

STATUS AND CONSERVATION OF FOREST RAPTORS IN THE WEST INDIES

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ABSTRACT

The islands of the West Indies have undergone extensive habitat change due to man's agricultural, industrial and housing needs. Substantial deforestation began in the eighteenth and nineteenth centuries and has continued to the present on most islands, although in Puerto Rico a shift from an agrarian to an industrial economic base has led to a recent increase in forested lands. Population declines have characterized forest-dwelling raptors: of particular concern are the Cuban and Grenadan populations of the Hook-billed Kite, Gundlach's Hawk (Cuba), the Puerto Rican, Hispaniolan and Cuban races of the Sharp-shinned Hawk, Ridgway's Hawk (Hispaniola), the Puerto Rican Broad-winged Hawk, the Hispaniolan Stygian Owl and Newton's Screech Owl. Also of concern are wintering populations of the Peregrine Falcon and Merlin which, through their prey, continue to accumulate persistent pesticides. Status, threats and conservation measures are discussed for each of these species.

INTRODUCTION

Tropical forests are in worldwide decline due to a number of human-related factors, primarily (1) conversion to agriculture, (2) fuelwood gathering, and (3) poorly-managed logging. Behind these direct causes are the more fundamental problems of rapidly-increasing human populations, lack of advancement in agricultural technology, and absence of employment opportunities outside the agricultural sector. In the ever-expanding quest for food supplies, shifting agriculture and clearing of closed forests for pastures have been the major contributors to forest loss in the West Indies. Although native peoples cleared forested lands, substantial loss did not occur until after European man colonized the islands and populations underwent rapid growth in the seventeenth and eighteenth centuries. On some islands, forested lands have been completely cut over. Puerto Rico is the extreme example of the speed and thoroughness of this habitat destruction. At the time of Columbus' discovery (1493), Puerto Rico was forest-covered. By 1828 more than one-third of the island had been cleared (Capó 1925) and by 1949 less than three percent was still under virgin or partially-felled forest (Wadsworth 1949). In contrast to the continuing trend of forest clearing throughout the Caribbean, on Puerto Rico the area of forest has vastly increased since the 1950s as a result of a shift from an agrarian to an industrial economic base.

Other islands, though not yet as extreme as Puerto Rico in achieving complete habitat alteration, are continuing to lose their forests at a steadily accelerating rate. Although some islands (e.g. Dominica) have retained substantial pre-Columbian forest lands, primarily due to low human population (but in some instances because of far-sighted conservation programmes by the governments), the value of these areas for agriculture and timber production will place increasing pressure on them.

Although some species of savannah raptors have benefited by the destruction of forests (e.g. Short-eared Owl (*Asio flammeus*)), most forest species have been adversely affected. Persecution by man due to superstition or protection of livestock has further reduced these populations. Man has also indirectly influenced West Indian raptors through the introduction of exotic predators and competitors, and through recent use of agricultural chemicals. Roof Rats (*Rattus rattus*), which are egg and chick predators, arrived with the first European explorers. Mongooses (*Herpestes auropunctatus*), introduced on most islands in the nineteenth century to control feral rats, are important predators of ground-nesting raptors (e.g. Puerto Rican Short-eared Owl (*A. f. portoricensis*)). Introduced honeybees (*Apis mellifera*) compete with cavity-nesting species (e.g. Puerto Rican Screech Owl (*Otus nudipes*)) for nest sites. Additionally, some species (especially the bird-feeding migrants) are exposed to increasing levels of chemical pollutants used for agriculture.

In this survey I will highlight wet forest species of raptors of particular concern in the West Indies, mentioning status and reason(s) for concern and with recommended conservation measures needed to preserve populations.

SPECIES ACCOUNTS

Hook-billed Kite (*Chondrohierax uncinatus*)

Both West Indian races of this kite are of concern. Although Greenway (1967) suggested that the Cuban Hook-billed Kite (*C. u. wilsoni*) might be in danger of extinction, Garrido & Montaña (1975) have more recently reported it as rare but localized. *C. u. uncinatus* formerly occurred on Trinidad but was apparently extirpated from that island more than 100 years ago (French 1973). Bond (1979) considered the nearby Grenada race (*C. u. mirus*) on the verge of extinction. Hurricane damage to forests and, perhaps more importantly, loss of prey (land snails) through habitat destruction, competition with introduced species and control programmes have contributed to its decline (Smith & Temple 1982). Shooting of birds is also a likely factor. Immediate steps should be taken to preserve the habitat and food supplies of the kite, particularly on Grenada.

Sharp-shinned Hawk (*Accipiter striatus*)

All three resident races have experienced apparent declines related to loss of their restricted habitat, the mature montane forest. Although the Cuban Sharp-shinned Hawk (*A. s. fringilloides*) formerly inhabited lowland wet forests (now destroyed), the species is today found only in montane forests (Garrido & Montaña 1975). While Garrido (1967) considered it as one of the two rarest hawks in Cuba, the Sharp-shinned Hawk has generally been reported as widespread (though uncommon) in suitable habitat throughout Cuba and the Isle of Pines (now Isle of Youth) (Bond 1956; Garrido & Montaña 1975).

Wetmore & Swales (1931) found the Hispaniolan race (*A. s. striatus*) to be locally common in the forested areas of the interior. However, Dod (1978, 1981)

reported the hawk as now rare in the Dominican Republic due mainly to deforestation and shooting. In Haiti and the Dominican Republic I found it only in extensive mature forests, and even there it was rare and local (1974–77).

The total number of Puerto Rican Sharp-shinned Hawks (*A. s. venator*) is low (perhaps 200–300 birds), but the populations are in several disjunct areas of the island in federal (Caribbean National Forest, Luquillo Mountains) and commonwealth (Toro Negro, Maricao, Carite-Guavate) montane forests where habitat management is assured. Currently populations may be increasing with reversion of former agricultural lands to forests. Still a number of factors may be limiting population growth, including illegal shooting of birds, severe warble fly (*Neomusca pici*) infestations of some populations, and nest predation by the Pearly-eyed Thrasher (*Margarops fuscatus*).

Although the Sharp-shinned Hawk is protected by law in Puerto Rico and the Dominican Republic, more vigorous enforcement is needed. An education programme would also benefit the species. Sizeable tracts of montane forest need to be set aside as sanctuaries for the hawk.

Gundlach's Hawk (*Accipiter gundlachi*)

Although Brown & Amadon (1968) suggested that this species may already be extinct, other reports indicate that Gundlach's Hawk is widely distributed, though rare, in Cuba (Bond 1956; Garrido 1967; Garrido & Schwartz 1969; Garrido & Montaña 1975). Garrido (1967) considered this species to be the rarest of Cuban hawks, although it has a wider distribution than the Sharp-shinned Hawk and inhabits a broader range of habitats, i.e. high mountains to lowland woods and mangroves. Garrido & Schwartz (1969) described the species as secretive and not often seen. Recently the hawk has been observed on several occasions, and two active nests were located in the Zapata Swamp (J. Clements, pers. comm.; C. Wotzkow *in litt.*, 1981; R. D. Ripley *in litt.*, 1982). Numbers are probably declining with loss of habitat and shooting.

Basic research on the ecology of Gundlach's Hawk is needed. Management should include habitat preservation (particularly the Zapata Swamp) and protecting the hawk from shooting.

Ridgway's Hawk (*Buteo ridgwayi*)

Although this endemic species was formerly widespread through much of Hispaniola in several habitat types, its range is now much reduced (Wiley & Wiley 1981). Habitat destruction and disturbance are the most important causes of its decline. In the Dominican Republic it is restricted to sizeable areas of original forest from lowlands to about 2000m; the largest populations are in the Haitises range. Today, suitable habitat is limited and forest destruction is accelerating. The outlook is poor in Los Haitises National Park, where forests are steadily being destroyed by slash-and-burn agriculture. The species may still exist in good numbers on a few of the less-disturbed satellites of Haiti (e.g. Ile à Vache) but the rate and extent of forest destruction in Haiti proper leaves little hope for the future of the hawk there.

It is vital that agricultural activities are excluded from Los Haitises National Park. Additional populations should be identified and habitats preserved. Ridgway's Hawk is protected in the Dominican Republic and an education campaign to reduce shooting of hawks is under way.

Puerto Rican Broad-winged Hawk (*Buteo platypterus brunnescens*)

Populations of this endemic species have declined within the last 100 years.

Gundlach (1878) reported it as common in the interior, but by 1911–12 Wetmore (1916, 1927) failed to find it during his comprehensive studies of the Puerto Rican avifauna. Later Bond (1942) suggested endangered status for this hawk. Probable causes of the decline include the massive habitat destruction throughout Puerto Rico and the unrestricted shooting of 'pest' hawks. Today the Broad-winged Hawk is known only from the eastern slopes of the Luquillo Mountains (c. 40–50 birds) and the expanding second growth forest of the Río Abajo karst forest (c. 40–60 birds). Both populations are protected within federal or commonwealth forests. The Luquillo population has been stable within the last decade and the Río Abajo population may be increasing in response to reversion of agricultural land to forest.

Merlin (*Falco columbarius*) and Peregrine Falcon (*F. peregrinus*)

The West Indies are important wintering grounds for Peregrines and Merlins. These visiting species may spend more than six months in the islands, where they feed upon a variety of resident and migrant birds. They particularly frequent shore and mangrove panne areas, but are also regularly found at the higher altitudes in virgin and partially degraded forests.

Although the use of certain persistent pesticides (especially DDT) has declined in countries where Merlins and Peregrines breed, their use has increased on a global scale (Peakall *et al.* 1975), including the West Indies. Organochlorines continue to be taken into the food chain and accumulate in the body tissues of raptors wintering in the West Indies, particularly those (like the Merlin and Peregrine) that feed on birds.

There should be stricter international regulation of the use of persistent chemicals in agriculture. Pesticides less damaging to the environment should be substituted for persistent varieties.

Stygian Owl (*Asio stygius*)

This species was formerly common in Cuba (Garrido & Montaña 1975), but by the late nineteenth century Gundlach (*in* Barbour 1943) reported a decline in numbers which he attributed to deforestation and association with 'ill omen'. Bond (1956) found the owl to be uncommon but widespread in woodlands on Cuba and the Isle of Pines (Isle of Youth). More recently, Garrido & Montaña (1975) listed it as very rare and found only in the forested areas of the mountains.

The Hispaniolan populations of the Stygian Owl are now low, although the species has apparently always been difficult to detect (see Wetmore & Swales 1931). Bond (1956) and Dod (1978, 1981) listed it as rare. During extensive searches for the owl in all habitat types during 1974–76, I located this species only twice. Dod (1978) cited the destruction of the original moist forests and pines as the major cause of its decline. Even though the owl is protected in the Dominican Republic, it is regularly killed as a 'witch' by country people.

Populations need to be identified and habitat protected against human disturbance. An education programme would benefit the species both in Cuba and the Dominican Republic.

Newton's Screech Owl (*Otus nudipes newtoni*)

This race of the Puerto Rican Screech Owl has been confirmed only from four islands east of Puerto Rico: Vieques, St Thomas, St John and St Croix, on all of which it was described as rare (Bond 1956). There was considerable concern over these populations, as no individuals had been detected for many years. However,

Leck (1975) found the owl extant on St Croix (based on calls) and Nellis (1979) observed it on that island in 1971 and 1972. I failed to locate it on St John or Vieques Island between 1974 and 1978. There have been several reports of owls heard on Culebra Island and in 1976 and 1977 I heard Screech Owls there, although birds were not captured for subspecific identification. The call of an owl, probably this subspecies, was heard on Tortola, British Virgin Islands, in 1966 (Bond 1967).

As this species requires sizable trees with cavities for nesting, the decline probably resulted from the extensive forest cutting (complete or nearly so throughout the owl's range) for agriculture and grazing. Further searches should be made in former habitat and on islands adjacent to previously-inhabited ones. The Culebra Island population needs to be investigated and provisions made for its security. Puerto Rican Screech Owls readily adopt artificial nest sites, and the possibility of augmenting nesting habitat as a management technique should be explored in areas where the owls are suspected to survive.

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