

White-Crowned Pigeon
Patagioenas [Columba] leucocephala

This profile is a short summary of information to introduce the species and does not summarize all available information on the species.

Listing status: USFWS = None
FWC = Threatened

Trend: While the range-wide trend is likely declining, Bancroft and Bowman (2001) believe the Florida population is probably stable. Population estimates in Florida range from 5,000 to 12,000 pairs (Bancroft and Bowman 2001, Bancroft 1996, Meyer and Wilmers 2008, Strong et al. 1991).

Perceived Threats: Habitat loss and fragmentation are cited as primary threats to this species (Strong and Bancroft 1994; Bancroft et al. 2000; Bancroft and Bowman 2001). The fact that this pigeon requires two distinct habitats to produce young successfully exacerbates the threat of habitat loss and fragmentation. Destruction of tropical hardwood forest throughout the Florida Keys is likely the most serious and increasing threat to the U.S. population, as it reduces successful recruitment of young birds into the population, increases vulnerability to predation (Strong and Bancroft 1994), decreases fruit supplies, and increases disturbance (Bancroft and Bowman 2001).

Strong and Bancroft (1994) estimate from Long Key north to the Ragged Keys over 40% of the seasonal deciduous forests and 15% of the mangrove forests have been cleared for development. Many Florida nesting sites are within federal parks or refuges, including Biscayne Bay National Park and Everglades National Park in the Upper Keys, and Great White Heron and Key West National Wildlife Refuges in the Lower Keys. However, continued destruction of tropical hammocks, especially in the Keys, poses one of the greatest threats to the pigeon's food supply. As of 2009, the Florida Keys Ecosystem state acquisition project has acquired approximately 47 percent of the remaining tropical hammocks targeted, and 86% of North Key Largo Hammocks has been acquired (<http://www.dep.state.fl.us/lands/FFAnnual/>). Further loss of habitat will continue to threaten the south Florida population (Strong et al. 1994). The increasing numbers of birds feeding in pinelands north of Florida Bay (Ogden 1973) suggest that some birds may already be resorting to atypical habitats.

White-crowned Pigeons are sensitive to human activity, which may deter them from foraging areas and render nesting areas unsuitable (Bancroft and Bowman 2001). Colonization of nesting islands by raccoons may represent a serious threat to breeding populations (Bancroft 1992).

Severe hunting pressure and collecting of squabs in the Bahamas and other Caribbean nesting grounds have reduced numbers and have been major reasons for this species' decline. Pigeons are especially vulnerable early in the nesting season because their populations are highly localized at nesting colonies and adult birds make regular flights between these sites and feeding/watering sites. Human

harvest of adults and squabs continues throughout much of the range (Strong and Bancroft 1994) and this does impact Florida's White-crowned Pigeons as they migrate to these areas.

With rising global awareness regarding climate change, an important note is that a rise in sea level would significantly impact this species by reducing available mangrove and tropical hardwood forest habitat in Florida.

Notes: The dependence of this species on two distinct habitat types for foraging and nesting combined with this species' daily and seasonal movement patterns increases the difficulty of management at a local scale, and increases the importance of management at a regional scale. The White-crowned Pigeon does appear to respond favorably to protection of nesting and feeding areas and reduction of hunting mortality. The Florida population has recovered at least partially following the curtailment of hunting and harvesting of squabs (Sprunt 1954), but faces a number of threats.

Prioritization information:

PLCP PVA proportion of pops modeled to persist on public lands = 1.00

PLCP PVA probability of a 50% decline on public lands = **0.5**

Millsap updated biological score = **29.6**

Millsap updated supplemental score = 11

Legacy population trend = **unknown**

Legacy population status = **low**

Summary: This species triggers 4 of the 6 parameters.

Life History: The White-crowned Pigeon typically nests in mangroves in the Florida Keys from southern Biscayne Bay south through the Marquesas Keys. Nesting requires isolated mangrove islands that are free of predators, and this species feeds in hardwood forests that bear fleshy fruit. Nesting and feeding habitats typically are separated by several miles of water. The limited extent of suitable feeding habitat defines where nesting occurs.

In Florida Bay, White-crowned Pigeons nest from early May through September. This species may nest colonially, in small groups, or solitarily in Florida. White-crowned Pigeons are aggressively territorial with the size of the defended territory varying depending on density of the nesting aggregation (Bancroft and Bowman 2001). Generally, two major nesting periods occur: one in late May to early June, and a second, larger peak in late July to early August. White-crowned pigeons build a stick nest placed anywhere from ground level to high in the canopy. Two eggs are typically laid, and both parents share in incubation and brooding duties and feeding the young. Incubation takes 13 to 14 days. Young birds leave the nest when they are 16 to 20 days old, but generally do not leave the nesting keys until 25 to 40 days old (FWC 2003). The number nesting in the Florida Keys appears related to food supply (Bancroft and Bowman 2001).

In Florida, the average annual survival of birds banded at about the time of fledging was 45%. Annual adult survival was 55%. Survival of first-year birds in

the Bahamas may be lower (21%) than adults (49%) likely due to hunting (Paul 1977).

White-crowned Pigeons are sensitive to human activity, which may deter them from foraging areas and render nesting areas unsuitable (Bancroft and Bowman 2001). In Florida, young and eggs are preyed upon by Red-winged Blackbirds (*Agelaius phoeniceus*), raccoons (*Procyon lotor*), Red-tailed Hawks (*Buteo jamaicensis*), and crows (*Corvus spp*). Colonization of nesting islands by raccoons may represent a serious threat to breeding populations (Bancroft 1992). It appears that, with few exceptions, White-crowned Pigeons will not nest on islands raccoons have occupied (Strong et al. 1991). Currently, the distribution of raccoons on mangrove keys is limited by the distance from the mainland or mainline keys and by the frequency of major hurricanes (Bancroft 1992).

White-crowned Pigeons feed almost exclusively on the fruit of tropical hardwood trees. Poisonwood (*Metopium toxiferum*), blolly (*Guapira obtusata*), short-leaf fig (*Ficus citrifolia*), and strangler fig (*Ficus cotinifolia*) are extremely important, especially during the breeding season. After the breeding season, fruiting trees such as strongbark (*Bourreria succulenta*), snowberry (*Chiococca alba*), mastic (*Mastichodendron foetidissimum*), pigeon plum (*Coccoloba diversifolia*), and sea grape (*Coccoloba uvifera*) are also important. Individuals fly daily from nesting keys to feeding areas on mainland Florida or in uplands on Florida Keys to feed on fleshy fruits of trees and shrubs. They may fly between 3 and 25 miles to reach feeding sites. These forests occupy elevated, rarely inundated, and relatively fire-free sites, and contain a large number of evergreen and semi-evergreen tropical trees species (Bancroft and Bowman 2001).

The White-crowned Pigeon is a locally abundant resident of the Florida Keys and the southern mainland tip from April to September. Most White-crowned Pigeons in Florida migrate to the Bahamas, Cuba, and the Greater Antilles during the fall (FWC 2003).

Preferred Habitat Parameters: (See Bancroft and Bowman, 2001)

- Preferred feeding areas are forests that occupy elevated, rarely inundated, and relatively fire-free sites. These areas contain a large number of evergreen and semi-evergreen tropical trees species.
- Mangrove nesting keys tend to be fringed with red mangroves that grade into black mangroves of various heights and canopy closure. Interior of islands consists of relatively open stands of low-growing black mangroves in shallow water and a deeper lagoon fringed with taller red mangroves.
- Avoids nesting on islands on which raccoons occur.

Minimum Habitat Requirement:

From PVA: N/A

From Literature: In Florida, breeding birds generally feed in an area about 0.4 mi² (1 km²), and then travel anywhere from 3 to 15 miles (5 to 25 km) to their nesting key (Bancroft and Bowman 2001).

Best Management Practices: (See Bancroft 1992; Bancroft et al. 2000; Strong and Bancroft 1994; Bancroft and Bowman 2001)

- As adults flush from nests when people approach within 30 feet (10 meters), keep people > 50 feet (16.67 meters) from nesting areas during the nesting season. Limit human access to foraging concentrations.
- Protect foraging and nesting habitat, including the discouragement of human and raccoon activity on mangrove nesting islands.
- Protect poisonwood trees and encourage bolly and strongbark in suburban areas as food sources.
- Protection of large forest fragments, especially on southern Key Largo, should be a priority.

Survey Methods and Monitoring Protocols:

- Population estimates have been made from flight-line counts. See Strong et al. 1994.
- Nest survey protocol can be inferred from transect surveys of related Columbidae. See Rivera-Milan 2001.

PVA Summary: Parameters used for the Wildlife Habitat Conservation Needs in Florida project's PVA included: females breeding within their first year, an average clutch size of 1.89, 2 clutches produced per year, 32% fledgling success, 0.29 juvenile fecundity, and 0.58 adult fecundity, and 0.55 survival. Species experts suggest it might be inappropriate to have the same survival for adults and fledglings, and that the fecundity rate used in this model might be high. The model for all potential habitat for the White-crowned Pigeon included over 91,000 ha, of which 92% occurred on publicly managed lands, and all locations were treated as a single functioning population in Florida. Species experts indicate that while 92% of modeled potential habitat may be on public lands, the amount of and importance of actual occupied habitat on private land is greater than the model indicates. For example, the proportionally large depiction of potential habitat in southern Everglades National Park has low actual density relative to the Florida Keys. An intermediate abundance estimate of 7,500 pairs was used. This model resulted a rate of increase of 0.9996. These parameters were taken from literature as recent as 2001.

For both scenarios (all potential habitat and only managed habitat), the probability of extinction in the next 100 years was modeled to be zero, however there was a 37% probability of a 60% decline in the next 100 years. Adult survival and fecundity were modeled to be the most significant parameters in the model.

The results of this model should be used with caution for the following reasons. First, the model assumed all habitat was occupied at the same density. As such, the model may not adequately reflect the colonial nature of this species. Second, the potential habitat map identified all potential nesting and foraging habitat regardless of how close these two necessary habitats were in proximity to each other, which may over-estimate usable habitat. Third, the model assumed no catastrophic events, which is problematic considering the likelihood of severe

hurricanes and the potential for climate change to significantly impact this species. For these reasons, it is likely the model underestimated the risk to this species.

2003 Landcover used for model:

Hardwood Hammocks and Forest
Mangrove Swamp

Tropical hardwood hammock

FNAI Natural Communities Utilized:

Upland Hardwood Forest
Tidal Swamp

Coastal Berm

FNAI field guide description of habitat: Nests on mangrove islands and islets free from raccoons and human disturbance. A fruit eater, this species forages in tropical hardwood hammocks on poisonwood and other native fruit-bearing trees.

Important Links:

FNAI. 2001. Field Guide: White-crowned pigeon

http://www.fnai.org/FieldGuide/pdf/Columba_leucocephala.PDF

Bancroft, G. T. and R. Bowman. 2001. White-crowned Pigeon (*Patagioenas leucocephala*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/596/>.

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Florida Fish and Wildlife Conservation Commission (FWC). 2009. Florida's endangered species, threatened species, and species of special concern. http://myfwc.com/docs/WildlifeHabitats/Threatened_Endangered_Species.pdf

Documents/Literature:

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