White-Crowned Pigeon

Patagioenas leucocephala

Photograph by Robert Epstein.

Species Overview

Status: Listed as state Threatened on Florida's Endangered and Threatened Species List.

Current Protections

- 68A-27.003(a), F.A.C., No person shall take, possess, or sell any of the endangered or threatened species included in this subsection, or parts thereof or their nests or eggs except as allowed by specific federal or state permit or authorization.
- 68A-27.001(4), F.A.C., Take – to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. The term "harm" in the definition of take means an act which actually kills or injures fish or wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. The term "harass" in the definition of take means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering.
- White-crowned pigeons, active nests, eggs, and young also are protected under the Federal Migratory Bird Treaty Act, state Rule 68A-16.001, F.A.C., and state Rule 68A-4.001, F.A.C.

Biological Background

A species' biological background provides context for conservation measures and permitting guidelines. It focuses on the habitats that support essential behavioral patterns, threats to the species, and what may constitute significant disruption of essential behavioral patterns. The white-crowned pigeon (WCPI) is a subtropical frugivorous (fruit-eating) species found in southern Florida, the Bahamas, and the Caribbean. In Florida, the white-crowned pigeon is limited to the southern portion of the peninsula and the Florida Keys (see Distribution Map). Most WCPIs in Florida migrate to the Bahamas and Caribbean from mid-September to mid-October, though 10-20% remain in Florida over the winter (Bancroft 1996, Meyer and Wilmers 2008). Large numbers of WCPI begin to return in April, with the number of WCPI increasing until early June (Bancroft 1996). WCPIs typically breed from May to early September, with a peak in nesting typically occurring in late May to June and a larger peak in mid-July through August (Bancroft and Bowman 2001).Habitat features that support essential behavioral patterns.

White-crowned pigeon in Florida primarily use 2 natural communities for essential behavioral patterns: mangrove islands for breeding and tropical hardwood hammocks for feeding and sheltering. The species commonly nests semi-colonially on offshore, tidally-inundated mangrove islands that provide some protection from predators such as raccoons *(Procyon lotor)* (Strong et al. 1991, Bancroft and Bowman 2001). The Species Action Plan (SAP) recognizes a need to identify all of the islands currently used for breeding (SAP Action 8; Florida Fish and Wildlife FWC 2013). WCPI also nest on rare occasions in palm trees in Key West (R.

Zambrano, FWC, personal communication).

Breeding WCPI fly daily from mangrove islands to forage in tropical hardwood hammocks and, to a lesser extent, pine rocklands that contain an understory of fruit-bearing trees and shrubs (Bancroft and Bowman 2001). WCPI consume fruit from 36 species in Florida (Bancroft and Bowman 2001; Appendix 1). Four of these species dominate the diet of nestlings: poisonwood (*Metopium toxiferum*), blolly (*Guapira discolor*), wild banyan (*Ficus citrifolia*) and strangler fig (*Ficus aurea*) (Bancroft and Bowman 1994). The diet of adults varies seasonally as different species come into fruit (Bancroft and Bowman 2001). Fruit production can vary substantially, both temporally and spatially, due to rainfall patterns (Bancroft et al. 2000), and WCPI are known to fly further than 30 miles in search of forage during periods of fruit scarcity (Bancroft and Bowman 1994, Bancroft et al. 2000, FWC 2013). Because of the variability in the availability of fruiting trees, WCPI need numerous patches of tropical hardwood hammock spread over large areas to provide sufficient food resources (Bancroft et al. 2000). Although WCPIs will forage in both small and large patches of tropical hardwood hammock and even in just a few trees(Meyer and Wilmers 2008), patches greater than 12 acres in size are important for juvenile WCPI during the first few days after leaving the nest site (Strong and Bancroft 1994).

Gumbo limbo trees in a tropical hardwood hammock; suitable habitat for the white-crowned pigeon. FWC photograph.

Threats

Of the threats identified in the SAP and Biological Status Review (BSR) for the WCPI (FWC 2013), loss of, and disturbance within, breeding and foraging habitat form the basis of these Guidelines. Most mangrove islands used by WCPI for nesting occur on public conservation lands (Bancroft and Bowman 2001), but hurricanes and tropical storms have reduced the amount of remaining breeding habitat available to WCPI (Wilmers 2011). Nest numbers and productivity are strongly correlated to food supply (Bancroft and Bowman 2001), but the amount of available foraging habitat continues to decline (Karim and Main 2009). White-crowned pigeons also are extremely wary of humans, and are easily flushed from trees by people or vehicles (Bancroft 1996). Thus, disturbance of remaining nesting colonies has been identified as a potential threat by avian researchers (K. Meyer, Avian Research and Conservation Institute [ARCI], personal communication), and SAP Actions 5 and 6 recommend protecting important breeding and foraging sites from disturbance (FWC 2013).

Other threats identified in the SAP include pesticides and contaminants, collisions with structures or objects, degradation of habitat, sea level rise, increasing frequency of tropical storms and hurricanes, and nest predation by raccoons and other predators (Strong et al. 1991, Bancroft and Bowman 2001). Hunting on wintering grounds outside of Florida is a significant threat but is not applicable to these guidelines (Bancroft and Bowman 2001, Wells and Wells 2001, Meyer and Wilmers 2008).

Potential to significantly impair essential behavioral patterns

Given the WCPI's reliance on mangrove islands and tropical hardwood hammocks for breeding, feeding, and sheltering, impacts to these habitats can result in significant impairment of essential behavioral patterns.

Because the availability of offshore, tidally-inundated mangrove islands is limited within the species' breeding range in Florida, activities that result in loss or degradation of mangrove islands providing breeding habitat for WCPI can significantly impair the essential behaviors of breeding and sheltering. Moreover, disturbance of WCPI on mangrove islands can cause birds to flush from the nest, resulting in potential harm to eggs and young. Flushed adults can knock eggs or young off of nests or can leave young exposed to predators or the elements (Blankinship 1977, Bancroft and Bowman 2001, FWC 2013).

There is a need to identify core foraging areas (SAP Action 11) that are critical for essential behavioral patterns (FWC 2013). However, until core foraging areas can be established, these guidelines focus on the importance of contiguous, or nearly contiguous, patches of tropical hardwood hammock greater than 12 acres in size. Patches greater than 12 acres in size are thought to be important for juvenile WCPI during their first few days after leaving the nest site (Strong and Bancroft 1994). These larger patches allow young WCPI to learn to forage undisturbed (Bancroft 1996), and Strong and Bancroft (1994) hypothesized that these patches could provide important cover from predators for juvenile WCPIs, which must disperse during the fall raptor migration in the Florida Keys. Therefore, loss or degradation of habitat (e.g., land use conversion or removal of native shrubs and trees) within patches of contiguous, or nearly contiguous, tropical hardwood hammock greater than 12 acres in size constitutes significant habitat modification that results in take for WCPI.

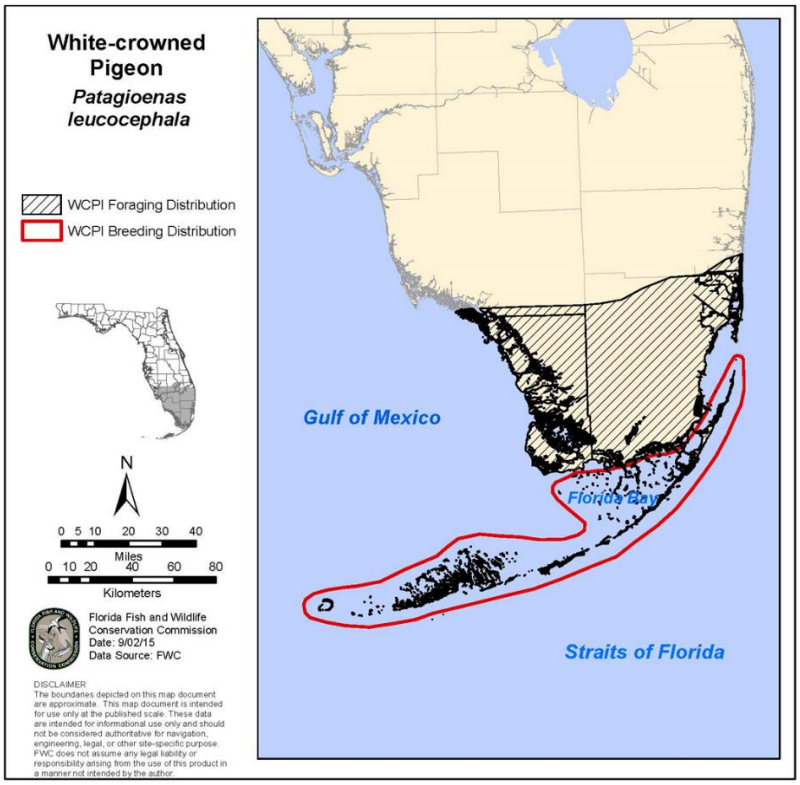
Given the species' sensitivity to disturbance, the SAP (Action 6) recognizes the need to protect foraging WCPI from disturbance in core foraging areas (FWC 2013). In the absence of defined core foraging areas, we consider consistent, repeated flushing of WCPI within patches of tropical hardwood hammock greater than 12 acres in size as a significant disruption of essential behavioral patterns. There is an increasing body of literature indicating that even non-motorized human disturbance can impact the physiology, behavior, and reproduction of some bird species (Steven et al. 2011). Although WCPI can become habituated to people under certain circumstances (Wiley and Wiley 1979), WCPI often are extremely wary of people and readily flush in the presence of humans (Bancroft 1996, Bancroft and Bowman 2001). The sensitivity of WCPI is demonstrated by the unusual amount of stress exhibited by individuals that are captured and handled (Meyer and Wilmers 2008). Bancroft and Bowman (2001) hypothesized that dispersing juvenile WCPI may prefer larger patches in part to avoid disturbance.

Mangrove island, breeding habitat for the white-crowned pigeon. Photograph by Gina Kent.

Distribution and Survey Methodology

The map below represents the principle geographic range of the white-crowned pigeon in Florida, including intervening areas of unoccupied habitat. This map is for informational purposes only and is not for regulatory purposes.

Counties: Broward, Collier, Miami-Dade, Monroe.



Recommended Survey Methodology

Surveys can be used to determine if white-crowned pigeons are breeding, feeding, or sheltering in an area. Surveys are not required but if conducted in accordance with the methodology described below and the species are not detected, no FWC review or coordination is needed.

Surveys of breeding habitat

Mangrove island surveys conducted during the breeding season are useful for identifying and avoiding, minimizing, or mitigating for take of active nests, eggs, or young.

- Three surveys should occur, spaced at least 2 weeks apart throughout the breeding season, to increase the probability of detecting the peak of nesting: 1 survey in mid-late June, 1 in mid-late July, and 1 in early-mid August.
- Recommended survey methods include flight-line counts according to the protocol of Strong and colleagues (1994). The objective of surveys is to estimate the number of nesting pairs.
  - Flight line counts should include enough boats and observers to detect WCPI approaching the colony from different directions. For small colonies, a single boat with $\geq$ 2 observers usually is sufficient (Wilmers 2011; R. Zambrano, personal communication). For larger colonies, where it is difficult to see pigeons arriving from different directions, flight-line counts involve an

observer in each of 3 boats spaced at approximately 120^0 intervals, or in a manner that maximizes the ability to detect incoming birds and minimizes double-counting (Strong et al. 1994).
  - Observers should remain 330 feet from the mangrove islands to avoid disturbance to nesting birds. The appropriate buffer has not been determined specifically for WCPI (SAP Action 13; FWC 2013), but, in the interim, a buffer distance of 330 feet is effective for a suite of waterbirds that nest on tree islands in Florida (Rodgers and Smith 1995).
  - Observers should count WCPIs that fly from the foraging areas to breeding islands from 8:20-10:10am (Strong et al. 1994). Observers then estimate the number of nesting pairs using the method outline by Strong and colleagues (1994).
  - Observers should avoid conducting surveys in rainy weather.

Surveys of foraging habitat

There is no recommended survey protocol for WCPI in foraging habitat at this time, and core foraging areas (SAP Action 11; FWC 2013) have not been identified. Patches of tropical hardwood hammock > 12 acres in size within the species distribution are significant for the essential behavior of feeding and are likely to be occupied (Strong and Bancroft 1994).

Recommended Conservation Practices

Recommendations are general measures that could benefit the species but are not required. No FWC permit is required to conduct these activities.

- Avoid trimming or alteration of mangroves on uninhabited islands or lands set aside for conservation, preservation, or mitigation per Florida Statute 403.9323(2).
- Design projects to minimize loss of mangrove islands and tropical hardwood hammock.
  - Consider provisions in the Monroe County Comprehensive Plan regarding protection of tropical hardwood hammocks and other native habitats (Monroe County 2015a).
  - Adhere to Land Planning Regulations for the Florida Keys Area of Critical State Concern – Monroe County Chapter 28-20, F.A.C.) and Sections 118-7, 118-10(1), and 118-10(4) of the Monroe County Land Development Code regarding designing development away from natural areas and sensitive habitats, restrictions to developing tropical hardwood hammock and mangrove habitats, and maintenance of native trees (State of Florida 2014, Monroe County 2015*b*).
- Retain native fruiting trees (Appendix 1) whenever possible, including poisonwood, which is a particularly important species for nesting WCPI (Bancroft and Bowman 1994).
- Plant appropriate native fruiting species to provide foraging opportunities for WCPI (Appendix 1). For example, blolly is an important early-season food source for nesting WCPI and does not have an extensive root system like native fig trees (Bancroft and Bowman 1994, FWC 2013).
- Educate project personnel regarding the species and its sensitivity to disturbance.
- Avoid siting transmission and distribution lines through tropical hardwood hammock. Place markers on transmission and distribution lines where collisions are a potential hazard.

Measures to Avoid Take

Avoidance Measures that Eliminate the Need for FWC Take Permitting

The following measures will eliminate the need for an FWC take permit.

- Maintain a no-disturbance buffer of 330 feet around mangrove islands with active WCPI nesting colonies. The appropriate buffer has not been determined specifically for WCPI (SAP Action 13), but,

in the interim, a buffer distance of 330 feet is effective for a suite of waterbirds that nest on tree islands in Florida (Rodgers and Smith 1995).

- Avoid trimming or killing native vegetation on mangrove islands that are used by WCPI for breeding.
- Avoid land use change or removal of native trees or shrubs in contiguous, or nearly contiguous, patches of tropical hardwood hammock > 12 acres in size (Strong and Bancroft 1994).
- Avoid consistent, repeated flushing of birds within patches of tropical hardwood hammock greater than 12 acres in size.

Examples of Activities Not Expected to Cause Take

This list is not an exhaustive list of exempt actions. Please contact FWC if you are concerned that you could potentially cause take.

- Activities within breeding habitat outside of the breeding season that do not result in trimming or killing of mangroves.
- Aerial activities at an altitude that does not cause flushing from nests. The reaction of white-crowned pigeons may vary depending on the type of aerial activity, and activities should cease or move to a higher altitude if flushing occurs.
- Routine maintenance of vegetation in existing linear utility and highway right-of-way's.
- Passive recreational activities on existing trails that result in short-term, occasional foot traffic (e.g., existing hiking along trails through hardwood hammocks) and do not cause any disturbance within the canopy of tropical hardwood hammocks.

Florida Forestry Wildlife BMP's and Florida Agricultural Wildlife BMP's

- These best management practices do not include the white-crowned pigeon and thus do not apply.

Other Authorizations for Take

- Activities within an airport property in accordance with Rule 68A-9.012, F.A.C.
- As described in Rule 68A-27.007(2)(c), F.A.C., land management activities (e.g., exotic species removal) that benefit wildlife and are not inconsistent with FWC Management Plans are authorized and do not require a permit authorizing incidental take.

Coordination with Other State and Federal Agencies

The FWC participates in other state and federal regulatory programs as a review agency. During review, FWC identifies and recommends measures to address fish and wildlife resources to be incorporated into other agencies' regulatory processes. For example, FWC will continue to work with USFWS on the Big Pine Key and No Name Key Habitat Conservation Plan (HCP), which notes the importance of tropical hardwood hammock for federally-listed species and restricts the loss native habitat for species covered under the plan. The HCP assists in determining the location of potential new development and in prioritizing mitigation areas on these keys. Also, FWC coordinated with local jurisdictions on the Monroe County Comprehensive Plan (Monroe County 2015*a*), Chapter 118 of the Land Development Code, and the Land Planning Regulations for the Florida Keys Area of Critical State Concern – Monroe County (Rule Chapter 28-20; State of Florida 2014). Chapter 380 of the Florida Statutes addresses FWC's interactions with counties.

The FWC provides recommendations for addressing potential impacts to state-listed species in permits issued by other agencies. If permits issued by other agencies adequately address all of the requirements for issuing a take permit for Species of Special Concern or state-Threatened species, FWC will consider these regulatory processes to fulfill the requirements of Chapter 68A-27, F.A.C., with a minimal

application process. This may be accomplished by issuing a concurrent take permit from FWC, by a memorandum of understanding with the cooperating agency, or by a programmatic permit issued to another agency. These permits would be issued based on the understanding that implementation of project commitments will satisfy the requirements of Rule 68A-27.003 and Rule 68A-27.007, F.A.C.

Review of Land and Water Conversion projects with State-Listed Species Conditions for Avoidance, Minimization and Mitigation of Take

- FWC staff, in coordination with other state agencies, provide comments to Federal agencies (e.g., the Army Corps of Engineers) on federal actions, such as projects initiated by a federal agency or permits being approved by a federal agency.
- FWC staff works with landowners, local jurisdictions, and state agencies such as the Department of Economic Opportunity on large-scale land use decisions, including long-term planning projects like sector plans, projects in Areas of Critical State Concern, and large-scale comprehensive plan amendments.
- FWC staff coordinates with state agencies such as the Department of Environmental Protection (DEP) and the five Water Management Districts on the environmental resource permitting (ERP) program, which regulates activities such as dredging and filling in wetlands, flood protection, stormwater management, site grading, building dams and reservoirs, waste facilities, power plant development, power and natural gas transmission projects, oil and natural gas drilling projects, port facility expansion projects, some navigational dredging projects, some docking facilities, and single-family developments such as for homes, boat ramps, and artificial reefs.
- During the ERP process, the FWC will provide guidance on avoidance, minimization, and mitigation measures for WCPI.
- For mangrove trimming permits described under Section 403.9327, Florida Statutes, FWC would review and provide comments on potential impacts to fish and wildlife resources.
- For take of WCPI in breeding habitat (i.e., mangrove islands), FWC staff will also work with DEP, water management districts, and the applicants during the ERP process so that ERP mitigation will satisfy the applicants' responsibilities under Chapter 68A-27, F.A.C. and associated enforcement policies (see FWC Incidental Take Permitting Process below).
- For significant modification to breeding habitat, conservation benefit as defined under Chapter 68A-27, F.A.C., can be accomplished through avoidance, minimization, and mitigation measures outlined in the ERP permit, provided the mitigation includes offshore, tidally-inundated mangrove islands without raccoons. The existing ERP requirements for wetland mitigation include replacement of functional loss from impacts to wetlands. The mitigation includes provisions for perpetual conservation and management.

FWC Permitting: Incidental Take

According to Rule 68A-27.001, F.A.C., incidental take is take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Activities that result in impacts to WCPIs can require an Incidental Take Permit from the FWC (see above for actions that do not require a permit). Permits may be issued when there is a scientific or conservation benefit to the species and only upon showing by the applicant that that the permitted activity will not have a negative impact on the survival potential of the species. Scientific benefit, conservation benefit, and negative impacts are evaluated by considering the factors listed in Rule 68A-27.007(2)(b), F.A.C. These conditions are usually accomplished through a combination of avoiding take when practicable, minimizing take that will occur, and mitigating for the permitted take. This section

describes the minimization measures and mitigation options available as part of the Incidental Take Permit process for take of WCPIs. This list is not an exhaustive list of options.

Minimization Options

The suite of options below can help to reduce or minimize take of the species, and lessen the mitigation necessary to offset take. All of the options below assume it is not possible to adhere to avoidance measures that eliminate the need for FWC permitting described above, and that some level of take will occur.

Seasonal, Temporal, and Buffer Measures

- Minimize, to the extent practicable, activities within 330 feet of active nests to minimize disturbance to nests, eggs, and young. The appropriate buffer has not been determined specifically for WCPI (SAP Action 13), but, in the interim, a buffer distance of 330 feet is effective for a suite of waterbirds that nest on tree islands in Florida (Rodgers and Smith 1995).
- If the project must occur within the buffer, minimizing time spent within the buffer in the breeding season minimizes take of nests, eggs, and young.
- For activities that may cause disturbance to foraging birds in patches of hardwood hammock greater than 12 acres, conduct project activities from mid-October to March, when 80-90% of the WCPI population in Florida overwinters in the Bahamas and Caribbean.

Design Modification

- Minimize loss and disturbance of breeding habitat.
- Minimize loss or degradation of tropical hardwood hammock, especially fruiting trees, in patches of hardwood hammock greater than 12 acres.
- Minimize activities year round that cause WCPI to repeatedly flush in patches of hardwood hammock greater than 12 acres.
- Restrict activities that may cause disturbance of foraging birds to the periphery of patches of hardwood hammock greater than 12 acres.
- Minimize transmission and distribution lines through patches of tropical hardwood hammock greater than 12 acres.

Method Modification

- Post educational signage to reduce disturbance around breeding colonies.
- When activities must occur within habitat occupied by WCPI, refer to the Seasonal, Temporal, and Buffer Measures above to minimize take.
- Educate project personnel regarding WCPI and their sensitivity to disturbance.
- Place markers on transmission and distribution lines where collisions are a potential hazard.

Mitigation Options

Mitigation is scalable depending on the impact, with mitigation options for significant impairment or disruption of essential behavioral patterns constituting take. Multiple options for mitigation may exist that could be appropriate to counterbalance impacts to essential behavioral patterns resulting from a given project or action. From those options, the most appropriate combination of actions can be selected. The DEP's ERP process can provide mitigation for loss or degradation of WCPI breeding habitat (i.e., mangrove islands), provided the mitigation includes mangrove islands suitable for WCPI nesting. Subsequent to or in conjunction with the ERP process, the FWC will review the resulting wetland mitigation to assess whether the mitigation meets the definition of conservation benefit for WCPI. For cases in which the mitigation includes approximately equivalent acreage of tidally-inundated mangrove islands suitable for breeding, wetland mitigation through the ERP process will satisfy the applicants' responsibilities under Chapter 68A-27, F.A.C.,

and associated enforcement policies. Potential options for mitigation are described below, including options to mitigate for significant habitat modification of foraging habitat and take of adults, eggs, and young through disturbance. This list is not an exhaustive list of options.

Scientific Benefit

This section describes research and monitoring activities that provide scientific benefit, per Rule 68A-27.007, F.A.C. Conducting or funding these activities can be the sole form of mitigation for a project with FWC approval of methodologies.

- Identification of core foraging areas throughout the species' range in Florida (SAP Actions 11 and 12).
- Development and implementation of a standardized monitoring protocol for breeding habitat throughout the species' range in Florida (SAP Action 10).

Habitat

Habitat Protection/Acquisition or Management for Significant Modification of Breeding Habitat:

- The acquisition option in breeding habitat (i.e., mangrove islands) includes wetland mitigation through the ERP program.
- The FWC will review the ERP mitigation to evaluate whether it meets the definition of conservation benefit for WCPIs. Suitable mitigation includes protection/acquisition of tidally-inundated mangrove islands free of mammalian predators and of sufficient size to accommodate WCPI nesting.
- Provided the mitigation includes protection/acquisition of suitable breeding habitat, ERP mitigation is expected to satisfy the applicants' responsibilities under Chapter 68A-27, F.A.C, and associated enforcement policies, and an FWC permit may be subsequently issued based on the understanding that implementation of project commitments will satisfy the requirements of 68A-27.003 and 68A-27.007, F.A.C.

Habitat Protection/Acquisition or Management for Significant Modification of Foraging Habitat:

- Options include habitat protection via acquisition or easements, restoration of tropical hardwood hammock vegetation, and/or long-term commitment to manage invasive exotic vegetation in tropical hardwood hammock.
- When evaluating impacts to foraging habitat and whether proposed mitigation meets the definition of conservation benefit in Chapter 68A-27, F.A.C., important factors include (but are not limited to):
    1. The total acreage of the proposed impacted area and proposed mitigation,
    2. The habitat quality of the proposed impacted area and proposed mitigation area, including species richness of native fruiting trees and shrubs, presence and density of fruiting species that are particularly important for nestlings (Appendix 1), degree of fragmentation, degree of human disturbance, and the need for management (e.g., presence of invasive plants).
    3. Whether the proposed impacted area and proposed mitigation occurs within or outside of a patch of tropical hardwood hammock > 12 acres in size,
    4. Distance to nearest occupied breeding habitat,
    5. Adjacency to other conservation land.

Funding

No funding option has been identified at this time. However, funding options as part of mitigation will be considered on a case by case basis.

Information

- Mitigation can be used to support research projects consistent with actions in the SAP.
- Monitoring options can include multi-year monitoring that contributes to a portion of a statewide survey.
- The information option is appropriate for take of adults, eggs, or young via disturbance or in circumstances where ERP mitigation does not completely satisfy the FWC's definition of conservation benefit for WCPI.

Programmatic Options

No programmatic option available.

Multispecies Options

- A multi-species permitting option may be available for loss of foraging habitat in some parts of the Keys, where there is overlap with other state-listed species such as the Lower Keys population of the Florida brown snake, rim rock crowned snake, and possibly the Key ringneck snake.

FWC Permitting: Intentional Take

Intentional take is not incidental to otherwise lawful activities. Per Chapter 68A-27, F.A.C., intentional take is prohibited and requires a permit. For state-Threatened species, intentional take permits may only be considered for scientific or conservation purposes (defined as activities that further the conservation or survival of the species taken). Permits are issued for state-Threatened species following guidance in Rule 68A-27.007(2)(a), F.A.C.

Risks to Property or People

Intentional take for Human Safety

- Rule 68A-9.012, F.A.C., describes circumstances under which WCPIs may be taken on airport property without further state authorization for an imminent threat to aircraft or human safety.
- Permits will be issued only under limited and specific circumstances, in cases where there is an immediate danger to the public's health and/or safety, including imminent or existing power outages that threaten public safety, or in direct response to an official declaration of a state of emergency by the Governor of Florida or a local governmental entity. Applications submitted for this permit must include all information that is required from any other applicant seeking a permit, along with a copy of the official declaration of a state of emergency, if any. This permit process may be handled after the fact or at least after construction activities have already started. An intentional take permit may be issued for such purposes.

Aversive Conditioning

Not applicable to this species.

Permits Issued for Harassment

Not applicable to this species.

Scientific Collecting and Conservation Permits

Scientific collecting permits may be issued for the White-crowned pigeon using guidance found in

Rule 68A-27.007(2)(a), F.A.C. Activities requiring a permit include any research that involves capturing, handling, or marking wildlife; conducting biological sampling; or other research that may cause take.

Considerations for Issuing a Scientific Collecting Permit

1) Is the purpose adequate to justify removing the species (if the project requires this)?
   - Permits will be issued if the identified project is consistent with the goal of the SAP (i.e., improvement in status that leads to removal from Florida's Endangered and Threatened Species List), or addresses an identified data gap important for the conservation of the species.
2) Are there direct or indirect effects of issuing the permit on the wild population?
   - WCPI are sensitive to trapping and handling (Meyer and Wilmers 2008). Trapping, capturing and handling WCPI may impact the wild populations' ability to forage, breed, or rear young. Trapping and handling protocols must be included in the permit application and should identify measures to lessen stress for captured WCPI.
3) Will the permit conflict with program intended to enhance survival of species?
4) Will issuance of the permit reduce the likelihood of extinction?
   - Projects consistent with the goal of the SAP or that fill identified data gaps in species life history or management may reduce the likelihood of extinction. Applications should clearly explain how the proposed research will provide a scientific or conservation purpose for the species.
5) Have the opinions or views of other scientists or other persons or organizations having expertise concerning the species been sought?
6) Is applicant expertise sufficient?
   - Applicants must have prior documented experience with this or similar species; applicants should have met all conditions of previously issued permits; and applicants should have a letter of reference that supports their ability to handle the species.
   - WCPI are sensitive to trapping and handling (Meyer and Wilmers 2008). The applicant should identify measures to lessen stress for captured WCPI.

Relevant to all Scientific Collecting for White-Crowned Pigeons

- Applications must include a proposal that clearly states the objectives and scope of work of the project, including a justification of how the project will result in a scientific or conservation purpose for the species. The proposal also must include a thorough description of the project's methods, time frame, and final disposition of all individuals. Permit amendment and renewal applications must be "stand alone" (i.e., include all relevant information on objectives and methods).
- WCPI are sensitive to trapping and handling. Trapping and handling protocols, and a justification of trapping methods, must be included in the permit application and should identify measures to lessen stress for captured WCPI (e.g., Meyer and Wilmers 2008).
- Surveys of WCPI within occupied breeding habitat will require a permit unless conducted in the manner specified above.
- Passive point counts or line transect sampling in foraging habitat do not require a permit.
- Non-destructive habitat sampling near foraging, roosting, and breeding birds does not need a permit provided observers remain outside the identified buffer distances in active nesting sites

and nesting birds do not flush.

- Permits may be issued to display a specimen if the specimen was obtained via a rehabilitation facility or was encountered dead.
- Permits may be issued for captive possession (removal from the wild) to an educational or rehabilitation facility if the individual WCPI is deemed non-releasable.
- Methodologies for any collection of tissues, such as blood, should be clearly spelled out, including measures taken to reduce stress/injury to the birds.
- Disposition involving captive possession for any period of time must include a full explanation of whether the facility has the appropriate resources for accomplishing the project objectives and for maintaining the animals in a safe and humane manner.
- Federal permits are required from the USFWS to comply with the Migratory Bird Treaty Act and from the USGS Bird Banding Lab for banding, color-marking, specific capture methods, sampling of blood/tissues, collection of feathers, and attachment of transmitters or other data gathering mechanisms. Federal salvage permits are also required to collect any dead individuals (i.e., mortality not due to research activities or incidental take from research activities) or parts of deceased individuals including feathers and tissues.
- Any mortality should be reported immediately to the FWC at the contact information below. The FWC will provide guidance on proper disposal of specimens.
- Undocumented, active nest sites should be reported as soon as possible to the FWC at the contact information below.
- A final report should be provided to the FWC in the format specified in the permit conditions. Monitoring data must be provided to FWC on approved forms that can easily be integrated into a statewide database.

Additional information

Information on Economic Assessment of this guideline can be found at http://myfwc.com/wildlifehabitats/imperiled/management-plans/

Contact

For permitting questions or to report mortalities, contact the FWC at (850) 921-5990 or WildlifePermits@myfwc.com. For more species specific information visit http://myfwc.com/contact/.

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Appendix 1.
Fruits known to be consumed by all white-crowned pigeons.

As determined from nestling crop samples, adult gut contents, visual observations, and fecal samples collected throughout the year in the Florida Keys (from Bancroft and Bowman 2001).

Fruit family	**Species**	**Common names**
Anacardiaceae	*Metopium toxiferum**	Poisonwood*
	Schinus terebinthifolia	Florida holly
Aquifoliaceae	*Ilex cassine*	Dahoon holly
Arecaceae	*Thrinax morrisii*	Key thatch palm
	Thrinax radiata	Florida thatch palm
Boraginaceae	*Bourreria ovata*	Bahama strongbark
Burseraceae	*Bursera simarouba*	Gumbo-limbo
Canellaceae	*Canella winterana*	Cinnamon bark
Celastraceae	*Schaefferia frutescens*	Florida boxwood
Celtidaceae	*Trema sp.*	Trema
Chrysobalanaceae	*Chrysobalanus icaco*	Coco plum
Euphorbiaceae	*Drypetes lateriflora*	Guiana plum
Fabaceae	*Pithecellobium unguis-cati*	Catclaw blackbead
Lauraceae	*Nectandra coriacea*	Lancewood
Moraceae	*Ficus aurea**	Strangler fig*
	*Ficus citrifolia**	Wild banyan*
	Ficus microcarpa	Indian laurel fig
Myrsinaceae	*Ardisia escallonioides*	Marlberry
Myrtaceae	*Calyptranthes sp.*	Spicewood
	Eugenia foetida	Spanish stopper
Nyctaginaceae	*Guapira discolor**	Blolly*
Passifloraceae	*Passiflora suberosa*	Small passion vine
Polygonaceae	*Coccoloba diversifolia*	Pigeon plum
	Coccoloba uvifera	Seagrape
Rhamnaceae	*Krugiodendron ferreum*	Black ironwood
Rubiaceae	*Chiococca alba*	Snowberry
	Erithalis fruticosa	Black torch
	Randia aculeata	White indigoberry
Sapindaceae	*Exothea paniculata*	Inkwood
Sapotaceae	*Sideroxylon salicifolia*	Willow bustic
	Chrysophyllum oliviforme	Satin leaf
	Mastichodendron foetidissimum	False mastic
Simaroubaceae	*Simarouba glauca*	Paradise tree
Solanaceae	*Solanum erianthum*	Potato tree
Surianaceae	*Suriana maritima*	Bay cedar
Verbenaceae	*Lantana camara*	Lantana

*A dominant species in the diet of nestlings (Bancroft and Bowman 1994).