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Important Bird Areas **AMERICAS**

COSTA RICA

Julio E. Sánchez, Juan Criado, César Sánchez & Luis Sandoval

Resplendent Quetzal (*Pharomachrus mocinno*) is Guatemala's national bird and currently Near Threatened due to fragmentation and destruction of forests, especially at lower elevations to which it descends in the non-breeding season.
Photo: Hays Cummins/Miami University

Country facts at a glance

Area:	51,100 km^2
Population (2008):	4,100,000
Capital:	San José
Altitude:	0–3820 m
Number of IBAs:	21
Total IBA area:	3,070,976 ha
IBA coverage of land area:	52%
Total number of birds:	877
Globally threatened birds:	21
Globally threatened birds in IBAs:	13
Country endemics:	6

General introduction

Costa Rica, despite having a small area is an incredibly diverse country, as much for its geographical location as for its conservation efforts to date. The country lies between the Pacific Ocean to the west and the Caribbean to the east; to the north it is bounded by Nicaragua and to the southeast by Panama. Isla del Coco, a World Heritage Site, lies 480 km to the southwest and takes the country's marine territory to a frontier with Ecuador.

Costa Rica has been a sovereign and independent country since 1821, and is one of the most consolidated democracies on the continent. The government consists of three branches: the executive is made up of the president, vice-president and ministers; the legislative branch of the Legislative Assembly (made up of 57 representatives); and the judicial branch of the Supreme Court of Justice. Costa Rica is divided into seven provinces, which, in turn, are divided into 81 cantons and these, into 463 districts. The capital, San José, is located in the Central Valley, where most of the population live. Costa Ricans are mainly of *mestizo* origin (indigenous-Spanish), although there is also an important Afro-Caribbean component. Eight indigenous groups have historically been identified in Costa Rica. According to the 2000 census, these groups now account for 1.7% of the country's total inhabitants (64,000). Almost half of these communities (43.2%) live in 22 legally defined indigenous reserves (Solano 2004).

The country's economy has traditionally been based on agriculture (including cattle ranching), leading to the loss of the majority of the country's vegetation cover, mainly at the beginning of the 1940s. However, over the last three decades, the economy has changed, with tourism taking over as the greatest source of income since the mid-1990s. Nevertheless, large-scale production of crops such as banana, pineapple and sugarcane, as well as increasing urbanization are still considered the greatest drivers behind the destruction of natural habitats and the birds that inhabit them.

Geologically, Costa Rica is a young country, with a landscape highly shaped by the uplift of its mountain ranges. A mountainous fulcrum, running northwest-southeast, divides the country into Pacific and Caribbean slopes and is made up of four separate ranges, separated by mountain passes, as well as the Central Valley. Low-lying plains are found to the north and east, on the Caribbean side of the country, becoming narrower towards the southeast. The Pacific slope is more rugged and has a complex shoreline with two large peninsulas and large volcanic plateaux towards the north. The central region of the Pacific Slope has narrow littoral plains, due to the proximity of the foothills (5–10 km), but become wider again towards the southeast (Bergoing 1998).

Climate is typically wet to very wet, except towards the northwest where a dry climate predominates. Rainfall ranges from 1300 mm per year in the most arid areas to 7000 mm in the wettest regions. The Caribbean slope receives rain throughout the year, lessening between February and May and later in October. In the rest of the country, the rainy season begins in mid May and ends in November. Average annual temperatures range from 6 ºC at an altitude of approximately 3800 m, increasingly steadily with decreasing elevation until 26–28 ºC in warmer areas, almost at sea level (Herrera 1985).

Conservation and protected area system

Costa Rica is globally recognized for high levels of biodiversity within a small area. To maintain this biodiversity, the country has established a key development strategy: designation of protected areas as the most efficient tool for conservation and sustainable development. This mechanism attempts to avoid continuing loss of habitat and resources within the majority of natural areas.

"Costa Rica has a key development strategy: designation of protected areas as the most efficient tool for conservation and sustainable development."

Deforestation reached a high point in Costa Rica between 1950 and 1980, representing one of the highest rates in Latin America at the end of this period (CCAD 2002), due to agricultural activities and timber extraction (Sader & Joyce 1988). Although there have been numerous efforts to revert this situation, pressure on natural resources and conservation areas continue today. However, from the 1980s onwards, conservation policies changed in the country, allowing some of the former forested areas, lost during the 1970s and 1980s, to be restored. In fact, more than 40% of Costa Rica's total area has been reforested or restored (Fallas 2003, FONAFIFO 2007).

Currently, 29% of Costa Rica's continental area (1,529,945 ha) enjoys some kind of protection (public or private), although only 13.74% is strictly protected (SINAC 2007a). The Ministry of Environment and Energy is responsible for wildlife conservation and protected areas, encompassed in a National System of Conservation Areas. However, several authors have found shortcomings within the current network of protected areas (Powell 2000; Pfaff & Sánchez 2004; Sánchez-Azofeifa et al. 1999, 2003). In Costa Rica, as well as in other Central American countries, part of this conservation need is reflected in the establishment of biological corridors as an initiative to connect protected areas and promote sustainable development. Approximately 45 biological corridors, of some 1,100,000 ha have been set up in the country (Rojas & Chavarría 2005). The main challenge to biological corridors in Costa Rica is generating biological, social and economic benefits for all parties involved.

An incentive to protect forests and forestry areas in Costa Rica has existed since 1996 in the form of a "payment for environmental services (PSA, in Spanish)". Payment is given in return for services mitigating the effects of green-house gases, protection of water sources, biodiversity and scenic beauty. A 2004 decree regulating PSA established a five-year target to protect 100,000 ha of forest on land within the Mesoamerican Biological Corridor Project. In 2007, more than 240,000 ha had been included within the PSA system (SINAC 2007a).

At international level, Costa Rica has ratified the greater part of international agreements, such as the Convention on Biological Diversity, the World Heritage Convention, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and the Ramsar Convention on Wetlands. Costa Rica is also party to several regional initiatives, such as the Central American Protected Areas System. All the above measures have helped consolidate Costa Rica as a leading country in conservation issues in Latin America.

Ornithological importance

"Three endemic species inhabit the 47-km^2 Cocos Island Endemic Bird Area: Cocos Cuckoo, Cocos Flycatcher and Cocos Finch."

Costa Rica has a total of 875 species (Obando *et al*. 2007) within an area of 51,100 km^2, making it one of the countries with the highest number of species per area on the American continent. Of these, 37 species are classified as globally threatened or Near Threatened (BirdLife International 2007). The main threats to these species are deforestation, urban and tourism development, wetland drainage and extensive pineapple, sugarcane and banana plantations.

The Vulnerable Cocos Finch (*Pinaroloxias inornata*) is one of a trio of threatened endemics on Cocos Island. Photo: Felipe López

Six species are politically endemic to Costa Rica, three are continental (Coppery-headed Emerald; *Elvira cupreiceps*, Mangrove Hummingbird; *Amazilia boucardi*, Black-cheeked Ant-tanager; *Habia atrimaxillaris*) and three inhabit the 47-km^2 Isla del Coco (Cocos Cuckoo; *Coccyzus ferrugineus*, Cocos Flycatcher; *Nesotriccus ridgwayi*, Cocos Finch; *Pinaroloxias inornata*).

Three Endemic Bird Areas are shared by Costa Rica with neighboring countries (Central American Caribbean slope; EBA 019, Costa Rica and Panama highlands; EBA 020, South Central American Pacific slope; EBA 021) and one is exclusive to the country (Cocos Island; EBA 022). These areas have been identified as priority areas for biodiversity conservation at global level. As well as applying to birds, different studies have shown that this richness is reflected in other groups of flora and fauna.

Three biomes are recognized in Costa Rica for the purposes of IBA identification, modified from those established by Stotz *et al*. (1996). These are, Pacific Arid Slope (PAS) in the northwest of the country, Gulf-Caribbean Slope (GCS) throughout the lowlands and Chiriquí-Darién Highlands (CDH), running approximately northwest-southeast into Panama, over the highest elevations. Four bird regions are also recognized in Costa Rica (as well as Isla del Coco) by Slud (1964): dry tropical forest in the northeast, Pacific slope wet tropical forest, Caribbean slope wet tropical forest and the highlands which include mountainous areas over 700 m in height.

More than 220 species of migratory birds cross Costa Rica or make use of stopover sites for resting, feeding or overwintering. Of these species, 58 are of conservation concern according to different sources (Kushlan *et al*. 2002, USFWS 2002, US Shorebird Conservation Plan 2004, BirdLife International 2006, Panjabi *et al*. 2005). Of all migratory species, more than three million individuals are birds of prey such as Broad-winged Hawk (*Buteo platypterus*), Swainson's Hawk (*Buteo swainsoni*), Mississippi Kite (*Ictinia mississippiensis*) and Turkey Vulture (*Cathartes aura*; Porras *et al*. 2004) which migrate southwards along the Caribbean coast, giving this region the second highest abundance of migratory raptors in the world.

"More than three million raptors such as Broad-winged Hawk, Swainson's Hawk, Mississippi Kite and Turkey Vulture migrate southwards along the Caribbean coast every year."

The biome-restricted Black-and-yellow Silky-flycatcher (*Phainoptila melanoxantha*).

Volcano Hummingbird (*Selasphorus flammula*) is restricted to the Costa Rica and Panama highlands (EBA 020) and triggers IBA criteria at two sites in Costa Rica.
Photos: Julio E. Sanchéz

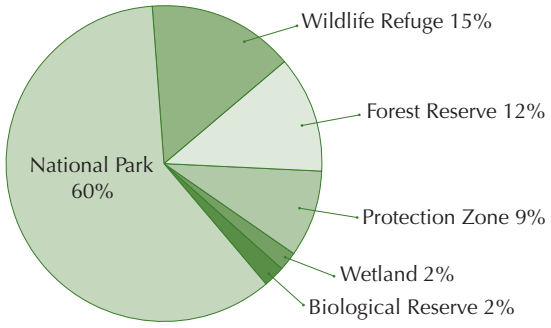
IBA overview

Twenty-one IBAs have been identified in Costa Rica, with a total area of 3,070,976 ha (Table 1, Figure 1), representing almost 52% of the country's land area. The majority of IBAs are terrestrial. Only 371,928 ha account for marine areas, representing just 12% of total IBA coverage, exposing an evident lack of information. In Costa Rica, 19 species of birds have been confirmed in IBAs under criterion A1 (species of conservation concern), 82 species under A2 (restricted-range), 102 under A3 (biome-restricted) and 22 species under A4 (congregatory).

More than half of Costa Rica's IBAs are designated protected areas. The most frequent protection category in IBAs is National Park, representing more than a third of the total IBA area at 1,100,000 ha (Figure 2).

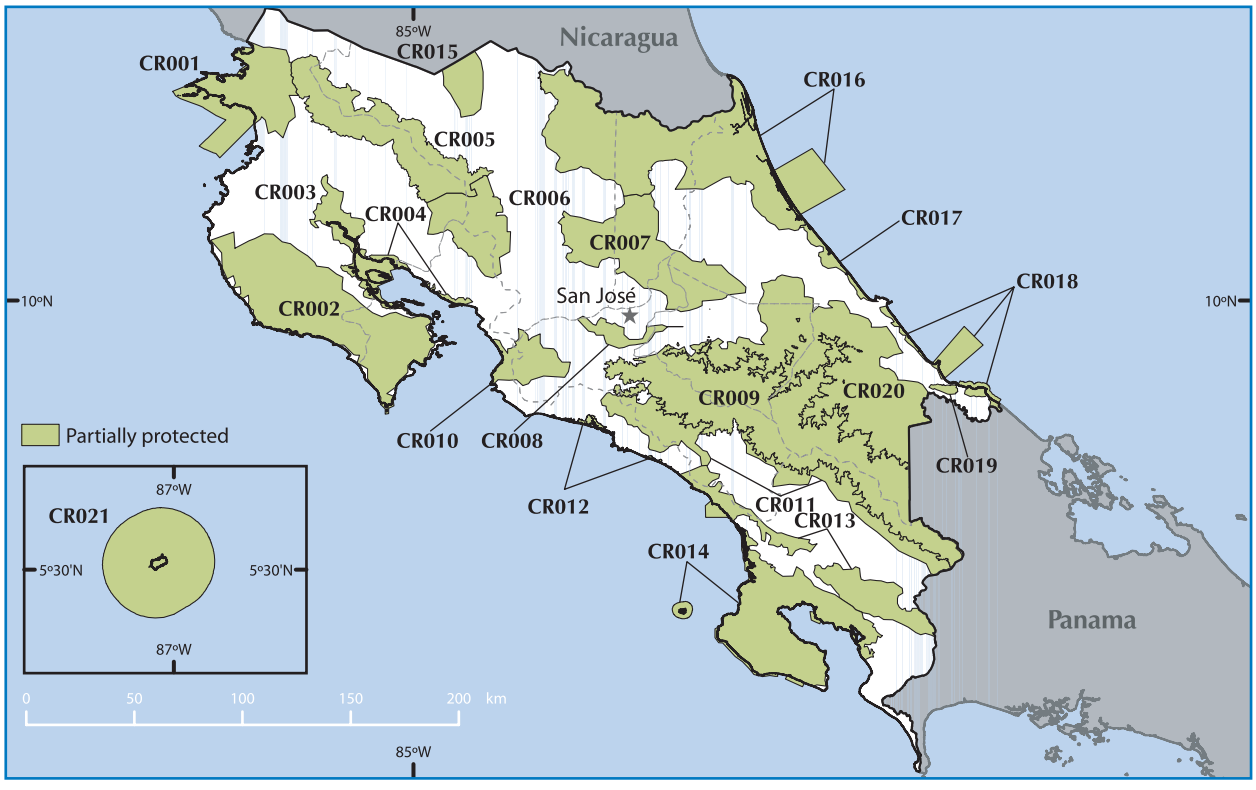
The IBA program began in Costa Rica at the end of 2005. An integral vision has underlined its development, where scientific knowledge, social participation and local know-how have played essential roles in coordinating effective conservation strategies. The Unión de Ornitólogos de Costa Rica has been leading on the IBA program, with the support of the following NGOs, Fundación para la Gestión Ambiental Participativa, Centro Científico Tropical and BirdLife International. The objective of the IBA program is to contribute to the improvement of ecosystem conservation in Costa Rica, one of the world's "megadiverse" countries.

Figure 2. IBA protection categories



IBAs were identified using criteria developed by BirdLife International, taking into account the geographical and climatic characteristics of the country. Many researchers, ornithologists and birders took part in the process. Through the application of these criteria, IBAs were defined with the support of Geographic Information Systems in an analysis of protected areas, biological corridors, indigenous reserves, forest cover, land use, rivers and elevation (ITCR 2005).

Figure 1. Location of Important Bird Areas in Costa Rica



Mangroves on the Pacific coast are highly threatened ecosystems and vital for scarce species such as the Endangered and biome-restricted Yellow-billed Cotinga (*Carpodectes antoniae*). Photo: César Sánchez

Migratory birds are an important component of the IBA program, as is evidenced by the Migratory Bird Corridor, which includes seven IBAs on the Caribbean slope between Nicaragua and Panama. Millions of migratory birds use this corridor every year (Box 2). Mangroves on the Pacific coast also act as stopover and wintering sites for many migratory warblers (*Parulidae*) during the northern winter (Barrantes 1998). However, this ecosystem is severely degraded and at risk from tourist development and deforestation. Its inclusion in several

"Social participation and connectivity between protected areas are important for the sustainability of actions carried out within IBAs."

Table 1. Important Bird Areas in Costa Rica

IBA code	IBA name	Adm unit	Area (ha)	A1				A2	A3	A4			
				CR	EN	VU	NT			A4i	A4ii	A4iii	A4iv
CR001	Tierras bajas de Guanacaste	Guanacaste	149,177				1		X				
CR002	Península de Nicoya	Guanacaste, Puntarenas	304,258				1		X	X			
CR003	Humedales de Palo Verde	Guanacaste	37,186				1			X		X	
CR004	Manglares y franja costera del Golfo de Nicoya	Guanacaste, Puntarenas	38,875		1					X		X	
CR005	Tierras altas de Tilarán	Alajuela, Guanacaste	176,562			3	3	X	X				
CR006	Arenal-Monteverde	Alajuela, Guanacaste, Puntarenas	98,379		1	5	4	X	X				
CR007	Cordillera Volcánica Central	Alajuela, Cartago, Heredia, Limón, San José	193,570		1	5	4	X	X				
CR008	El Rodeo, Cerros de Escazú y La Carpintera	Cartago, San José	21,650				1	X	X				
CR009	Cordillera de Talamanca	Cartago, Limón, Puntarenas, San José	433,587			1	2	X	X				
CR010	Tárcoles, Carara y La Cangreja	Alajuela, Puntarenas, San José	51,811		2	1	2	X					
CR011	Los Santos, La Amistad Pacífico	Puntarenas, San José	134,872		1	3	4	X	X				
CR012	Manglares del Pacífico Central	Puntarenas	4,497		2					X			
CR013	Fila Costeña	Puntarenas, San José	116,558		1	2	2	X	X				
CR014	Humedales de Sierpe y Península de Osa	Puntarenas	225,797		3	2	2	X	X	X			
CR015	Maleku-Caño Negro	Alajuela	39,920				1			X			
CR016	Llanuras y humedales del Caribe	Alajuela, Heredia, Limón	417,041		1	1	1	X	X	X			
CR017	Pacuare, humedales costeros y corredor para aves migratorias	Limón	15,859					X	X	X			
CR018	Cahuita, Gandoca-Manzanillo y corredor para aves migratorias	Limón	41,835		1		1	X		X			
CR019	Kéköldi	Limón	3,928										X
CR020	La Amistad Caribe	Cartago, Limón	362,830		1	3	4	X	X				
CR021	Isla del Coco	Puntarenas	202,784			3		X					

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

IBAs has enabled the protection of populations of the endemic and Endangered Mangrove Hummingbird (*Amazilia boucardi*) and the Endangered Yellow-billed Cotinga (*Carpodectes antoniae*).

A preliminary analysis of land use in IBAs (after Sánchez-Azofeifa & Calvo 2002, made available by Centro Científico Tropical) shows the importance of forest in IBAs (more than 60%), compared to agricultural uses (24%). Wetlands, mangroves and marine areas also make up a significant component (13%). Extensive areas in Costa Rica, globally recognized for their ornithological importance, make evident the need to consider strategies including social participation, connectivity between protected areas and effective conservation. These elements are important for the sustainability of actions carried out within IBAs.

IBA identification prompts review of red list categories for Costa Rican birds

Box 1

The requirement for population estimates for the 37 globally threatened and Near Threatened species in Costa Rica for IBA identification has made evident the need to revise the conservation status of some of these species. A preliminary evaluation of 11 species was carried out, of these, the status of 10 may need uplisting on the basis of their populations in Costa Rica. However, the global populations need to be taken into account in all but Mangrove Hummingbird (*Amazilia boucardi*), which is endemic to Costa Rica. (Table 2).

Table 2. Species whose red list categories may need reevaluation

Species	2007 IUCN category	No. of IBAs with species' presence	Population estimate in IBAs
Crax rubra	NT	15	1210-<3575
Amazilia boucardi	EN	4	2350-5148
Trogon bairdii	NT	4	450-1797
Pharomachrus mocinno	NT	6	3060-5780
Electron carinatum	VU	4	<200
Cotinga ridgwayi	VU	4	460-1030
Procnias tricarunculatus	VU	14	955-1900
Carpodectes antoniae	EN	5	100-<450
Cephalopterus glabricollis	VU	4	190-330
Aphanotriccus capitalis	VU	4	400-<800
Bangsia arcaei	NT	4	2500-3900

Another red list change could be warranted if the isolated subspecies of Prevost's Ground-sparrow (*Melozone biarcuata cabanisi*) is upgraded to full species status. Its taxonomic situation is uncertain; significant morphological differences exist between this subspecies and other distant subspecies in northern Guatemala and central Mexico. The subspecies *M. b. cabanisi* is restricted to Costa Rica's Central Valley, the most populated part of the country. Here, the species' habitat is made up of shade coffee plantations and young secondary growth. However, the accelerated reduction of its habitat, mainly due to urban growth within its range, could lead to its imminent extinction.

Baird's Trogon (*Trogon bairdii*)
Photo: Bill Hubick; www.billhubick.com

Turquoise Cotinga (*Cotinga ridgwayi*)
Photo: Dr. Cagan Sekercioglu; www.sekercioglu.org

Opportunities

The development of the IBA program in Costa Rica has generated opportunities to collaborate between different organizations and institutions, strengthening local organizations and allowing their participation in specific conservation actions. Recommendations and priority actions for the conservation of birds and their habitats in Costa Rica, include:

- Incorporating IBA monitoring into the Terrestrial Ecological Monitoring Program for Protected Areas and Biological Corridors in Costa Rica (SINAC 2007b).
- Ensuring that information on IBAs in Costa Rica is considered within the implementation of conservation activities contemplated in the document, "Land use planning for biodiversity conservation in Costa Rica" (SINAC 2007a).
- Use of information from IBAs in other site-based conservation initiatives. As well as being extraordinarily important for birds, IBAs also hold a high number of other plant and animal species. This concept is being applied by diverse organizations such as Conservation International through defining Key Biodiversity Areas (Eken et al. 2004).
- Publication of an IBA inventory for Costa Rica and communication of its importance for bird conservation in the country.
- Strengthening the biological corridor concept and Local Support Groups for IBAs.
- Considering IBA identification as a baseline for establishing conservation priorities, developing conservation actions for endemic, threatened and migratory birds. There is a special need in Costa Rica to estimate population numbers for many species of birds in IBAs.
- Maintaining and promoting the development of courses for young ornithologists in IBAs, such as those carried out by the Unión de Ornitólogos de Costa Rica in 2007 in Reserva Forestal Los Santos (CR011) and the indigenous reserve of Kéköldi (CR019).

Ornithology workshop for young people in Los Santos, Kéköldi region.
Photo: Leonardo Chaves

Box 2

Key habitats for migratory birds are in need of conservation

Costa Rica's geographic make up, specifically the mountain ranges running northeast-southeast along the length of the country and the proximity of the Caribbean, creates a coastal corridor of great importance to migratory birds. A large area of this corridor is made up of lowlands which were originally covered by tropical wet forest, littoral and palm wetlands. Today, these forests are fragmented and a large proportion of the wetlands have been drained. The majority of the 185 migratory species that pass through this corridor on their fall migration fly over the shoreline, although birds of prey generally pass over the central plains. Thus, shorelines, beaches, wetlands and river mouths make up important resting and feeding sites for migratory shorebirds, herons and terns. For other birds, belonging to Parulidae, Tyrannidae, Vireonidae and Thraupidae families, the foothill forests are the main stopover sites and need to be considered as conservation targets. Towards the southeast, the indigenous territory of Kéköldi (CR019) is located where this migratory corridor narrows, becoming a obligatory point of passage for millions of birds of prey every year. In fact, this IBA is the only site in the Americas exclusively designated for migratory raptors (A4iv). As well as the conservation areas already established in this region, important forest remnants exist that must be protected as stopover sites and key habitat for both migratory and resident species.

IBAs making up the migratory bird Corridor in Costa Rica, including Kéköldi (CR019; red circle) through which more than three million birds of prey pass each year. See Table 1 for IBA names.

Migratory birds, such as these Swainson's Hawks (*Buteo swainsoni*) are monitored from the bird observation tower in the Kéköldi (CR019) reserve in the Caribbean lowlands. Photo: Daniel Martinez

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Long-tailed Silky-flycatcher (*Ptilogonys caudatus*) is restricted to Costa Rica and Panama highlands (EBA 020).
Photo: Bill Hubick; www.billhubick.com