

STATUS OF NEOTROPIC CORMORANT IN ARIZONA WITH NOTES ON IDENTIFICATION AND AGING

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Arizona Birds 4:17-21; <https://doi.org/10.65238/371.bkm>

STATUS AND DISTRIBUTION

The Neotropic Cormorant (*Phalacrocorax brasilianus*) is suitably named given it is the only cormorant ranging over the entire neotropics. Although it is widespread throughout most of the western hemisphere, in the U.S. it is found primarily along the Gulf States of Texas and Louisiana, north locally to Kansas, and in south-central New Mexico. The species is sedentary throughout most of their breeding range, with widespread post breeding dispersal (figure 1).

Neotropic Cormorant was first confirmed in Arizona in 1961 when two specimens were found shot at Arivaca Junction (Monson and Phillips 1964). By 1980, Neotropic Cormorants were considered a rare but regular straggler to lakes, ponds, and drainages in the Santa Cruz River valley north to Tucson, occasionally east to southern Cochise County (Monson and Phillips 1981). They were also found once north to the Phoenix area and a few individuals had been noted along the lower Colorado River north to Lake Havasu (Rosenberg et al. 1991). Most of these early records pertained to only one or two individuals, but observations ranged through all seasons (Corman 2005).

Since then Neotropic Cormorants have increased in southeastern Arizona and expanded north into central Arizona to northeastern Pinal County, southern Gila County and across Maricopa County west to Painted Rock Reservoir northwest of Gila Bend. The increase in population occurred gradually through the 1970s and 1980s with a rapid increase in the late 1990s and 2000s. That increase is graphically illustrated in figure 2, drawn from raw data extracted from the Christmas Bird Count (CBC) database (NAS 2008).

It should be noted that 99 percent of the numbers in figure 2 routinely come from only two Christmas Bird Counts along the lower Salt and adjacent Gila Rivers immediately southwest of Phoenix in Maricopa County. Furthermore, it was determined that high densities and diversity of wintering aquatic birds (including cormorants) were using the numerous urban lakes, ponds, and canals within the greater Phoenix metropolitan area, and that more than 95 percent of these water bodies are not included in any local CBC. The Phoenix Area Urban Aquatic Bird Survey was established in 2006 to collect information of water birds using these water bodies during winter. This single-day urban survey in mid-January produced a tally of 178 Neotropic Cormorants in 2006 and 191 individuals in 2007. In 2008, a high count of 1357 Neotropic Cormorants was remarkable and further supports the large population increase of this species in Maricopa County. More than 90 percent of these birds are consistently found within the city limits of Chandler, Gilbert, Phoenix, and Tempe. (<http://azfo.org/namc/IndexphoenixUrban.html>).



Figure 1. Adult Neotropic Cormorant, Gilbert, AZ. Photo by Brendon Grice

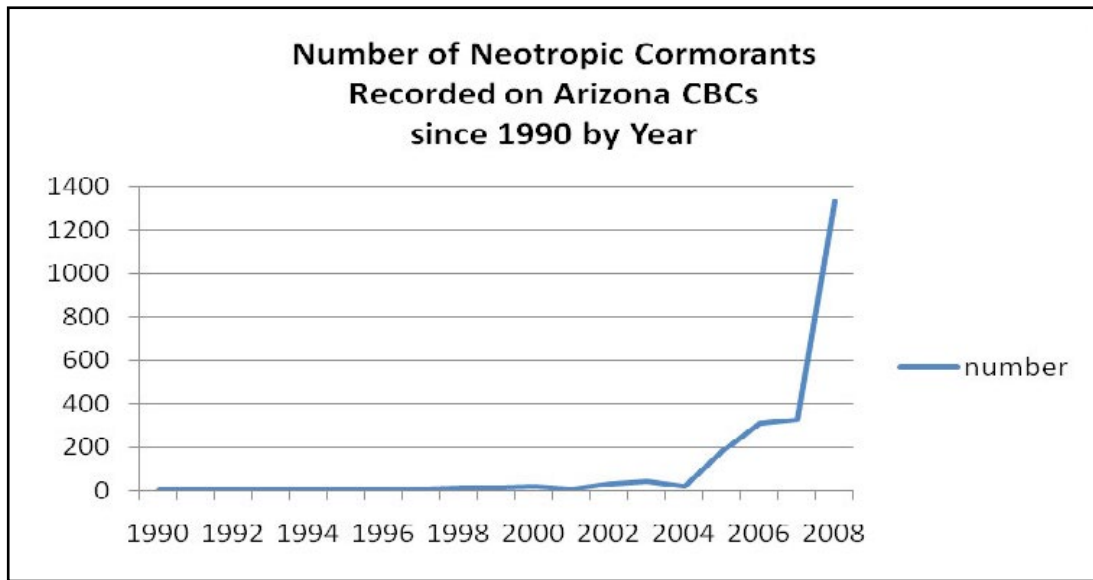


Figure 2

While increasing exponentially, particularly in central Arizona, Neotropic Cormorants remain rare west to the lower Colorado River Valley (with few records for California, Patten 2001), and the first report for northeastern Baja California, Mexico, came in Dec. 2007 (Richard Erickson, personal communication). These cormorants are casually reported north to southern Mohave and northeastern Yavapai counties. There are currently few records north of the Mogollon Rim in Arizona.

Although Neotropic Cormorants were not confirmed nesting during the Arizona Breeding Bird Atlas (1993- 2001), nesting was suspected (Corman 2005). The species is generally sedentary, birds were locally fairly numerous during the latter part of the atlas period in Arizona, and they were observed by atlasers in several potential nesting sites such as Gillespie and Painted Rock Dams, and also in southeastern Arizona at Patagonia Lake and Picacho Reservoir.

Indirect evidence of nesting was first discovered 10 May 2003 during the North American Migration Count when T. Corman observed a female Neotropic Cormorant guarding a small stick platform. This nest structure was near a half dozen or so active nests of Double-crested Cormorants (*Phalacrocorax auritus*) at the small Painted Rock Road/I-8 exit egret and heron colony west of Gila Bend. Corman also observed a male fly to the nest with a large stick, and after many grunts and purring gurgles from the pair, the female readily accepted the stick and placed it on the platform. It appeared they were only in the first few days of the nest building stage. A follow-up visit found the stick platform had been claimed by a lone Double-crested Cormorant.

Confirmation of breeding came in 2004 when R. Edwards informed Corman about apparent nesting activity near the Ocotillo Golf Course in Chandler, Maricopa County. Edwards lived along a nearby urban lake and for some time had been observing individual Neotropic Cormorants surfacing with water-logged sticks, then taking flight over his house and toward a nearby gated community. On 29 Feb. 2005, Edwards and Corman visited the golf course and observed 30-35 nesting pairs in four approximately 12 m (29.4 ft) high eucalyptus trees (*Eucalyptus* spp.). The trees were in two backyards bordering the golf course and adjacent to a small artificial lake. Corman noted that there were no Double-crested Cormorants in this colony, but that 300+ Double-crested Cormorants were foraging and loafing in several urban lakes about a mile away.

In Arizona, Neotropic Cormorants prefer fresh water lakes, ponds, lagoons, and slow moving rivers containing large densities of fish with available trees, snags, islands, or open banks for loafing. In Maricopa County the species has become common to locally abundant in some urban lakes and ponds in the greater Phoenix area, as well as along perennial sections of the lower Salt and Gila rivers downstream to Gillespie Dam. Several concentration areas have

already exceeded 500 individuals (figure 3). The highest densities have been observed at several residential lakes in Chandler and Gilbert, just upstream of Tempe Town Lake, and several gravel extraction company lakes on the Salt and Gila Rivers. However, it should be noted that the specific concentration locations are often temporary and are based on abundant populations of appropriate size fish. Once prey populations are reduced, these highly mobile cormorants readily move to other neighborhood lakes and ponds.



Figure 3. Congregation of about 100 cormorants, mostly Neotropic with several Double-crested Cormorants at Kokopelli Golf Course in Gilbert, AZ. Photo by Lynn Samuels.

EXPANSION AND CONSERVATION

The environmental factors that have influenced the exponential increase in Arizona populations of Neotropic Cormorants and stimulated their northern range expansion are unclear. More research is needed to determine the precise reasons of these changes, which are likely due to an increase in available foraging and nesting sites (Telfair and Morrison 2005). Specifically in Maricopa County, the rapid cormorant population growth in the Phoenix area has certainly been influenced by an increase in available prey at urban ponds, canals, and manmade lakes. At least four species of exotic tropical fish (*Tilapia* spp.) have been introduced into Arizona and are frequent prey items of both Neotropic and Double-crested Cormorants. Although the practice is discouraged by the Arizona Game and Fish Department, private property owners and lake managers continue to release *Tilapia* in an effort to control the growth of certain aquatic plants (E. Swanson, personal communication). *Tilapias* are prolific breeders and they can mature and begin reproducing at only six months of age, thus providing a plentiful supply of appropriate size prey for cormorants throughout the year. Unfortunately birds also consume other types of preys and the rapid increase of cormorants in the Phoenix area is becoming a serious challenge and financial burden to those that stock game fish into urban lakes and ponds for fishing. Recent discussions have begun that may lead to attempts at locally controlling cormorant numbers in some urban areas.

Neotropic Cormorant population expansion is taking place also outside Arizona. Elsewhere in the U.S. recent breeding colonies of Neotropic Cormorant were noted in southwest Arkansas in 1996 and in southeast Oklahoma in 2001, and the number of colonies in Texas and Louisiana continues to increase, some far into the interior of these states (Telfair and Morrison 2005). In contrast, after the first New Mexico nests were discovered in the middle and lower Rio Grande River valley in 1972, these cormorants increased in numbers and breeding range into the 1990s. Since then, however, populations have significantly declined, most likely due to drought conditions that reduced lake levels and limited nesting sites, and subsequent prey base fluctuations (S. Williams and B. Howe, personal communication).

The authors suggest that the central Arizona population of Neotropic Cormorant will continue to expand. Current environmental conditions (abundance of fish, availability of roost and nesting sites, continued urbanization with little pressure from illegal shooting) provide favorable conditions for the Neotropic Cormorant. Time will tell if populations continue to expand westward along the Gila River and eventually colonize the lower Colorado River and surrounding urban areas of Yuma north to the Imperial Reservoir, where warm water and abundant preys seem readily available.

It is far less likely that this most "tropical" of the N.A. species of cormorant will permanently expand north and east across the Mogollon Rim where air and water temperatures are markedly cooler and prey less abundant than in central Arizona, especially in winter.

While it is possible that some population control programs or take permits will be granted to commercial shrimp growers, agricultural fish farms, and fish-stocking entities, it is unlikely that these limited programs would have a permanent impact on the overall population.

IDENTIFICATION

The Neotropic Cormorant often occurs with Double-crested Cormorants in Arizona and may be confused with that species. In mixed flocks, Neotropic Cormorants are obviously smaller and more slender, and have proportionately longer tails. In mixed flocks in flight, the small size, longer tail, and less prominent head of Neotropic Cormorant is obvious. Lone birds are more difficult to identify.

In adult plumage with clear views the species are readily separated by the following characteristics:

1. Adult Neotropic Cormorant usually has a white border to the gular pouch.
2. The gular pouch and facial skin of Double-crested is bright orange whereas it is usually a paler brownish-yellow on Neotropic.
3. The larger, more prominent orange gular pouch on Double-crested is square or rounded at the rear with the border between the bare area and the feathers extending straight down from the gape. The gular pouch in Neotropic is triangular and forms a sharp apex to the gape.
4. The area between the eye and the bill (supra-loral) is bright orange bare skin in Double-crested and feathered brown in Neotropic.

The identification of juveniles of both species can be challenging. These birds share many of the differences noted above for adults, especially the shape of the gular pouch and differences in the supra-loral. Juveniles of both species are lighter and browner than adults. Juvenile Neotropics are usually a fairly uniform dark brown with at most only slightly paler underparts. Juvenile Double-crested usually have light gray breasts which are sometimes paler gray on the upper breast, neck, and throat. Some juvenile Neotropics are especially challenging because they may have facial skin color that is brighter than adults (Clark 1992) and, therefore, more closely approach Double-crested. A key feature in separating these juveniles is the supra-loral which is dark feathering in Neotropics, but is fairly bright orange-yellow or yellow-orange bare skin and uniform in color with the gular pouch in Double-crested (figures 4 & 5; Patten 1993).



Figure 4. On this juvenile Neotropic Cormorant the yellow orange gular pouch is similar in color to that of a typical Double-crested Cormorant, but note the color and feathering of the supra-loral and the dark breast. Photo by Brendon Grice.

ACKNOWLEDGMENTS

The authors thank Eric Swanson and AZ Game and Fish Dept. for status and information on Tilapia, Sandy Williams and Steve Howe for historical and current status of Neotropic Cormorants in New Mexico, and Michael Moore and an anonymous editor for review of the draft.

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Figure 5. On this juvenile Double-crested Cormorant note the bare skin and color of the supra-loral and the pale throat and upper breast. Photo by Jim Burns.