WILDLIFE INCIDENTS WITH U.S. CIVIL AIRCRAFTS IN MISSISSIPPI

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Introduction

Collisions between aircrafts and wildlife have occurred since first recorded in 1905. In the past 21 years, there have been 24 human fatalities and 235 injuries from wildlife incidents with civil aircrafts (Dolbeer et al. 2012). There is an anticipated increase of 3.5% annual increase of U.S. civil aircraft movements through 2025 which would include adding runways, thus posing risk of more wildlife incidents through increase movements and habitat (FAA 2008, Blackwell et al. 2009). To characterize wildlife incidents with civil aircrafts in Mississippi, we examined Federal Aviation Administration (FAA) National Wildlife Strike Database records from 1990–2010.

Objectives

1. Measure number of incidents in relation to:
   - Year
   - Month
   - Aircraft movement
   - Time of day
   - Season
2. Identify number of incidents per species group and hazard level defined by Dolbeer and Wright (2009)
3. Explain observed patterns of wildlife-aircraft incidents in relation to animal ecology

Methods

•Evaluated records from FAA database during 1990–2010 to calculate total incidents in Mississippi

•Bird incidents were considerably greater than mammal and reptiles; thus, further analysis on avian-aircraft incidents only

•Analyzed incidents by:
   - Year
   - Month
   - Aircraft movement
   - Time of day
   - Season

Results

•381 reported wildlife incidents have occurred with U.S. civil aircrafts in Mississippi (Table 1).

•62% of incidents involved wildlife at or above the high hazard levels.

Table 1. Ranking of species groups (*n* = 42) by reported number of strikes with U.S. civil aircraft and hazard level (Dolbeer and Wright 2009), Mississippi, 1990–2010.

Group	Strikes Reported	Hazard Level[1]	Group	Strikes Reported	Hazard Level[1]
Unknown Bird - Small	111		Northern Mockingbird	2	Low
Unknown Bird - Medium	62		Purple Martin	2	Low
Mourning Dove	43	Moderate	Great Blue Heron	2	Very High
Killdeer	16	Low	Bald Eagle	1	Extremely High
Gulls	13	Very High	American Crow	1	High
Swallows	13	Very Low	Egret	1	High
Blackbirds	12	Low	Domestic Dog	1	Very High
Hawks	12	Moderate	Wild Turkey	1	Very High
Meadowlarks	10	Low	American Kestrel	1	Very Low
Sparrow	10	Low	Chimney Swift	1	Very Low
Unknown Bird - Large	10		Common Nighthawk	1	Very Low
Geese	7	Extremely High	American Woodcock	1	
White-tailed Deer	7	Extremely High	Brown-headed Cowbird	1	
Vultures	6	Extremely High	Cattle	1	
Ducks	5	Extremely High	Eastern Bluebird	1	
Coyote	5	High	Horned Lark	1	
Unknown Bird	4		Sandhill Crane	1	
Owls	3	High	Sora	1	
European Starling	3	Moderate	Tern	1	
American Robin	3		Turtle	1	
Rock Pigeon	2	High	Wilson's Snipe	1	

[1] Dolbeer and Wright 2009

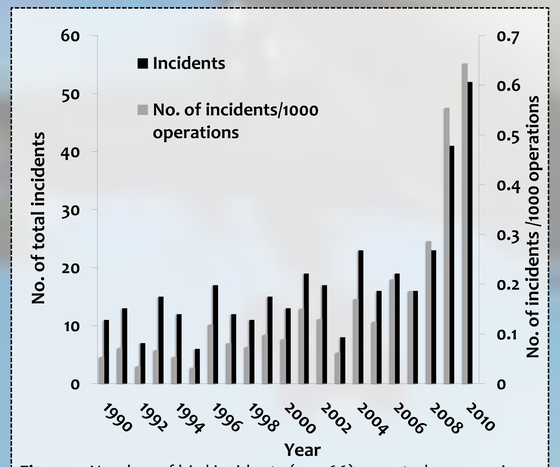

Figure 1. Number of bird incidents (*n* =366) reported per year in U.S. civil aircraft, Mississippi, 1990–2010.

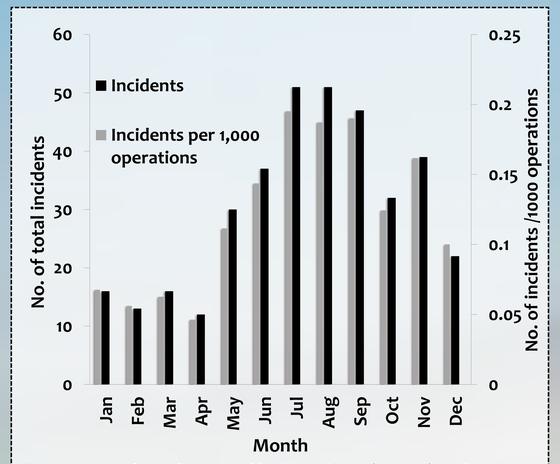

Figure 2. Number of reported bird incidents (*n* =366) with U.S. civil aircraft, Mississippi, by month from 1990–2010.

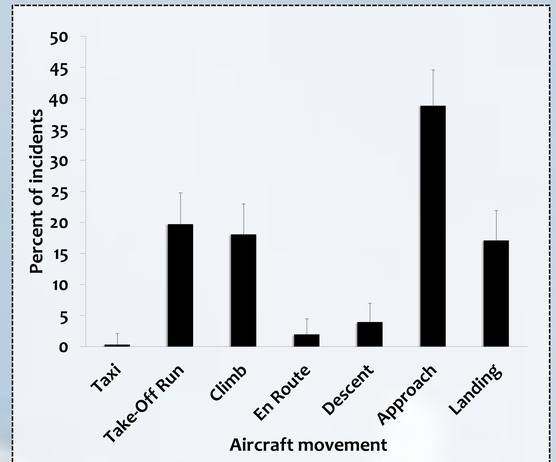

Figure 3. Percent of reported bird incidents (*n* =304) with U.S. civil aircraft, Mississippi, by aircraft movement, 1990–2010.

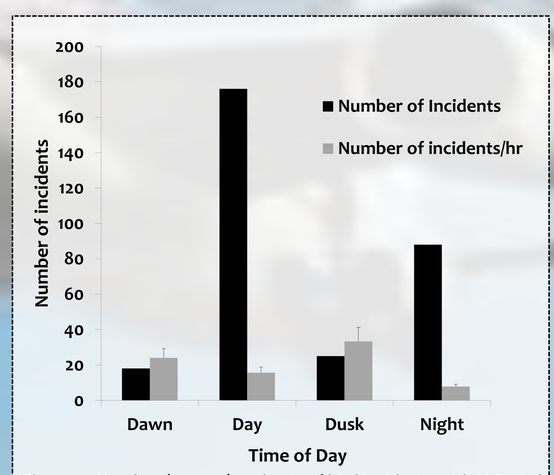

Figure 4. Number (*n* = 299) and rate of bird incidents with U.S. civil aircraft, Mississippi, by time of day, 1990–2010.

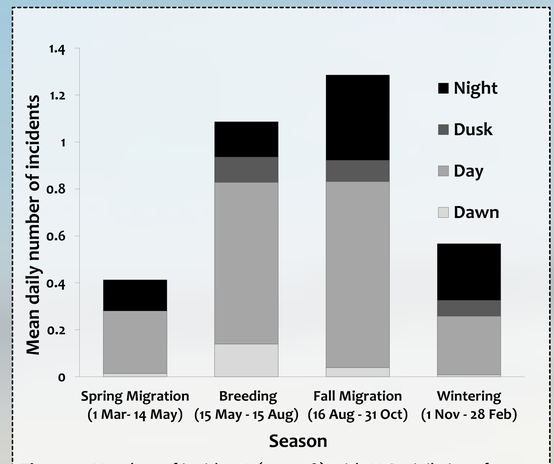

Figure 5. Number of incidents (*n* = 298) with U.S. civil aircrafts, Mississippi, by season, 1990–2010.

Results (cont.)

•Number of bird incidents per 1,000 operations increased (adjusted r^2=0.77, $P \leq 0.001$) annually (Figure 1).

•Number of bird incidents increased from April – August then decreased from September-February (adjusted r^2=0.542, $P \leq 0.001$) (Figure 2).

•Most incidents occurred while the aircraft was approaching followed by landing, take-off run, and climb (x^2 = 235.59, P=0.012) (Figure 3).

•Number of bird incidents per hour occurred highest during dusk, followed by dawn, day and night respectively (x^2 = 17.87, $P \leq 0.001$) (Figure 4).

•Mean daily number of bird incidents was highest during fall migration (x^2 = 133.38, $P \leq 0.001$) (Figure 5).

Management Implications

•Wildlife management should emphasizes species with the highest hazard levels such as large bodied birds and small flocking birds

• Management in Mississippi is most needed during fall migration when aircrafts are taking off and climbing then again while approaching and landing

•Modifications to habitat, food availability, and harassment or lethal control of wildlife on runways seem to be most applicable

Acknowledgements

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