

## Bats of St. Eustatius

In 2015, Naturalis Biodiversity Center set out to create a baseline study of St. Eustatius' marine and terrestrial fauna and flora. Marine studies were done in collaboration with Anemoon Foundation and terrestrial studies in collaboration with Naturalis, the Dutch Mammal Society, RAVON, EIS and Leiden University. Prior to this effort, the biodiversity of the island had been poorly investigated. One of the many exciting finds of the terrestrial exploratory expedition was the discovery of a new species of bat for the island, the Insular Single-leaf bat (*Monophyllus plethodon*), which was found on the edge of The Quill's crater. Bats may not be the most conspicuous of animal species in the Dutch Caribbean, however they have a very important ecological niche. Nectar-eating bats are key pollinators of a number of native plant species, and fruit-eating bats assist with seed dispersal. As part of an ongoing study of the chiropteran (bat) fauna of the Lesser Antilles, American and Dutch bat specialists combined their findings to provide the first-ever comprehensive assessment of St. Eustatius's bat population. The results of the study were recently published by Pedersen et al. (2018) in the Occasional Papers of the Museum of Texas Tech University (Number 353, March 13th 2018).



*Monophyllus plethodon*. Photo by: © Wesley Overman

Over the course of several years, both the US and Dutch researchers set out mist nets around St. Eustatius and identified a total of five bat species for the island: Insular Single-leaf bat (*Monophyllus plethodon*), Antillean Fruit-eating bat (*Brachyphylla cavernarum*), Jamaican Fruit-eating bat (*Artibeus jamaicensis*), Antillean Tree bat (*Ardops nichollsi*) and Pallas's Mastiff bat (*Molossus molossus*). The Brazilian Free-tailed bat (*Tadarida brasiliensis*) is listed as a provisional species as there is record of it within the literature but no live specimen was found during the course of the study. Of great concern to the researchers is how impoverished and unbalanced St. Eustatius's chiropteran fauna is compared with nearby islands that boast an average of 8 to 10 bat species. Pedersen et al. (2018) believe that the clearing of the island's vegetation for agriculture and charcoal production since the 19th century has resulted in chronic environmental degradation and a lack of habitat diversity. This, in turn, has resulted in lack of diversity of the bat fauna in favor of those species that are more adaptable. St. Eustatius's three most abundant bat species - *Molossus molossus*, *Artibeus jamaicensis* and *Brachyphylla cavernarum* - have a broad environmental tolerance and are "capable of living in habitats that are heavily impacted by human activity and natural disasters". The other two species, *Ardops nichollsi* and *Monophyllus plethodon*, require much more specialized habitats and are classified by Pedersen et al. (2018) as rare to very rare on the island.



*Monophyllus plethodon*. Photo by: © Ellen van Nooren

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Bats are the only non-introduced mammal species present on St. Eustatius. Goats and cats were brought to the island by humans during colonization and have had a devastating impact on the native bat population. Predatory species such as cats and dogs prey directly on bats; in fact, cats were observed pulling bats out of mist nets during this research project. The uncontrolled grazing of feral livestock is preventing native trees that provide food and shelter to bats from maturing. In some cases, invasive species have outcompeted native plants that are an important food source for the bats. Fruit- and pollen-feeding bats depend upon a diverse collection of tree species providing a year-round supply of fruit, pollen, and nectar.

The active management of the Quill/Boven National Park will allow the island's bat populations to rebound in the future. The park's forests are protected and provide roosts, protection and food resources for the bats. In order to further protect St. Eustatius's chiropteran fauna, Pedersen et al. (2018) recommend the protection of all caves and rock shelters as well as man-made equivalents of these such as mines and wells. Many of the island's bat species use caves as day roosts as well as a refuge during storms and hurricanes.

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