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RECENT AND HISTORICAL SIGHTINGS OF THE MAGNIFICENT FRIGATEBIRD PRECEDED BY HURRICANES IN THE GULF OF MEXICO WITH NOTES ON FORAGING IN KANSAS

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Magnificent Frigatebirds (*Fregata magnificens*) are found in coastal zones and near islands of the Gulf of Mexico, Western Atlantic Ocean, Gulf of California and Pacific Ocean south of the Baja Peninsula (Diamond and Schreiber 2002). Foraging often occurs in warm coastal and pelagic waters, shallow areas of lagoons and coral reefs. Frigatebirds feed by either kleptoparasitism, or independently by flying close to the surface of the water and capturing flyingfish just taking flight, or by skimming for squid and fish (Diamond and Schreiber 2002). They have low wing loading compared to other birds (Diamond and Schreiber 2002, Gauger and Schreiber 2002) and as a result frigatebirds can use winds and thermals to make extended flights with little effort (Weimerskirch et al. 2003).

Accounts of frigatebirds outside their range (*hereafter; vagrants*) number in the hundreds in North America. Great Frigatebird (*F. minor*) sightings have been reported in Oklahoma and California, a Lesser Frigatebird (*F. ariel*) was seen in Maine and hundreds of vagrant Magnificent Frigatebirds have been recorded inland in North America, although most of these are in the southern portions of the United States (Mlodinow 1998, Dinsmore 2004, Brinkley 2005). Of the inland accounts, frigatebird sightings occurring furthest from oceans have been associated with hurricanes. A sighting occurred in Central Colorado more than 700 miles from the coast and this record coincided with Hurricane Elena in 1985. Three of eleven records in the Great Plains were associated with Hurricane Gilbert in 1988 and all these sightings occurred more than 550 miles from the coast (Mlodinow 1998).

KANSAS FRIGATEBIRD SIGHTINGS AND HURRICANES

Kansas has five official records of frigatebirds dating back as early as 1880 and occurring as recently as 9 September 2007. On 16 August 1880, a Magnificent Frigatebird collected in Osborne County was documented by Goss (1886) after seeing a photo and this is the earliest known vagrancy in western North America (Mlodinow 1998). This specimen is now lost (Thompson and Ely 1989). On 16 June 1982, a Magnificent Frigatebird was seen in Meade County (Parker et al. 1983) which was presumed to be observed again on 23 July 1982 by Marvin Schilling and Jim Ptacek at a nearby fish hatchery (Thompson and Ely 1989). Another was sighted on 8 October 1988 in Graham County (Grzybowski 1988). On 12 October 1995 a Magnificent Frigatebird was documented in Manhattan, Riley County (Kansas Birds Record

Committee, KBRC 95-36; Grybowski 1996) and most recently B. D. Monser observed a Magnificent Frigatebird foraging at the outlet tubes of Tuttle Creek Dam in Riley County (KBRC 2007-29).

Each of the Magnificent Frigatebird sightings in Kansas has occurred after one or more severe storms that had tracks through the Gulf of Mexico (Figure 1). The 16 August 1880 frigatebird record occurred 2 days after the termination of Hurricane Number 2 which was active from 4-14 August. The 16 June 1982 record occurred after Hurricane Alberto which was active from 2-6 June and the 8 October 1988 record occurred 18 days after the termination of Hurricane Gilbert which was active from 8-20 September. The 12 October 1995 record coincided with Hurricane Opal (27 September-6 October) and with Hurricane Roxanne (7-21 October). The 9 September 2007 sighting coincided with three storms; Tropical Storm Erin (15-19 August), Hurricane Dean (13-23 August) and Hurricane Felix which was active from 31 August-6 September, as few as three days prior to the sighting (Figure 1).

The 2007 record is the first frigatebird (*F. magnificens*; B. D. Monser per. obs.) sighting in Kansas with documented foraging activity (KBRC 2007-29). In ca. 20 minutes the frigatebird captured 4-6 fish (up to 12.5 cm long) by diving toward the water from a height of 20-40 m and was last seen soaring skyward on a thermal with a group of vultures. In addition to this observation, evidence of frigatebirds foraging inland has been reported in two other accounts. Previously a Magnificent Frigatebird that had eaten freshwater fish was captured in Pennsylvania (Schorger 1962). Anecdotal evidence of feeding in Kansas was first reported in Parker et al. (1983), although the 2007 sighting is the only direct observation.

DISCUSSION

Frigatebird vagrancies have consistently been documented in North America as a result of the reports of enthusiastic birders to regional bird committees. Seabirds are commonly recorded outside their range during weather events such as El-Nino which influence the distribution of their prey (Schreiber 2002). Frigatebirds have often been observed staying aloft during storms (Eisenman 1962) which is a potential explanation for many vagrancies. It has been suggested they avoid harm by flying out in front of storms and are carried outside their range (Diamond and Schreiber 2002). Within reports, many vagrancy records of frigatebirds from North America have not been associated with storms (Dinsmore and Silcock 2004). Hurricanes have only been suggested as a casual factor in a handful of accounts (Parker et al. 1989). Of the many North American sightings of frigatebirds displaced inland from breeding colonies, few reports have been of frigatebirds greater than 600 miles inland (Mlodinow 1998, Brinkley 2005). It is possible that there is a relationship between the severity and path of the storm and the distance birds are found from their range. Accordingly, each frigatebird record in Kansas is preceded by at least one hurricane which tracked through the Gulf of Mexico.

Hurricanes within the range of frigatebirds have implications for conservation of these species. Severe storms traveling through their range could damage nesting vegetation and important coastal habitats, in addition to increasing the mortality of birds and nests battered by the storm. The onset of severe storms during breeding results in pelecyaniform species flying out in front of storms allowing them to survive to the next breeding season (Schreiber 2002). It is possible that frigatebirds have an adaptation to reduce the mortality resulting from extreme climatic disturbance by temporarily abandoning their normal range. For long-lived species such as frigatebirds, population growth is strongly influenced by rates of survival (Sæther and Bakke 2000) and from a life history perspective, behavior that reduces the risk of mortality could stabilize population numbers after severe storms.

Documenting rare bird observations is important because this allows ecologists to understand changes occurring in the distribution of species and potential colonization events.

The observation of a frigatebird foraging in Kansas suggests that individuals could obtain food to survive outside their range. Our data suggests that if hurricane frequency increases, we should expect the number of frigatebirds displaced long distances inland to also increase. Additionally, hypotheses about speciation in raptors predict that displacement of individuals by weather is a process which could lead to the establishment of populations that evolve independently of congeners (Bildstein 2004). For speciation to occur by such processes it would first be necessary for displaced individuals to find food and survive, again implying the significance of a frigatebird observed foraging in Kansas greater than 600 miles outside their range.

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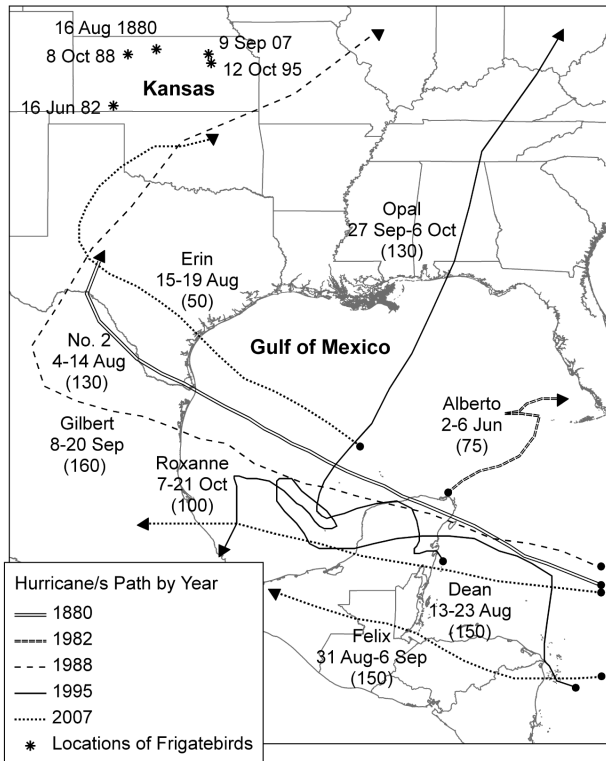


Figure 1. Locations of frigatebird sightings in Kansas and associated hurricanes occurring before each record. Storm data are from Atlantic Tropical Storm Tracking by Year (2009). Maximum wind speed (mph) attained by each storm is listed in parenthesis under the storm name and dates. Path of No. 2, Gilbert, Dean, and Felix initiate east of where shown and path of Gilbert and Opal terminate north of where shown.

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