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Important Bird Areas AMERICAS

CUBA

Susana Aguilar Mugica



The Near Threatened Bee Hummingbird (*Mellisuga helenae*), the world's smallest bird, is endemic to Cuba and the Greater Antilles biome. However, its range within Cuba is too large for it to qualify as a "restricted-range" species.
Photo: Tim Stewart



Country facts at a glance

Area:	109,886 km ²
Population:	11,239,043
Capital:	Havana
Altitude:	0–1974 m
Number of IBAs:	28
Total IBA area:	2,316,578 ha
IBA coverage of land area:	15%
Total number of birds:	371
Globally threatened birds:	18
Globally threatened birds in IBAs:	15
Country endemics:	28

General introduction

Cuba is the largest and most westerly island of the insular Caribbean, accounting for more than 50% of the region's land area. It is bordered by the Bahamas and the Florida peninsula to the north, Turks and Caicos Islands to the north-east, Hispaniola to the east, Cayman Islands to the south, Jamaica to the southeast, and the waters of the Gulf of Mexico to the west. Mainland Cuba is surrounded by four archipelagos: Sabana Camagüey (off the north coast of central Cuba); Los Canarreos (including the Isle of Pines of the south coast of western Cuba); Jardines de la Reina (south coast of eastern Cuba); and Los Colorados (north coast of westernmost Cuba). Combined, these archipelagos comprise 4195 islets and cays which cover c.3715 km².

Mainland Cuba is 1250 km long and averages 150 km wide. Vast plains occupy 79% of the land area but are interrupted by four mountain systems: Guaniguanico Mountain Range (western Cuba), Guamuhaya Massif (on the southern side of central Cuba), the Nipe-Sagua-Baracoa Massif (easternmost Cuba), and the Sierra Maestra (the south coastal range of south-east Cuba). Pico Turquino in the Sierra Maestra, is the highest point on the island at 1974 m. The climate is tropical–subtropical, with an average annual rainfall of 1375 mm and temperatures ranging from 21 to 27 °C. Annual rainfall varies between less than 200 mm on the south coast (around Guantánamo) to 3400 mm in the Nipe-Sagua-Baracoa mountain range.

“Cuba is the most biologically diverse island in the Caribbean and more than 50% of flora and 32% of vertebrate fauna are endemic to the island.”

Climate, geography and topography have combined to produce a wide diversity of ecosystems on the island (including five terrestrial ecoregions, three biogeographical areas, and 39 floristic districts). The flora of the island is particularly rich, with 921 species of bryophytes, 500 pteridophytes and 6519 higher plant species. Cuba is the most biologically diverse island in the Caribbean and exhibits exceptional levels of endemism, particularly at higher elevations and in the east of the country. More than 50% of flora and 32% of vertebrate fauna are endemic to Cuba, with these proportions especially high among vascular plants (52%) and herpetofauna (86%). Many of these endemic species are locally restricted. Mammals are represented by 42 species, including hutias (*Capromys pilorides*, *Mysateles melanurus*, *M. prehensilis*, and *Mesocapromys auritus*), the Cuban solenodon (*Solenodon cubanus*), and various species of bats, including *Nyctiellus lepidus*, the smallest bat in the world. Among the 204 species of herpetofauna, *Eleutherodactylus iberia* is notable for being the smallest frog in the Northern Hemisphere. At least 13,000 invertebrate species have been reported, and among these, mollusks and in particular land snails, have significant levels of endemism. There are also unique species of arachnids, such as the scorpion *Microfityus fundorai*. Marine life is also extremely diverse (although endemism is not high) and in a healthy state, with 963 fish species, 58 corals, 160 sponges, and 68 gorgonids.

The growth of the sugarcane industry in the early twentieth century led to the destruction and alteration of habitats across the plains of Cuba. This was followed by deforestation for urban development and livestock farming and as a result all Cuban habitats have been affected, either by fragmentation, pollution, degradation, modification or introduction of exotic species. Fortunately, reforestation efforts that started in 1960 have borne fruit, and forest now covers 21% of the country. Tourist development has also caused major disturbances, especially in the northern cays which have been severely impacted. Finally, Cuba is frequently affected by hurricanes and storms, and recent climate changes have contributed to increased cyclonic activity, drought periods, and fires.

Conservation and protected area system



Alejandro de Humboldt IBA (CU027) represents the largest and best preserved tract of tropical and montane forest in the insular Caribbean.
Photo: Julio Larramendi

Conservation efforts began on the island in the 1930s, with the creation of the Sierra Cristal National Park. This was followed by the designation of other areas, albeit as a formal exercise rather than on-the-ground management action. By 1959, nine national parks, and the first natural reserves and national monuments had been created, and the first proposal for a national system of protected areas (Sistema Nacional de Áreas Protegidas, SNAP) made. However, these early protected areas had no structured protection categories, adequate personnel nor infrastructure. In 1980, the Empresa para la Protección de la Flora y la Fauna (National Enterprise for the Protection of Flora and Fauna, ENPFF) of the Ministry of Agriculture was created to manage c.30 protected areas. Installations were built and technical and administrative personnel were assigned to individual areas, and a proposal was made to expand this capacity development to a further 73 protected areas. Four biosphere reserves were declared at this time through UNESCO.

The creation of the Ministerio de Ciencia Tecnología y Medio Ambiente (Ministry of Science, Technology, and Environment; CITMA) and within it the Centro Nacional de Áreas Protegidas (National Center for Protected Areas, CNAP) in 1995 marked a new era in the realization of the national protected area system. CNAP is responsible for planning and management of the overall national system of protected areas in Cuba. ENPFF is also responsible for the administration of the majority of them. CITMA manages a smaller portfolio

of sites, primarily those with fragile ecosystems or in need of strict protection. The national system of protected areas follows the 1994 IUCN protected area management classification scheme (with some Cuba-specific modifications).

Significant progress has been made in the development and institutionalization of Cuba's protected areas in recent years. The protected area system currently includes 253 proposed areas (91 of which are considered nationally significant and 162 locally significant), covering c.22% of the country's area. There are 105 protected areas currently functioning at a practical level within Cuba, of which 45 areas have been legally approved by the Comité Ejecutivo del Consejo de Ministros (Executive Committee of the Ministerial Council), whilst 14 are waiting for formal recognition.

The protected areas provide a framework for considerable research, conservation, education and awareness efforts of CNAP, ENPFF and other institutions including Instituto de Ecología y Sistemática, the Museo Nacional de Historia Natural, the Facultad de Biología de la Universidad de la Habana, and the Centro Oriental de Ecosistemas y Biodiversidad. However, in spite of these efforts, the protected areas (and the land surrounding them) still face multiple threats from habitat destruction and degradation, hunting, alien invasive species, illegal trade in species and pollution.



The protected areas network and IBAs provide a framework for education and awareness activities, such as this in Delta del Cauto (CU020), by a number of institutions.
Photo: Omar Labada



Ornithological importance

Of the 371 bird species reported for Cuba about 42% breed on the island, and 70% are migratory (c.114 species are regular winter residents). Of the breeding species, 135 are resident (including eight introduced birds) and 14 arrive from South America to breed on the island in the summer. The island is home to six endemic genera (namely *Cyanolimnas*, *Starnoenas*, *Xiphidiopicus*, *Ferminia*, *Teretistris* and *Torreornis*), 28 endemic birds (including the world's smallest bird, the Bee Hummingbird; *Mellisuga helenae*) and 60 endemic subspecies. Cuba is an Endemic Bird Area (EBA 025), but only 11 species have ranges of less than 50,000 km² (which is the threshold that defines a restricted-range bird). However, there are 48 species confined to the Greater Antilles biome (GAN) which include all the island endemics and the restricted-range birds. These have been used to define IBAs in Cuba (see below). Some of the restricted-range species are shared with neighboring islands (e.g. Thick-billed Vireo; *Vireo crassirostris* and Olive-capped Warbler; *Dendroica pityophila* with Bahamas, Palm Crow; *Corvus palmarum* with Hispaniola, Bahama Mockingbird; *Mimus gundlachi* with Bahamas and Jamaica).

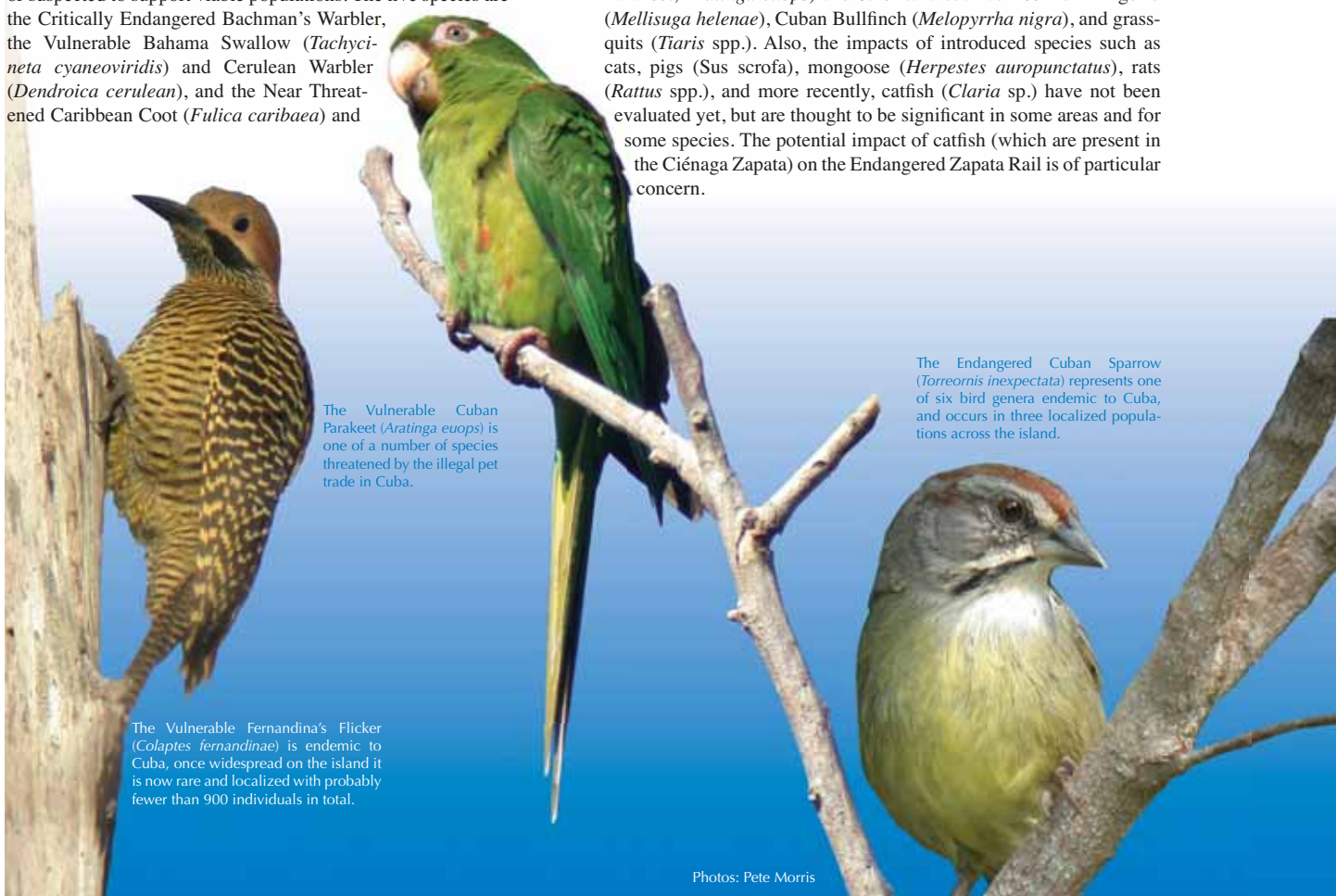
“There are 29 threatened or Near Threatened birds known from Cuba, three of which are Critically Endangered.”

There are 29 threatened or Near Threatened birds known from Cuba, three of which are Critically Endangered (namely, Cuban Kite; *Chondrohierax wilsonii*, Ivory-billed Woodpecker; *Campephilus principalis* and Bachman's Warbler; *Vermivora bachmanii*), eight Endangered, seven Vulnerable, and 11 Near Threatened¹. However, five of these threatened birds are not represented in IBAs, as the island is not currently known or suspected to support viable populations. The five species are the Critically Endangered Bachman's Warbler, the Vulnerable Bahama Swallow (*Tachycineta cyaneoviridis*) and Cerulean Warbler (*Dendroica cerulean*), and the Near Threatened Caribbean Coot (*Fulica caribaea*) and

Golden-winged Warbler (*Vermivora chrysoptera*). The endemic Cuban Macaw (*Ara tricolor*) became extinct in the nineteenth century due to heavy hunting. Other species heading in the same direction as the macaw are: the Cuban Kite which was once widespread, but habitat destruction has caused its decline, and it is presently confined to the Alejandro de Humboldt IBA (CU027); and Ivory-billed Woodpecker, a small population of which may survive in south-eastern Cuba, although it has not been observed since 1987. A number of the threatened species have very localized populations which contributes to their endangerment, as is the case with the Endangered Zapata Rail (*Cyanolimnas cerverai*) and Zapata Wren (*Ferminia cerverai*), both confined to Ciénaga Zapata, CU006, and Cuban Sparrow (*Torreornis inexpectata*), confined to three small, disjunct areas in Cuba.

Cuba's location within the Caribbean makes the island an important migratory corridor and wintering site for a large number of Neotropical migratory birds. It is located on both the Mississippi and East Atlantic migratory flyways, and thousands of raptors, ducks, shorebirds and landbirds are recorded each year across the country. Cuba is extremely important for waterbirds, and the country's network of natural and artificial wetlands (which includes the two largest wetlands in the Caribbean, namely Ciénaga Zapata and Delta del Cauto) provides critical habitat for the largest recorded concentrations in the Caribbean of a number of species (including flamingos, ibises, cormorants, egrets, anhingas and spoonbills). Major seabird breeding colonies are concentrated on the offshore cays of the Sabana-Camagüey Archipelago.

Apart from the widespread loss and degradation of habitats, Cuba's birds are threatened by hunting (both sport hunting and illegal poaching), collecting eggs, and illegal capture and trade of Cuban psittacids (i.e. Cuban Amazon; *Amazona leucocephala* and Cuban Parakeet; *Aratinga euops*) and other taxa such as Bee Hummingbird (*Mellisuga helenae*), Cuban Bullfinch (*Melopyrrha nigra*), and grassquits (*Tiaris* spp.). Also, the impacts of introduced species such as cats, pigs (*Sus scrofa*), mongoose (*Herpestes auropunctatus*), rats (*Rattus* spp.), and more recently, catfish (*Claria* sp.) have not been evaluated yet, but are thought to be significant in some areas and for some species. The potential impact of catfish (which are present in the Ciénaga Zapata) on the Endangered Zapata Rail is of particular concern.



The Vulnerable Cuban Parakeet (*Aratinga euops*) is one of a number of species threatened by the illegal pet trade in Cuba.

The Vulnerable Fernandina's Flicker (*Colaptes fernandinae*) is endemic to Cuba, once widespread on the island it is now rare and localized with probably fewer than 900 individuals in total.

The Endangered Cuban Sparrow (*Torreornis inexpectata*) represents one of six bird genera endemic to Cuba, and occurs in three localized populations across the island.

Photos: Pete Morris

¹ This directory uses 2007 Red List categories. However, according to the IUCN Red List 2008, there are 13 Near Threatened species and seven Endangered: the recognition of Cuban Black Hawk (*Buteogallus gundlachi*) as a valid species adds a further Near Threatened species; the formerly Endangered Cuban Palm Crow (*Corvus minutus*) has been lumped with Palm Crow (*Corvus palmarum*) and is classified as Near Threatened.

IBA overview



Cuba's network of 28 IBAs (Table 1, Figure 1) have been identified on the basis of 69 key bird species, including 24 threatened birds, 11 restricted-range species, 48 biome-restricted species and 16 congregatory waterbird and seabird species. All 28 IBAs support populations of

globally threatened birds; 17 contain Cuba EBA restricted-range species and 24 IBAs support a significant proportion of the Greater Antilles biome-restricted species; 13 IBAs are home to globally significant congregations of seabirds or waterbirds.

Table 1. Important Bird Areas in Cuba

IBA code	IBA name	Adm unit	Area (ha)	A1				A2	A3	A4				
				CR	EN	VU	NT			A4i	A4ii	A4iii	A4iv	
CU001	Guanahacabibes	Pinar del Río	101,116	3	1	5		X	X					
CU002	Mil Cumbres	Pinar del Río	16,930	3	3	5		X	X					
CU003	Humedal Sur Pinar del Río	Pinar del Río	66,691		1	2					X			X
CU004	Sierra del Rosario	La Habana, Pinar del Río	26,686	3	2	4		X	X					
CU005	Ciénaga de Lanier y Sur de la Isla de la Juventud	Isla de la Juventud	96,216	1	1	3		X	X		X			
CU006	Ciénaga de Zapata	Matanzas	530,695	6	4	7		X	X		X			
CU007	Las Picúa- Cayo del Cristo	Villa Clara	56,290		1	2					X			X
CU008	Cayería Centro-Oriental de Villa Clara	Villa Clara	284,091		1	3					X			
CU009	Humedal Sur de Sancti Spiritus	Sancti Spíritus	82,377		1	2					X			X
CU010	Topes de Collantes	Sancti Spíritus	29,425	1	2	3			X					
CU011	Alturas de Banao	Sancti Spíritus	6,126	1	2	3			X					
CU012	Gran Humedal del Norte de Ciego de Ávila	Ciego de Ávila	268,728	3	2	5		X	X		X			
CU013	Cayo Sabinal, Ballenatos y Manglares de la Bahía de Nuevitas	Camagüey	66,490		2	3		X	X		X			X
CU014	Río Máximo	Camagüey	35,562	1	3	4		X	X		X			
CU015	Cayos Romano-Cruz-Megano Grande	Camagüey	241,161	1	1	4		X	X		X			
CU016	Limones-Tuabaquey	Camagüey	1,962	2	3	2			X					
CU017	Sierra del Chorrillo	Camagüey	83,322	4	3	5		X	X				X	
CU018	Turquino-Bayamesa	Granma, Santiago de Cuba	48,462	4	3	2			X					
CU019	Desembarco del Granma	Granma	32,660	3	3	5		X	X					X
CU020	Delta del Cauto	Granma, Las Tunas	75,372	1	3	3			X		X			
CU021	Gibara	Holguín	40,564	1	2	3		X	X					
CU022	La Mensura	Holguín	8,467	1	2	4		X	X					
CU023	Delta del Mayarí	Holguín	4,660	1	1	3			X					
CU024	Pico Cristal	Holguín, Santiago de Cuba	18,537	2	2	5		X	X					
CU025	Gran Piedra - Pico Mogote	Santiago de Cuba	4,532	2	1				X					
CU026	Siboney - Juticí	Santiago de Cuba	1,857	1		3		X	X					X
CU027	Alejandro de Humboldt	Guantánamo, Holguín	70,835	2	3	2		6	X		X			
CU028	Hatibonico - Baitiquirí - Imías	Guantánamo	16,764	2	2	3		X	X					

For information on trigger species at each IBA, see individual site accounts at BirdLife's Data Zone: www.birdlife.org/datazone/sites/



The Cuban IBA program has facilitated the collection of baseline data and some population estimates for a number of IBAs. Photo: Arturo Kirkconnell

Most IBAs are partially or wholly included in the national system of protected areas, with some level of legal protection and management. However, there are several environmentally sensitive areas that lack any form of protection, such as Delta del Mayarí (CU023) and the Humedal Sur de Pinar del Río (CU003), both of which support important habitat for resident and migratory waterbirds. Five of Cuba's six Ramsar sites are part of the IBA network: Ciénaga de Lanier y Sur de la Isla de la Juventud (CU005), Río Máximo (CU014), Gran Humedal del Norte Ciego de Ávila (CU012), Delta del Cauto (CU020), and Ciénaga de Zapata (CU006). Additionally, six of the IBAs are designated biosphere reserves and the Desembarco del Granma National Park (CU019) and the Alejandro de Humboldt National Park (CU027) have been declared World Heritage Sites.

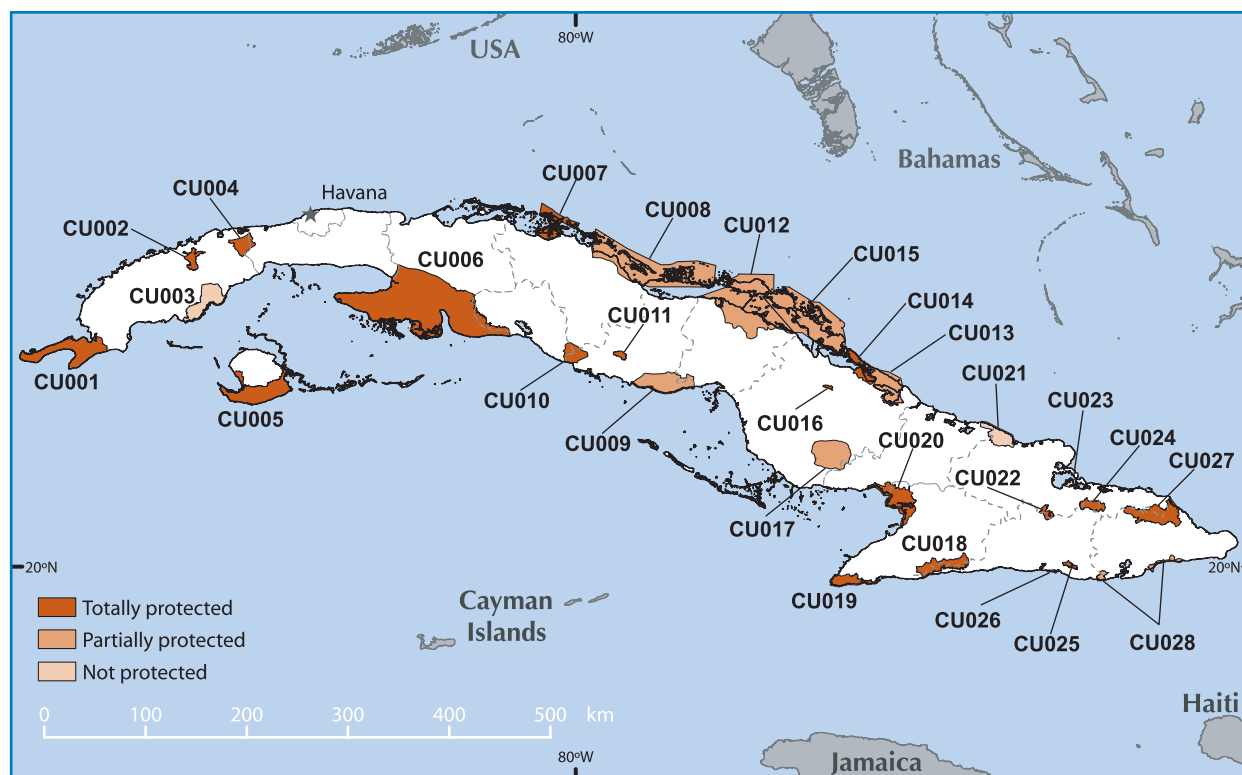
“Conservation actions have begun at seven IBAs, including activities such as bird monitoring, infrastructure construction, education and sustainable development initiatives.”

The Centro Nacional de Áreas Protegidas (CNAP) is responsible for coordinating the Cuban Important Bird Area (IBA) program which started in 2000 through the project “Eastern Cuba: saving a unique Caribbean wilderness” with funds from the British Birdwatching Fair and BirdLife International. This project focused on an extensive fieldwork program in eastern Cuba, implemented by CNAP, Instituto de Ecología y Sistemática, Museo Nacional de Historia Natural, Facultad de Biología de la Universidad de la Habana, and Centro Oriental de Ecosistemas y Biodiversidad. Results from this fieldwork have contributed to the information presented in this chapter (which was otherwise an output of three participatory national IBA workshops), and many of the proposals for the establishment of new protected areas that are detailed within the various IBA profiles in BirdLife International (2008). An IBA steering committee was put together with participation of the above institutions (and others), who have also been involved in public education and awareness initiatives, campaigns and events, including the Society for the Conservation and Study of Caribbean Birds' annual Caribbean Endemic Bird Festival and West Indian Whistling-Duck and Wetlands Conservation Program. Equipment was also provided for the long-term study and monitoring of birds by the principal ornithologists of the country as a result of the above process.



Bee Hummingbird
Photo: Tim Stewart

Figure 1. Location of Important Bird Areas in Cuba



Opportunities



To date, conservation actions have already begun at seven IBAs through the implementation of different projects. Work has begun at the following sites: Refugios de Fauna Río Máximo (CU014) and Delta del Cauto (CU020), Reservas Ecológicas Baitiquirí y Hatibonico (CU028) and the national parks Alejandro de Humboldt (CU027), Zapata (CU006), Turquino and Bayamesa (CU018), among others. Projects have included actions such as research, bird monitoring, infrastructure construction, provision of equipment, personnel training, environmental education, community sustainable development initiatives such as ecotourism, communications materials, among others.

The IBA program, including some of the above projects, has facilitated the collection of baseline data (including some population estimates) for many of the IBAs (especially in eastern Cuba, and also for water-birds). These data need to be built on to monitor the status of key bird species, especially the globally threatened birds, at each IBA. Information concerning the status of these key species can be used to inform the annual assessment of state, pressure and response variables at each

of Cuba's IBAs in order to provide an objective status assessment and highlight management interventions that might be required to maintain these internationally important biodiversity sites.

Among the principal priorities of the IBA program in Cuba are:

- fundraising for site management plan implementation (infrastructure, equipment, transport, signage, etc.), with emphasis on management and monitoring programs.
- capacity building for the management and monitoring of birds and their habitats, through training courses and workshops.
- carefully constructed environmental education and awareness raising programs aimed at different levels, including at a local, community level where this is critical to the development of effective IBA conservation actions.



Río Máximo (CU014) is one of six Ramsar sites in Cuba, and supports the largest breeding colony of Caribbean Flamingos (*Phoenicopterus ruber*) in the Caribbean, with more than 50,000 pairs. Photo: Aniet Venereo

Further information

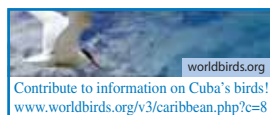
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References

- ACOSTA, M., MUGICA, L. & DENIS, D. (2002) Dinámica de los gremios de aves que habitan la arrocera Sur del Jíbaro, Sancti Spiritus, Cuba. *El Pitirre* 15: 25–30.
- BLANCO, P. (2006) *Distribución y áreas de importancia para las aves del orden Charadriiformes en Cuba*. Ciudad de la Habana: Universidad de la Habana. (Unpublished Doctoral thesis).
- CIGEA - CENTRO DE INFORMACIÓN, GESTIÓN Y EDUCACIÓN AMBIENTAL (2000) *Panorama ambiental de Cuba*. Ciudad de la Habana, Cuba: Ministerio de Ciencia Tecnología y Medio Ambiente.
- FONG, A., MACÉIRA, D., ALVERSON, W. S. & SHOPLAND, J. M. Eds. (2005) *Cuba: Sí-boney-Juticí*. Chicago, USA: The Field Museum. (Rapid Biological Inventories Report 10).
- GARRIDO, O. H. & KIRKCONNELL, A. (2000) *Field guide of the birds in Cuba*. Ithaca, USA: Cornell Univ. Press.
- GONZÁLEZ, H., LLANES, A., SÁNCHEZ, B., RODRÍGUEZ, D., PÉREZ, E., BLANCO, P. & PÉREZ, A. (1999) *Estado de las comunidades de aves residentes y migratorias en ecosistemas cubanos en relación con el impacto provocado por los cambios globales 1989–1999*. Ciudad de la Habana, Cuba: Instituto de Ecología y Sistemática. (Unpublished final report).
- GONZÁLEZ, H. (2002) *Aves de Cuba*. Vaasa, Finland: UPC Print.
- GONZÁLEZ, H., PÉREZ, E., RODRÍGUEZ, D., RODRÍGUEZ, P., LLANES, A., BEGUÉ, G. & HERNÁNDEZ, A. (2007) *Distribución, diversidad y abundancia de las comunidades de aves del Parque Nacional Alejandro de Humboldt y la Reserva Ecológica Baitiquirí*. Ciudad de la Habana: Instituto de Ecología y Sistemática. (Unpublished final report to BirdLife International for the project “Eastern Cuba: saving a unique Caribbean wilderness”).
- GONZÁLEZ, H., PÉREZ, E., RODRÍGUEZ, D. & BARRIO VALDÉS, O. (2005) Adiciones a la avifaunaterrestre de Cayo Sabal, Cuba. *J. Carib. Orn.* 18: 24–28.
- GONZÁLEZ, H., ÁLVAREZ, M., HERNÁNDEZ, J. & BLANCO, P. (2001) Composición, abundancia y subnicho estructural de las comunidades de aves en diferentes habitats de la Sierra del Rosario, Pinar del Río, Cuba. *Poeyana* 481–483: 6–19.
- HECHAVARRIA, G., TRIAY, O., ALMEIDA DE LA CRUZ, M., SEGOVIA, Y., TORRES, M., GARCÍA, Z., GARCÍA, A., CALA DE LA HERA, Y., GALINDO, A. & PÉREZ, J. (2005) *Avifauna asociada al Parque Nacional Desembarco del Granma, Cuba*. (Unpublished report).
- KIRKCONNELL, A. (2007) *Results from nine field surveys in Granma, Holguín and Guantánamo provinces between 2004 and 2007*. Ciudad de la Habana, Cuba: Museo Nacional de Historia Natural. (Unpublished final report to BirdLife International for the project “Eastern Cuba: saving a unique Caribbean wilderness”).
- KIRKCONNELL, A., STOTZ, D. F. & SHOPLAND, J. M. Eds. (2005) *Cuba: Península de Zapata*. Chicago, USA: The Field Museum. (Rapid Biological Inventories Report 14).
- KIRKCONNELL, A. (1998) Aves de Cayo Coco, Archipiélago de Sabana-Camagüey, Cuba. *Torreia* 43: 22–39.
- LABRADA, O. & CISNEROS, G. (2005) Aves de Cayo Carenas, Ciénaga de Birama, Cuba. *J. Carib. Orn.* 18: 16–17.
- MORALES, M., CASTILLO, U. & COLLAZO, U. L. (2004) *Dinámica poblacional de las áreas tróficas del Refugio de Fauna Las Picuas Cayo del Cristo*. (Unpublished report).
- MORALES LEAL, J. (1996) El Flamenco Rosado Caribeño. *Flora Fauna* 0: 14–17.
- MUGICA, L., ACOSTA, M., DENIS, D., JIMÉNEZ, A., RODRÍGUEZ, A. & RUIZ, X. (2006) Rice culture in Cuba as an important wintering site for migrant waterbirds from North America. Pp.172–176 in G. C. Boere, C. A. Galbraith & D. A. Stroud, eds. *Waterbirds around the world*. Edinburgh, UK: The Stationary Office.
- NAVARRO, N., LLAMACHO, J. & PEÑA, C. (1997) Listado preliminar de la avifauna de Sierra de Nipe, Mayarí, Holguín, Cuba. *El Pitirre* 10: 65.
- OCAÑA, F., CIGARRETA, S., PEÑA, C., FERNÁNDEZ, A., LAMBERT, D., GONZÁLEZ, P., MONTEAGUDO, S. & VEGA, A. (2004) *Informe de los resultados del estudio de cuatro humedales en la costa norte de la provincia de Holguín, Cuba*. (Unpublished report to the Ramsar Convention).
- PERERA, S. (2004) *Dinámica de la comunidad de aves acuáticas del Refugio de Fauna Río Máximo, Camagüey*. Ciudad de la Habana, Cuba: Facultad de Biología, Universidad de la Habana. (Unpublished Diploma thesis).
- PRIMELLES J. & BARRIO, O. (2005) *Lista preliminar de las aves del Refugio de Fauna Cayos Ballenatos y Manglares de la Bahía de Nuevitás, Cuba*. (Unpublished report).
- RODRÍGUEZ, F. (2002) Highest Osprey flight for Cuba. *El Pitirre* 15: 127–128.
- RODRÍGUEZ, F., MARTELL, M., NYE, P. & BILDSTEIN, K. L. (2001) Osprey migration through Cuba. Pp.107–117 in K. L. Bildstein & D. Klem eds. *Hawkwatching in the Americas*. Kempton, USA: Hawk Migration Association of North America.
- RODRÍGUEZ-BATISTA, D. (2000) *Composición y estructura de las comunidades de aves en tres formaciones vegetales de Cayo Coco, Archipiélago de Sabana-Camagüey, Cuba*. Ciudad de la Habana, Cuba: Instituto de Ecología y Sistemática. (Unpublished Doctoral thesis).
- RUIZ, E., RODRÍGUEZ, D., LLANES, A., RODRÍGUEZ, P., PÉREZ, E., GONZÁLEZ, H., BLANCO, P., ARIAS, A. & PARADA, A. (in prep.) Avifauna de los cayos Santa María y Las Brujas, del Archipiélago Sabana-Camagüey, noreste de Villa Clara, Cuba. *J. Carib. Orn.*
- SÁNCHEZ, B. (2005) Inventario de la avifauna de Topes de Collantes, Sancti Spiritus, Cuba. *J. Carib. Orn.* 18:7–12.
- SÁNCHEZ, B. N., NAVARRO, N., OVIEDO, R., PEÑA, C., HERNÁNDEZ, A., REYES, E., BLANCO, P., SÁNCHEZ, R. & HERRERA, A. (2003) Composición y abundancia de las aves en tres formaciones vegetales de la altiplanicie de Nipe, Holguín, Cuba. *Orn. Neotrop.* 14: 215–231.
- SÁNCHEZ, B., RODRÍGUEZ, D., TORRES, A., RAMS, A. & ORTEGA, A. (1992). Nuevos reportes de aves para el corredor migratorio de Gibara, Holguín, Cuba. Pp. 22–23 in *Comunicaciones breves de Zoología* (Instituto de Ecología y Sistemática).
- TORRES, A. (1994) Listado de las aves observadas dentro del corredor migratorio de Gibara, provincia Holguín, Cuba. *Garciana* 22: 1–4.



Delta del Cauto (CU020), a major wintering site for migratory ducks and shorebirds, including species such as Blue-winged Teal (*Anas discors*) and Least Sandpiper (*Calidris minutilla*). Photo: Emilio Alfaro