GRENADA

LAND AREA 344 km² ALTITUDE 0–840 m HUMAN POPULATION 96,000 CAPITAL SAINT GEORGE'S IMPORTANT BIRD AREAS 6, totalling 21.5 km² IMPORTANT BIRD AREA PROTECTION 85% BIRD SPECIES 164

THREATENED BIRDS 1 RESTRICTED-RANGE BIRDS 7

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Critically Endangered Grenada Dove, less than 140 survive in Grenada's dry forests.

INTRODUCTION

The island nation of Grenada lies at the southernmost end of the Lesser Antilles, just c.160 km north of the Venezuelan coast. It comprises three main islands: Grenada (311 km²) in the south; and the southern Grenadines islands of Carriacou (32 km², and 37 km north of Grenada) and Petit Martinique (0.7 km², and 6 km east of Carriacou) along with their associated offshore islets. Grenada is the highest remaining part of the submarine Grenada Bank that extends 180 km from Bequia (in the St Vincent Grenadines), south past Grenada. An active submarine volcano—"Kick-'em-Jenny"—sits 3 km north of Grenada. Its first recorded explosion into the atmosphere was in 1936. Carriacou and Petit Martinique are also exposed summits of the Grenada Bank.

The main island of Grenada is volcanic. The island's highest point is Mount St Catherine, part of a central chain of rugged mountains (that also includes Mount Qua Qua and Mount Sinai) that run north–south through the centre of the island. South of this mountain chain is a system of curving ridges (the Southern Mountains) that run toward the south and then bend to the east and north-east and make up the Grand Etang Forest Reserve. These mountains descend gradually to an extensive lowland coastal plain in the east. Grenada supports a wide

diversity of forest types with (in 1982) cloud-forest (including elfin woodlands, palm brake and montane thickets) on the highest peaks (covering c.1,700 ha), then rainforests and lower montane rainforest (2,280 ha), evergreen and semi-evergreen seasonal forest, deciduous forest and dry woodlands (less than 1,750 ha), littoral woodland or dry coastal scrub (less than 1,230 ha), and mangrove forest (less than 190 ha). Mangroves have greatly diminished in numbers and area, and pockets are found primarily along the eastern coastline from True Blue to Requim, with some around Mount Hartman and Woburn Bays, and at Calivigny. One of the largest areas, at Levera, was recently (2003) mostly destroyed for development.

Like many Caribbean islands, Grenada was cleared of most of its forests to make way for sugarcane cultivation, but natural disasters paved the way for the introduction of other crops. In 1782, nutmeg *Myristica fragrans* was introduced to Grenada, and thrived in the island's ideal soils. The collapse of the sugar estates and the introduction of nutmeg and cacao encouraged the development of smaller landholdings, and the island developed a land-owning farmer class. Currently, Grenada relies on tourism as its main source of foreign exchange, especially since the construction of an international airport in 1985, located on the south-westernmost peninsula of Point Saline. Grenada's tropical climate is defined by a

hot, humid rainy season from June to January (with maximum rainfall in November). Average annual rainfall varies between 4,000 mm in the mountainous interior to 1,500 mm in some coastal areas, and as little as 750 mm on the Point Saline peninsula. Grenada is divided into six parishes for administrative purposes.

The deep fertile soils on Carriacou and Petit Martinique resulted in extensive clearing for agriculture, primarily cotton and for a short period for sugarcane and fruit trees. By the late-1870s soil fertility had decreased and livestock were introduced. To this day, grazing continues to cause significant soil erosion, particularly during the dry season when the animals are released and graze freely. In spite of the clearances and livestock, recent (2004) estimates suggest that Carriacou is 65% forested (forest and woodland), albeit with just 135 ha in forest reserves (primarily High North Forest Reserve). The islands support seasonal evergreen forest, dry thorn scrub and deciduous forest, mangroves and fringing coral reefs. Offshore islets to the between Grenada and Carriacou are uninhabited.

Conservation

The protection of Grenada's natural resources (forests and wildlife) is directed by a series of policies and legislation, primarily under the management of the government's Forestry and National Parks Department (FNPD). The Ordinances for the Protection of Forests, Soil and Water Conservation (1954– 1958, with an amendment in 1984) addresses the protection of areas to provide natural and undisturbed habitat for the flora and fauna of Grenada, and gives protection mainly to the Grand Etang Forest Reserve (the area around Grand Etang Lake, Grenada) and High North Forest Reserve (Carriacou). These forest reserves serve as sanctuaries for wildlife, and the legislation prohibits hunting, trapping, and carrying firearms within them. The Birds and other Wildlife Protection Ordinances (of 1956, 1964 and 1966) were intended to provide protection to wild birds and other wildlife, with all birds and their eggs being protected throughout the year except those listed in an annex for which there is an open season. The Critically Endangered Grenada Dove Leptotila wellsi is not specifically mentioned in this legislation, but it is protected within the context of "all wild birds".

In 1988, the Government of Grenada and the Organization of American States developed a Plan and Policy for a System of National Parks and Protected Areas for Grenada and

Carriacou. However, this plan has not been implemented nor formally adopted. The National Parks and Protected Areas Act (1990) led to the establishment of both the Mount Hartman National Park and the Perseverance Protected Area (Dove Sanctuary). An amendment to this Act in 2007 enabled the re-designation of the Mount Hartman National Park boundaries (in 2008). The FNPD initiated a participatory, National Forest Policy review which resulted in a governmentapproved new Forest Policy (2002). The FNPD has also undertaken a review of all of Grenada's key forest and wildlife legislation, and has drafted revisions although (as of June 2008) these revisions have not yet been implemented. The revised legislation addresses issues such as endangered species, and grants specific mention to species of special concern, such as the L. wellsi and the Grenada Hook-billed Kite Chondroheirax uncinatus mirus.

About 23% of Grenada is currently forested: c.4,000 ha as higher elevation forests and c.3,000 ha of evergreen, semievergreen and deciduous seasonal forest and woodland. Almost 70% of this forest area is Crown land. However, most of Grenada's protected land (primarily the Grand Etang Forest Reserve and the proposed Mount St Catherine Forest Reserve) cover just the high elevation montane forest-types leaving the seasonal forest, deciduous forest, dry woodlands, dry coastal scrub and mangrove forest very poorly protected. Grenada lies south of the hurricane belt, and before Hurricane Ivan (September 2004) and Emily (July 2005), the last hurricane to hit the island was in 1955 (Janet). Hurricane Ivan had a profoundly devastating effect on the island's economy, agricultural sector and ecosystems (including those on which L. wellsi depends). Biodiversity on the island is being affected by a range of factors (mostly related to development and agricultural pressures) which are described under each of the IBA profiles below. However, the introduction of the mongoose Herpestes auropunctatus during the 1880s is particularly notable. This alien invasive predator is now abundant and is thought to be having a significant impact on Grenada's mammal, bird and herpetofauna.

Birds

Over 160 species of bird have been recorded from Grenada, with resident landbirds represented by just 35 species. The remainder is comprised of Neotropical migrants, waterbirds and seabirds. A number of birds of South American origin are



Dry forest at Mount Hartman, south-west Grenada. PHOTO: BONNIE RUSK)

				Grenada IBAs						
				GD001	GD002	GD003	GD004	GD005	GD006	
			Criteria							
Key bird species	Criteria Nation	al population	Ë							
Grenada Dove Leptotila wellsi		136		16	6	14		38	50	
Green-throated Carib Eulampis holosericeus				✓	✓		✓			
Antillean Crested Hummingbird Orthorhyncus cristatus				✓	✓	✓	✓	✓	✓	
Caribbean Elaenia Elaenia martinica				✓	✓	✓	✓	✓	✓	
Grenada Flycatcher Myiarchus nugator				✓	✓	✓	✓	✓	✓	
Lesser Antillean Bullfinch Loxigilla noctis				✓	✓		✓	✓	✓	
Lesser Antillean Tanager Tangara cucullata				/	1	✓	/	1	J	

All population figures = numbers of individuals. Dove population figures are based on numbers of calling males, and assume 1:1 sex ratio.

Threatened birds: Critically Endangered. Restricted-range birds.

present on the island. However, the zoogeographic boundary of the West Indian region separates Grenada from Trinidad and Tobago which has a predominantly South American avifauna. Lesser Antilles EBA restricted-range birds (of which there are 38) are represented by seven species (see Table 1), one of which, Grenada Dove Leptotila wellsi, is endemic to the island of Grenada. The Grenada Flycatcher Myiarchus nugator and Lesser Antillean Tanager Tangara cucullata are restricted to Grenada and St Vincent. Four other Lesser Antilles restricted-range birds have been recorded from Grenada but have not been included in the IBA analysis as their current status is unclear. The Purple-throated Carib Eulampis jugularis was seen several times in the 1960s although it has been suggested that these may have been vagrants. Scaly-breasted Thrasher Margarops fuscus was described as "not common" and then "very rare" prior to 1940 and its current status is unknown. The Antillean Euphonia Euphonia musica is similar recorded as "not very common" in the 1900s and "very rare" by the 1940s, the species does not seem to have been recorded since. Last, the Brown Trembler Cinclocerthia ruficauda is unknown by current birdwatchers in Grenada (or visiting birding tours) although it is listed as present in the country. The presence of Lesser Antilles EBA restricted-range birds on Carriacou and Petit Martinique is poorly documented.

Leptotila wellsi is Grenada's national bird, but it is Critically Endangered and since its abundance and distribution were

Grenada Flycatcher, endemic to Grenada, St Vincent and the Grenadines. (PHOTO: ALLAN SANDER)



first documented in 1987, the species has been limited to two isolated patches of secondary seasonal dry forest in the southwest and west of the island. The total population declined by about 50% between 1987 and 1990. In 1998, the population numbered only c.100 individuals, increasing to an estimated 180 individuals by 2004. Surveys in 2007 found 68 calling males suggesting a post-hurricane recovering population of c.136 individuals. With so few individuals in the population, the dove features prominently in the IBA analysis for Grenada, and is the focus of a range of conservation efforts being implemented by the government and the international scientific community. The Near Threatened Caribbean Coot Fulica caribaea occurs on Grenada with 30 individuals recorded from Lake St Antoine in 1971, and an unspecified number again in 1987. However, there are no recent reports documenting the current status of the species on the island. The Near Threatened Buff-breasted Sandpiper Tryngites subruficollis is a very rare migrant on the island.

Little has been documented concerning the status and distribution of Grenada's breeding and non-breeding seabirds (or in fact waterbirds and migrants in general). However, important areas for breeding seabirds are the unpopulated islets between Grenada and Carriacou, especially the islands close to Isle la Ronde. Boobies (presumably mostly Red-footed Booby Sula sula and Brown Booby S. leucogaster) are by far the most important species group and significant rookeries (of unknown size) are to be found at "gwizo" (near Isle la Ronde), Les Tantes, and "Upper Rock". Significant (but undocumented) numbers of Magnificent Frigatebird Fregata magnificens are resident at Sandy and Green Islands. Brown Noddy (Anous stolidus) and Red-billed Tropicbird Phaethon aethereus are also found on these islands. Roseate Tern Sterna dougallii, Bridled Tern Sterna anaethetus, and Sooty Tern Sterna fuscata were observed (2004) around the islands between Carriacou and Kick-'em-Jenny. All of these birds depend on the abundant fish (schools of anchovies and various fry or "pischet") in the Isle la Ronde zone. Fishermen and other poachers target the young (fat-chested) boobys and Scaly-naped Pigeon Patagioenas squamosa ("Ramier"), which, in 1987, were abundant on Sugarloaf and Sandy Islands.

IMPORTANT BIRD AREAS

Grenada's six IBAs—the country's international site priorities for bird conservation—cover 21.5 km², equivalent to 30% of remaining forested area, but only 6.25% of total land cover. They have been identified on the basis of seven key bird species (listed in Table 1) that variously trigger the IBA criteria. These species are all Lesser Antilles EBA restricted-range birds, one of which (Grenada Dove *Leptotila wellsi*) is Critically Endangered. There is very little data concerning the distribution and abundance of these key species (with the exception of *L. wellsi*), the other restricted-range birds that have been recorded historically, or other potential IBA



Mount Hartman National Park, home to 37% of the world's Grenada Dove population. (PHOTO: LISA SORENSON)

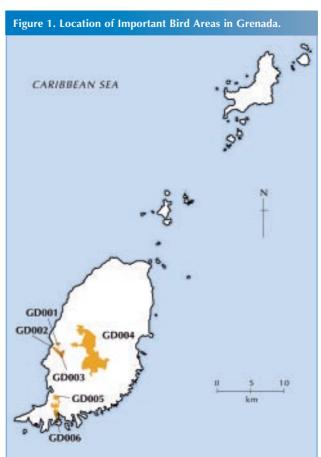
trigger species such as the waterbirds and seabirds that are known to occur but in unknown numbers. As a result, five of the IBAs have been identified primarily for the Critically Endangered *L. wellsi*, and together these IBAs support nearly the entire species' population. However, six males hold territories outside the IBAs: two on the west coast and four in the south-west.

Three of the IBAs (Perseverance GD002, Grand Etang GD004 and Mount Hartman GD006), are currently legally protected. The remainder include one IBA that is primarily Crown land (GD003), one that is owned (mostly) by a single land owner (GD001), and one that is held by many private

Red-footed Booby, one of a number of seabirds that urgently need surveying to assess the importance of Grenada's breeding colonies. (PHOTO: ALLAN SANDER)



land owners (GD005). These three unprotected IBAs all support critical habitat for *L. wellsi*. Indeed, Woodlands IBA (GD005) supports 27% of the world population of the dove and should therefore be the focus of special management measures. Grand Etang IBA is Grenada's only montane protected area. It represents a significant portion of Grenada's interior high mountain forest covering different vegetation types, and it supports populations of all the restricted-range birds other than *L. wellsi*. It might yet prove to support other restricted-range species (such as Purple-throated Carib *Eulampis jugularis*, Scaly-breasted Thrasher *Margarops fuscus*, Antillean Euphonia *Euphonia musica* and Brown Trembler



Cinclocerthia ruficauda; see above), and systematic surveys should be undertaken with these species in mind.

The paucity of data concerning the status and distribution of restricted-range species, waterbirds and seabirds suggests an urgent need for systematic surveys for these species groups throughout the islands that make up the nation of Grenada. With additional information it is likely that other IBAs will be identified. Mount St Catherines covers 573 ha of forest at 480–800 m in central Grenada. It probably supports the same key bird species that Grand Etang IBA supports, but this requires confirmation. Mount St Catherines is a proposed Forest Reserve currently being considered for designation by the Grenada Government. Surveys at Lake St Antoine may also highlight its continued importance for the Near Threatened Caribbean Coot Fulica caribaea, and surveys on/ around the known seabird breeding colonies will help provide the necessary information to assess their international importance. Thus there is a clear and urgent need for surveys of wetlands and seabird colonies to establish a baseline against which to monitor and from which additional IBAs could possibly be described. The existing dove monitoring programme could be usefully expanded to include field assessments (surveys and subsequent monitoring) for other forested areas on Grenada and potentially the surrounding islands. All monitoring results should be used to inform the annual assessment of state, pressure and response variables at each of the country's IBAs to provide an objective status assessment and highlight management interventions that might be required to maintain these internationally important biodiversity sites.

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■ Site description

The Woodford IBA is on the west coast of Grenada, north of Perseverance IBA (GD002). Its western border extends from the coast at Halifax Harbour to inland of the north–south coastal road along the Douce River. It is bordered to the north by the Douce River, except c.8 ha on the coastal side of the road, both north and south of the mouth of the Douce River. To the south, the IBA is bordered by a sanitary landfill and a proposed habitat corridor linking the site to the Perseverance Dove Sanctuary. Upriver is a gravel quarry, no longer in operation (2007). On the coastal side of the North–South road to the south are a mangrove swamp, Grenada's main garbage dump, and an asphalt plant.

Birds

This IBA is important for the Critically Endangered Grenada Dove *Leptotila wellsi*. The population was estimated at 12 pairs in 2003/2004 (pre-Hurricane Ivan) (Rusk & Clouse 2004), only four pairs 3–4 months after the hurricane in 2004 (a possible under estimate due to a change in calling behaviour post hurricane) (Rusk 2005), and eight pairs in 2007 (Rusk

2008). All seven of the Lesser Antilles EBA restricted-range birds occur at this IBA, as does the threatened endemic Grenada Hook-billed Kite *Chondrohierax uncinatus mirus* subspecies.

Other biodiversity

Nothing recorded.

Conservation

This site is private land owned primarily by a single landowner, and is unprotected. Due to its importance for *L. wellsi*, special management and/or its purchase for protection should be considered. Expanding industrial activity is the primary threat to the IBA, as well as clearing of land for agriculture. A proposed (2008) quarry on its southern border would negatively impact doves on adjacent sites. Hurricane Ivan (2004) caused extreme changes to vegetation structure and composition, and to the availability of resources used by the dove. Rats *Rattus* spp., mongoose *Herpestes auropunctatus* and other predators may affect the bird populations (including the dove).



■ Site description

The Perseverance IBA, a plantation destroyed by Hurricane Janet in 1955, is on the west coast of Grenada, inland from Halifax Harbour. Its western border is on the north–south coastal road, running inland c.400 m to its eastern border at the base of a steep cliff. To the north, the IBA is bordered by some houses and the Salle River. This IBA includes an unprotected habitat corridor north of the Salle River, inland of the sanitary landfill to the base of the ridge (behind which is a proposed quarry), linking this IBA with Woodford IBA (GD001). North of the river is a (non-operational) sanitary landfill. On the coastal side of the north–south road are a mangrove swamp, Grenada's main garbage dump, and an asphalt plant.

Birds

This IBA is important for the Critically Endangered Grenada Dove *Leptotila wellsi*. The population was estimated at six pairs in 2003/2004 (Rusk & Clouse 2004) (pre-Hurricane Ivan), only one pair 3–4 months after the hurricane in 2004 (Rusk 2005) (a possible under estimate due to a change in calling behaviour post hurricane), and three pairs in 2007 (Rusk 2008). It supports all of the Lesser Antilles EBA restricted-range birds and also the threatened endemic Grenada Hook-billed Kite *Chondrohierax uncinatus mirus* subspecies.

Other biodiversity

Nothing recorded.

Conservation

Perseverance IBA is a protected area (Dove Sanctuary) established in 1996 to protect L. wellsi. It comprises a c.32 ha (to be re-surveyed) portion of the 113-ha Government-owned Perseverance Estate (contrary to the government gazette which suggests it includes the entire estate). Protection measures are being explored for the nearby Beausejour-Grenville Vale IBA (GD003) that would link the two sites. Expanding industrial activity is the primary threat to the IBA. Toxic fumes (from landfill fires that started in 2004) and garbage are blown into the IBA. A proposed (2008) quarry would impact the habitat corridor to the Woodford IBA. Rats *Rattus* spp., mongoose Herpestes auropunctatus and cats may affect the bird populations (including L. wellsi). A metal recycling collection site borders the IBA to the north. Hurricane Ivan caused extreme changes to vegetation structure and composition, and to the availability of resources used by the dove. A fire (May 2008) burned the western-facing ridge down to the edge of the lower slopes, below which the doves are found.



■ Site description

Located near the west coast of Grenada, the Beausejour–Grenville Vale IBA is just inland from the north-south coastal road from Beausejour Bay. The bowl-shaped site is bordered to the west, north and south by a slope, rising to c.500 m in elevation, and includes the east-facing side of the eastern ridge (Grenville Vale). The slopes to the west, north and east are forested. The valley bottom comprises some fruit trees, an agricultural plot and cattle grazing. Immediately to the south is a housing development. The north-western side of this IBA is adjacent to the south-eastern border of the Perseverance IBA (GD002).

Birds

This IBA is important for the Critically Endangered Grenada Dove *Leptotila wellsi*. The population was estimated at c.15 pairs in 2003/2004 (pre-Hurricane Ivan) (Rusk & Clouse 2004) but only 1–6 pairs 3–4 months after the hurricane in 2004 (Rusk 2005) (a possible under/over estimate due to a change

in calling behaviour post hurricane). Seven pairs were estimated in 2007 (Rusk 2008). Five (of the seven) Lesser Antilles EBA restricted-range birds occur at this IBA.

Other biodiversity

Nothing recorded.

Conservation

This site is both Crown land and under private ownership and is currently unprotected. Threats include the possible expansion of a housing development and cutting for agriculture. Rats *Rattus* spp., mongoose *Herpestes auropunctatus* and other predators may impact the *L. wellsi* population. A fire (May 2008) burned a large portion of the IBA, though remained upslope of most known dove territories. Hurricane Ivan caused extreme changes to vegetation structure and composition on the west coast. Protection measures are being explored by Government that could result in a contiguous protected area with the Perseverance IBA.



■ Site description

Grand Etang Forest Reserve is within the Southern Mountains of central Grenada. It encompasses mountains such as Mount Sinai (701 m), Mount Grandby (682 m) and Mount Qua Qua (735 m), and several crater lakes including the Grand Etang Lake near the centre of the reserve (at 530 m). Rainforests, lower montane rainforests and elfin woodlands characterise the steeper slopes throughout the high region. At lower altitudes, the trees are smaller and more thickly covered by epiphytes (ferns and mosses). Six plantations of exotics have been established on steep slopes since 1957.

Birds

Six (of the seven) Lesser Antilles EBA restricted-range birds occur at this IBA, and others may occur. Little survey or census work has been carried out. However, the site represents a major portion of Grenada's remaining high altitude forests that are so important for the restricted-range birds, and may yet prove to support populations of Purple-throated Carib *Eulampis jugularis*, Scaly-breasted Thrasher *Margarops fuscus*, Antillean Euphonia *Euphonia musica*, and Brown Trembler *Cinclocerthia ruficauda* (all of which were historically known to occur, but have not recently been recorded).

■ Other biodiversity

Eleutherodactylus euphronides is Endangered and confined to just 16 km² of Grenadian montane forest at elevations >300 m, including within this Forest Reserve. Anolis aeneus and A. richardii occur at this site along with other reptile and amphibian Grenada Bank endemics. Endemic plants include Grand Etang Fern Danaea sp., the Cabbage Palm Oxeodoxa oleracea, Maythenus grenadensis, Rhytidophyllum caribaeum, and Lonchcarpus broadwayi. The Mona monkey Cercopithecus mona, introduced from West Africa, is found in the upper montane forest of this IBA.

Conservation

This IBA was designated as a Forest Reserve in 1906. A visitor centre near the Grand Etang Lake is (in 2006) managed privately although nearby trails (and the forest) are maintained by the Forestry and National Parks Department. Illegal hunting and cutting of trees takes place within the forest reserve, though direct impacts on the forest birds are likely to be minimal. Regulations are enforced by the government.



■ Site description

Located in south-west Grenada, this IBA comprises discrete wooded areas within and adjacent to residential areas. Its southern border is the northern boundary of the Mt Hartman IBA (GD006). The site extends north across the Grand Anse Road through Petit Bouc to the eastern side to Café. The northernmost edge is a concrete road (with a concrete water tower). A golf course (with adjacent houses) is situated near the middle of the IBA.

■ Birds

This IBA is important for the Critically Endangered Grenada Dove *Leptotila wellsi*. The population was estimated at c.25 pairs in 2003/2004 (Rusk & Clouse 2004) (pre-Hurricane Ivan), c.12–15 pairs 3–4 months after the hurricane in 2004 (Rusk 2005) (a possible under/over estimate due to a change in calling behaviour post hurricane) and 19 pairs in 2007 (Rusk 2008). Six (of the 7) Lesser Antilles EBA restricted-range birds occur at this IBA, as does the Grenada Hook-billed Kite *Chondrohierax uncinatus mirus* subspecies.

Other biodiversity

Nothing recorded, although reptiles and amphibians endemic to the Grenada Bank have been recorded in the adjacent Mount Hartman Estate.

Conservation

This site is private land (with many land owners) and is unprotected. Due its importance for the Grenada Dove, special management of this site should be considered in partnership with private landowners. Purchasing portions of this site should also be considered. Expanding residential development (which is happening both along the edge of the IBA and within its boundaries) is the primary threat to the IBA. Roads through the IBA are also leading to habitat loss and are opening up new areas to increased disturbance and use. Hurricane Ivan (2004) severely affected the structure of the vegetation in this area.



■ Site description

Mount Hartman IBA comprises the (recently re-defined) national park on the coast in south-western Grenada. The park sits within the 187-ha Mount Hartman Estate; the 125 ha outside the park is privately owned. Originally three discrete parcels of woodland, the national park boundaries were redesignated (in 2008) to create one contiguous protected area of the same size. The IBA is bordered (except to the north) by a new resort development. To the north are residential houses, and to the north-east is a marina on Woburn Bay. Mount Hartman Bay lies to the south-west.

Birds

This IBA is the single most important site for the Critically Endangered Grenada Dove *Leptotila wellsi*. It supports a population estimated at c.20 pairs in 2003/2004 (pre-Hurricane Ivan) (Rusk & Clouse 2004), and c.11–20 pairs 3–4 months after the hurricane in 2004 (a possible under/over estimate due to a change in calling behaviour post hurricane) (Rusk 2005). Twenty-five pairs were estimated in 2007 (Rusk 2008) within the re-designated park boundaries. Six (of the 7) Lesser Antilles EBA restricted-range birds occur at this IBA, as does the threatened endemic Grenada Hook-billed Kite *Chondrohierax uncinatus mirus* subspecies.

Other biodiversity

The "Grenada Bank" endemic reptiles and amphibians Corallus grenadensis, Anolis aeneus and A. richardii occur.

Conservation

Mount Hartman was designated a national park in 1996 to protect L. wellsi. Disturbance from foot traffic and grazing are primarily confined to the lowlands outside the park, but grazing does sometimes occur within the park boundaries. Cutting for charcoal rarely occurs inside the park. Predators (rats Rattus spp., mongoose Herpestes auropunctatus and feral cats) may affect the bird populations (including L. wellsi). Hurricane Ivan caused extreme changes to vegetation structure and composition, and to the availability of resources used by the dove. The Mount Hartman Estate, previously government-owned, was sold (in 2008, excluding the national park) to a private developer for a large-scale tourism development involving a hotel, golf course and over a hundred villas. In conjunction with the development, the national park boundaries were re-designated to embrace the dove's centre of abundance and a contiguous area of suitable dove habitat. Mitigation measures have also been put in place to minimize the impact on critical dove habitat.