

The order Falconiformes in Cuba: status, distribution, migration and conservation

Freddy Rodríguez Santana

INTRODUCTION

Fifteen species of raptors have been reported in Cuba including residents, migrants, transients, vagrants and one endemic species, Gundlach's Hawk. As a rule, studies on the biology, ecology and migration as well as conservation and management actions of these species have yet to be carried out. Since the XVI century, the Cuban archipelago has lost its natural forests gradually to nearly 14 % of the total area in 1959 (CIGEA 2000). Today, Cuba has 20 % of its territory covered by forests (CIGEA op. cit) and one of the main objectives of the Cuban environmental laws is to protect important areas for biodiversity as well as threatened, migratory, commercial and endemic species. Nevertheless, the absence of raptor studies, poor implementation of the laws, insufficient environmental education level among Cuban citizens and the bad economic situation since the 1990s continue to threaten the population of raptors and their habitats. As a result, the endemic Gundlach's Hawk is endangered, the resident Hook-billed Kite is almost extirpated from the archipelago, and the resident race of the Sharp-shinned Hawk is also endangered. Studies on these species, as well as conservation and management plans based on sound biological data, are needed for the preservation of these and the habitats upon which they depend. I offer an overview of the status, distribution, threats, migration and conservation of Cuba's Falconiformes.

MATERIALS AND METHODS

For the status and distribution of the Falconiformes in Cuba, I reviewed the latest published literature available as well as my own published and unpublished data. As for migration, I took my own published as well as unpublished data from two years of operation of La Gran Piedra Raptor Observatory (GPRO), so far the only Cuban raptor observatory where studies

on raptor migration are being carried out every year on a regular basis. Threats and conservation needs came from published literature as well as interviews with resident farmers in the Sierra Maestra and Nipe-Sagua-Baracoa mountain range in eastern Cuba, and my own unpublished observations.

STATUS AND DISTRIBUTION

Cuba is an important stopover site and wintering ground for some North American raptors (Hoffman & Darrow 1992). Nine of the 15 species reported in the Cuban Archipelago are migratory in some way (Table 1). Other species (5) are from North American populations established in the archipelago or which have become endemic (Gundlach's Hawk *Accipiter gundlachi*) by speciation from Cooper's Hawk *Accipiter cooperi* immigrants. The exception is the Hook-billed Kite *Chondrohierax uncinatus*, claimed to be an endemic (*C. wilsonii*) by Garrido and Kirkconnell (2000), which established itself in the island from Central American immigrants via Peninsula of Yucatan.

Table 1. Status of the Falconiformes reported in Cuba: (b) breeds regularly in Cuba, (wtmp) winter resident and transient migratory populations, (rmp) resident and migratory populations, (t) transient, (wr) winter resident, (e) endemic, (v) vagrant.

Common and scientific name	Status
Osprey (<i>Pandion haliaetus</i>)	B, WTMP
Hook-billed Kite (<i>Chondrohierax uncinatus</i>)	B
Swallow-tailed Kite (<i>Elanoides forficatus</i>)	T
Snail Kite (<i>Rostrhamus sociabilis</i>)	B
Northern Harrier (<i>Cyrcus cyaneus</i>)	WR
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	RMP
Gundlach's Hawk (<i>Accipiter gundlachi</i>)	E
Common Black Hawk (<i>Buteogallus anthracinus</i>)	B
Broad-winged Hawk (<i>Buteo platypterus</i>)	RMP
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	B
Crested Caracara (<i>Caracara cheriway</i>)	B
American Kestrel (<i>Falco sparverius</i>)	RMP
Merlin (<i>Falco columbarius</i>)	WTMP
Peregrine Falcon (<i>Falco peregrinus</i>)	WTMP
Mississippi Kite (<i>Ictinia mississippiensis</i>)	V

Figure 1. Map with the localities cited in the text



Hook-billed Kite *Chondrohierax uncinatus*.

The rarer and most threatened raptor in Cuba. Garrido and Kirkconnell (2000) reported three sightings in the last 30 years, the most recent in Yateras, Guantánamo province, in 1992. The Peregrine Fund has been supporting Cuban biologists since 2002 in an effort to identify the current population of the species with no success so far. Any existing population almost certainly must be located around Yateras, in Sagua-Baracoa mountain range, north-eastern Cuba, where the last individuals were seen (Figure 1).

Cuban farmers usually kill any hawk if they consider their poultry to be threatened, regardless of whether they prey on poultry or not. As this hawk is considered quite tame, it is a fairly easy target for local citizens. Loss of primary habitat and indiscriminate collection of molluscs of the genus *Polymita* upon which it preys, are the major causes for its decline (Raffaele *et al.* 1998).

Osprey *Pandion haliaetus*.

There are two subspecies of Osprey in Cuba, *P. h. carolinensis*, winter resident, permanent resident and transient in Cuba, which is the most common, and *P. h. ridgwayi*, rarer and reported by Raffaele *et al.* (1998) for some of Cuba's offshore keys and Zapata Swamp. There are no studies on the ecology and abundance of either race in Cuba. Rodríguez *et al.* (2001) reported hunting as the major threat in Cuba. Winter resident and permanent populations might be increasing lately due to the construction of new dams.

Swallow-tailed Kite *Elanoides forficatus*.

This species has been reported in the two years of operation of GPRO (south-eastern Cuba), suggesting that it might be wintering in Cuba or other Caribbean islands, because it is unable to cross large bodies of water such as the Caribbean (Bildstein *et al.* 2002).

Snail Kite *Rosthramus sociabilis*.

Not a common species in the eastern part of Cuba. From the author's studies of the avifauna of Nipe-Sagua-Baracoa and Sierra Maestra mountain ranges and the wetlands of eastern Cuba, there have been no records of this species in the last six years other than those associated with the Cauto river basin. Snail Kites appear to be restricted to some freshwater ponds where Apple Snails *Pomacea paludosa* occur. Raffaele *et al.* (1998) reported it as increasing due to the establishment of reservoirs and rice fields. There are no studies on the ecology and abundance of this species in Cuba.

Northern Harrier *Circus cyaneus*.

This species must be not uncommon from Las Tunas to Matanzas province. The extent to which wintering populations might be threatened by direct persecution or any other cause is unknown. There are no studies on its wintering ecology and abundance.

Sharp-shinned Hawk *Accipiter striatus*.

One of the rarer raptors in Cuba. Resident populations are mainly threatened by fragmentation and loss of habitat (Garrido 1985; Wiley 1986) and possibly by direct persecution. There are no studies on the ecology and abundance of the resident race *A. s. fringilloides*. The migratory race *A. s. velox* is more common, especially during autumn migration in the northern Cuban keys. Individuals seen in Santiago de Cuba city and in GPRO probably belong to the migratory race. Misidentification between the resident and migratory races can result in overestimation of the resident race's true population size. It is found in forests at middle elevations and occasionally seen in lowland forests (Garrido 1985).

Gundlach's Hawk *Accipiter gundlachi*.

Although regarded as vulnerable by Garrido and Kirkconnell (2002) it is reported as endangered (C2a) by Hilton-Taylor (2000). The major threats to this species are considered to be hunting and loss of habitat (Raffaele *et al.* 1998). This is the raptor that kills most of the poultry of Cuban farmers, thus the most persecuted and killed by local citizens. Interviews with local farmers of the Sierra Maestra and Nipe-Sagua-Baracoa mountain ranges show that hunting Gundlach's Hawk using different traps is a common practice, thus direct persecution there combined with loss of habitat as the principal threats supports Raffaele *et al.* (1998). It has been found in every province of Cuba (Collar *et al.* 1992) and Garrido (1985) reported it in forest edges, swamps, wooded coasts and mountains at an elevation below 800m. This author has seen this species breeding well above that altitude (*ca.* 1100m) in La Gran Piedra, south-eastern Cuba.

Black Hawk *Buteogallus anthracinus*.

There are no studies on the ecology and abundance of this hawk that Garrido and Kirconnell (2000) suggested might be considered an endemic species (*B. gundlachii*). It is more common in the central-western part of Cuba. It has never been found on the coast of Santiago de Cuba, Holguín or Guantánamo provinces.

Broad-winged Hawk *Buteo platyterus*.

The resident race *B. p. cubanensis* is restricted to some dense and undisturbed semideciduous and pine forests (Garrido & Kirkconnell 2000). As a migrant, there are no data on its habitat preferences. Wotzkow (1994) reported it as decreasing in many localities, mainly due to the degradation of natural habitats. Wotzkow (in Wiley 1985) considered it as widespread in suitable habitat throughout Cuba.

Red-tailed Hawk *Buteo jamaicensis*.

A common raptor, widely distributed in the main island and also in Key Coco and Sabana-Camaguey archipelagos (Garrido & Kirkconnell 2000). There are no studies on this raptor in Cuba. Sometimes it preys on poultry, thus is occasionally hunted by local farmers, which is the major threat, although the number killed appears to be too small to put its population at risk.

Crested Caracara *Caracara cheriway*.

More common on some keys than on the mainland of the Cuban archipelago (Garrido & Kirkconnell 2000), where it is well distributed. As with other raptor species, there are no studies on its population ecology and abundance.

American Kestrel *Falco sparverius*.

The most abundant and widely distributed of Cuban raptors (Wotzkow 1994). There are no population studies on either the migratory race *F. s. sparverius* or the resident race *F. s. sparverioides*. During the breeding season, taking fledglings to be kept as pets is a common practice in Santiago de Cuba and other cities. It is primarily seen in open areas, including urban areas, secondary forests and open forests. It is well distributed in the entire Cuban archipelago.

Merlin *Falco columbarius*.

Can be seen throughout Cuba, especially during migration. Its habitat includes open areas, coastlines, urban areas and sometimes dense forests (during migration). Threats to this species while in Cuba are unknown.

Peregrine Falcon *Falco peregrinus*.

Appears to be more common during migration than reported by Garrido and Kirkconnell (2000), to judge from the numbers seen heading south to Cuba from the Florida keys by Hoffman and Darrow (1992). People interested in protecting their racing pigeons often kill this falcon. Recent sightings of display flights and a breeding record in Cuba (Wardman & Aspinall 1999; Regalado & Cables 2000) might reflect the expansion of the North American population after its recovery.

MIGRATION

South America, Central America and the Caribbean rank as the least studied regions in the world regarding raptor migration (Zalles & Bildstein 2000). The best description of the raptor migration for the Caribbean is that of Hoffman and Darrow (1992), together with studies on the migration of satellite-tracked

Swallow-tailed Kites *Elanoides forficatus* (K. Meyer in Zalles & Bildstein 2000) and Ospreys and other raptors (Rodríguez *et al.* 2001; Rodríguez *et al.* 2003 a, b). Hoffman and Darrow (1992) reported migrant Peregrine Falcons, Merlins, Kestrels, Sharp-shinned Hawks and Ospreys departing from peninsular Florida into the Caribbean, particularly Cuba.

In Cuba there are no studies on raptor migration other than those on the migration of the Swallow-tailed Kite (Bildstein *et al.* 2002), and those of Rodríguez *et al.* referred to above. There was a report on sightings of Swallow-tailed Kites in Cuba by Milera (1995). Just recently (2001) the GPRO in south-east Cuba was opened, to track the movements of migrating hawks through that region.

Studies on the wintering ecology and abundance of the nine species of migratory raptors that regularly occur in Cuba are still to be carried out.

Species Accounts

Osprey

Cuba is an important flyway for North American Ospreys. Ring recoveries, satellite telemetered birds and visual counts (Rodríguez 2001; Rodríguez *et al.* 2003 b) suggest that almost 90 % of the eastern seaboard population pass through Cuba during autumn migration. They mostly reach Cuba in a broad front between Matanzas and Villa Clara provinces, travelling then south-east to eastern Cuba (Rodríguez *et al.*, 2001). Counts made at GPRO and Nipe-Sagua-Baracoa mountain ranges (Rodríguez *et al.* 2001) showed that these mountain chains, both in the east, are important corridors that funnel Ospreys into the easternmost part of Cuba. This, together with visual counts on the north and south coasts (F. Rodríguez, unpub. dat) suggests that Maisí point, the easternmost point of Cuba, appears to be an important congregation point for migrating Ospreys, before they cross the Wind Channel en route to La Hispaniola and South America. Counts at Maisí point might be particularly revealing on the numbers of these birds that pass through during autumn migration.

Osprey wintering ecology is unknown, although the island has been suggested to be an important stopover site and wintering ground for the species (Rodríguez *et al.* 2001; Poole 1989).

Swallow-tailed Kite

Although Garrido and Kirkconnell (2000) reported this as an uncommon transient in Cuba, satellite-tracking data (Meyer 1995) suggest that it is a common autumn transient through western Cuba on its flight from peninsular Florida to the Yucatan peninsula. Meyer (K. Meyer, pers. comm.) also suggests that nearly 90 % of the North American population of this species is likely to take this flyway during autumn migration. The fact that a Swallow-tailed Kite flying high could be undetected and that there are no researchers studying raptor migration on a regular basis in western Cuba, could explain the lack of regular records for this area. As quoted above, during the counts at GPRO, this species has been observed flying east to easternmost Cuba (Bildstein *et al.* 2002, F. Rodríguez, unpubl. data). This suggests that every year at least some part of the population of the Swallow-tailed Kite takes the eastern flyway to

wintering grounds either in eastern Cuba or probably Jamaica and La Hispaniola, where this bird was reported previously (Raffaele *et al.* 1998; Crouse & Keith 1999).

It is curious that this bird has been reported migrating together with Ospreys (Rodríguez *et al.* 2003a; Crouse & Keith, 1999; Bildstein *et al.* 2002).

Mississippi Kite

First record for Cuba and the West Indies made very recently (Burke *et al.* 2000). This is a rare vagrant in Cuba.

Northern Harrier

Never reported at GPRO during the autumn migration, although the species has been seen wintering farther east in Guantánamo province. Two records in mountainous areas, Cuba Peak (1900m a.s.l.) in February 2000 and Gran Piedra (1200m a.s.l.) in February 2003 (A. Llanes, pers. comm.) suggest some inland wandering between wintering areas. There are no data on the magnitude of its migration into Cuba, just arrival (August 15) and departure (April 24) dates (Garrido & Kirkconnell 2000). It is a common winter resident in open areas such as savannas and marshes (Garrido & Kirkconnell, 2000). The main wintering areas range from Granma province west to Matanzas, where the major part of suitable Northern Harrier habitat occurs.

Sharp-shinned Hawk

The difficulties associated with censusing accipiters while in their wintering grounds because of their preference for forests (Fuller & Moser 1987) and lack of studies on their wintering ecology, may have influenced Garrido and Kirkconnell (2000) to consider this species rare as a winter resident.

Although only one migrating individual has been reported at GPRO (Rodríguez *et al.* 2003 b), there are reasons to believe that large numbers arrive every autumn on the northern coasts of Cuba. Hoffman and Darrow (1992) reported this species as an abundant migrant in the Florida keys. Caretakers of Empresa Nacional de Flora y Fauna at Carahatas station, in North Central Cuba, describe the arrival on the outer keys of numerous round-winged, long-tailed little raptors that prey upon exhausted song birds. Arriving scattered over a broad front and subsequently dispersing into the Cuban mainland forests, including keys, combined with the difficulties associated with distinguishing the migratory race from the resident population *A. s. fringilloides*, can keep their migratory abundance unnoted by Cuban ornithologists.

Broad-winged Hawk.

There is strong evidence suggesting that this species is not a rare migrant in Cuba, as reported by Garrido & Kirkconnell (2000). Hoffman and Darrow (1992) describe the movements of several thousands of Broad-winged Hawks (mostly juveniles) through the Florida keys flying south, presumably to Cuba. During the spring, large flocks ranging between 250 and 500 individuals have been seen soaring in kettles in the Peninsula of Hicacos (north-central Cuba) before departing north to Florida from the Peninsula of Hicacos in Matanzas province (D. Rodríguez & C. Perez, pers. comm.). During the counts at GPRO, juveniles of this species have been seen migrating east along the Sierra Maestra

mountain range to easternmost Cuba (Rodríguez *et al.* 2003 b; Rodríguez, unpubl. data). This supports the fact that even in eastern Cuba this species is a common winter resident. The difficulties associated with distinguishing the migratory *B.p.platypterus* from the non-migratory race *B.p.cubanensis*, and lack of studies on their wintering ecology and migratory movements in Cuba, might keep the migratory influx unknown; thus records made by Cuban ornithologists during the winter might be from either race.

Crested Caracara.

Although this species does not migrate from the USA to Cuba, Rodríguez *et al.* (in press) have reported internal migration in Cuba. This kind of movement has also been reported for North America (Clark & Wheeler 2001).

American Kestrel.

Hoffman and Darrow (1992) reported this species as probably an abundant migrant through the Florida keys. It seems to be more common in western than in eastern Cuba (F. Rodríguez, unpubl. data). There are no records of migratory individuals at GPRO, nor studies on its wintering ecology.

Merlin.

More common in Cuba during the autumn migration, occurring almost everywhere in the archipelago. Cohn and Martell (in Bildstein 2000) suggested that they apparently island-hop or migrate across a broad front through the Greater and Lesser Antilles. Often seen in urban habitats during winter.

Peregrine Falcon.

Hoffman and Darrow (1992) believed that large numbers of this species are expected to be seen in October at some points of the Florida keys. Considering the geographic position of Cuba, halfway between North and South America, and that this species rarely hesitates to cross wide bodies of water (Kerlinger 1989), it is likely that raptor counts during migration in either the westernmost or easternmost tips of Cuba show some pattern of Peregrine movements through Cuba and the Caribbean islands during autumn migration. In the inland GPRO, there have been too few records to allow any conclusion.

CONSERVATION

Cuba has a well-developed national protected areas system, comprising 236 different areas, resulting in 22% of the country being protected in some way. Of these areas, 75% are terrestrial, the rest being marine ecosystems (CIGEA, *op. cit.*). These protected areas include 14 National Parks, 25 Ecological Reserves and six Biosphere Reserves.

Bearing in mind the lack of basic information on the distribution, ecology, biology and migratory patterns of some species of the Cuban vertebrate fauna, these areas have been established following mainly botanical criteria, sometimes protecting naturally self-protected, undisturbed areas. Thus there are good possibilities for improving the coverage by conducting basic studies on the distribution and ecology of the fauna that might result even in proposals for new protected areas.

As for Cuban efforts to protect the environment, Law # 81 of the Environment passed on July 11, 1997, includes in its articles 84, 85, 90 and 116 the conservation of biological resources, as well as endemic, migratory, commercial and endangered species and their genetic heritage. On the other hand, Law # 200, passed on December 12, 1999, foresees contraventions regarding collecting and/or damaging the biodiversity, and the legal procedures required to maintain it.

Cuba has also signed several international agreements such as CITES, the Agreement on Biological Biodiversity of Río de Janeiro, and the Ramsar Convention.

With this array of protected areas, laws and international agreements, one might think that conservation of biodiversity is guaranteed. Nevertheless, Cuba, among the Greater Antilles, is the island with more species of birds in the Red List of Threatened Species (Hilton-Taylor 2000), including the endemic Gundlach's Hawk. The Cuban law for the protection of the environment is still very vague and does not guarantee the automatic conservation of biodiversity. Furthermore, implementation of the existing laws is still poor and, when applied, still too lenient to discourage environmental crime.

The major part of the protected areas, although with well-established geographical boundaries, lack the proper signs, guards, budget, financing and management plans, which *de facto* undermines their conservation mission.

The difficult Cuban economic situation affects the environment, where logging by private owners and some state entities without planning or required permits still occurs. It has also triggered the hunting of some species either for food and/or for commercial purposes.

Finance for conservation is harder to achieve in Cuba than in its neotropical neighbours. Cuban researchers are not allowed to apply for US-based funding for research and conservation, although some US institutions have collaborated with their Cuban counterparts.

Despite its high level of education compared with the Latin American standard, Cuban society is still poorly educated from the environmental point of view. Trapping songbirds for the pet trade, collecting tree snails for handicraft, killing animals for food, trapping raptors (Ospreys) to use their talons as spurs in cockfighting, illegal logging, charcoal, nomadic agriculture in mountain ranges, cattle ranching, killing poultry-eating and non-eating raptors, continue among other things to threaten Cuban biodiversity. Together with this, programmes targeted to overcome the consequences of this insufficient environmental education are still rare.

Bearing all this in mind, it is not surprising that three of the 15 species of raptors reported in Cuba are directly threatened in one way or another. All forest raptors are persecuted, blamed for killing poultry and all occasionally killed for no apparent reason other than hunting.

There is a need for population studies and dissemination of the environmental laws among Cuban citizens. Specific laws to protect raptors in Cuba, including some compensation to farmers for their hawk-related poultry losses and/or payment of some due for every threatened falconiform nesting on their land, educational campaigns countrywide, upgrading of some Cuban ornithologists as

raptor biologists and financial support for researchers studying raptors should be the starting points for accomplishing raptor conservation in Cuba.

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Freddy Redriguez Santana

Centro Oriental de Ecosistemas y Biodiversidad (BIOECO)

José A. Saco No. 601, Santiago de Cuba CP. 90100, Cuba