

NOTES

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ASSESSMENT OF OCCURRENCES OF FLAMINGOS IN NORTHWEST FLORIDA, INCLUDING A RECENT RECORD OF THE GREATER FLAMINGO (*PHOENICOPTERUS RUBER*)

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Flamingos occur very rarely and irregularly on the Panhandle coast of Florida (Robertson and Woolfenden 1992, Stevenson and Anderson 1994); there are only four records and four reports (*sensu* Robertson and Woolfenden 1992) during the last 70 years. In this note, we document a 1995 record of the Greater Flamingo (*Phoenicopterus ruber*) at Lanark Village, Franklin County, Florida. We also summarize all occurrences of flamingos from the northern Gulf coast of Florida during this century; and we discuss the possibility that some of the occurrences may be vagrants from wild populations in Mexico and, perhaps, western Cuba. We hypothesize that some Greater Flamingos were carried to the Panhandle coast of Florida by tropical cyclones that tracked through the western Caribbean Sea and Gulf of Mexico.

Since the establishment of captive flocks of Greater Flamingos in South Florida in the 1930s (which are now properly defined as feral, semi-domesticated birds; P. W. Smith, *in litt.*), the origin of Greater Flamingos observed in Florida has been conjectural (Allen 1956, *op. cit.*). Flamingos of uncertain origin could also arrive from other sources. Small flocks observed in Florida Bay may have been natural vagrants, although this is uncertain (Allen 1956, Robertson and Woolfenden 1992, Stevenson and Anderson 1994). Determining the provenance of Greater Flamingos in Florida is complicated further because this species closely resembles the Chilean Flamingo (*P. chilensis*), which has now been reported twice in Florida (Stevenson and Anderson 1994). In the Carolinas, the four verified records of flamingos are all of the Chilean Flamingo (Lee 1987, Post and Gauthreaux 1989).

We obtained data on occurrences of flamingos in northwest Florida from Howell (1932), Allen (1956), Stevenson and Anderson (1994), *Audubon Field Notes*, and archives at Tall Timbers Research Station (TTRS). We examined the original citations for each occurrence. We obtained data on annual reports of tracks of tropical cyclones in the North Atlantic Ocean from Neumann et al. (1981); data on tropical cyclones from 1981-1995 were extracted from annual reports published in *Monthly Weather Review*. We defined a storm-assisted flamingo as an individual bird reported within 500 km of the storm track and within 20 days after the storm's landfall (*cf.*, Tuck 1968, Fussell and Allen-Grimes 1980). Flamingos are land-based waterbirds, not seabirds, but we believe this operational definition is appropriate for our analyses.

We photographed a richly colored adult Greater Flamingo along the shore of St. George Sound, Lanark Village, on 12 June 1995 (TTRS P634-P637). The large size, long tarsus, pink legs, head and neck, and general coloration including extensive pink on the back indicate that the bird was a Greater Flamingo (Allen 1956). We watched the flamingo for 1 hr while it fed in shallow water, but could not detect any obvious plumage ab-

normalities or soft-part wear that might suggest the bird had been a recent captive. Our record is the first occurrence of any flamingo from the Florida Panhandle in 23 years.

The following annotated list of the seven other occurrences of flamingos that have appeared on the Panhandle coast is organized chronologically.

- (1) 24 Sept 1927-31 Jan 1928; Wakulla Co. The original report was in Stoddard (1928) with further discussion in Bailey (1928), Howell (1932), and Allen (1956). The bird was filmed, but the whereabouts of this film is unknown. This report was not associated with a tropical cyclone.
- (2) 22 June 1948; Bay Co.; Hallman (1962). This record of a Greater Flamingo is supported by a specimen at Florida State University (FSU 1505). This record was not associated with a tropical cyclone.
- (3) early July 1961; Bay Co.; Hallman (1962). This bird was captured and eventually transported to a zoo, but no verifiable evidence exists. This report was not associated with a tropical cyclone.
- (4) 1-15 Oct 1965; Wakulla Co.; Anon (1966). This record of a Greater Flamingo is supported by TTRS P5. Tropical Storm Debbie landed in Mississippi on 29 Sept approx. 400 km to the west of Wakulla Co.
- (5) 30 Oct 1967; Escambia Co.; Anon (1968). This bird was captured but no verifiable evidence exists. This report was not associated with a tropical cyclone.
- (6) 12 June 1970; Wakulla Co.; Anon (1970). This record of a Greater Flamingo is supported by TTRS P71. Tropical Depression Alma landed in Dixie Co. just north of Cedar Key on 25 May approx. 140 km southeast of the sighting in Wakulla Co. This storm reached hurricane strength earlier in the western Caribbean sea.
- (7) 19 June 1972; Wakulla Co.; Anon (1972). This report was associated with Hurricane Agnes which landed in Bay and Gulf counties on 19 June approximately 120 km to the west of Wakulla Co.

These eight occurrences of flamingos on the northern Gulf coast of Florida during this century (the seven above plus this report) occurred during two periods of about one month each: five from early June to early July, and three from late September to late October. Four of eight of these occurrences are records of Greater Flamingos. The four reports cannot exclude the possibility that any one of these individuals could have been a Chilean Flamingo. The earliest sighting (No. 1) preceded the establishment of captive flocks of Greater Flamingos in South Florida in the 1930s (Bailey 1928, Stoddard 1928, Allen 1956).

Four of the eight occurrences (three records; one report) coincided with storm tracks of tropical cyclones in June (three) and October (one). These cyclones originated in the western Caribbean Sea or the Yucatan and passed over the Yucatan, through the Yucatan Straits, or the western tip of Cuba (Alma). Greater Flamingos are locally abundant in the Yucatan and, perhaps, western Cuba (Allen 1956, Sprunt 1975, A.O.U. 1983, Espino-Barros and Baldassarre 1989, Robertson and Woolfenden 1992, Arengo and Baldassarre 1995). None of these four cyclones originated or passed over other areas in the West Indies inhabited by flamingos.

Three of the above four occurrences that were verified as Greater Flamingos (Nos. 4, 6, and our record) coincided with landfall of tropical cyclones that passed over or near the Yucatan where Greater Flamingos are locally abundant, which suggests that these individual birds were natural vagrants that were displaced across the Gulf of Mexico (ca. 1200 km). One sighting (No. 7) occurred under these same conditions which suggest that this bird was also a natural vagrant and probably a Greater Flamingo, not a Chilean. In addition, Allen (1956) believed four Greater Flamingos reported to be captured in Escambia County after a storm in 1881 were wild vagrants and properly identified.

Early or late season tropical cyclones that originate in the western Caribbean Sea and then pass over the Yucatan or through the Yucatan Straits tend to travel north-northeast (see Neumann et al. 1981). There have been only eight such storms that landed on the Panhandle from the 1930s through 1995. We find it striking that three

storm-assisted occurrences (Nos. 4, 7, and our record) of flamingos for the Panhandle coincided with three of these storms. The 1970 record (No. 6) also coincided with a storm from the western Caribbean Sea that landed on the Florida peninsula.

Most storms that land on the Panhandle during mid-season (mid-July to mid-September) have passed over geographical areas where flamingos are absent, which may account for the absence of arrival of flamingos on the Panhandle during the middle of the storm season. The principal area of tropical cyclone formation during this period is the Atlantic Ocean, and the predominant direction of storms that track through the Yucatan Straits is northwest toward the western Gulf of Mexico (Neumann et al. 1981). The four occurrences of flamingos from the northern Gulf coast of Florida that did not coincide with tropical cyclones were also not associated with weaker storm systems (e.g., tropical depressions with wind ≤ 33 knots), or other obvious weather events (based on examination of detailed weather summaries available in *Monthly Weather Review* and *Climatological Data*). One explanation is that these flamingos were not detected until long after storms transported them across or around the Gulf, but we have no way of examining this possibility. Because these occurrences could not be associated with storm systems, the probable origins of these birds remain uncertain.

In contrast to the northern Gulf coast of Florida, on the southeast Atlantic coast, Lee (1987) suggested that only one of approximately 18 occurrences of flamingos in the Carolinas was associated with a tropical cyclone. The track of this one storm (in mid-September 1876) passed just westerly of Andros Island (Neumann et al. 1981), probably the major source for Greater Flamingos in Florida (Allen 1956). The Andros Island colonies were subsequently decimated, however, and the only breeding colonies remaining in the Bahamas are on Great Inagua Island, which, together with the Yucatan, form the two largest breeding populations in the Caribbean Basin (Allen 1956, Sprunt 1975, Espino-Barros and Baldassarre 1989, Arengo and Baldassarre 1995). Recoveries of flamingos banded on Great Inagua Island have occurred further west and south in the Greater Antilles, not further north in the Bahamas (Sprunt 1975). Only seven tropical cyclones have passed near or over Great Inagua Island with landfall in the Carolinas since the 1930s (Neumann et al. 1981). Therefore, Greater Flamingos have had few opportunities to be transported by storms to the Carolinas, reinforcing Lee's (1987) evaluation that many reports of flamingos in the Carolinas since the 1930s have probably been Chilean Flamingos, in addition to the four records (see also Post and Gauthreaux 1989).

In contrast to Great Inagua Island, tropical cyclones passing near or over the Yucatan are relatively frequent (at least 35 since the 1930s; see Neumann et al. 1981) which has coincided with the occurrence of four storm-assisted flamingos in northwest Florida since the 1930s, all but one verified as Greater Flamingos. Allen (1956) stated that Greater Flamingos were scarce on the Gulf coast outside Florida and the Yucatan, though he did document several apparent storm-assisted vagrants in Texas, apart from other reports from this state (also see Oberholser 1974, Chapman et al. 1979). At least one occurrence (15 Oct 1912) was associated with a hurricane which landed on the Texas coast after crossing northeast Yucatan.

In summary, we documented a record of the Greater Flamingo from the Florida Panhandle in early June 1995 following tropical cyclone Allison. This is the first occurrence of a flamingo on the Florida Panhandle in 23 years. Three (Nos. 4, 6, and 7) out of seven other occurrences of flamingos from this region during the past 70 years were also associated with tropical cyclones. Thus, four of eight occurrences were associated with cyclones which originated in the western Caribbean Sea or the Yucatan early or late in the season. These cyclones passed over the Yucatan, through the Yucatan Straits, or over the western tip of Cuba, which suggests these flamingos were naturally transported by these storms (ca. 1200 km). Three of these four occurrences were records of Greater Flamingos (our record and Nos. 4 and 6), and we believe the sighting (No. 7) was probably a Greater Flamingo also. The probable origins (wild vagrants or escapees) and species identity

(Greater or Chilean) of the remaining four occurrences of flamingos are uncertain, although these occurrences also occurred early or late in the season. We believe that observers should not dismiss occurrences of Greater Flamingos in the United States north of Florida Bay as escapees before assessing the probable geographic origin of these birds. Some of these birds, particularly on the Gulf coast, have almost certainly been wild vagrants.

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