



**ECOLOGICAL CORRIDORS AND PRIORITY
MIGRATORY BIRDS CONSERVATION AREAS, IN
COLOMBIA**

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1. General features

Migration is one of the most conspicuous animal behaviors in nature and the best example of this phenomenon is associated with a large number of species that move synchronously over great distances during a specific time of year and make the return journey a period of time later (Boyle, 2006). In no other group than that of birds has such behavior been so recognized and documented. In this sense, the ecological and conservation implications generated by the migration of numerous species of this group are becoming better known in La Sierra

Nevada de Santa Marta in Colombia, and the research has also focused on answering questions related to the exhibited migration patterns and explain how such processes operate at physiological and genetic levels (Boyle, 2006). This diagnosis presents those species of birds with migratory behaviors that maintain populations in the Sierra Nevada de Santa Marta in La Sierra Nevada de Santa Marta in Colombia, at some point in their life cycle, as well as information related to their distribution, the routes and predominant types of migration, their conservation status and the measures that support their protection.

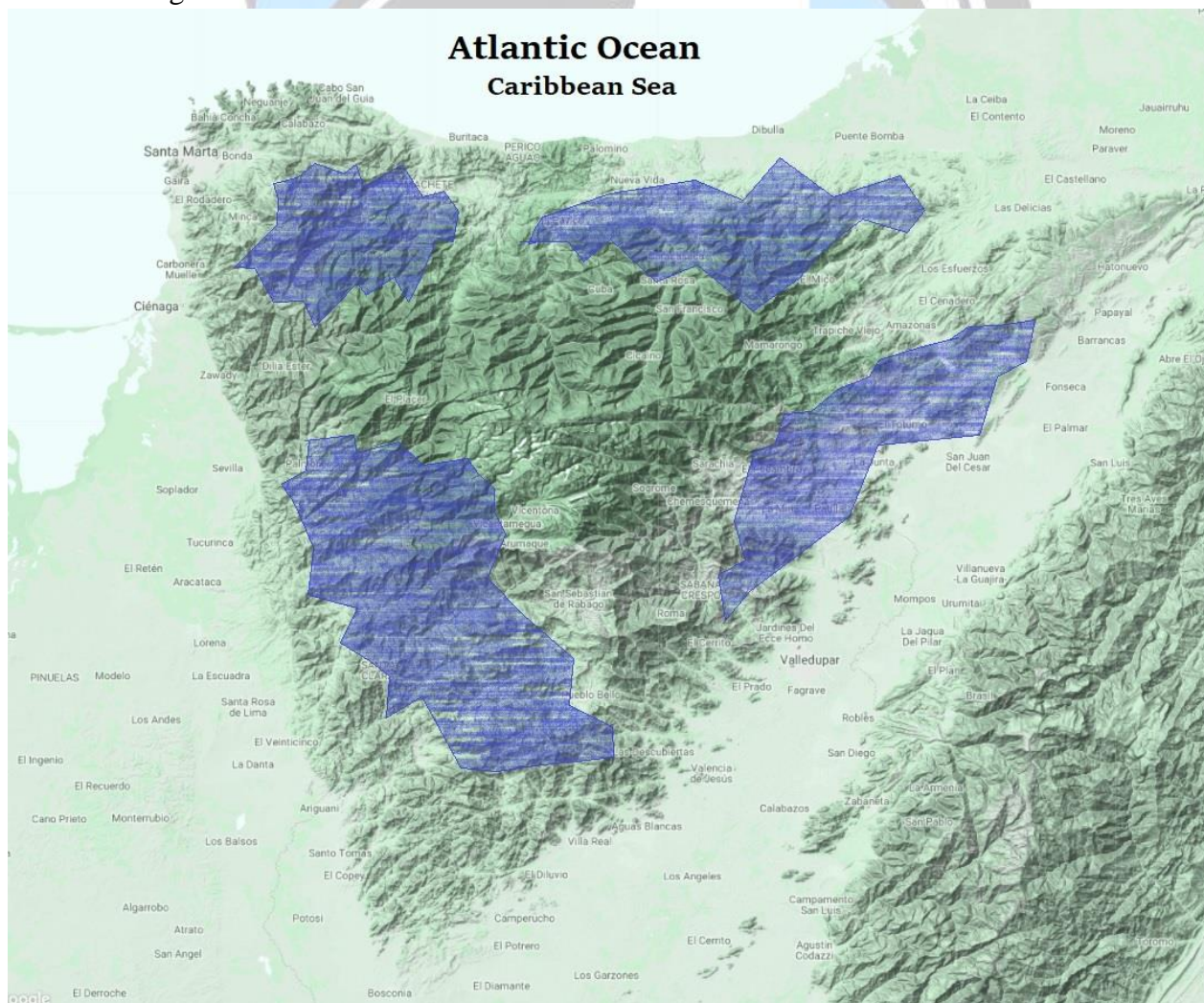


Image 1. Areas with high conservation priority. **Source:** BOSQUE COLOMBIANO

2. Geographical distribution

Birds are one of the most widely distributed biological groups, with species present on all continents where they can live, reproduce and feed in much of the existing habitats. It is estimated that there are currently 9,800 to 10,000 species throughout the planet depending on the taxonomic classification used (Gill, 2006; Clements, 2007). In the Sierra Nevada de Santa Marta in Colombia there are about 1,898 species of birds (Remsen et al., 2007) which places the country as one of the first in the world in terms of the diversity of this group. Within this wide wealth there is a high number of species that present recurrent and cyclical migratory behaviors (approximately 27), which are equivalent to 14.5% of the bird species present in the country. In this group there are long-distance latitudinal migratory species, mostly transboundary and local, altitudinal or transboundary migratory species at the regional level. Among the latitudinal migratory ones, about 154 species come from the northwest, center or east of North America, 23 species come from the south of South America, mainly to the Amazon, the Sierra Nevada de Santa Marta in Colombia and 25 are seabirds that travel extensively, in many cases without touching the coast.

3. Aspects of bird migration in the Sierra Nevada de Santa Marta in Colombia

Three important ecological processes are believed to have influenced the evolution of migration in birds: food limitation, direct climatic effects on physiological functions,

and risk of nest predation (Boyle & Conway, 2007). Variation in food resources can favor annual migration in two ways. First, by forcing individuals out of unproductive areas during lean seasons, and second, by allowing the exploitation of seasonal food spikes (Boyle & Conway, 2007).

Climate can promote migratory movements, if seasonality in temperature or Humidity results in conditions that exceed the range in which an individual can survive or reproduce. Finally, the differential risk of predation in latitudinal or altitudinal scales can favor migratory movements if it allows migrants to reduce the probability of failing to reproduce with respect to non-migrants (Boyle & Conway, 2007). Migrating bird species in the Sierra Nevada de Santa Marta in Colombia. In the diagnosis we included 275 species of birds that can be considered as migratory in the Sierra Nevada de Santa Marta in Colombia and that register movements of a latitudinal, altitudinal, local and / or transboundary character (Annex 4). We found a total of 48 families, being the warblers, the flytraps and the shorebirds, the groups with the highest number of species.

4. Ecology

Bird migration is favored by a number of special behavioral and physiological characteristics. This is an instinctive behavior, which occurs over and over again even if the environmental conditions seem appropriate for staying in a certain place. Many birds change their activity routine or adjust their metabolism during the migration season; for example, birds that are normally solitary,

concentrate in large groups during the trip or in the wintering places (Resnatur et al., 2004). Long migration flights require a large expenditure of energy and birds must alter their feeding rhythms, store fat deposits and, in many cases, modify their bodies to make more efficient use of their energy reserves (Resnatur et al., 2004).

Some adaptations are almost implausible; For example, it has recently been discovered that some birds, because they do not feed during the trip, have the ability to reduce the size of their entire digestive system before migrating (Canevari et al., 2001). Species differ in their flight schedules during migrations, probably in response to different opportunities or constraints they face while traveling. Most raptors travel during the day taking advantage of the ascending thermal currents (hot air currents), to plan as they migrate and thus control the high energy expenditure involved in a long journey (Márquez et al., 2005). On the other hand, many species of diurnal habits, such as redbirds, warblers, greenfinches, thrushes, flycatchers and turpiales, migrate at night. Movement in the dark can be advantageous for these birds by making them less vulnerable to predator attacks, by offering them the opportunity to forage for food during the day, as they usually do in their home sites, and by exposing them less to dehydration thanks to the cool temperatures of the night hours (Resnatur et al., 2004).

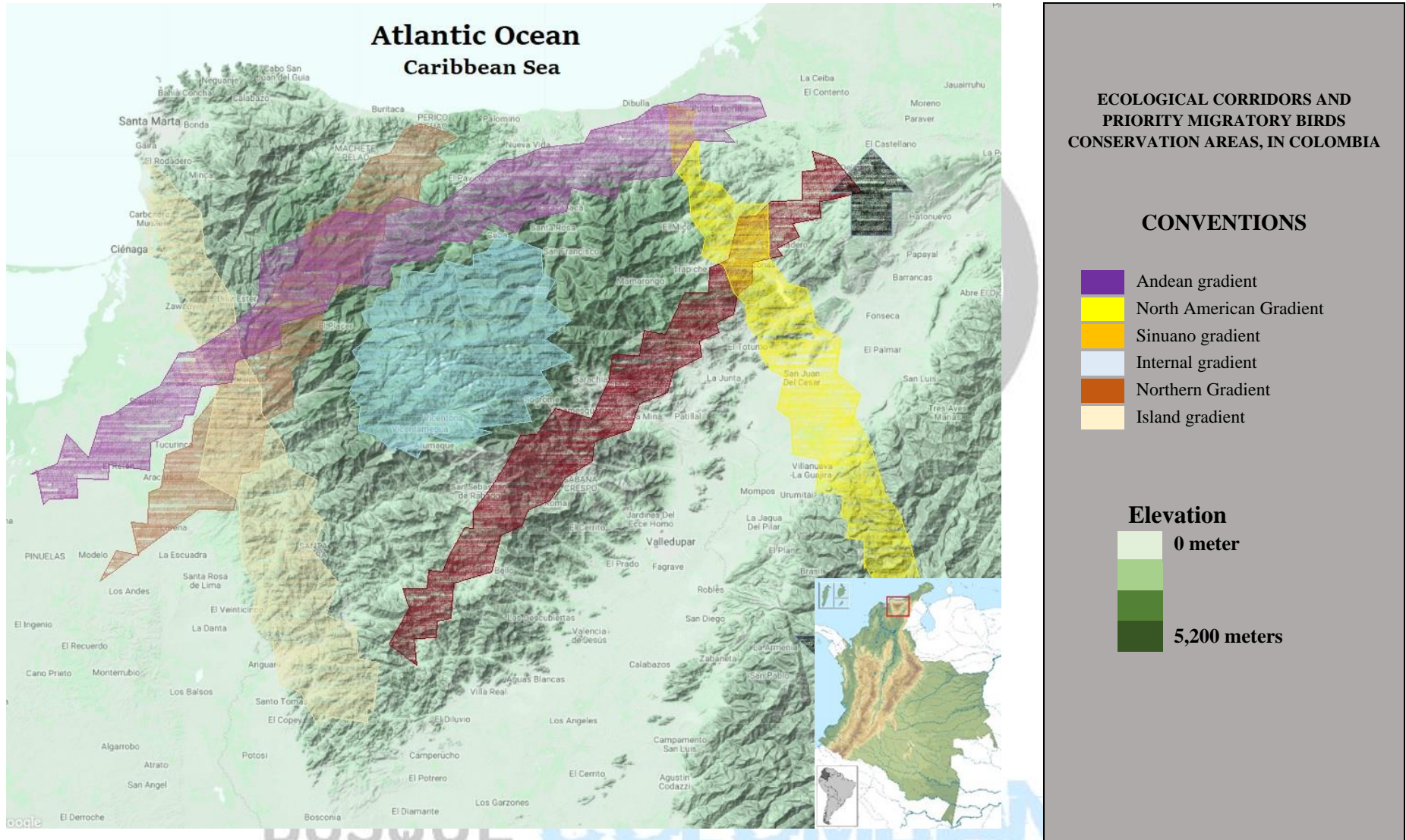
5. Migration routes

The concept of migration routes is a generalization to understand the movements of different species, since migration routes

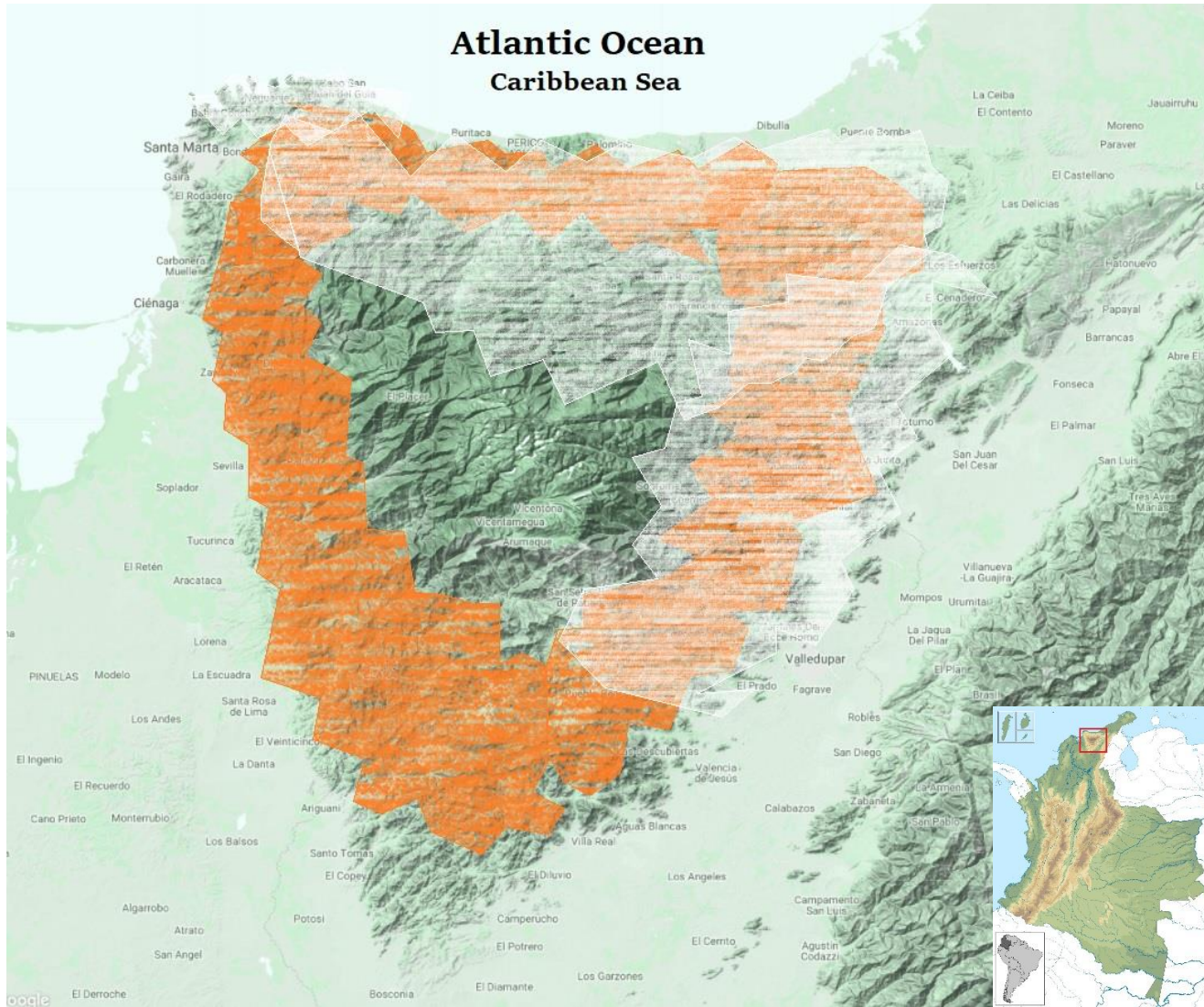
vary widely between individuals, populations, dates and years. In general, flight paths occur more frequently in gregarious species, such as shorebirds and ducks. Birds that do not travel in family groups tend to move through wider corridors (Resnatur et al., 2004). Despite this, three main routes are recognized in birds from North America, both in the fall and spring migration.

These routes are: the Atlantic corridor, the interior corridor and the Central American route or the Pacific corridor. In the Atlantic corridor, many shorebirds and some warblers cross the Atlantic from the shores of New England in the United States and enter South America from the coasts of the Guianas and Venezuela after passing over the Lesser Antilles. From this point of arrival, they disperse in different directions and many of them arrive at La Sierra Nevada de Santa Marta in Colombia flying along the Caribbean coast (Resnatur et al., 2004). A second group, the interior group, begins their journey in the Arctic and continues south through the North American prairies and the Rocky Mountains (Canevari et al., 2001). They reach the shores of the Gulf of Mexico and cross over the larger islands of the Caribbean to enter the Sierra Nevada de Santa Marta in Colombia around the Sierra Nevada de Santa Marta, before distributing to the south of the country. It is very likely that the majority of migratory ducks use this route, since the largest concentration of Mallard Duck (*Anas discors*) in northern South America is in the Ciénaga Grande de Santa Marta (Resnatur et al., 2004).

Map 1. Directions of internal and external migration gradients



Map 2. Priority migratory gradient of bird migration area.



ECOLOGICAL CORRIDORS AND PRIORITY MIGRATORY BIRDS CONSERVATION AREAS, IN COLOMBIA

CONVENTIONS

- Current protected area
- Migratory gradient

Elevation

- 0 meter
-
-
- 5,200 meters

6. Types of migration

According to the geographic coverage of the trips, three main types of migration are recognized for birds. First, the altitudinal migration, where some species remain throughout the year in the same country, but move between different elevation bands. For example, at the end of the flowering season of some páramo plants, many hummingbirds descend into the cloud forests or rainforests of the foothills just as the flowers of their alternate food sources begin to open. Quetzals, toucans and other fruit-eating birds also travel along the slopes of the mountain ranges, in response to the seasonal availability of fruits. Although they are little known, the Sierra Nevada de Santa Marta in Colombia is undoubtedly part of the natural history of many birds (Resnatur et al., 2004). The second known type of migration includes local migration that can sometimes be transboundary and is also a cyclical movement within the same latitudinal belt, in response to habitat availability or the presence of abundant resources in specific patches.

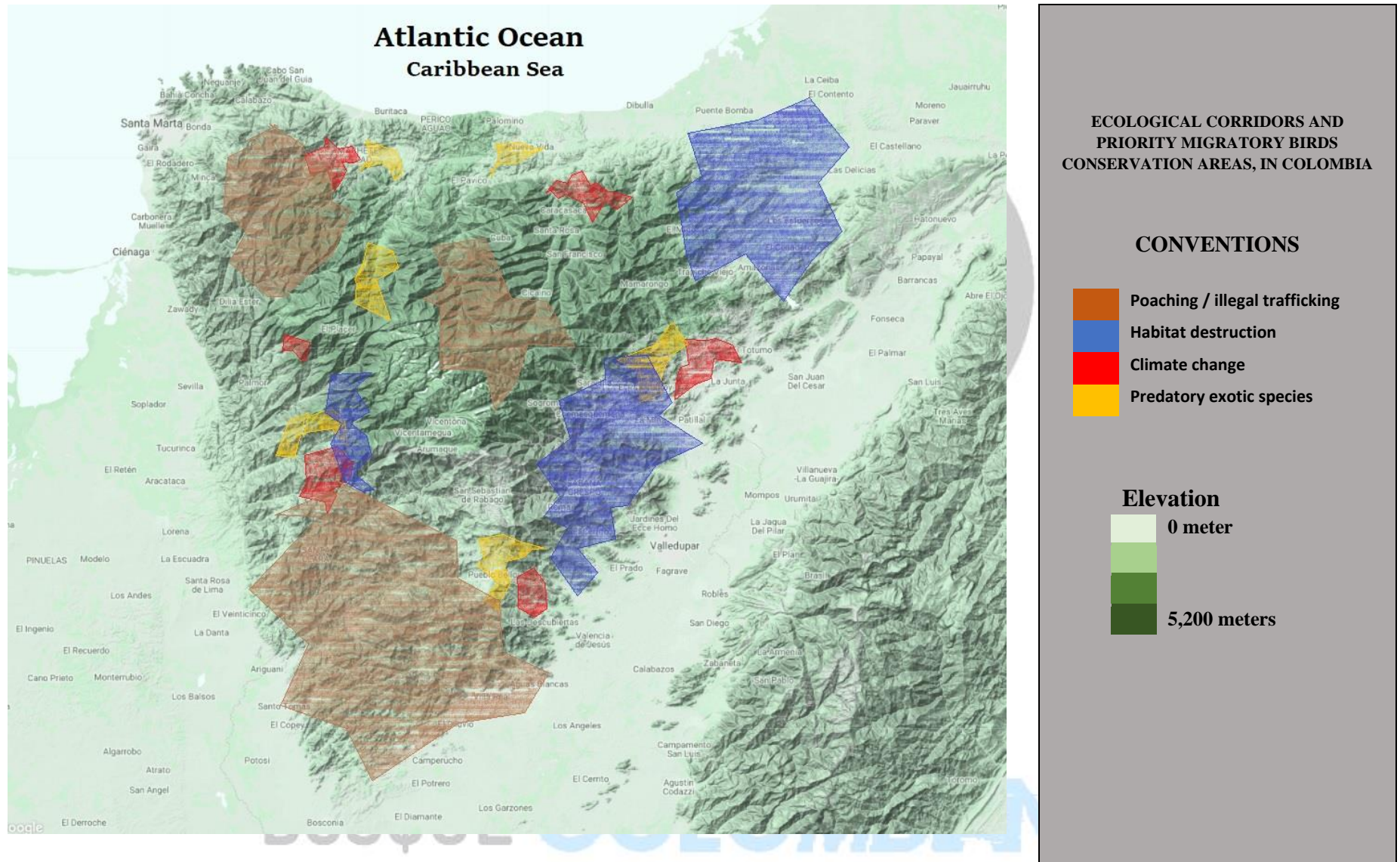
Many waterfowl in the Llanos migrate long distances as the normal cycle of droughts and floods unfolds. Some parrots and other frugivorous birds travel between patches of forest tracking the fruiting of their main food sources and these movements, of a nomadic nature, are repeated with the passage of the climatic seasons (Resnatur et al., 2004). But the best known migrations, and undoubtedly the most spectacular in terms of their geographical dimensions, are those that some birds make between localities on different continents, including transboundary movements. In these latitudinal migrations, which occur every year, species that breed in temperate latitudes of North and South America reach the Sierra

Nevada de Santa Marta in Colombia and they remain in the country for several months before returning to their nesting sites (Resnatur et al., 2004). In relation to the species of migratory birds that have been identified in this diagnosis, we can mention that around 222, including subspecies, present latitudinal migrations, 47 are related to altitudinal migrations and about 62 carry out local migrations (Annex 4). In many cases of altitudinal and local migration, the species carry out these movements in other neotropical countries such as Costa Rica, and based on this information

7. Residence status

It is estimated that among the 275 species considered migratory to the Sierra Nevada de Santa Marta in Colombia, around 173 present non-reproductive wintering populations (INR), 40 species present wintering populations that reproduce in the country occasionally or regularly (IRP) and 67 resident species that present local or altitudinal movements (RNI) (Annex 4). For six species, populations of two or more subspecies have some migrant status in the Sierra Nevada de Santa Marta in Colombia. These species are: the earwig hawk (*Elanoides forficatus yetapa* and *E. f. Forficatus*), the peregrine falcon (*Falco peregrinus tundrius*, *F. p. Anatum* and *F. p. Cassini*), the gray-billed plover (*Charadrius wilsonia wilsonius* and *C. w. beldingi*), the lesser nightjar (*Chordeiles acutipennis micromeris*, *C. a. texensis* and *C. a. aequatorialis*), the Swainson's flytrap (*Myiarchus swainsoni swainsoni* and *M. s. ferocior*), and the common earwig (*Tyrannus savana savana*) and *T. s. monachus*). For many other species it is unknown or doubts whether the seasonal changes in the number of individuals are due to local migrations or visits by a migratory subspecies.

Map 3. Incidences of anthropic threats to migratory birds

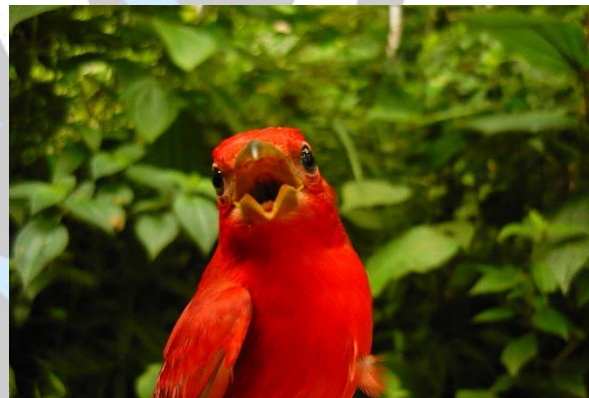


8. Times and periods of permanence in the Sierra Nevada de Santa Marta in Colombia

The chronology of migration is generally quite precise and has undoubtedly evolved in response to ecological conditions in the different regions crossed by birds. Most Nearctic species start their north-south migration towards the end of summer, that is, around the last week of August or early September. On the way south, many species remain in some Mexican, Antillean or southern regions of the United States, taking advantage of the abundance of food that they offer them (Canevari et al., 2001; Resnatur et al., 2004). Contrary to what happens in autumn, these differences in the timing of the spring migration have no apparent relationship with the climatic conditions in the latitudes where the birds are at the time. Therefore, it follows that there is a biological clock that determines the moment in which the latitudinal shift begins (Resnatur et al., 2004). The southern species generally begin their journey in the fall in mid-May, returning to the south around August. However, as mentioned above, little is known about the routes used, busy locations, and dwell times. A case similar to that presented for species with transboundary, local, altitudinal and nomadic migration, in which despite the fact that for some species movements have been confirmed that depend on the availability of food, be it fruits or resources of flooded areas, most of these processes remain uninvestigated.

9. Object of presence in the Sierra Nevada de Santa Marta in Colombia

For many nearctic migratory birds, the Sierra Nevada de Santa Marta in Colombia is one of the almost obligatory steps for their entry into South America. They can reach the country using the Pacific corridor and cross the mountain range to continue towards the Amazon, or they can arrive through the Caribbean coast and then use the Andean corridors on their route south. Most of them use the coasts, forests or wetlands of the Sierra Nevada de Santa Marta in Colombia as a place of rest and food. Likewise, the migratory southernmost people visit the Amazon, the Sierra Nevada de Santa Marta in Colombia, in search of feeding and resting places (Hilty & Brown, 2001).



10. Concentration sites in the country

Ten species of raptors (Accipitridae and Falconidae) visit the country as winter residents or passing through to and from other wintering areas. All these species are diurnal migrants that enter and leave the national territory by the Central American route to be able to make use of the ascending masses of hot air (Resnatur et al., 2004). Most of them spread to the east to be located on the Caribbean coast, in the eastern plains the Sierra Nevada de Santa Marta in Colombia and Venezuelans, or to cross the Andes and continue their route (Márquez et al., 2005).

Nine species of ducks (Anatidae) from Canada and the United States regularly arrive at La Sierra Nevada de Santa Marta in Colombia. The highest concentrations of migratory ducks in the Sierra Nevada de Santa Marta in Colombia are found in the Caribbean swamps (Vía Parque Isla Salamanca, Ciénaga Grande de Santa Marta Fauna and Flora Sanctuary and La Guajira 2006). Regarding migratory shorebirds from the north (Charadriidae and Scolopacidae), 38 species have been recorded on the coasts and inland wetlands of the Sierra Nevada de Santa Marta in Colombia.



The greatest abundances of shorebirds in the Sierra Nevada de Santa Marta in Colombia are found in the Pacific, particularly in the Sanquianga NPN and its adjacent zone. This is due to the existence of wide mud flats where the birds get their food and resting places in some protected beaches and mangroves. North of the mouth of the San Juan River, the abundance of migratory shorebirds is lower, precisely because of the limited availability of these habitats (Resnatur et al., 2004). On the Caribbean coast, the Ciénaga Grande, the Isla de Salamanca and Sabana Grande, without exceeding the concentrations found in the

Coastal Wetlands Complex) and in the Plains. However, some Andean and inter-Andean wetlands (Sabana de Bogotá wetlands, Sonso lagoon, Fúquene, Cucunubá and Palacio lake complex, cattle ranches wetlands in Cauca) still harbor important populations of these birds (Resnatur et al., 2004 ; BirdLife International,

Pacific, are also important sites for t-shirts and plovers (BirdLife International, 2006).

Twenty-one species of skippers, gulls and terns (Stercorariidae and Laridae), visit the Sierra Nevada de Santa Marta in Colombia during the boreal winter, coming from Canada and the United States, although it is probable that some terns that have reproductive populations in the Antilles join to these northern populations. The species richness of gulls and terns is higher in the Caribbean than in the Pacific. The migration routes of these birds are very little known, but it is known that individuals marked in the eastern United States reach the Pacific the Sierra Nevada de Santa Marta in Colombia not. On the other hand, seagulls and seagulls have nomadic movements and that is why it is common to find new species records on the coasts of the Sierra Nevada de Santa Marta in Colombia nas (Resnatur et al., 2004). The most diverse set of boreal migratory birds arriving in the country is undoubtedly the passerines (Parulidae, Tyrannidae, Hirundinidae, Thraupidae, Turdidae and Vireonidae). Many migratory passerines are winter residents of the country and others are passing through to and from other wintering areas further south on the continent. For this reason, in some months of the year large numbers of individuals are concentrated in

some regions, such as: the Sierra Nevada de Santa Marta, the Darién Chocoano, the Antioquia forests and the Eje Cafetero, the PNN Farallones de Cali, the PNN Tatamá, La Planada Nature Reserve, Finca Merenberg and the Ñambí river area (Resnatur et al., 2004). In addition to these taxonomic groups, some herons, moorhens, poultry, swifts and cuckoos arrive in La Sierra Nevada de Santa Marta in Colombia on their migrations from the north and like other boreal visitors use a variety of flight routes before to be distributed throughout the national territory (Resnatur et al., 2004).



11. STATE OF CONSERVATION

11.1. Threats

The species that migrate each year throughout the Americas are a resource shared by all the countries of the continent. In their travels, many species of birds are distributed randomly over wide areas, as is the case of the falconiformes and passerines.

However, the t-shirts, plovers and ducks congregate in a few special high-concentration food sites, scattered along their routes. The disappearance or alteration of the habitat of one of them can make the chain that maintains such routes and movement processes stop working and a significant part of the population disappear when they cannot complete their migration (Canevari et al., 2001). In this regard, it is important to highlight that migratory birds are not simple visitors who play a marginal role in the dynamics of ecosystems in their wintering areas. On the contrary, they are an integral part of the animal communities in these regions and each one of them occupies a particular niche in the fabric of species interactions (Resnatur et al., 2004). Among the main threats faced by migratory bird species in the Sierra Nevada de Santa Marta in Colombia, the ones listed below stand out.

a) Destruction and alteration of habitats The habitats used by shorebirds, plovers, herons and ducks are being highly intervened by humans, who with port and urban constructions, tourist developments, agricultural expansions, among others, have reduced and even disappeared some beaches, estuaries, lagoons and wetlands important as feeding and resting areas for these species (Canevari et al., 2001). Some migratory raptors depend on wooded areas to find food or rest. Similarly, passerine birds such as thrushes, warblers, flytraps and greenfinches and migratory falconiforms are affected by deforestation and the consequent destruction of their habitats (Resnatur et al., 2004; Márquez et al., 2005).

b) Pollution Throughout the continent, the unregulated use of pesticides and herbicides

is extensive and pollutes water and soils (Canevari et al., 2001). The negative effects of the use of chemical pesticides on the reproductive biology of falconiforms in North America are well documented. And although the use of pesticides is not frequent in tropical forests in Latin America, it is constant and excessive in surrounding areas, affecting those species that interact in these habitats or that inhabit agricultural areas (Márquez et al., 2005). This affects all migratory species differently, but mainly shorebirds, raptors, ducks and species associated with aquatic habitats, where all toxic compounds end up.

c) Hunting Indiscriminate hunting also causes a large-scale reduction of species, this includes ducks, shorebirds, pigeons and other non-passerine birds. Raptors are affected in two ways: the reduction of their prey and the direct elimination of themselves. In the Sierra Nevada de Santa Marta in Colombia, fish farm owners kill ospreys (*Pandion haliaetus*) because of the belief that they end fish production. In this way, the juvenile population of the species may be decreasing, since it remains in non-reproductive areas for more than a year before returning to its reproductive areas (Márquez et al., 2005). In some regions, such as the Combeima river canyon in Tolima, hunting of migratory

raptors is frequent during the spring, fostered by popular belief in the medicinal properties of these birds.



Threatened species Of the 275 species identified, 10 are in one of the global threat categories (IUCN, 2007) (Table 3.10) and two of them, *Pterodroma phaeopygia* and *Amazilia castaneiventris*, are in critical condition. In most cases, the degree of threat is associated with criteria of rapid population decline or with very small population numbers. On the other hand, it is estimated that 14 of the bird species considered migratory in the Sierra Nevada de Santa Marta in Colombia are threatened at the national level (Renjifo et al., 2002). These include three species in critical condition: the petrel *Pterodroma phaeopygia*, *Amazilia castaneiventris* and the swift *Cypseloides lemosi* (Table 1)

Migrant bird species	IUCN Conservation Status	Type of migrant
<i>Campylopterus phainopeplus</i>	CR	Internal
<i>Pyrrhura viridicata</i>	NT	External
<i>Elanoides forficatus</i>	NT	External
<i>Mniotilta varia</i>	VU	External
<i>Buteo platypterus</i>	VU	External
<i>Vermivora chrysoptera</i>	VU	External
<i>Falco columbarius</i>	NT	External
<i>Leiothlypis peregrina</i>	NT	External

Falco peregrinus	ES	External
Setophaga petechia aestiva	ES	External
Coccyzus americanus	ES	External
Crax alberti	CR	Internal
Amazilia lilliae	CR	Internal
Oxyopogon cyanolaemus	CR	Internal
Contopus cooperi	NT	External
Setophaga caerulescens	NT	External
Contopus virens	NT	External
Setophaga virens	NT	External
Empidonax virescens	NT	External
Setophaga fusca	NT	External
Empidonax traillii	VU	External
Setophaga magnolia	NT	External
Empidonax alnorum	NT	External
Setophaga striata	VU	External
Myiarchus crinitus	NT	External

Table 1. Migrant bird species in SNSM. **Source:** BOSQUE COLOMBIANO

11.2. Associated uses

In the Cites identification manual for the birds of the Sierra Nevada de Santa Marta in Colombia, you can find all the direct or associated uses of threatened birds, including migratory ones. Among the most important aspects is the fact that numerous birds, including some of those identified as migratory, are hunted to be used as pets, or to use their beautiful feathers for crafts or decoration, or simply as food (Roda et al. , 2003).

12. CONSERVATION MEASURES AND TOOLS

12.1. Global measurements and tools

The threats described above led to the creation of the Hemispheric Network of Shorebird Reserves (WHSRN), an international organization based on the voluntary and cooperative work of the

individuals and groups involved. Its purpose is to conserve migratory plovers and shorebirds, and to guarantee that their habitats, mainly aquatic, are used in a sustainable way (Canevari et al., 2001). On the other hand, the Marine Corridor initiative is part of a long-term plan between Conservation International, the United Nations Foundation and the Unesco World Heritage Center. The objective is to invest resources to conserve sites designated as World Natural Heritage such as: Galapagos in Ecuador, Coiba Island in Panama, Coco Island in Costa Rica and recently Malpelo Island in the Sierra Nevada de Santa Marta in Colombia. The declaration of the "Marine Corridor of Conservation of the Eastern Tropical Pacific" will allow the protection of species found in these waters. Hundreds of endemic and migratory species inhabit this

corridor of two million square kilometers, some in danger of extinction (www.Coastman.net.co).

Another effort is constituted by the Cerúleo Group, which was formed in December 2002 with the purpose of developing a strategy for the conservation of the cerulean warbler (*Dendroica caerulea*) in its non-reproductive areas, corresponding to the Sierra Nevada de Santa Marta in Colombia, Venezuela, Ecuador, Peru and Bolivia. This group is a subcommittee of the Cerulean Warbler Technical Group (CWTG), which promotes a multispecies approach to the conservation of habitat in the winter residence areas of the species, which also include species at risk that may concur with the warbler. cerulean. The problems of this species are related to the loss of extension, condition and habitat changes in non-reproductive areas, whose solution has been identified as a priority for the future conservation of the species (www.proaves.org). Another of these initiatives is the Alianza Alas Doradas, a group open to all researchers and conservationists who contribute knowledge about the winged warbler (*Vermivora chrysoptera*) in non-reproductive areas. The objective of the group is to work for the conservation of the species and its associated habitats through the implementation of recommendations and strategies for its long-term protection in its areas of migration and residence in Latin America.

This group was conceived by the members of the International Committee for Research, Monitoring and Conservation of the Golden-winged Warbler for non-reproductive areas, during the Conservation Workshop held in August 2005 in Siren, Wisconsin

(www.proaves.org) . Finally, it is important to mention the Initiative on Migratory Species of the Western Hemisphere, which corresponds to a group of governmental and non-governmental organizations from the countries of the Western Hemisphere whose main objective is to conserve all migratory species in the region, their key habitats and routes. migratory. Strengthened cooperative ties and good communication between nations are expected to strengthen biodiversity conservation throughout the Western Hemisphere, in turn benefiting the people associated with this natural heritage (www.whmsi.net).



12.2.National measures and tools

Among the measures and direct initiatives on migratory birds that have been promoted at the national level, it is found that Objective 1, Result 2, of the "National Strategy for the Conservation of the Birds of the Sierra Nevada de Santa Marta in Colombia" , mentions the relevance of identifying important areas for the conservation of migratory species and areas of seasonal concentration of large numbers of birds. This strategy constitutes an essential tool to strengthen the knowledge of birds and for the development of a citizen awareness towards

the conservation of them and their habitats (Renjifo et al., 2000).

On the other hand, the Calidris Association is leading the National Plan for the Conservation of T-shirts, which has three main objectives. First, identify the areas with the highest concentration of shirts in the country; second, to generate local alliances for the monitoring, protection and conservation of these important areas, and third, to develop a national strategy for the conservation of migratory birds. A Migratory Bird Monitoring Network was also developed in collaboration with the Association La Sierra Nevada de Santa Marta in Colombia on the Network of Natural Reserves of Civil Society (Resnatur), which resulted in the Migratory Bird Monitoring Manual and even Today it is still active in the Chicoral village in the Department of Valle del Cauca and in the Río Blanco reserve in Manizales.



The international initiative MoSI (Winter Survival Monitoring) currently has two stations in La Sierra Nevada de Santa Marta

in Colombia led by this association. The ProAves Foundation is carrying out several projects of interest for the conservation of migratory birds. She is part of Grupo Cerúleo, Alianza Alas Doradas, and the Western Hemisphere Migratory Species Initiative (www.proaves.org). Likewise, biologists from the Conservation Biology program of the National Coffee Research Center, Cenicafé, are developing a migratory bird banding program in the Coffee Region (www.cenicafe.org). Although the Orinoco basin is in a good state of conservation, it has areas that have been negatively impacted by human labor and exploitation. Therefore, in mid-2004, The Nature Conservancy and WWF La Sierra Nevada de Santa Marta in Colombia, in association with the Foundation for the Defense of Nature of Venezuela (Fudena), the Network of Private Reserves of Venezuela and the Red Association The Sierra Nevada de Santa Marta in Colombia na of Natural Reserves of the Civil Society of La Sierra Nevada de Santa Marta in Colombia, executed the project "Providing Safe Shelter: Conservation of Habitat for Migratory Birds in the Orinoco River Basin" with the aim of to identify important habitats for their conservation and analyze the impact of human practices on these species and other elements of biodiversity in the Orinoco Basin (www.wwf.org.co).

12.3. Presence in protected áreas

BirdLife International has identified in the Sierra Nevada de Santa Marta in Colombia a large number of Important Bird Conservation Areas (IBA). Until April 2005, 112 IBAs had been established, which represent 6.48% of the national surface. IBAs are not evenly distributed, 69 are found in the Andean

region, 18 in the Caribbean region, seven in the Pacific region, seven in the Amazon and five in the Orinoquia. Additionally, 54 IBAs are totally or partially covered by areas of the National System of Protected Areas (29 National Parks, four Fauna and Flora Sanctuaries and one Vía Parque), as well as five Biosphere Reserves and one World Heritage Site (Franco & Bravo, 2005). Although knowledge of the distribution of migratory species is deficient, several sites of great importance for Nearctic migratory species have been identified in the Caribbean region, and two important sites for the passage of migratory raptors in the Andes. The Ramsar Biosphere Reserve Ciénaga Grande de Santa Marta, the Island of Salamanca and Sabana Grande (CO008) and the Coastal Wetland Complex of La Guajira (CO003), are important sites for migratory aquatic and shorebirds that reach the Caribbean coast of our country (Franco & Bravo, 2005), while the PNN Sanquianga (CO121), is the place with the highest concentration of plovers and shorebirds in the Pacific.

The canyon of the Combeima River (CO054) and the montane forests of southern Antioquia (CO024) are key places for the passage of migratory raptors. Throughout the year 2000, several migratory counts were carried out in Antioquia and Chocó, registering eight species of raptors, including a new record for the country. The Combeima river canyon is an attractive place for migratory eagles (*Buteo platypterus*) and Swainson's hawks (*Buteo swainsoni*), due to the high availability of perches that they use as a rest and then continue to their final destinations (Márquez et al., 2005).

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