United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

April 17, 2006

Lawrence C. Evans
U.S. Army Corps of Engineers
Jacksonville Regulatory Division
Post Office Box 4970
Jacksonville, Florida 32232-0019

Attention: Alice E. Kirkland

Service Log No.: 4-1-05-F-11945
Corps Application No.: SAJ-2004-3931 (AEK)
Date Received: February 3, 2006
Project: Big Cypress Regional General Permit
Applicant: Seminole Tribe of Florida
County: Hendry, Broward

Dear Mr. Evans:

The Fish and Wildlife Service (Service) has reviewed the letter dated February 3, 2006, and other information submitted by the U.S. Army Corps of Engineers (Corps) for the application referenced above. This letter is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) and the provisions of the Fish and Wildlife Coordination Act of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 *et seq.*).

PROJECT DESCRIPTION

The Seminole Tribe of Florida (Tribe) has submitted an application to the Corps for a Regional General Permit (RGP). The permit, RGP-83, would be used for minor activities involving the placement of fill material, not to exceed a total of 100 acres of jurisdictional wetlands at the Big Cypress Indian Reservation (BCIR) over the life of the RGP. The RGP, if issued, would be valid for 5 years with a maximum of 20 acres of wetland impacts per year authorized. The project area is located in waters of the United States at the BCIR, south of Lake Okeechobee and about 45 miles west of Fort Lauderdale, in Hendry and Broward Counties, Florida. In Hendry County, the BCIR is located in Sections 23 through 26, 35, and 36, Township 48 South, Range 32 East; Sections 2 through 36, Township 48 South, Range 33 East; and Sections 7 and 12 through 36, Township 48 South, Range 34 East. In Broward County, the BCIR is located in Sections 7, 8, 9, and 16 through 21, Township 48 South, Range 35 East.

THREATENED AND ENDANGERED SPECIES

The Service has reviewed information available, including our Geographic Information System (GIS) database for recorded locations of federally listed threatened and endangered species, and critical habitats on or adjacent to the project area. The GIS database is a compilation of data received from several sources. The Service has not conducted a site inspection to verify species occurrence or validate information available.

Wood stork

The Corps determined that RGP-83 "may affect" the endangered wood stork (*Mycteria americana*) and requested initiation of formal consultation under section 7 of the Act.

The wood stork typically utilizes freshwater marshes, ponds, ditches, tidal creeks and pools, impoundments, pine/cypress depressions and swamp sloughs for foraging. They forage most effectively in shallow-water areas with highly concentrated prey, such as wetland depressions subject to seasonal drying. The Service has identified an 18.6-mile core foraging area (CFA) around all known wood stork colonies that is important for reproductive success. Information on the Service's GIS database indicates presence of five historic wood stork colonies within 18.6 miles of the project area. The most recent activity at any of the colonies was in 2002. Three of the colonies have not been active for over 10 years. The nearest documented colony is approximately 14 miles northwest of the BCIR and has not been active since 1983.

The Tribe has provided maps, aerial photos, and Florida Land Cover and Forms Classification System (FLUCCS) (FDOT 1998) for the BCIR that designate which areas would be included in the RGP-83, excluded, or included with appropriate agency coordination. Wetland areas of high resource value have been excluded from the RGP. The areas included in the RGP contain wetlands that have been hydrologically altered, disturbed by human activities, and degraded by the displacement of native wetland species by non-native species. Wetland evaluations performed by the Tribe, the Corps, and the District over the past 5 years yielded an average score of 0.5 wetland functional units for the areas included in the RGP based on the Wetland Rapid Assessment Procedure (WRAP). The RGP would limit wetland impacts to 1.5 acres or less, for a total of no more than 20 acres per year.

Under the RGP-83, wetland functional loss for each of the impacted sites will be determined using WRAP. The functional loss will be replaced on a 1:1 basis within the "Native Area" of the BCIR, with no net loss of wetland function. Mitigation will consist of enhancement of wetland areas through removal of exotic vegetation; restoration of natural hydrologic regime; creation of wetlands through establishment of appropriate hydrologic regime and planting of native vegetation; and protection of resource-significant wetland areas and upland buffers located south of the West Feeder Canal. A mitigation plan will be submitted to and approved by the Corps prior to any authorized wetland impacts.

The wetland areas potentially affected by projects that may use RGP-83 are not within the CFA of any known active wood stork rookeries; however, the wetlands still represents potential foraging habitat during the non-nesting season. For projects outside the boundary of the CFA, the Service supports avoiding impacts to wetlands (Executive Order 11990) as well as the avoidance, minimization, and compensation requirements pursuant to section 404 of the Clean Water Act (33 U.S.C. 1344). The Tribe and the Corps have designed RGP-83 to avoid and minimize wetland impacts to the greatest extent possible. For unavoidable impacts, the RGP requires that the Tribe replace lost wetland function. Furthermore, the wetlands potentially impacted under the RGP have been previously impacted by hydrologic alteration, human disturbance, and displacement of native wetland species by non-native species. For these reasons, the Service believes the loss of wetland habitat under the RGP is not likely to adversely affect the wood stork; therefore, formal consultation on the RGP for the wood stork is not required.

Audubon's crested caracara

The Corps determined that RGP-83 "may affect" the threatened Audubon's crested caracara (*Polyborus plancus audubonii*) and requested initiation of formal consultation under section 7 of the Act.

Records in our GIS database indicate that caracaras have been observed within the area designated as "included with appropriate agency coordination" in the RGP-83. Caracaras commonly occur in dry or wet prairie areas with scattered cabbage palms (*Sabal palmetto*). They may also be found in lightly wooded areas. Nest trees are generally cabbage palms over 5 meters (16 feet) in height with large closed crowns. Nests may be in lone, freestanding cabbage palm trees, in groups of 2 to 10 cabbage palms or in tall, emergent cabbage palms in the middle of a large hammock. Oaks and cypress trees may also be used for nesting, but are likely to be used only if few palms are available within a large area of otherwise suitable pasture and wetland habitat (Morrison 1997).

Suitable nesting and foraging habitat occurs within the area designated as included with appropriate agency coordination. The Service concurs with the Corps' determination that RGP-83 may affect the caracara, but has developed a decision key to streamline the consultation process for the caracara. The key will guide the Corps' effect determinations and provide conditions for Service concurrence with those determinations for projects within the with coordination area of the RGP. If the use of this key results in a Corps determination of "no effect" for a particular project, the Service hereby supports this determination. If the use of this key results in a determination of "may affect, but is not likely to adversely affect" (NLAA), the Service hereby concurs with this determination and no formal correspondence will be necessary[1].

[1] With an outcome of "no effect" or "NLAA" as outlined in this key, the requirements of section 7 of the Act are fulfilled and no further action is required for the Audubon's crested caracara for a particular project.

The Key is as follows:

A. Proposed activity is not located in habitat suitable for caracara nesting or foraging,[2] or is not within 1,500 m of habitat suitable for caracara nesting..... *"no affect"*

Proposed activity is located in habitat suitable for caracara nesting or foraging, or is within 1,500 m of habitat suitable for caracara nesting ..... *go to* B

B. Caracara nest surveys[3] do not detect presence of caracara nests within the project area or within 1,500 m of the project area..... *"no affect"*

Caracara nest surveys do detect presence of caracara nests within the project area or within 1,500 m of the project area ..... *go to* C

C. Proposed activity is within 300 m of a caracara nest..... *go to* D

Proposed activity is within 300 to 1,500 m of a caracara nest.....*go to* F

D. Proposed activity does not occur outside the caracara nesting season..... *"may affect"* and consultation with the Service is requested.

Proposed activity does occur outside the caracara nesting season..... *go to* E

E. Proposed activity does not include new construction or the conversion of pasture and wetland habitats to row crops, sugarcane, or citrus groves..... *"NLAA"*

Proposed activity does include new construction or the conversion of pasture and wetland habitats to row crops, sugarcane, or citrus groves .....*"may affect"* and consultation with the Service is requested.

F. Proposed activity does not involve the conversion of pasture and wetland habitats to row crops, sugarcane, or citrus groves.....*go to* G

Proposed activity involves the conversion of pasture and wetland habitats to row crops, sugarcane, or citrus groves.....*"may affect"* and consultation with the Service is requested.

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[2] Nesting habitat consists of large expanses of pastures, grasslands, or prairies dotted with numerous shallow ponds and sloughs and single or small clumps of live oaks (*Quercus viginiana*), cabbage palms (*Sabal palmetto*), and cypress (*Taxodium* spp.). Cabbage palms are the favored nest trees (Morrison 2001). Foraging habitat consists of improved pasture, newly plowed or burned fields, and variety of wetland habitats (Morrison 2001). For a complete description of caracara nesting and foraging habitat, (see Enclosure 1).

[3] The Service's survey protocol for finding caracara nests will be used, (see Enclosure 2).

G. Proposed activity does not include commercial use development[4] or government facilities[5]..... "*NLAA*"

Proposed activity does include commercial use development or government facilities.....*"may affect"* and consultation with the Service is requested.

Florida panther

The Corps determined that RGP-83 "may affect" the endangered Florida panther (*Puma concolor coryi*) and requested initiation of formal consultation under section 7 of the Act. The BCIR is within the current range of the panther and contains habitat suitable for utilization by panthers and prey species. It is located within the consultation area identified in the Service's *Final Interim Standard Local Operating Procedures for Endangered Species for the Florida Panther* (Service 2000) and is nearly entirely within the panther Primary Zone as defined in the report *How Much Is Enough? Landscape-scale Conservation for the Florida Panther* (Kautz et al. 2006).

The Florida panther was federally listed as endangered in 1967 (32 FR 4001). The present occupied range of the panther in south Florida represents about 1 percent of its historic range in the southeastern United States. Current estimates of panther home ranges average from 45 to 97 square-miles north of I-75 (Florida Fish and Wildlife Conservation Commission [FWC] 2005) and 55 to 214 square-miles south of I-75 (Jansen et al. 2005 draft report). They frequent large areas of undeveloped forested habitats, especially oak hammocks and longleaf pine flatwoods, but use areas comprised of other vegetative cover as well. Cover, water, and adequate prey are required to sustain panthers.

Telemetry locations of 14 living radio-collared Florida panthers have been recorded on 964 separate occasions within the BCIR. Telemetry locations for 11 of those panthers (775 occasions) were recorded within the Big Cypress Native Area, an area that will be restored, enhanced, and protected as part of the Advanced Mitigation Program (AMP) submitted to the Corps with the RGP-83. These telemetry locations typically represent day-time resting sites and are not a comprehensive set of locations for habitat use. Areas around these telemetry points are panther habitat providing functional value to panthers (Comiskey et al. 2002). Telemetry locations only apply to panthers that historically had collars on them; they are not a comprehensive database of suitable habitat for panthers. The activity of any uncollared panthers that might have used the area is unknown.

The Service concurs with the Corps' effect determination for the Florida panther. In order to effectively ascertain the effect of RGP-83 on the panther and in order for the Service to initiate formal consultation in accordance with 50 CFR 402.14, please provide the following:

[4] Proposed activity number 6 as described in the Corps public notice for RGP-83.
[5] Proposed activity number 7 as described in the Corps public notice for RGP-83.

Project Effects and Project Conservation Measures:

1. An estimate of the acreage of land, including wetland and non-wetland areas, that could be expected to be developed for each of the proposed activity types listed in the public notice for RGP-83. From this list, please estimate the number and types of projects that could be expected to use the RGP over the next 5 years based on the activities covered under the RGP, the Tribe's previous permitting history, and the Tribe's future growth plans.

2. An estimate of panther prey (*e.g.*, hog, deer, small mammal) species for the project area;

3. Estimates of the increase in traffic expected to result from each of the proposed activities listed in the public notice for RGP-83. Please indicate which, if any, of the proposed activities would be expected to require new roads or roadway improvements as part of the project or as a result of the project(s);

4. A table showing both county and state land acquisition in the 25-mile action area, by year, over the past 5 years;

5. A table showing calculations of panther habitat units for the Big Cypress Native Area.

   To evaluate effects to the Florida panther, the Service considers the contribution that project lands provide to the Florida panther, recognizing not all habitats provide the same functional value. Kautz et al. (2006) and FWC (In Review) also recognized not all habitats provide the same habitat value to the Florida panther and developed cost surface values for various habitat types, based on use by panthers. Habitat types were assigned a cost surface value from 0 to 10, with lower values indicating higher likely use by Florida panthers. In Kautz et al. (2006) and FWC (In Review), these values were used in a least-cost base analysis to determine panther dispersal zones and corridors.

   The Service chose to evaluate project effects to the Florida panther through a similar process. However, our analysis is the reverse and evaluates habitats from 0 to 10 with low values reflecting low habitat value to the Florida panther. The habitat suitability scores as developed by the Service incorporate a direct calculation per acre with a base ratio (2.5) multiplier to compensate for unavoidable project effects to the Florida panther.

   The Service has developed a spreadsheet-based habitat assessment method (Panther Habitat Assessment Methodology), which performs these calculations for the user. The Service recommends the use of this methodology to determine panther habitat functional value.

Other Projects Within a 25-mile Radius (Action Area) of the Project Site:

For items 6 through 8 below, please include the location (Section, Township, and Range), the total size in acres and, if available, the acreages of all land use or cover types on-site (as classified by the FLUCCS). Only include projects within a 25-mile radius of the project site

that are also within the Panther Consultation Area. Please provide the information requested in items 6 through 8 in tabular format.

6. A list of all projects that require a permit from the South Florida Water Management District (District). The list can be obtained from the District's Regulatory Data website (http://my.sfwmd.gov/ePermitting/PopulateLOVs.do?flag=1) and should include:

    a. Projects that have been permitted in the last year where construction has begun or has been completed.

    b. Projects that have been permitted, but have not yet initiated construction activities.

    c. Projects that have been applied for, but have not yet received a permit.

7. A list of all projects that require a Development Order (DO) from the Southwest Florida Regional Planning Council (*e.g.*, Developments of Regional Impact [DRI]). The list can be generated from data obtained from the Southwest Florida Regional Planning Council DRI website (http://www.swfrpc.org/maps.htm#DRIs) and should include:

    a. Projects that have received a DO in the last year where construction has begun or has been completed.

    b. Projects that have received a DO in the last year where construction has not yet been initiated.

    c. Projects that have been applied for, but have not yet received a DO.

8. A list of all projects that require a county land clearing permit or land use plan approval (*i.e.*, Planned Unit Developments [PUD] or other new construction). For Collier County, the information can be downloaded for free from their website at: http://gis.colliergov.net/website/downloadNET/download.aspx. For Lee County, the data can be purchased by contacting the Lee County Property Appraiser's office. For other counties, this information should be available from county planning or permitting departments and may also be available through the county's website. The list should include:

    a. Projects that have been permitted in the last year where construction has begun or has been completed.

    b. Projects that have been permitted, but have not yet initiated construction activities.

    c. Projects that have been applied for, but have not yet received a permit.

9. Using data in item numbers 6 through 8 provide a separate table showing a comprehensive action area list of those projects having less than 5 percent wetlands on-site. This can be accomplished using the following method:

    a. Using FLUCCS, determine if a project contains less than 5 percent wetlands on-site. In this assessment, consider pine flatwoods (including code numbers 411, 4119, 4151, 4159, and 6250) as wetlands, as the "hydric" pine community is prevalent in south Florida. If this information is not available for a particular project, overlay the project on a National Wetlands Inventory (NWI) map and determine the percentage of wetlands on the project site.

    b. Provide a list of the projects in a tabular format, including a total combined acreage for these projects. This estimate will be a component of the acreage that could be expected to be developed within the action area without Federal permit involvement through the Clean Water Act (Corps permitting).

County and State Planning within the Action Area:

10. Provide a scaled graphic of the county(s) future land use plan(s) for lands within a 25-mile radius of the project site (located within the Service's Panther Consultation Area). This information is often available from the county's website.

11. Provide a table showing both county and state land acquisitions in the action area, by year, since 1999. State acquisition information can be obtained from the Florida Department of Environmental Protection (DEP) website (http://www.dep.state.fl.us/gis/datadir.asp [state lands records]). Often, county acquisition information can be obtained from the county's website as well.

FISH AND WILDLIFE RESOURCES

Wetlands in southwest Florida are ecologically important areas supporting a myriad of fish and wildlife species. They provide nesting, resting, and feeding sites for a variety of wading and migratory bird species. Many species of reptiles and amphibians use wetlands during certain stages of their life cycle or throughout their entire lives. Wetlands within the BCIR are considered by the Service to be valuable in terms of fish and wildlife habitat and food chain support, pollutant filtration, and groundwater recharge.

Information presented in the wood stork section of this report was also used in our evaluation of the impact of RGP-83 on wetland habitat within the BCIR as well as the surrounding watershed and receiving waters. The sequence of actions and reasoning outlined in the Clean Water Act Section 404(b)(1) Guidelines is the foundation of the Service's mitigation policy. Applicants should avoid and then minimize impacts associated with a project prior to proposing mitigation. Areas in BCIR supporting wetlands of high value have been excluded from the RGP. The Tribe will mitigate for unavoidable wetland impacts that may occur through the use of the RGP on a

"no net loss of wetland functional value" basis. The wetlands potentially impacted under RGP-83 have been previously impacted by hydrologic alteration, human disturbance, and displacement of native wetland species by non-native species. Furthermore, the proposed RGP-83 will result in an improvement of the subject watershed and will benefit important ecological areas downstream, such as Big Cypress National Preserve, by eliminating exotic seed and spore sources through implementation of the AMP. Thus, the Service believes the Tribe has demonstrated reasonable assurance that there will be no significant impacts to wetland resources through use of RGP-83.

Thank you for your cooperation and effort in protecting Florida's natural resources. If you have any questions, please contact Mary Peterson at 772-562-3909, extension 327.

Sincerely yours,

Kalani D. Cairns for

Paul Souza
Acting Field Supervisor
South Florida Ecological Services Office

cc:
DEP, Fort Myers, Florida
FWC, Punta Gorda, Florida

LITERATURE CITED

Comiskey, E.J., O.L. Bass, Jr., L.J. Gross, R.T. McBride, and R. Salinas. 2002. Panthers and forests in south Florida: An ecological perspective. Conservation Ecology 6(1):18. [online] URL: http://www.consecol.org/vol6/iss1/art18.

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Morrison, J.L. 2001. Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida (Attachment A).

U.S. Fish and Wildlife Service. 2000. Final Interim Standard Local Operating Procedures for Endangered Species for the Florida Panther. Fish and Wildlife Service, Vero Beach, Florida.

South Florida Ecological Services
DRAFT
April 20, 2004

ENCLOSURE 1

Recommended Management Practices and Survey Protocols for Audubon's Crested Caracaras (*Caracara cheriway audubonii*) in Florida

South Florida Ecological Services
DRAFT
April 20, 2004

SURVEY PROTOCOL FOR FINDING CARACARA NESTS

This supplemental information is provided for further guidance on surveying for caracara nest based on the protocol in Morrison (2001). There is the highest probability of success in finding caracara nests during the period January to April. This period covers the time when most birds are feeding the nestlings and become more visible to observers. Surveys should start in January and continue through April to provide adequate data to conclude that a caracara nest does not occur on site. Once all nests on the site are found the survey can be terminated. Surveys should be conducted by a biologist with caracara experience as the birds can be hard to find and identify at long distances. The protective area for the caracara is 1,500 m (4,920 ft) around the nest. The area surveyed should include the project area and a 1,500-m buffer to account for off-site territories that might overlap onto the project area. All areas of suitable habitat within the project area and buffer should be initially surveyed for 1 day. If the area is large or the view obstructed more than 1 day or multiple observers may be needed to completely survey the area.

The observer should position themselves in a location where the largest open area (unobstructed by trees) can be viewed. The survey area should be no more than about 500 ha, which is the largest area easily observable from one point. An aerial photograph of the property and buffer zone can be used to identify areas of suitable habitat and map observation blocks to facilitate surveying the whole area. Use the map and a site visit to select strategic points where caracaras are more likely to be seen going to and from potential nesting sites. From a stationary position search for caracara activity, especially birds moving to the nest tree carrying sticks or food. Watch for other birds, such as American crows (*Corvus brachyrhynchos*), red-tailed hawks (*Buteo jamaicensis*), and turkey vultures (*Cathertes aura*), that might elicit an aggressive response from caracaras present. Nesting caracaras will often chase potential predators away from the nest; thus, revealing their presence. Also circling vultures can indicate the presence of naturally occurring carrion that may attract caracaras. If a potential nesting tree is detected then the observer can reposition to improve observing the bird's behavior. Weather condition should

be adequate to clearly view the whole area. The area should be viewed from sunrise to 11AM and again 3 hours before sunset. During midday potential nest trees can be examined close up for evidence of nests (Morrison 2001). The area viewed during each survey should be marked on a site map. All caracara activity observed should be recorded by time of day and distinguished between juvenile and adult birds. Record flight direction to identify foraging areas and the nesting tree. Mark any nesting tree locations on a map and obtain GPS coordinates. Weather conditions including temperature, wind speed and direction, cloud cover, visibility, and precipitation, should be recorded at the start and end of each survey period.

If no nests are found during the initial survey then return and repeat the survey in 2 weeks. Continue to repeat the survey at a 2-week interval through the end of April or until a nest is found. If the survey starts after January and no nests are found the earlier part of the survey should be completed during the next nesting season to insure that early nesting birds are not missed.

The opportunity for caracara observation can be enhanced by placing fresh meat (or road kills) along the property border overnight and observing the bait site during the morning survey. These birds can be followed back to their nest trees. For more details on caracara activities and habits see Morrison (2001).

Literature Cited

Morrison, J.L. 2001. Recommended management practices and survey protocols for Audubon's crested caracaras (*Caracara cheriway audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

South Florida Ecological Services
DRAFT
April 20, 2004

ENCLOSURE 2

Survey Protocol for Finding Caracara Nests

South Florida Ecological Services
DRAFT
April 20, 2004

SURVEY PROTOCOL FOR FINDING CARACARA NESTS

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The opportunity for caracara observation can be enhanced by placing fresh meat (or road kills) along the property border overnight and observing the bait site during the morning survey. These birds can be followed back to their nest trees. For more details on caracara activities and habits see Morrison (2001).

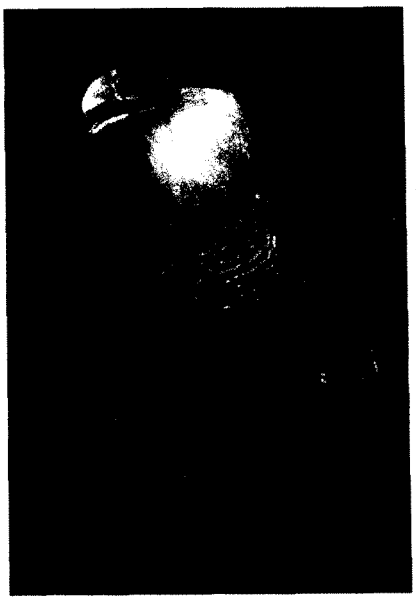
Literature Cited

Morrison, J.L. 2001. Recommended management practices and survey protocols for Audubon's crested caracaras (*Caracara cheriway audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audubonii*) in Florida

TECHNICAL REPORT NO. 18

Joan L. Morrison



September 2001

Bureau of Wildlife Diversity Conservation
Florida Fish and Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, FL 32399-1600

This report is the result of a project supported by the Florida Fish and Wildlife Conservation Commission's Nongame Wildlife Trust Fund. It has been reviewed for clarity, style, and typographical errors, but has not received peer review. Any opinions or recommendations in this report are those of the authors and do not represent policy of the Commission.

Suggested citation:

Morrison, J. L. 2001. Recommended management practices and survey protocols for Audubon's crested caracara (*Caracara cheriway audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida, USA.

Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audubonii*) in Florida

TECHNICAL REPORT NO. 18

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Florida Fish and Wildlife Conservation Commission
Project NG96-021
Contract Number 96115

September 2001

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INTRODUCTION

This document was published and issued by the Florida Fish and Wildlife Conservation Commission (FFWCC) but was prepared in consultation with experts on the crested caracara and with biologists from both the FFWCC and the U.S. Fish and Wildlife Service. The purpose of this document is to provide recommendations for management practices that would benefit the caracara in Florida by developing, maintaining, and/or enhancing environmental conditions required for the species' survival and well being. The management practices recommended here are advisory in nature, to be used by a variety of constituents including private landowners and land managers who may have an interest in managing their lands in ways compatible with the caracara's survival. These management practices, if carried out, should avoid or minimize detrimental human-related impacts on crested caracaras and should foster persistence of the species in Florida. This document also provides general biological information about the species and protocols for surveying for nests and for monitoring known nest sites.

BIOLOGICAL INFORMATION ABOUT THE SPECIES

The crested caracara (*Caracara cheriway*; hereafter, caracara), is a unique raptor/scavenger from the family Falconidae that reaches the northern limit of its geographic range in the southern U.S. (Fig. 1). The subspecies occurring in the U.S. is Audubon's crested caracara (*C. c. audubonii*) (Brown and Amadon 1968, American Ornithologists' Union 1983). In Florida, this raptor occurs as an isolated population in the south-central region of the state.

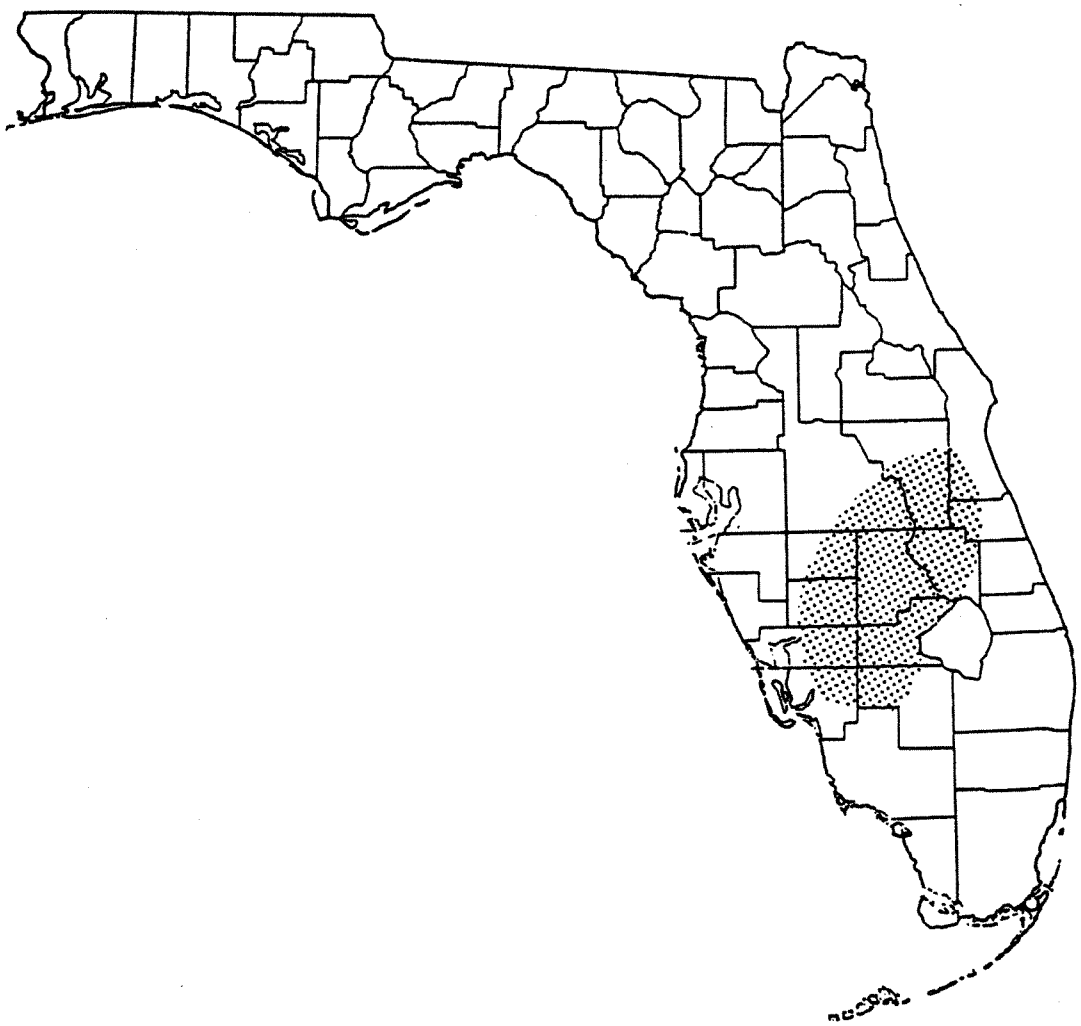

Fig. 1. Currently known breeding range of the crested caracara in Florida.

Caracaras in Florida were formerly documented to inhabit native prairie in Florida's central region. The species has been reported from the Kissimmee, Caloosahatchee, and upper St. Johns river basins, and the Kissimmee prairie (Bryant 1859, Scott 1892, Phelps 1912, Bailey 1925, Nicholson 1929, Howell 1932, Bent 1938, Sprunt 1954). Few historic nesting records are available, however. Notable changes in land use patterns have occurred throughout central Florida in recent years and, as a result, the status of this population has become a subject of concern. The caracara's range in Florida is now considerably smaller than was historically reported (Stevenson and Anderson 1994, Layne 1996), and this raptor apparently now occurs almost exclusively on privately owned cattle ranches in the south-central part of the state (Morrison and Humphrey 2001). The size of this population is unknown but is probably at least 500 (Layne 1996) or greater (J. Morrison, unpublished data). Populations comprised of 500 or fewer individuals may be more susceptible to extinction due to stochastic demographic or environmental events (Shaffer 1981).

All available evidence suggests that the most serious threat to Florida's caracara population is loss or degradation of nesting and feeding habitat. Such loss is most commonly due to conversion of pasture and other grassland habitats and wetlands to citrus, sugar cane, other agriculture, and urban development. Adult caracaras exhibit high site- and mate-fidelity; therefore, extensive loss of habitat within the home range, particularly of the nesting site itself, may cause the pair to abandon that home range, or at least the nesting site. Caracaras use some agricultural lands for foraging (J. Morrison, unpublished data); however, these habitats will not support resident, breeding caracaras if nesting habitat is not available. It is currently not known what degree of nesting or foraging habitat loss within a home range will cause permanent movement of a pair out of their home range.

Home Range

Florida's caracaras are resident, remaining year-round on home ranges that consist of the nesting territory and feeding habitat. Home ranges of caracaras in Florida average approximately 1,200 ha (3,000 acres) in size (Morrison 1997*a*) and represent an area within a radius of approximately 2–3 km (1.2–1.9 miles) from the nest. Adult caracaras typically forage throughout their home range during both nesting and non-nesting seasons. The nesting territory itself may be considered to be approximately the 25% core area of the home range, within an average radius of 1.0 km (0.6 mile) from the nest. This core area is where the resident pair spends most of its time during the nesting season (Morrison 1997*a*). The nesting territory is strongly defended by the pair during the nesting season. Adult caracaras spend more time farther from the nest and are rarely defensive around the nesting site during the non-nesting

season (Morrison 1997*a*). Other areas within the home range that are not near the nest itself are regularly used by the caracaras for collecting nesting material, roosting, loafing, and feeding.

Nesting

The crested caracara has a nesting ecology similar to that of bald eagles (*Haliaeetus leucocephalus*). Caracara pairs are generally monogamous and highly territorial, and exhibit strong fidelity to their breeding site, even nesting in the same tree year after year. Long-term observational data on occupancy of home ranges by caracaras in Florida indicate that as long as the nesting site and surrounding feeding habitat are not substantially altered, the home range will remain continuously occupied (J. Layne, unpublished data) and the pair will make an annual breeding attempt (Morrison 1999). Adult caracaras are highly intolerant of other adult caracaras within the nesting territory and particularly near the nest site, although caracaras of the juvenile age classes (fledgling to 3 years of age) may be tolerated at feeding areas that are not near the nest tree.

Timing.—Breeding activity can occur from September through June in Florida, with the primary season being November through April. Peak egg laying occurs from late December through early February, and incubation ranges from 31 to 33 days (Morrison 1999). The total breeding cycle (nest building, egg laying, incubation, nestling, and post-fledging dependency periods) is approximately 25 weeks in length, although sometimes up to 2 months elapse between completion of nest building and commencement of egg laying. The nestling period covers approximately 7–8 weeks, and the post-fledging dependency period is approximately 8 weeks (Morrison 1999).

Crested caracaras are capable of making more than 1 nesting attempt during a single breeding season. Pairs frequently produce a replacement clutch following nest failure in the incubation or early nestling stages (Morrison 1999). Early-season nesting pairs (those that lay their first clutch before March 1) may raise a second brood, but this occurs in less than 10% of the population, annually (Morrison 1998). Second-brood clutches may be laid as late as March and April. Second-brood young fledge as late as July and may remain with their parents through the rest of the summer and into the fall.

Nesting Habitat.—The crested caracara is primarily a bird of open habitats. Its nesting habitat in Florida consists of large expanses of pastures, grasslands, or prairies dotted with numerous shallow ponds and sloughs and single or small clumps of live oaks (*Quercus virginiana*), cabbage palms (*Sabal palmetto*), and cypress (*Taxodium* spp.). Cabbage palms are favored as

nest trees; equally chosen are single, isolated trees or trees within a group of 3–10. Caracaras nest only occasionally in oak and cypress trees. Most striking about caracara nesting habitat is the physical structure of the landscape—low, short, ground vegetation; scattered trees; and minimal or absent understory or shrub layer. Caracaras in Florida historically nested in native wet prairie habitat, particularly adjacent to marshes associated with the Kissimmee and St. Johns rivers (Nicholson 1929, Bent 1938). Caracaras are now found regularly in "improved" pastures, grasslands heavily managed for forage production for cattle (Morrison 1997*a*). Exotic forage grasses dominate these improved pastures, and regular mowing, burning, and high-density grazing maintain the low vegetative structure.

The Nest.—Caracara nests can generally be seen by looking up directly into the nest tree from alongside the trunk. Nests are bulky, loosely woven structures typically composed of long, slender, dried pieces of vines, weed stalks, briars, twigs, and fruiting clusters of palm. Nests are round or oval in shape and are about 2 feet in diameter. Nests typically face south to southeast within the nest tree.

Number of Nest Trees Used.—The nest site that originally attracts the pair of breeding caracaras is of critical importance. Pairs may use the same tree year after year, even if the old nest is lost. It is not uncommon for nests to be blown from trees by storms, after which the resident pair typically rebuilds a new structure in the same tree. If an old structure remains, the pair typically builds a new structure on top of it. Caracara pairs sometimes have 2 or 3 alternate nest trees that may be used in different years or for a second nesting effort within the same year. All nest trees used by a given pair are typically situated in the same general vicinity (usually within 0.5 km [0.3 mile] of each other). A new pair will often use one of the originally used nest trees when a member of a pair dies or is replaced (J. Morrison, unpublished data).

Feeding

Crested caracaras obtain their food from a variety of habitats, including improved pastures, newly plowed or burned fields, dairies, and around dwellings and farm buildings. They scavenge along roads and at slaughterhouses, poultry houses, and urban dumps. Caracaras also forage regularly in a variety of wetland habitats. The types of wetlands that provide good feeding conditions for caracaras include the extensive networks of drainage ditches and small ponds and wetlands found within improved pastures, drying marshes or stock ponds, shallow roadside or agricultural ditches, and marshes associated with river oxbows. Caracaras occasionally forage in agricultural lands including sod and cane fields and citrus groves but

do not spend most of their foraging time in these habitats (J. Morrison, unpublished data). Groups of up to 20 juvenile caracaras are often seen feeding in citrus groves during the fall, although the seasonality of this behavior is not understood.

The crested caracara is considered a scavenger because it is most easily observed feeding on carrion along roadsides. However, this raptor actually exhibits a broad diet, feeding on insects associated with carrion and dung in pastures as well as on a wide variety of vertebrate and invertebrate prey, much of which it captures live. Prey includes rats, mice, skunks, rabbits, squirrels, piglets, snakes, frogs, lizards, sirens, nestling birds, birds' eggs, turtles, fish, crayfish, beetles, grasshoppers, and worms.

Roosting

Adult caracaras frequently perch on the tallest trees or snags or on telephone poles within their home range. Breeding adult caracaras typically roost in trees near or within the nest stand. Groups of up to 50 or more juvenile caracaras roost in groups of palm and oak trees. These roosts occur on ranches or they may be near gathering areas (see below), particularly along the Kissimmee River floodplain. During the non-breeding season, roosts containing up to 30 juveniles may even be found within the home range of a nesting pair, although not generally within the nesting territory itself.

The Juvenile Period

Young caracaras fledge from January through July with the peak of fledging occurring in March and April. Juvenile caracaras have a long fledgling dependency period, remaining dependent on their parents for the first 2–3 months after fledging from the nest (Morrison 1996). Beginning about 3 months post-fledging, juveniles begin to explore locations outside the natal home range but continue to return to that home range. Following the exploratory phase, juveniles become nutritionally independent but are tolerated by the adults and may remain on their natal home range until the adults begin another breeding effort the following year. The home range used by juvenile caracaras until permanent departure mirrors that of their parents. Permanent departure from the natal home range can occur from 11 to 45 weeks post-fledging.

Age at first reproduction for Florida's crested caracaras is 3 years, although probably not all 3-year-olds attain a territory and begin breeding. Juvenile caracaras are characterized by a medium to dark brown and buffy white plumage (Wheeler and Clark 1995). They do not attain the black and

white adult plumage until about 4 years of age. Juvenile caracaras primarily use improved pasture and grassland habitats and associated wetlands for foraging.

Gathering Areas

After departing from their natal home ranges, young caracaras are nomadic throughout the population's range in south-central Florida, but they regularly use temporary settling areas called gathering areas. Juvenile caracaras typically travel between gathering areas and may remain for days to weeks at any one site (J. Morrison, unpublished data). Juvenile caracaras explore throughout the population's range, then return to spend varying lengths of time in the gathering areas. Even individuals from home ranges on the periphery of the population's range eventually find their way to these gathering areas. Because individuals move between areas it is difficult to monitor numbers at the gathering areas; therefore, the numbers of juveniles and floaters (adult non-breeders) in this population are not known.

Tolerance of Human Activity and Disturbance

Caracaras exhibit a wide range of tolerance of human activities. Some may be quite tolerant of buildings and of the occasional presence of people, livestock, machinery, and vehicles in their home range. Particular pairs may endure a wide range of potential impacts to their habitat resulting from altered patterns of human activity. The nature and extent of impacts on nesting and feeding habitat or on the birds themselves will depend largely on the current situation within each home range and on previous exposure of the resident pair to human activity. Whether or not a caracara pair will be affected by an activity generally depends on the patterns of activity. Some human influence may already be present in any particular home range. If the caracaras have been nesting successfully at these sites, it would be mainly altered patterns of activity that might impact their nesting behaviors and success.

Caracaras are most sensitive to human disturbance during the nesting season, particularly during the late incubation and early nestling stages, although pairs may abandon a nest if disturbed frequently during the nest-building stage. More nests fail during the last week of incubation and the first 2 weeks of the nestling stage than at any other time during the nesting cycle, at least prior to fledging (Morrison 1999). Nests may be abandoned if disturbed during hatching. Increased activity around the nest at hatching may also attract predators such as American crows (*Corvus brachyrhynchos)*, which can take small chicks.

Nesting occurs during the winter months; therefore, eggs and small chicks may die quickly from exposure if adults are frequently forced off the nest or are kept off for long periods. Adults are more tolerant of human activity occurring near the nest after the chicks have hatched and become partially feathered than during the period between nest construction and the third or fourth week of the nestling stage. Adult caracaras are particularly sensitive to human disturbance when attempting to deliver food to nestlings. They will not approach the nest if human activity is occurring nearby. Prevention of food deliveries has the most potential for serious consequences when nestlings are very young and must be fed frequently.

Caracaras generally flush from nests during incubation or early nestling stages when the disturbance source is within 300 m (1,000 feet) of the nest (J. Morrison, unpublished data). Flushing occurs at greater distances as the amount and frequency of disturbance increases, for example with subsequent visits to the nest area. If certain activities occur within approximately 300 m of the nest during the nesting season (November through April), they may have detrimental impacts on caracara nesting activities and success. Significant changes in activity levels or in habitat near the nest could result in the breeding pair leaving that nest site and moving to another site, even if these activities occur during the non-breeding season. If habitat changes occur over a wide area within the overall home range, the breeding pair might abandon the home range altogether.

RECOMMENDED MANAGEMENT PRACTICES FOR CRESTED CARACARA HABITAT IN FLORIDA

Following are recommendations for management practices that would benefit the crested caracara in Florida. These practices could be used by landowners and land managers interested in developing, maintaining, and enhancing habitat suitable for caracaras, and they pertain to habitat both near the nest site and throughout the home range. Objectives of these management practices are to (1) protect the nest site itself, (2) minimize disturbance around the nest that might compromise the nest site, (3) conserve important feeding areas nearby and away from the nest site, (4) protect important areas of cover for the fledglings during the post-fledging dependency period, and (5) improve and enhance habitat, when possible.

1) Retain pasture and grassland habitats and natural and man-made wetlands (i.e., ditches and ponds) within pastures.
2) Do not remove nest trees or other live trees within 300 m (1,000 feet) of a nest tree. Harvest of palm trees for human consumption should occur farther than 300 m from a known nest tree.
3) Retain dead trees, which are often used for perching and roosting, within 300 m (1,000 feet) of a nest tree.
4) Planting palm trees in areas lacking potential nest trees might attract new caracara pairs into an area. Potential nest trees should be at least 5 m (16 feet) in height and have full, closed crowns. At least 3 trees should be planted close together in a group.
5) Retain ground vegetation within 300 m (1,000 feet) of a nest tree. Clumps of taller grasses and small shrubs are regularly used as cover by chicks after they fledge from the nest. Chicks are vulnerable for the first few weeks after fledging because they do not fly well. They spend most of their time on the ground hiding under vegetation and perching on low branches in trees. Limiting disturbance to ground vegetation near a nest tree will ensure adequate cover for fledglings.
6) Cattle grazing, burning, mowing, and roller chopping are land management activities that are compatible with caracara survival. These activities keep ground cover vegetation short, which allows the caracaras to easily walk through grassland habitats when foraging. Caracaras are quite terrestrial compared to other raptors and frequently walk in grassland and along wetland habitats in search of food. Caracaras frequently walk behind tractors during plowing and feed on insects disturbed by the activity. They follow the front of grass fires and remain at burned sites for several days, feeding on animals killed by the fire. Continuing the above

management activities will enhance foraging habitat by limiting growth of tall, thick, or shrubby ground vegetation that is not used as frequently by foraging caracaras. Reductions in these management activities may cause widespread growth of thick, tall, or shrubby ground vegetation.

7) Wetland maintenance and ditch cleaning are management activities compatible with caracara survival. Caracaras are attracted by ditch-cleaning operations and feed on fish, turtles, sirens, and other animals exposed by these activities. They also steal food from wading birds that feed along these ditches.
8) In a known home range, particularly near a nest site, care should be taken to avoid use of chemicals toxic to wildlife, including pesticides, fertilizers, or herbicides. Care should also be taken to keep these chemicals from being introduced into wetlands and waterways.
9) Construction activities (including increased vehicle traffic other than normal agricultural operations; earth stockpiling; vehicle parking; equipment or materials storage; or development of new agricultural, commercial, industrial, or residential sites) typically cause changes in human activity levels and in habitat that may affect nesting caracaras. Although roads, canals, and some agricultural lands may provide seasonal food resources, their construction near the nest, particularly during the early phases of the nesting cycle (nest building, egg laying, incubation, early nestling), could disturb the pair and cause them to abandon the nesting territory.
10) Some activities such as fence-building, moving cattle, and normal vehicle and agricultural operations can occur in the home range year-round. Careful timing of these activities within 300 m (1,000 feet) of the nest can minimize the impacts of such activities during the nesting season. These activities should be limited near the nest, particularly during nest building, incubation, and early nestling (first 2–3 weeks) stages.
11) Mortality of juvenile caracaras is particularly high along roads, which they frequent in search of carrion. Increasing the number of roads within a home range increases risk of collision with vehicles. Care should be taken along all roads to minimize mortality of caracaras by posting signs, lowering speeds, and watching for birds.

SURVEY PROTOCOL FOR FINDING CARACARA NESTS

As land use changes continue in south-central Florida, the need increases for a standardized and effective protocol for assessing the presence of nesting caracaras or of gathering areas at targeted project sites. Survey techniques for caracaras must provide accurate information on territorial occupancy and breeding. This protocol is intended for use by individuals required to survey new habitat for breeding pairs.

Caracaras are not often visible to a casual observer even in known occupied, active, nesting territories, particularly during certain times of the day and of the year. Casual roadside surveys can grossly underestimate occupancy rates for caracara territories. The probability of seeing a caracara on a roadside survey in a known occupied territory can be as low as 30%, even during the breeding season (Morrison 1995). This protocol is intended to assist individuals in maximizing opportunities for finding nesting pairs and determining breeding status. If possible, surveys should be conducted by a qualified biologist, hereby defined as one who has had previous experience with caracaras, including observations and, preferably, radio tracking. Ideally, this person will have been trained by a qualified caracara researcher in monitoring, observation, and data collection techniques for caracaras, so that surveys will be carried out in a standardize manner.

Timing of Surveys

The timing of nesting activity can vary greatly from year to year; nesting can occur any time during September through June. Surveys for territory occupancy or to find new breeding pairs are best conducted during the months of January, February, and March, when nesting within the overall population is at its peak and adults are most likely to be feeding nestlings. Surveys made earlier than January could unduly disturb the birds and result in nest abandonment. Caracaras are most sensitive during the nest building, incubation, and early nestling stages of the nesting cycle. Caracaras can also be easily observed in the territory after the chicks fledge from the nest. The peak of fledging for this population occurs during March and April.

Surveys are best conducted early in the morning or late in the afternoon. Caracaras are most actively nest building, foraging, and feeding young between sunrise and about 1100 hours, and again, between about 1600 hours and sunset. Caracaras are rarely active during the heat of midday, especially in the summer months. They roost in trees that are often far from the nest site; thus they are rarely visible. Surveys conducted from May through October, particularly in new habitat for the purpose of finding new breeding pairs, are

not likely to be productive because of the caracaras' reduced activity levels during these months. Nests from even the most recent nesting season may be hard to find because they may have blown out of the nest tree. Any rain that occurred after nesting season would likely destroy most signs of activity around the nest tree. Also, after the chicks fledge, the family spends less time near the nest site, making them more difficult to find and observe. Surveys conducted during November and December may be productive, but probably will be more so in known territories. Pairs are most likely to be building nests during these months, but do not spend as much time near the nest as they do after egg laying. Additionally, pairs are quite sensitive to disturbance during the nest building and incubation stages, so surveys conducted early in the breeding season have the potential to excessively disturb nesting pairs.

Duration of Surveys

When surveying for caracaras in areas where the nest site is not known, observers should remain in each area for 2–4 hours during each visit. Observers should remain in the vehicle and watch for caracaras over a wide area of suspected habitat. Observations may be made on consecutive days, but ideally should be conducted at least 2 weeks apart and during the months of January through March. Observations made in this manner will usually yield information on territorial occupancy and even the nest site after only 3 visits, if the site is active. If the entire territory cannot be surveyed from a road, areas containing palm trees should be searched by foot if access is feasible. Observations should be conducted in an area at least twice a month for at least 3 consecutive months before it is considered to be unoccupied by caracaras.

Searching for Nests

Caracaras are very site faithful, even to particular nest trees. Most caracaras nest in cabbage palms (Morrison 1997*b*). The nest structure can easily be seen by looking up directly into the palm from alongside the trunk. Signs that a suspected nest is active are feces and prey remains below the nest, chicks calling from the nest, or defensive behavior by the adults when the observer is near the tree. Nests will most likely be facing south to southeast within the nest tree. Nest trees are generally over 5 m (16 feet) in height; have large, full, closed crowns; and are typically on the southeastern to southwestern edge of a group of trees. Nests may also be in lone, free-standing palm trees, in groups of 2–10 palms, or (rarely) in tall, emergent palms in the middle of a large hammock. Oaks and cypress should be checked also, but these are likely to be used as nest trees only if few palms are available within a large area of otherwise suitable pasture and wetland habitat.

When searching for new breeding pairs, efforts should first concentrate on areas of large contiguous pasture habitat containing scattered palms and oaks and numerous wetlands. Observations should be conducted from a position where a large area of suitable habitat can be viewed. If possible, observations should also be made from cover, such as a vehicle, so that disturbance to the pair can be minimized. Searching should focus on observing adult behavior (e.g., carrying sticks or food) that would suggest nesting activity. Caracaras exhibit little size and no plumage dimorphism (Morrison and Maltbie 1999), and these behaviors are not gender specific.

Other behaviors of adults can be used to find nests. During incubation, the adult not currently incubating often will perch high and visibly in a tall tree within 300 m (1,000 feet) of the nest. Adult caracaras exhibit little defense behavior near their nest, but if the chicks are large (5–8 weeks), adults may remain close to the nest and exhibit rattle and cackle vocalizations and the head-throwback display (Morrison 1996). Nest searching using playback tapes, a technique used successfully for surveys of other raptors, is not likely to be effective for caracaras because they do not respond to such tapes. Their vocalizations do not carry far in open habitats. Most vocalizations are used in situations of immediate contact or proximity of individuals, such as copulation, aggression towards a nest predator, or when feeding alongside other caracaras or vultures.

When a nest is found, the contents can be checked using an extendible pole with a mirror attached or by direct observation. If a nest is not found immediately in an area where adult caracaras are known to occur, another visit should be made to that territory within 1 month after the first visit. Use of carrion as bait can also facilitate nest finding, determining territory occupancy, and determining the breeding status of a known pair. A carcass or other large piece of carrion can be set in a suspected area the night before a planned observation period. If caracaras are in the area, they will usually find and begin feeding upon the carcass just after sunrise the following morning. Individuals can then be observed when they return to the nest site.

Nest Monitoring

Subsequent to finding a caracara nest in a new area, monitoring of the nest may be required to obtain information on breeding chronology and reproductive success. If a monitoring program is initiated in conjunction with a land development program, refer to the monitoring protocol which follows.

MONITORING PROTOCOL FOR KNOWN CARACARA TERRITORIES

Because a major management goal is to monitor the status of Florida's caracara population, it is important to monitor known caracara territories as well as attempt to find new ones. Objectives of monitoring known territories are (1) determining whether territories remain occupied year after year, (2) determining whether the same individuals occupy and breed in the same territories year after year, (3) determining whether pairs successfully fledge young year after year, (4) determining how many young are fledged per pair per year, and (5) for long-term monitoring programs, evaluating any changes in habitat use by resident caracaras in conjunction with habitat changes in their home range. Procedures for monitoring in known territories are similar to those for surveying for nesting pairs in new habitat, but the difference is that monitoring occurs in areas where nest and foraging locations may already be known.

For any monitoring program for crested caracaras in Florida, a qualified biologist should visit the territory on a regular basis (i.e., at least once per month). A qualified biologist is one who has had previous experience with caracaras, including observations and, preferably, radio tracking. Ideally, this person would be trained by a qualified caracara researcher in monitoring, observation, and data collection techniques for caracaras, so that any monitoring program initiated in conjunction with a land development project would be standardized with respect to other ongoing long-term monitoring of crested caracaras in south-central Florida.

Nest Finding and Monitoring Reproductive Success

Timing of Monitoring to Determine Territorial Occupancy and Breeding Status.—Monitoring at known caracara territories is best conducted during January, February, and March, when nesting within the overall population is at its peak and adults are most likely to be feeding nestlings. Caracaras can also be easily observed in the territory after chicks fledge from the nest, which peaks for this population during March and April.

Monitoring is best conducted early in the morning or late in the afternoon. Caracaras are most actively nest building, foraging, and feeding young between sunrise and about 1100 hours and again between about 1600 hours and sunset. Caracaras are rarely active during the heat of midday, especially during the summer months. They roost in trees and often far from the nest site, thus they are rarely visible. Monitoring conducted from May through October may be more difficult because of the caracaras' reduced activity levels during

these months. After the chicks fledge, the family spends less time near the nest site so the observer may have to visit more areas within the home range to find and observe the caracaras. Whereas surveying for new nests is not likely to be as productive in November and December, monitoring during these times may be productive in territories with known nest locations. Pairs are most likely to be building nests during these months.

Duration of Monitoring Sessions.—To find active nests in known territories, all known nest trees should be checked first. If a nest is not immediately found, observers should position themselves where known nest trees can be observed and then remain in the vehicle while watching for caracaras over a wide area of suspected habitat. Observations made in this manner will usually yield information on territorial occupancy and even the nest site after only 3 visits, if the site is active. When a nest is found, nest contents can be checked using an extendible pole with a mirror attached or by direct observation.

Additional monitoring sessions may be needed if the nest is not found during the first monitoring session. Each session should span approximately 2–4 hours and ideally should be conducted at least 2 weeks apart from December through March. During the second visit, the search area for the nest should be broadened to include all potential nest sites within 0.5 km (0.3 mile) of the traditional site. Sometimes a pair moves its nest site, particularly if habitat degradation has occurred within the nesting territory or near the traditional nest site, or if one member of the pair dies. Usually, however, if the home range remains occupied, adults will be seen within 3 visits to the nesting territory. A third visit should be made, if necessary, within 2 weeks of the second visit. If no adults are seen or no nest is found after 3 visits, with at least 1 visit made in each of 3 consecutive months from November through April, the home range may be considered temporarily unoccupied. However, if both members of a pair die, the site would likely be taken over by another pair if no habitat degradation occurs, so an apparently unoccupied site should be monitored the following breeding season.

Monitoring for Habitat Use

To evaluate habitat use by caracaras in known territories, monitoring sessions should occur at least monthly year-round for a minimum of 3 years when associated with habitat conversion or a land development project. Because caracaras are site faithful, responses to habitat changes or noticeable changes in nesting behaviors or success may not become apparent within only 1, 2, or even 3 years of observation. During each visit the biologist should remain in the territory for at least 4 hours beginning at sunrise, or beginning in

late afternoon and extending into early evening, but before dark. Any radio-tagged individuals should be tracked during this period and foraging activity, habitats used, and locations recorded. If no individuals are radio tagged, the observer should search for caracaras within the project area. These individuals should be followed and observed during the monitoring period and their foraging activity, habitats used, and locations recorded.

Other Monitoring Considerations

The major limitation to finding new nesting territories and monitoring known nests is the fact that most caracaras in Florida now occur on privately owned land. Permission must always be obtained from the landowner before entering the property of interest. Private lands and the requests of landowners, such as not driving in certain areas and observing gate closures, must always be respected. Less restricted access facilitates nest searching on public lands, but searching may be more difficult because of habitat differences such as smaller areas of short-grass pasture habitats and larger areas of thick, tall, or shrubby ground vegetation, which caracaras typically do not use.

Reporting Banded Individuals

Sightings of banded caracaras made during any survey or monitoring period provide valuable information regarding individual survival and habitat use. Sightings, along with supporting information, may be reported to the Florida Fish and Wildlife Conservation Commission or the U.S. Fish and Wildlife Service. If a banded caracara is found dead, the band number and color combination should be reported to the U.S. Fish and Wildlife Service.

CURRENT STATUS OF THE CRESTED CARACARA IN FLORIDA

Currently, Florida's population of Audubon's crested caracaras is listed as Threatened both federally (U.S. Fish and Wildlife Service 1987) and by the state of Florida (Logan 1997). This listing was afforded primarily because this population is believed to be isolated from any other caracara populations and of small size, therefore is of evolutionary and conservation concern, and because suitable caracara habitat in Florida has been declining rapidly in recent years. Under this listing, the caracara is protected from activities that would directly harm an individual or its habitat.

Persons with further interest in the legal statutes that afford protection for Florida's crested caracaras should review the federal Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.); the federal Migratory Bird Treaty Act (16 U.S.C. 703-711); and Rules 68A-4.001 and 68A-27.011of the state of Florida Wildlife Code.

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