

TURKEY VULTURE: A DANGEROUS STRIKE RISK FOR AIRCRAFT

ESTEBAN GODINEZ

Instituto de Ecología y Sistemática, Academia de Ciencias de Cuba,
Apartado Postal 8010, Código Postal 10 800, Habana 8, Cuba

The Turkey Vulture (*Cathartes aura*) has a wide range in the Caribbean region, including the Cuban archipelagos, Jamaica, Hispaniola, southwestern Puerto Rico, and the northwestern Bahamas, as well as North, Central, and South America, including Trinidad (Bond 1980). The biology of this species in Cuba has been reported by Centella (1916), Ramsden (1916), San Martín (1916), among others. Other studies on this species have recently been conducted in Mexico (Acosta et al. 1991) and Puerto Rico (Santana et al. 1986a, 1986b).

In Cuba, there is concern about the potential of Turkey Vulture strikes on aircraft. The Turkey Vulture has been seen at different Cuban military airfields (Sierra 1981), so it is included in some safety air-navigation reports (A.I.C. 1985, Wotzkow 1984, Wotzkow and Vicente 1985). Also, its flight activity and abundance were analyzed at an airport in western Cuba (Godínez et al. 1988).

Here I analyze the potential of Turkey Vulture-aircraft strikes in Cuba, based on the vulture's distribution, abundance, and general behavior, and consider control methods.

Garrido and García (1975) noted that the Turkey Vulture occurs in all Cuban regions, except in aquatic habitats, and that it has been frequently found in cities. Wotzkow and Wiley (1988) estimated a density of 0.06 birds/ha (0.6 birds/square km) as a result of 11 surveys along 670.5 km of the most important Cuban highway. Because of its social behavior, this density would be higher in feeding and roosting sites. S. Cubillas (pers. comm.) has reported two such social aggregations at the Cuban Zoo (in Havana City), where about 50-80 vultures were counted in a single group. In such areas, vulture densities would be around 80 birds/square km.

Abundance levels may change with respect to soaring altitudes and diurnal periods (Godínez et al. 1988), so it is important to know the flight activity to avoid a collision. Critical periods are mainly when vultures leave their roosts in the morning, because their early flights would be hazardous to airplanes flying at low altitudes. Another critical period is when vultures display their maximum flight activity, generally from 13:00 to 14:00 hrs. Typically, the vultures soar at altitudes of from 1-100 m (Godínez et al. 1988). However, Wotzkow and Armensol (1991) have seen *Cathartes aura* soaring as high as 1,700 m in their surveys made from aircraft.

Hunt (1976) estimated the probability of a bird strike on an aircraft flying through an airspace with respect to the density of birds per unit area (P[D]). Although the probability of a vulture-aircraft strike is low, one must consider the actual frontal area of big commercial airplanes, such as B-747, IL-86, TU-144, and other turbo-jets. Furthermore, when airplanes take-off or land, they are at low altitude, where Turkey Vulture densities are greatest and therefore the strike risks are highest. For instance, P[D] will be equal to 0.00093 with only a density of 1 bird/square km on an aircraft with a frontal area of 93 sq m at an altitude of 100 m.

No effective control method exists for Turkey Vultures. Although several collisions of Turkey Vultures with aircraft have occurred in Cuba, we do not have rigorous statistical data on air strikes. Thus, adequate aircraft-vulture collision data are unavailable. Fortunately, no commercial aircraft crashes resulting from vulture strikes are yet known, although there is a good possibility for such an incident.

LITERATURE CITED

- Acosta, M., L. Mujica, C. Juárez, and E. Jimenez. 1991. Consideraciones ecológicas sobre la comunidad de aves carroñeras de Cuba y México. II Simposio de Zoología, Resúmenes: 82.
- A.I.C. 1985. Sistema de información sobre el peligro aviario (AD José Martí). Serv. Inf. Aeronáutica, C 02/85, 01 Feb. 4 pp.
- Bond, J. 1980. Birds of the West Indies. Fourth American Edition. Houghton Mifflin Company, Boston. 256 pp.
- Centella, J.F. 1916. Contra la destrucción del aura. Mem. Soc. Cubana Hist. Nat. "Felipe Poey" 2(2):59-73.
- Godínez, E., M. Sierra, H. González, M. Alvarez, and J.L. Hernández. 1988. Abundancia relativa y actividad de vuelo de *Cathartes aura* en un aeródromo. I Simp. Zoología, Resúmenes.
- Hunt, F.R. 1976. The probability of bird-aircraft collisions based on radar data. NRC Associate Committee on Bird Hazards to Aircraft, Field Note 74, Ottawa, Canada. 19pp.
- Ramsden, C.T. 1916. El aura tñosa *Cathartes aura* (Linn.). Resultado de experimentos hechos para probar si propaga enfermedades por la via digestiva. Mem. Soc. Cubana Hist. Nat. "Felipe Poey" 2(5):174-178.
- San Martín, J. 1916. Sobre si el aura tñosa es útil o nociva. Mem. Soc. Cubana Hist. Nat. "Felipe Poey" 2(1):29-38.
- Santana, E., G.A. Potter, and S.A. Temple. 1986a. Status and seasonal patterns of abundance of turkey vulture in Puerto Rico. J. Field Ornithol. 57(3):236-237.
- Santana, E., G.A. Potter, and S.A. Temple. 1986b. Home range and activity patterns of turkey vulture in Puerto Rico. Carib. J. Sci. 22(3-4):175-177.
- Sierra, M. 1981. Incidencia de aves en los aeropuertos de las FAR. Estudio preliminar. I Congreso Nac. Cien. Biol., Resúmenes:188.