

Fish Crows (*Corvus ossifragus*) Utilize Unusual Nesting Location and Habitat

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ABSTRACT: A Fish Crow (*Corvus ossifragus*) pair chose to locate their nest on roof joists inside an open-fronted equipment storage building on a treeless island 4.0 km (2.5 mi) offshore in central Chesapeake Bay. Eggs and nestlings of nearly 2000 colonial and solitary bird nests within 1.3 km (0.8 mi) of the nest may have been a convenient resource influencing the crows' selection of this unusual location.

Keywords: colonial waterbird nests, crow nest chronology, Fish Crow nest, island, nest inside building,

Despite the prevalence of Fish Crows (*Corvus ossifragus*) in developed and undeveloped coastal habitats, there is surprisingly little information available concerning their nesting habits (Potter et al. 1980, McNair 1984, McGowan 2001). Breeding bird atlas efforts that have focused in May and June, quiet and secretive crow habits near active nests high in trees, and difficulty in separating the species from American Crow (*Corvus brachyrhynchos*), may have contributed to the paucity of nesting information (Gross 1992, Clapp and Banks 1993, Hess et al. 2000). Coastal Plain Fish Crows most commonly associate with open habitats of field margins with forest, marshes, shorelines, and islands in the Mid-Atlantic area nesting from mid-March to early August (Stewart and Robbins 1958, Potter et al. 1980, Clapp and Banks 1993, Lauro and Tanacredi 2003). Fish Crows generally build their nests more than 8 m (26.2 ft) above ground in tall trees (Reimann 1941, Bent and Collaborators 1946, Meanley 1981, Russell 1996, McGowan 2001). Herein, I describe an active Fish Crow nest not far above ground on roof joists inside an open-fronted equipment storage building on treeless Poplar Island. Not only is this an unusual nest site and location, but perhaps the first documentation of a Fish Crow nesting inside a building structure.

STUDY AREA

The Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island is a cosponsored island restoration project of the Maryland Port Administration and the Baltimore District of the United States Army Corps of Engineers. The location of the project site in Chesapeake Bay is approximately 25 km (15.5 mi)

SSE of Annapolis, Maryland and 4.0 km (2.5 mi) offshore of the Delmarva Peninsula Coastal Plain. The site comprises a dike rising 3.0 m (9.8 ft) or more above mean low tide, extending for 11.9 km (7.4 mi) to form an elongated 461 ha (1139.2 ac) oval shape with exterior rock riprap protection. A seabed area, 4.3 km (2.7 mi) long and 0.8 km (0.5 mi) wide, remained after pumping dry the engulfed area. The hollow interior, initially subdivided by dikes into six containment cells ranging 12.6-131.9 ha (31-326 ac) apiece in 2002, subsequently received further subdivision increasing the number of containment cells (ranging 10.1-131.9 ha [25-326 ac] apiece) to 15 by 2007. Maintenance dredge materials from northern Chesapeake Bay shipping channels are deposited into the containment cells in a slurry of 80% seawater and 20% sediment substrates. After substrate settling and removal of seawater, the materials undergo drying treatments to remove remaining moisture which can take several years. Engineers then design artificial tidal wetlands for the dry materials, and contractors subsequently build and plant beneficial wetlands, then open them to tidewater. Some cells are similarly designated for creation of upland forest areas. Consequently, wildlife and location of a specific habitat within the construction site are constantly changing from one season and/or year to the next. Artificial herbaceous wetland habitat consisting primarily of smooth cordgrass (*Spartina alterniflora*) in the low marsh and saltmeadow cordgrass (*S. patens*) in the high marsh, plus sparse woody shrubs on two bird-nesting islands in the marsh, characterized about 22.7 ha (56 ac) in two cells in 2007. Additionally, fallow herbaceous vegetation grows on many dike slope areas throughout the site void of trees. In 2007, a complex of eight building structures on the north side of intersecting interior dike roads near the center of the island supported approximately 24 management and machinery-operator personnel working most days. The project site's inaccessibility and lack of terrestrial predators enabled the nesting of greater than 2000 waterbirds from 1 March through 30 September 2007, including several colonial nesting species (Erwin 2007, Reese 2007). Bird censuses from the dike complex of each cell are conducted biweekly throughout the year to assess utilization of project site habitats by transient, wintering, and nesting birds. Censuses during 2007 revealed the Fish Crow nest.

OBSERVATIONS

Fish Crows are frequently seen in the vicinity of the building complex during warm months. I observed one there near an equipment storage building on censuses during 14 March-23 April 2007. The presence of two crows in that area on the 2 May census raised no suspicion. A Fish Crow carrying a stick on 15 May landed atop an inactive piece of construction equipment near an open-fronted, wooden-framed, steel-roofed and -sided equipment storage building (Figure 1). I found another crow inside the building on a partial nest being built at the confluence of roof rafters and supporting joists 3.5 m (11.5 ft) above



Figure 1. Fish Crow (*Corvus ossifragus*) nest site, May-July 2007. Poplar Island, Maryland (Photographed by Alexa Boos 2014).



Figure 2. Fish Crow nest on roof joists inside building. Poplar Island, Maryland, 12 July 2007 (Photographed by JGR).

ground (Figure 2). I observed the crows continuing to build a nest on 19 May, but saw no birds in the vicinity on 31 May. A crow appeared to be incubating and/or brooding young in the nest on 18 and 29 June and on 12 July. I found three nestlings near fledging-age standing on rafters by the nest during the 20 July census, while on 24 July no crows were observed at the nest site. Additionally, I found fledgling crow remains near a dumpster about 1.6 km (1 mi) south of the nest site on 20 July, but their origin was unknown. Censuses at the site during the previous six years and subsequent six years commonly found crows, but none were known to have nested on the island during those years.

DISCUSSION

The unusual nesting location and nest support structure observed incidental to bird censuses provides additional insights regarding scarcely documented Fish Crow nesting chronology. McGowan (2001) writes: "This species remains little studied, despite its abundance ... Nearly all publications include only incidental observations, and much information published ... is unsubstantiated." McGowan goes on to note: "Fish Crows show little difference in timing of breeding with differing latitude ..." Table 1 summarizes the most definitive Fish Crow nesting chronology from the eastern United States. The literature notes that nesting activity spans 169 days (16 March-31 August). Clutch size ranges 4-6 eggs (numerous authors); incubation period ranges 16-21 days (Reimann 1941, Potter et al. 1980, Gross 1992, McGowan 2001); and brooding ranges 21-26 days with fledging of young in 30-40 days (Reimann 1941, Potter et al. 1980, McGowan 2001). This sequence of events may require a minimum of 77 days.

Fish Crow activity in the vicinity of the building during the 133-day observation period (14 March-24 July) suggests the following approximations for timing and duration in nesting cycle events: nest construction beginning 7 May; egg laying in progress on 30 May; eggs hatching on 18 June; and fledging of young on 22 July. Nesting chronology took place within the nesting period range given in Table 1, with nesting events spanning approximately 77 days, consistent with the 77-day minimum derived from the literature. Timing dates of individual nesting events also coincide with those given for the Mid-Atlantic States.

I found one crow perched on inactive machinery outside the building and one on the nest during the 15 May census plus most censuses thereafter. Observer disturbance time involved briefly stopping outside the building, walking inside far enough to see nesting status, and quickly departing the area. The crow on the outside would utter a few low guttural notes before flying away while the crow on the nest appeared alert to my close proximity, but never flushed. My visits never elicited aggressive behavior by the crows. Knight et al. (1987) found similar behavior while at, and/or climbing to, tree nests in Madison, Wisconsin

Table 1. Fish Crow (*Corvus ossifragus*) nesting chronology. NY: McGowan 2001; **PA:** Brauning 1992, Gross 1992; **DE:** Hess et al. 2000; **MD:** Willis 1954, Stewart and Robbins 1958, Bridge and Riedel 1962, Bridge 1963, Bridge and Bridge 1964, Bystrak 1973, Ringler 1990, Russell 1996, McGowan 2001, Ellison 2010, (this documentation); **VA:** Meanley 1977, 1981, Clapp and Banks 1993, Clapp 1997, Rottenborn and Brinkley 2007; **NC:** Potter et al. 1980; **GA:** McNair 1984; **FL:** McGowan 2001. (*McGowan [2001] combined egg laying dates from 10 jurisdictions, including New York and Florida, when developing this egg-laying date range. The range is included here as an approximation for these two states.)

State	Nesting Period	Most Active	BBA Safe Dates	Nest Building	Egg Laying	Incubation	Brooding	Fledging
NY				12 APR- 9 JUN	22 MAR- 12 JUN*	15 APR- 19 JUN	4 MAY- 7 JUL	1 JUN- 7 AUG
PA			1 MAY- 30 AUG		14 MAY	10 APR- 24 MAY		9 JUN- 30 JUL
DE			10 MAY- 31 AUG		12 APR- Late MAY	20 APR- 24 JUN	1 MAY	
MD	16 MAR- 12 JUL	16 MAY- 26 JUN	10 MAY- 31 AUG	15 MAY	16 MAY- 12 JUN	30 MAR- 8 JUN	14 MAY- 26 JUL	3 JUL- 12 JUL
VA	Mid APR- End JUL	1 MAY- 10 JUN	10 MAY- 15 AUG	12 APR- 1 MAY	1 APR- 2 JUN	1 APR- 25 JUN	3 JUN- Early AUG	29 MAY- 1 JUL
NC	Late APR on Coast			1 APR		To Early JUN		
GA		12 APR- 13 JUN		12 APR- 2 MAY		25 APR- 3 MAY	20 MAY- 13 JUN	13 JUN
FL			1 APR- 1 AUG	25 MAR- 12 JUN	22 MAR- 12 JUN*	7 APR- 30 APR	26 APR- 17 MAY	JUN
Date Range	16 MAR- End JUL	12 APR- 26 JUN	1 APR- 31 AUG	25 MAR- 12 JUN	22 MAR- 12 JUN	30 MAR- 25 JUN	26 APR- Early AUG	29 MAY- 7 AUG

169 Day Nesting Period

where rural-nesting American Crows flew away while exhibiting no, or less, aggressive defense than urban-nesting crows.

Choosing a treeless island for nesting may be due to favorable and/or unfavorable influences on Fish Crow reproductive success. Nests of nearly 2000 geese, surface-feeding ducks, cormorants, egrets, Ospreys, gulls, terns, and blackbirds, plus many nests of other less abundant waterbird species and Diamond-backed Terrapins (*Malaclemys terrapin*) could be found within 1.3 km (0.8 mi) both north and south of the crow’s nest. Proximity of this abundant resource of eggs and nestlings may be a strong incentive attracting opportunistic crows to choose the treeless island and building structure for nesting. Lauro and Tanacredi (2003) found Fish Crows selected nesting habitat closer to water with easy access and significantly shorter distances to eggs and nestlings of waterbird

colonies than sympatric nesting American Crows at Rockaway Peninsula, New York City.

Within the Poplar Island archipelago there are two small natural islands just east of the subject large treeless island. These islands contain about 8.9 ha (22 ac) of large Loblolly Pine (*Pinus taeda*) mixed with some deciduous species (Sweetgum [*Liquidambar styraciflua*], oak [*Quercus* spp.], maple [*Acer* spp.]) typical of regional Fish Crow nest sites. These forest areas are 1.5 km (0.9 mi) northeast and southeast of the crow nest building. The 7.3 ha (18 ac) of trees southeast of the nest building appears a favorable location for crow nesting with the availability of tree nest sites among approximately 100 Great Blue Heron (*Ardea herodias*) tree nests. Conversely, nests of a Great Horned Owl (*Bubo virginianus*) and two Bald Eagles (*Haliaeetus leucocephalus*), plus frequent sightings in the trees of American Crows and a Cooper's Hawk (*Accipiter cooperii*) suggest nest success on these islands could be tenuous, unpredictable, and life-threatening for the smaller Fish Crows.

Similar circumstances of an offshore island lacking nest site trees while hosting numerous waterbird nests and providing a quickly accessible supply of eggs and nestlings may be responsible for a Fish Crow nest with two eggs located atop a shrub on a small treeless island in Sinepuxent Bay along the Atlantic Coast near Ocean City, Maryland on 12 June 1983 (Hayes and Bennett 1985). Likewise, at Barren Island in Chesapeake Bay about 50 km (31.1 mi) south of Poplar Island on 19 June 1973, Armistead (1978) found a Fish Crow nest with one young located in a scraggly tree on an otherwise treeless island breached from Barren Island where over 1000 herons nested in the trees. Approximately 25 km (15.5 mi) further south in Chesapeake Bay on 19 June 1975, Armistead also found four large nestlings in a Fish Crow nest situated near the top of a ladder to an observation platform overlooking the marsh landscape of South Marsh Island west of Wenona, Maryland.

Finding an elevated structure providing support for a nest, concealment, and safety is problematic on a treeless island. Lack of tall woody plants with leaf cover for nesting dictates crows use any existing projections including artificial ones despite full day and night exposure to heat, chill, sunlight, and possible avian or reptilian predators. It appears the Poplar Island crows solved these problems by seizing the opportunity to utilize tree-branch-like joists and rafters beneath a concealing roof, well above the ground inside an open-fronted building. Crows cited above (Armistead 1978, Hayes and Bennett 1985) locating nests on a shrub, a short scraggly tree, and a ladder to a platform appear to have made a similar treeless island nest site location decision despite their chosen sites providing weak support plus little or no nest concealment or protection. Pearson et al. (1942), Bent and Collaborators (1946), Potter et al. (1980), Hess et al. (2000), and McGowan (2001) report Fish Crow nesting on wetland shrubs, a

crate in a marsh, and range-light housing, but give no details. Knight et al. (1987) note nesting American Crows “minimize energy expenditure and disruption of their activity patterns by habituating to human presence.” Lauro and Tanacredi (2003) similarly note “... Fish Crows are coastal specialists while American Crows are human habitation specialists, possibly minimizing interspecific interaction and facilitating their existence.” Perhaps these behaviors have application with the Fish Crows nesting in the building, on human structures, or on low natural projections.

Finally, I have no explanation why the crows did not return in subsequent years to nest in the building despite the unique artificial nest support, protective overhead cover, nearby abundant food source, and assumed successful nesting in a previous year. McGowan (2001) notes Fish Crows tolerate human traffic near nests, but abandon with researchers’ repeated climbs to tree nests. The observer briefly viewed the nest from the ground (as in Figure 2 with young in the nest) at two-week intervals which never seemed to perturb the bird on the nest; however the building is sometimes subject to workmen procuring and returning tools and equipment, and construction equipment noise. Perhaps some of these activities discouraged the crows’ subsequent building use for nesting.

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