STATUS OF THE SPECIES – Audubon’s crested caracara (Polyborus plancus audubonii = Caracara cheriway; aka Northern crested caracara)

Legal Status – Federal Status: threatened, State: threatened


State of Florida Status: Listed as threatened by the state in accordance with the Service’s Federal notice.

Species Description

Appearance/Morphology

The caracara is a large falcon with a head crest, naked face, heavy bill, elongated neck, long legs, and a bright yellow-orange face and legs (Service 1999; Morrison and Dwyer, 2012). The total length of an individual ranges from about 19.7 inches (in) (50.04 centimeters [cm]) to 25.2 in (64.01 cm) with a maximum wingspan of 47.2 in (119.9 cm). Adult caracaras have dark brownish-black feathers on their crown, wings, back, lower abdomen and tail (Service 1999). The base of the head, throat, upper abdomen and underside of the tail coverts is usually white, although some individuals contain yellow to tan feathers. The breast and upper back are whitish with heavy black barred feathers and the tail feathers are white with thin, dark crossbars and an extensive, dark terminal band (Service 1999). A caracara’s feet are also a noteworthy identification trait. The feet have talons that are flatter than those of other raptor species. This adaptation aids in foraging because it allows the caracara to walk or run on the ground more easily (Service 1999).

Taxonomy

Caracaras were originally described by John James Audubon (1834) and assigned the scientific name Polyborus vulgaris. John Cassin changed the name to P. audubonii in 1865, although it had several other names at that time (Service 1999). Dove and Banks (1999) provided a historical review of the taxonomy of the caracara prior to listing. The authors noted that Ridgway (1876) treated the caracara as three species in the genus Polyborus: P. tharus (designated by Molina in 1782) occurring in southern South America; P. cheriway (designated by Jacquin in 1784) occurring from northern South America to southern North America; and P. lutosus (designated by Ridgeway in 1876) occurring on Guadalupe Island, Mexico. This nomenclature remained unchanged until 1949, with the exception of replacing P. tharus with P. plancus, as previously designated by Miller in 1777 (Brabourne and Chubb 1912; Swann 1925). Hellmayr and Conover (1949) grouped both P. cheriway and P. tharus into one species: P. plancus. At the time of listing in 1987, the caracara was considered a sub-species of P. plancus, P. plancus audubonii. Banks and Dove (1992) placed P. plancus in the genus Caracara in 1992. Finally, Dove and Banks (1999) evaluated plumage characters and body
dimensions of *C. plancus* from the northern populations with those from Bolivia and southern Brazil south to Tierra del Fuego, and concluded that *C. plancus* consists of three distinct species and sub-specific names were not warranted. The unique subspecies are: *C. lutosus* (the insular Guadalupe caracara), *C. cheriway* (the Northern crested caracara, referred to in this document as Audubon’s crested caracara [caracara]), and *C. plancus* (the Southern caracara) (Dove and Banks 1992).

### Life history

Caracaras are diurnal and non-migratory. Adult caracaras establish territories, which average approximately 3,000 acres (ac) [1,200 hectares (ha)], where they are typically found year round (Morrison and Humphrey 2001). This average territory size equates roughly to a territory within a radius of 1.9 miles from the nest site (Morrison 2001). Territory size ranges from about 1,000 acres to about 5,000 acres, likely dependent upon the quality of the habitat.

Breeding pairs of caracaras are monogamous, highly territorial, and exhibit fidelity to both their mate and the site (Morrison 1999). First breeding occurs at 3 years of age (Nemeth and Morrison 2002). The initiation of breeding is marked by several behavioral changes, including the pair perching together near the nesting site, preening and allopreening, and sharing food.

Caracaras are one of the first of Florida’s raptors to begin nesting. Although breeding activity can occur from September through June, the primary breeding season is considered to be November through April. Nest initiation and egg-laying peak from December through February. Caracaras construct new nests each nesting season, often in the same tree as the previous year. Both males and females participate in nest building. Nests are well concealed and most often found in the tops of cabbage palms (Morrison and Humphrey 2001), although nests have been found in live oaks (*Quercus virginiana*), cypress (*Taxodium distichum*) (first record, Morrison et al. 1997), Australian pine (*Casuarina* spp.), saw palmetto (*Serenoa repens*), and black gum (*Nyssa sylvatica*). Caracaras usually construct their nests 4 to 18 meters above the ground, and the nest structure primarily consists of stems from herbaceous and woody shrubs, vines, grasses or other plant materials woven together and trampled to form a depression (Bent 1938; Sprunt 1954; Humphrey and Morrison 1997; Smith and Scholer 2013). Caracaras vigorously defend their nesting territory during the breeding season (Morrison 2001). The clutch size is usually two eggs, although at times three eggs are laid. Incubation lasts for about 31 to 33 days (Morrison 1999) and is performed by both sexes. Ordinarily, only one brood is raised per season, but about 10 percent of breeding pairs may raise a second brood. Young fledge at about 7 to 8 weeks of age, and post-fledgling dependency on parental birds lasts approximately 8 weeks.

Foraging typically occurs throughout the territory during both nesting and non-nesting seasons (Morrison 2001). Caracaras are highly opportunistic in their feeding habits. They will capture live prey and eat carrion. The diverse diet consists of insects and other invertebrates, fish, snakes, turtles, birds, and mammals (Layne 1996; Morrison 2001). Recent information from Morrison (2005) indicates wetland-dependent prey species and mammals (primarily in the form of carrion) comprise about 64 percent and 31 percent of the total diet, respectively. Caracaras search for prey while flying, from perches, and when walking or running along the ground (Service 1999).
Foraging behavior also includes regularly patrolling sections of roads for animals killed by collisions with motor vehicles (Palmer 1988); caracaras are known to occasionally chase the larger black vulture (*Coragyps atratus*) and turkey vulture (*Cathartes aura*) away from a carcass (Howell 1932). Scavenging at land-fills has also been observed (Morrison 2001). Tractors plowing fields or mowing pastures and road right-of-ways are often closely followed by individuals who feed opportunistically on the prey that may be flushed or exposed. Agricultural drainage ditches, cattle ponds, roadside ditches, the margins of wetlands and other shallow water features, and recently burned lands also provide good foraging areas for the caracara (Morrison 2001).

Caracaras are strong fliers and highly mobile birds that are capable of moving long distances, including juveniles. Morrison (2005) noted that sub-adult caracaras are nomadic. Individuals may traverse a large portion of the species’ range in Florida from the time it leaves its natal territory to the time it establishes a territory. Adults will also occasionally leave their territory and travel great distances, usually outside of the breeding season. The caracara’s vagility and nomadic behavior during its sub-adult years may be the reason that caracaras are occasionally recorded far outside their breeding range. Caracaras have been observed in the Florida Keys and into the panhandle of Florida (Bay County) as well as in other states and as far north as Nova Scotia, although some of these individuals may have escaped from captivity (Layne 1996). Currently, there is no evidence to suggest breeding and genetic exchange occurs between the Florida population and other populations of the Northern caracara.

Observations and radio-telemetry monitoring have documented aggregations of caracaras within several “gathering areas” in south-central Florida. Large groups of caracaras (up to 50) have been observed along the Kissimmee River north of State Route (SR) 98; south of Old Eagle Island Road in northern Okeechobee County; south of SR 70 and west of Fort Pierce in St. Lucie County; and south of SR 70 on the Buck Island Ranch in Highlands County. These gathering areas are regularly, but not continually, used by sub-adult and non-breeding caracaras and generally consist of large expanses of improved pasture. Morrison (2001) suggests that gathering areas may be important to caracaras before first breeding during the first 3 years after leaving their natal territory. However, the habitat values of these areas to caracaras have not yet been evaluated.

**Habitat**

The caracara prefers habitats that contain largely short-stature vegetation with a low density of trees that can be used for nesting. Historically, caracaras inhabited native dry or wet prairies containing scattered cabbage palms, their preferred nesting tree. Scattered saw palmetto, low-growing oaks (*Quercus minima, Q. pumila*), and cypress also occur within these native communities. Over the last century, many of the native prairie vegetation communities in central and south Florida have been converted for cattle ranching, and have been replaced by improved and unimproved pasture dominated by non-native, sod-forming grasses. Caracaras occur within these pastures, presumably because the vegetation structure of this habitat type is similar to that of native prairies. In addition, the scattered cabbage palms that are often present within improved pastures provide nesting sites for caracaras. Morrison and Humphrey (2001) hypothesize that
habitats with short-stature vegetation may be preferred by the caracara, due to its tendency to walk on the ground while foraging. The height and relatively simple structure of the vegetation may directly facilitate foraging by caracaras because it easier to walk through and provides less cover for predators. Consequently, caracaras likely benefit from management actions, such as regular mowing, burning, and high-density grazing in agricultural lands and prescribed burning in native habitat types that maintain vegetation in a low stature and structurally simple condition (Morrison and Humphrey 2001).

Maintaining habitat heterogeneity, including specific land cover types as well as small (less than 2.47 ac [0.99 ha]) freshwater wetlands, is important in maintaining suitable habitat for the caracara in Florida (Morrison et al. 2006). The proportion of six vegetation and land cover types (i.e., cabbage palm-live oak hammock, grassland, improved pasture, unimproved pasture, hardwood hammocks and forest, and cypress/pine/cabbage palm) and two types of aquatic habitats (i.e., lentic and lotic) were determined to be the most important criteria for predicting habitat suitability for caracara. Most known nest locations (72.9 percent) in the study were present on improved pasture although that habitat type only comprised 12.5 percent of the entire study area. Caracara appear to be using pastures, ditches, and impounded wetlands that have replaced the historic land cover as shown by the high occurrence of improved and unimproved pastures and wetlands in caracara home ranges (Morrison et al. 2006).

Distribution

The caracara is a resident, non-migratory species that occurs in Florida as well as the southwestern United States and Central America. Florida’s population of caracara is found in the prairie area of the south-central region of the State, from Polk and Osceola Counties southward to Collier and Broward Counties. The caracara is most abundant in a five-county area that includes Glades, DeSoto, Highlands, Okeechobee, and Osceola Counties (Service 1999).

Morrison and Humphrey (2001) characterized caracara distribution, reproductive activity, and land use patterns within a 5,180,000-ac (2,096,000-ha) area in south-central Florida. Comparisons of caracara territories to randomly selected areas of available habitat within the study area indicated that caracara territories contained higher proportions of improved pasture and lower proportions of forest, woodland, oak scrub, and marsh. Territory size was inversely related to the amount of improved pasture within the territory. In addition, breeding-area occupancy rate, breeding rate, and nesting success were consistently higher on private ranch lands during the study.

Population Dynamics

Monitoring the caracara population, determining territory occupancy, and nesting effort and success, is very difficult because most caracara breeding territories occur on private lands in Florida that are not accessible to researchers (Humphrey and Morrison 1997). Consequently, estimates of the caracara population have been based on counts of caracaras along roadsides (Heinzman 1970; Layne 1995). These roadside counts have the potential to be strongly affected by the presence of non-territorial juvenile and sub-adult birds during the period when they are
nomadic. Furthermore, the abundance of non-breeding adults further complicates estimating breeding pairs from roadside counts. Because the occurrence and density of caracaras is not evenly distributed (due to congregations and nomadic individuals) within the region they occupy, roadside surveys are probably unreliable for estimating the overall population.

Morrison and Humphrey (2001) noted the caracara is perceived to be in long-term decline, although adequate data is not available on historic patterns of abundance, or habitat used to accurately assess the status of the species. Heinzman’s (1970) 4-year road survey from 1967 to 1970 suggested fewer than 100 individual caracaras at 58 localities remained in Florida. Stevenson (1976) concurred with this estimate in 1974. Layne (1996) monitored caracara distribution and population status in Florida from 1972 to 1991. Observations made by Layne (1996) estimated the adult portion of the population was stable with a minimum of about 300 birds in 150 territories. The immature portion of the population was estimated to be about 100 to 200 individuals, increasing the total statewide population estimate to 400 to 500 birds. However; these population estimates were likely biased because they were based on roadside counts of birds, and roadsides were surveyed more intensively than areas away from roads. Given the challenges associated with accessing all the potential habitat within the caracara’s range, conducting a reliable range-wide survey of the population and obtaining an accurate estimate of the caracara’s current population size remains difficult.

However, evidence from behavior suggests habitat is limited for the caracara and the species is at or near carrying capacity within the existing habitat (Morrison et al. 2007). Monitoring of caracara breeding areas since the 1990s found that breeding territories tend to remain occupied and that breeding is attempted every year. The fact that territories are not seen regularly coming and going is consistent with the assertion that all possible breeding sites are occupied (Morrison et al. 2007). In addition, Dwyer et al. (2012) tracked individual nonbreeding caracaras in adult plumage for over three years and found these birds never established breeding territories. This information indicates that the tracked caracaras were unable to find suitable breeding sites, again supporting the concept that no suitable breeding habitat is available to the breeding age birds and the existing breeding habitat is at carrying capacity. Furthermore, Dwyer et al. 2010 noted that nonbreeding adults (floaters) made up approximately 40 percent of the nonbreeding population.

**Critical Habitat**

Critical habitat has not been designated for the caracara.

**Threats**

*Present or Threatened Destruction, Modification or Curtailment of its Habitat or Range*

The caracara’s perceived decline, as described in historic literature, is attributed primarily to habitat loss (Layne 1996). Large areas of native prairie and pasture lands in south-central Florida have been converted to citrus operations, tree farms, other forms of agriculture, and commercial and residential development, and habitat loss has accelerated in the past few decades (Morrison and Humphrey 2001). The perceived population decline and the geographic isolation of the Florida population resulted in the listing of the caracara as threatened in 1987. However,
historical conversion of forested habitats to pasture has not been adequately documented as partially offsetting losses of caracara habitat, so a full accounting of historic habitat changes is lacking. The current threat of habitat loss persists as changes in land use and development of caracara habitat continue, and pastures are converted to residential and commercial development.

The lack of habitat management in some areas has also resulted in degradation or loss of caracara habitat. For example, encroachment of woody shrubs and trees into open dry prairies, pastures and similar habitats have resulted in reduction in habitat suitability. In addition, the large-scale removal of cabbage palms from pastures to sell for commercial and residential landscaping may also reduce the availability of potential nesting sites.

As discussed above, the caracara prefers open habitats with low-stature vegetation for foraging (Morrison and Humphrey 2001). Accordingly, cattle ranching and the creation of extensive pastures appear to be compatible with caracara survival. The number of caracara territories occurring in improved or unimproved pasture can be expected to increase if sufficiently large overgrown pastures are reclaimed and/or new pastures or restored native prairies are created from lands subject to other agricultural land uses. The conversion of pasture to citrus, sugarcane, and residential/commercial development is cause for concern (Morrison 2001). Recognizing the habitat value of cattle ranches and enlisting landowner cooperation in the conservation and management of these lands are essential elements in recovery of the caracara.

**Disease or Predation**

Currently, disease or Predation does not appear to threaten the continued existence of the caracara.

**Other Natural or Manmade Factors Affecting its Continued Existence**

Collision with vehicles along roadways may also be a significant form of mortality and contribute to further population level declines. Florida’s burgeoning human population has increased the number of motor vehicles and the need for roads. The increase in traffic as well as the caracara’s predisposition for feeding on road-killed animals has probably increased the number of caracaras killed or injured as a result of vehicle strikes. Morrison (2003) identifies highway mortalities as a major cause of juvenile mortalities with young birds especially vulnerable within the first six months after fledging.

In addition, direct human persecution continues in parts of the caracara’s range (Morrison and Dwyer 2012). Caracaras are killed by some ranchers because of the belief that caracara kill and eat newborn livestock. Furthermore, spent lead ammunition from hunting and shooting may have the potential to affect any individuals that feed upon the carrion (Golden et al. 2016).

Finally, the Florida population of caracaras is isolated and habitat-specific. Therefore, it may be susceptible to environmental catastrophes and potentially reduced reproductive rates because of demographic accidents such as skewed sex ratios or disproportionate age-related mortality. Low numbers may also reduce the genetic viability in the population through loss of heterozygosity, thereby increasing vulnerability to environmental stresses. The location of many of the
occupied territories on private land, and the inaccessibility of these territories to surveyors, makes it difficult to census the caracara and detect changes in its population size and distribution. This difficulty increases the possibility of not detecting a population decline that could result in extinction.

### Climate Change and Sea Level Rise

Our analyses under the Act include consideration of observed or likely environmental effects related to ongoing and projected changes in climate. As defined by the Intergovernmental Panel on Climate Change (IPCC), “climate” refers to average weather, typically measured in terms of the mean and variability of temperature, precipitation, or other relevant properties over time; thus “climate change” refers to a change in such a measure which persists for an extended period, typically decades or longer, due to natural conditions (e.g., solar cycles) or human-caused changes in the composition of the atmosphere or in land use (IPCC 2013, p. 1450). Detailed explanations of global climate change and examples of various observed and projected changes and associated effects and risks at the global level are provided in reports issued by the IPCC (2014 and citations therein). Information for the United States at national and regional levels is summarized in the National Climate Assessment (Melillo et al. 2014 entire and citations therein; see Melillo et al. 2014, pp. 28-45 for an overview). Because observed and projected changes in climate at regional and local levels vary from global average conditions, rather than using global scale projections, we use “downscaled” projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species and the conditions influencing it. (See Melillo et al. 2014, Appendix 3, pp. 760-763 for a discussion of climate modeling, including downscaling). In our analysis, we use our expert judgment to weigh the best scientific and commercial data available in our consideration of relevant aspects of climate change and related effects.

Climate change may result in inundation of habitat from sea level rise, and altered weather patterns in south Florida. For example, an increase or decrease in precipitation could affect water levels in wetlands and canals, and this, in turn, could affect prey densities and ultimately affect productivity and survivorship of the caracara. Increased precipitation could increase the availability of prey species, whereas increased periods of drought could reduce prey availability to caracara. The intensity or frequency of thunderstorms or hurricanes is also predicted to increase with climate change. Winds associated with these events could adversely affect the caracara by decreasing nesting trees and therefore nesting opportunities. It is difficult to estimate, with any degree of precision, which species will be affected by climate change or exactly how they will be affected. The Service will use Strategic Habitat Conservation planning, an adaptive science-driven process that begins with explicit trust resource population objectives, as the framework for adjusting our management strategies in response to climate change (Service 2006).
LITERATURE CITED


Howell, A.H. 1932. Florida bird life. Florida Department of Game and Fresh Water Fish; Tallahassee, Florida.


