific roosts such as buildings, roofs, among others).



Criterion 3. The area/site contains high species richness, independently of threat level.

Mark threats that apply:

x	Threat 1. Habitat loss.
	Threat 2. Roost destruction and disturbance.
	Threat 3. Human-bat conflicts and emergent diseases.
	Threat 4. Indiscriminate use of toxic substances.

Threat 5. Emergent threats (wind farms, invasive species, white-nose syndrome).



Justification summary:

Located in the South Caribbean xeric region, approximately 800 m from the Island of Bonaire, Klein Bonaire is a small flat island (maximum elevation 7 m a.s.l.) with a surface of 690 ha of limestone of coral reef origin and an estimated age of 30.000 to 40.000 years. Free of herbivorous exotic species since the 1980's, it presents a dry thorny forest dominated in the central area by columnar cacti of two species, Stenocereus griseus and Cereus repandus. These cacti have high production of flowers and fruit, suggesting high foraging activity of the two nectar-feeding bats that live on Bonaire Island, Glossophaga longirostris and Leptonycteris curasoae. Ecological interactions established between these bats and the cacti (pollination and seed dispersal) are of the essence for the maintenance of the dry ecosystems present on Bonaire. In addition, the bat pollinated tree Crescenta cujete is also a common species in the plant community. Its fruits are used by other species on the island. Because of the short distance that separates Bonaire and Klein Bonaire, the second is an important source of food resources for L. curasoae, known to fly over sea water. As natural habitats of Bonaire, including protected areas, undergo a degradation process due to the negative impact of exotic herbivore mammals (goats, sheep, donkeys and pigs) and the land suffers a fragmentation process due to touristic and urban developments, the importance of Klein Bonaire as food reservoir for fruit bats increases. This island is free of exotic herbivores and construction of any type of residential structure is forbidden. Despite of being already considered a protected area locally and internationally, its designation as AICOM is important for several reasons: a) it will help enforce future management plans for the island in favor of its wildlife, b) it will have influence on the approval of future environmental projects on the island (e.g., reforestation, research, recreational activities), c) it will enforce the need to protect the island, d) it will facilitate its designation as a KBA (Key Biodiversity Area) and, e) it will complement the current system of AICOMs and SICOMs recognized for the ABCs.

5. MAIN SPECIES TO PROTECT



(Photo: Jesús Molinari)

Leptonycteris curasoae Miller, 1900 Curaçaoan Long-nosed Bat (Phyllostomidae, Glossophaginae)



Distribution:

Distributed in arid and semiarid zones and dry forests in Colombia, Venezuela and the Caribbean Netherlands.

Conservation status

Venezuela status: "Vulnerable A2c" (Nassar, 2008). Global status: "Vulnerable A2c" (Soriano and Molinari, 2008). Curaçao status: "Endangered" (Petit et al., 2006) Aruba status: "Critically Endangered" (Bekker, 1999) Bonaire status: Not defined

Comments

Leptonycteris curasoae is a mid-size bat, elongated rostrum, small ears, short leaf-nose, and short light-brown fur. Feeding habits include nectar, pollen and fruit from different plant families associated with dry ecosystems (Cactaceae, Agavaceae, Bombacaceae, Moraceae, Sterculiaceae). From these plants, cacti and agaves are their main food sources (Martino *et al.*, 2002; Nassar *et al.*, 1997; Petit 1995, 1997). It is a gregarious species, which congregates in colonies from a few thousands to tens of thousands individuals (Cole and Wilson, 2006). Diurnal roosts are hot caves, with some ventilation and indirect sunlight. This species flies long distances above the sea, among the ABC Islands and mainland (Venezuela), and different sources of evidence also suggest that it migrates seasonally to mainland (Simal et al., 2015; Fleming and Nassar, 2002; Newton *et al.*, 2003; Sánchez and Cadena, 1999).

The ecosystems used by this species in northern South America and the Caribbean islands are among the most threatened in the region, with high conservation priority. Specific threats to L. curasoae include: 1) presence in one of the most threatened habitats in the region, 2) gregarious habits, which make them easily detectable and susceptible of being destroyed or disturbed, 3) dependence on food plants not legally protected and susceptible of massive removal for urban developments and agriculture, and 4) reproduction dependent on maternity caves, where newborns are very vulnerable to any cave disturbance. On Aruba Island, observations by J.M. Nassar indicate that the colonies of this species, historically, have been exposed to intense anthropogenic pressure. One of the main natural roosts used by the species, Tunnel of Love, was managed for several years as a recreational site. This activity restricted the colony of L. curasoae to a small chamber close to one of the entrances, and exposed it to stress with every visit of tourists. The other colony of this species, known for several years in Aruba Island, is located in an abandoned mine (Wela Mine), quite vulnerable to vandalism. On the Island of Bonaire, several caves are used by this species as diurnal and maternity roosts: Orizian, Cueva Raton, Pos di Watapana and Spelonk. Together, they provide roost to several thousand bats. Specific measures to protect the colonies in these caves are in progress.





(Photo: Mariana Muñoz-Romo) *Glossophaga longirostris* Miller, 1898. *Miller's Long-tongued bat* (Phyllostomidae, Glossophaginae)

Distribution

South American distribution, covering Colombia, Venezuela, Guyana, Brazil, Trinidad, and the Netherlands (Gardner 2008).

Conservation status

Global status: Data Deficient (Tavares and Soriano 2008). *Bonaire status:* Not defined

Comments

This is a small-size species, although it is the largest of the three recognized for the genus. It has short brownish to greyish fur, lighter in the ventral surface, prominent interfemoral membrane, and the tail extends in it 1/3 to 1/2 of its total length. It has an elongated rostrum compared to the other species in the genus, with dark short and rounded ears. Feeding habits include nectar, pollen, fruit, and occasionally insects (Soriano *et al.* 1991). It is common in areas with loose and low vegetation in arid, semi-arid and sub-humid zones in northern South America, near water bodies. It congregates in small colonies in caves, stone cracks, abandoned wells, and abandoned buildings. For this species, human constructions are of particular importance as an alternative to natural roosts. On the Island of Bonaire, this species is commonly spotted in a large number of caves, stone cracks, water wells, abandoned buildings and house roofs.

Even though it is more common than *L. curasoae*, it shares some common threats with that species: 1) habitat exposed to human intervention, 2) gregarious habits, and 3) land conversion of dry forests.



6. LIST OF SPECIES PRESENT IN THE AREA

FAMILY PHYLLOSTOMIDAE SUBFAMILY Glossophaginae Glossophaga longirostris Leptonycteris curasoae

7. AREA LOCATION



Central geographic coordinates at Klein Bonaire: North: 12.157201° West: -68.309009°



8. GENERAL DESCRIPTION OF THE AREA

Klein Bonaire is located in the xeric region of South Caribbean, approximately 800 m from Bonaire Island. It is a flat island (max. elevation 7 m) with total surface approx. 690 ha, made of limestone of coral reef origin (Stoffers, 1956) with an estimated age of 30.000 to 40.000 years (de Buisonjé, 1974). In the limestone terraces, there is a system of natural caves and water wells with different salinity degrees, including freshwater. Due to its scarcity, freshwater is of high importance to both islands. In addition to this, one or several of these caves could be used by the bat fauna of Bonaire as diurnal roosts (temporal or permanent). No studies have been conducted on the bat fauna of Klein Bonaire nor the water quality of its water wells and caves.

Thorny vegetation is low height, becoming into scrubs with patchy distribution on the island. De Freitas *et al* (2005) distinguished nine vegetation types and identified 76 species (Debrot, 1997). The island was exploded as plantation until mid XX century. Nowadays, it is uninhabited, but several ruins of ancient constructions can be observed. Even though exotic herbivore species (goats, donkeys) were removed completely in the 80's, the vegetation still shows evidence of severe degradation. However, signs of vegetation recover are also visible, but several decades will be probably needed to reach the vegetation complexity of the original forest, is ever. In the current vegetation observed at Klein Bonaire, the columnar cactus forest stands out in the central part of the island. These plants are the main source of food for nectar-feeding bats.

Bats are the only native mammals present at Klein Bonaire, but the number of species present is still unknown. Among the bird fauna that uses this small island, there are three species of terns that use it for nesting. Among terrestrial islands, the lora (*Amazona barbadensis*), very common on Bonaire, has not been observed. Overall, 33 bird species have been recorded on Klein Bonaire (Debrot, 1997).

Klein Bonaire is currently under several international and national legally protected categories: a) National Marine Park, b) Ramsar site, c) Important Bird Area (IBA), and, d) "Nature" designation in the Bonaire's Planning and Zoning system, approved in 2010. In addition, the island was bought in 2001 by the Klein Bonaire Foundation, with a clause in the purchase document that specifically prohibits construction on the island, even if it were sold in the future. Despite of the legal protective figures just mentioned, its designation as AICOM is important for: a) future management and conservation plans aimed to protect the bat fauna, b) its influence on the approval of future permits to execute any type of project on the island (e.g. reforestation, research, and recreational activities), c) enforce its protection in the future, d) its potential use to designate the island as a KBA (Key Biodiversity Area) and, e) complement the AICOMs and SICOMs already certificated in the ABCs.



9. INVOLVED ACTORS

Aruba, Curaçao and Bonaire Bat Conservation Program (PPRABC)

The Aruba, Curaçao and Bonaire Bat Conservation Program is member of RELCOM since 2011. Like all RELCOM members, PPRABC works for the wellness of bats of the three islands, conducting activities of research, education and conservation.

Wildlife Conservation, Science and Education (WILDCONSCIENCE BV)

It is an environmental consultancy company created in 2014 on Bonaire Island. It offers services of research, monitoring, and environmental education to governmental agencies and NGOs involved in management and conservation of natural resources. Recently, WILDCONSCIENCE BV received funds from the Dutch Government to support the first phase of the project "Bonaire Cave and Karst Nature Reserve", which has as central goal the creation of a natural reserve containing a significant proportion of the caves present in Bonaire. For this purpose, WILDCONSCIENCE BV follows IUCN's Category IV Guidelines. This application to designate Pos di Antoin as SICOM and its certification are part of the first phase of this project.

The Caribbean Speleological Society (CARIBSS)

CARIBSS was legally established on Bonaire in June 2016 by a group of professionals that share the passion for cave exploration. The society's vision is that the caves of the Caribbean and the natural values present in them be recognized and valued by all residents and visitors of the island. With five primary approaches (exploration, conservation, cultural heritage, recreation and exploitation), the society has 33 active members at present. Together with the Insular Government of Bonaire and WILDCONSCIENCE BV, CARIBSS is the third organization working in the Bonaire Caves and Karst Nature Reserve project. Since its official foundation, CARIBSS is also the host organization of the PPRABC.

Caribbean Office of the Ministry of Economy Affairs, Agriculture and Innovation (RCN)

Since October 10th, 2010, the Island of Bonaire is a municipality of Holland. This entity represents the Dutch Government in the island. Its environmental powers and attributes include the signature of international treaties such as Ramsar, SPAW and CITES; however, it does not participate in the management of natural resources at local level. This office of the ministry administrates financial resources that in the future could be used to manage and protect this SICOM.

STINAPA Bonaire

It is the NGO responsible of the management of national parks on Bonaire, and therefore, responsible of managing Klein Bonaire. All activities planned to be conducted on this island will need the approval and participation of STINAPA. From 2011 until 2014, STINAPA was leader consolidating the PPRABC and all bat research conducted on the ABC islands. Nowadays, STINAPA is neither member of PPRABC nor member of CARIBSS, but it is willing to provide support to the PPRABC.

Planning and Development Office of the public entity Bonaire (DRO and OLB).

The island government is responsible for the creation and implementation of the Nature Policy Plan, besides counseling the Insular Government on permits' approval of development plans and scientific research projects. It plays an important role regulating tourists' activities and research. This organization is key in the legal and physical protection of caves, for instance by commissioning to WILDCONSCIENCE BV the implementation of the Bonaire Caves and Karst Nature Reserve project.

Dutch Caribbean Nature Alliance (DCNA)



It is a regional network formed by all the foundations involved in management of natural areas in the Dutch Caribbean. DCNA was established in 2005 with the mission of bringing financial support and assistance to organizations responsible for the management of protected areas in the Dutch Caribbean. Its mission is to collaborate with the local organizations to preserve biodiversity in the Dutch Caribbean and promote sustainable use of those areas.. They also manage a fund trust aimed to cover the operational expenses of national parks in each island.

10. PLANNED ACTIONS FOR CONSERVATION, EDUCATION AND RESEARCH

Conservation

No management program has been conducted or exists at present for Klein Bonaire that includes the bat fauna as a focal target. At present, a management plan is being elaborated by "Nature2", under the supervision of STINAPA Bonaire. The first approach will be to contact STINAPA Bonaire and Nature2 to make sure that the bat fauna of Klein Bonaire is included in this plan. If possible, the PPRABC should participOate in the bat and caves management section.

Communication and education

Communicate all nature conservation and management organization of Bonaire the importance of Klein Bonaire for bats and its recognition as an AICOM.

Research and monitoring

Given that no formal data exists on the bats of Klein Bonaire, priority will be given to a baseline study on diversity and abundance of bats on this island. Likewise, research should include diurnal roosts present in the island and its use along the year by the different species of bats present in it.

11. CITED LITERATURE

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12. ANNEXED MATERIAL (SITE PHOTOS)













Klein Bonaire 01. View of the columnar cactus forest at central Klein Bonaire (Photo: Fernando Simal, 2015) Klein Bonaire 02. Saline water outcrop on Klein Bonaire's karst (Foto: Fernando Simal, 2015) Klein Bonaire 03. Ripe infrutescences of *Zanthoxylum flavum*, a rare species on Bonaire Island, but abundant on Klein Bonaire (Photo: Fernando Simal, 2015) Klein Bonaire 04. Site of access to underground freshwater during the rainy season (Photo: Fernando Simal

Klein Bonaire 04. Site of access to underground freshwater during the rainy season (Photo: Fernando Simal, 2015)

SUMMARY DATA

- 1.- Complete name of proposed site: Klein Bonaire Island
- 2.- Abbreviated name of proposed site: Klein Bonaire
- 3.- Location: Bonaire, Dutch Neederlands

4.- Main conservation value: Important source of food resources for the two species of nectar-feeding bats on the island; both species are key for the terrestrial xeric ecosystems on the ABC islands and arid and semiarid lands of Venezuela and Colombia.

5.- Geographic coordinates at entrance: North: 12.122978° West: -68.220547°

6.- Area surface (in hectares): 690 ha



7.- Dominant vegetation type: Thorny forest, Xeric Region South Caribbean

8.- List the five most important bat species in the site/area proposed (alphabetic order):

- Glossophaga longirostris
- Leptonycteris curasoae
- Mormoops megalophylla
- Myotis nesopolus
- Natalus tumidirostris



ESPACIO RESERVADO PARA RELCOM

AICOM Klein Bonaire Island

CÓDIGO: A-ABC-004

Date of approval: December 13th, 2018

Presented by: PPRABC (Programa pa Protehé raton dj' anochi).

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