TAD-494.6

AC NO: 150/5200-3A

DATE: 2 Mar 72

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: BIRD HAZARDS TO AIRCRAFT

1. PURPOSE. This advisory circular transmits to the aviation public the latest published information concerning the reduction of bird strike hazards to aircraft in flight and in the vicinity of airports. It also informs the aviation community of the use of a "Bird Strike/ Incident Report Form" (FAA Form 3830) to acquire data on effects of birds on aviation safety.

2. CANCELLATION. Advisory Circulars 150/5200-1, Bird Hazards to Aviation, dated 1 March 1965; 150/5200-2A, Bird Strike/Incident Report Form, dated 9 January 1970; and 150/5200-3, Bird Hazards to Aircraft, dated 7 October 1966, are canceled.

3. TECHNICAL CONSULTATION. Bird control consultation may be obtained from regional offices of the Bureau of Sport Fisheries and Wildlife, These are listed below:

   a. Region 1 (California, Idaho, Montana, Nevada, Oregon, Washington, Hawaii, Alaska)
   Regional Director
   Bureau of Sport Fisheries and Wildlife
   P.O. Box 3737
   Portland, Oregon 97208

   b. Region 2 (Arizona, Colorado, Kansas, New Mexico, Oklahoma, Texas, Utah, Wyoming)
   Regional Director
   Bureau of Sport Fisheries and Wildlife
   500 Gold Avenue, S.W.
   Albuquerque, New Mexico 87103

c. Region 3 (Illinois, Indiana, Iowa, Missouri, Minnesota, Wisconsin, North Dakota, South Dakota, Ohio, Michigan, Nebraska)
Regional Director
Bureau of Sport Fisheries and Wildlife
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

d. Region 4 (Arkansas, Florida, Georgia, Louisiana, Maryland, District of Columbia, Mississippi, Alabama, North Carolina, South Carolina, Tennessee, Kentucky, Virginia)
Regional Director
Bureau of Sport Fisheries and Wildlife
809 Peachtree - Seventh Building
Atlanta, Georgia 30323

e. Region 5 (Connecticut, Maine, Massachusetts, Rhode Island, New Hampshire, Vermont, New Jersey, Delaware, New York, Pennsylvania, West Virginia)
Regional Director
Bureau of Sport Fisheries and Wildlife
U.S. Post Office and Courthouse
Boston, Massachusetts 02109

4. BACKGROUND.

a. Bird Strike/Incident Report, FAA Form 3830 (BOB 04-R136), was first issued for the U.S. aviation public's use 1 January 1966 and reissued January 1968. To date, experience with the form has indicated that the FAA is now receiving more than twice the number of bird strike reports than in the past. However, the reports are lacking in adequate information on damage to aircraft such as description and extent of damage, cost or estimated cost to repair, aircraft out-of-service time, and estimated loss of revenue, etc.

b. Many species of birds frequenting airports are protected by laws. Their status should be determined before any lethal controls are attempted. Some laws contain provisions for destroying birds which are causing depredations or are injurious to society.

c. Migratory birds, particularly waterfowl, are a hazard to aircraft due to their size and weight. In recognition of this potential hazard, FAA Air Traffic Control and Flight Service Station facilities issue advisory information on bird activities when they are reported or when they have knowledge of such activities. Information given to pilots includes the position, species or size of birds if known, and their course and altitude.

d. FAA Air Traffic Control and Flight Service Station facilities coordinate with airport management for either appropriate alerting action by a Notice to Airmen when flocks of birds are noted to remain in the airport vicinity or for possible closing by a Notice to Airmen when flocks roost on runways.

e. The FAA Airman's Information Manual carries a chapter on bird hazards. This chapter deals with the migratory patterns of certain bird species and contains bird strike accident/incident reporting procedures.

5. MIGRATORY PATTERNS.

a. Generally speaking, the heaviest spring migration period is March and April and the heaviest fall migration period October and November. (See Appendix 1, page 1.)

b. The birds considered of greatest potential hazard to aircraft because of large size, abundance, or habit of flying in dense flocks are the whistling swans, Canadian geese, blue geese, white-fronted geese, mallards, pintails, gulls, vultures, starlings, and blackbirds. Birds of these species are considered particularly hazardous during spring and fall migrations and when they are concentrated in wintering areas. Swans make nonstop flights of several hundred miles (Chesapeake Bay to Lake Erie) at altitudes up to 6,000 feet. At some airports, there are large flocks of sandpipers, horned larks, blackbirds, tree swallows, longspurs, white pelicans, sandhill cranes, or other species which could be a problem during certain seasons.

c. The four major bird flyway routes within the continental United States are known as the:

(1) Atlantic

(2) Mississippi

(3) Central

(4) Pacific

d. The heaviest concentration of birds within these flyways occurs during the spring and fall migration. The wintering areas which accommodate the heaviest concentration of birds are as follows:

(1) Atlantic - Chesapeake Bay; Back Bay area in Virginia; and the Currituck Sound, Lake Mattamuskeet, area in North Carolina.

(2) Mississippi - The Mississippi Valley and the South Louisiana marshes along the Gulf of Mexico.

(3) Central - Along the Missouri River and Gulf Coast of Texas.

(4) Pacific - In the general area of Lake Tahoe and the Sacramento Valley area in California.

e. Whistling swans are our largest common migratory waterfowl which, during the migration, concentrate in a narrow and fairly well-defined path passing close to the airports of Duluth, Milwaukee, Detroit, Toledo, Cleveland, Buffalo, Pittsburgh, Harrisburg, Baltimore, and Washington, D.C.

f. In the spring, swans migrate over the Chesapeake Bay, the lower Susquehanna River, then overland to Lake Erie through Michigan, Wisconsin, North Dakota, Manitoba, and Saskatchewan to the Canadian Arctic. Some birds wintering on Great Salt Lake migrate northwest to the Pacific Coast, then up the coast to Alaska; others migrate northeast through Montana, Alberta, and Saskatchewan to reach the breeding grounds. The fall flights are made over approximately the same routes.

g. Geese are considered the greatest hazard to aircraft because of their abundance, large size, occurrence in large flocks, relatively slow flight, and high altitude of flight. Of the 400,000 to 500,000 Canadian geese that migrate between Hudson and James Bays and the Mississippi Valley, over 100,000 pass through Horicon Marsh in Wisconsin. In migrating between Horicon Marsh and southern Illinois, the bulk of these geese pass about 25 miles west of Milwaukee's municipal airport and 50 miles west of Chicago O'Hare Airport. At times, stray flocks pass over or very close to these airports.

h. Canadian geese migrate over several broad fronts. Atlantic Coast birds migrate up Chesapeake Bay, cross to Lake Erie, and then fly north. Another flight goes up the Mississippi River and over the Great Lakes north to their breeding grounds. Birds wintering on

the Great Salt Lake disperse to breed in the northwestern states and the southern parts of the western Canadian provinces. West coast geese migrate north along the coast to their breeding grounds in Alaska. The fall flights are over the same routes.

i. Snow geese and blue geese in numbers totaling 400,000 to 500,000 move down the Mississippi Valley on such a broad front in fall that they are likely to pass over or near most of the airports in the Valley. They concentrate at several places along the Illinois, Mississippi, and Missouri Rivers but seldom in numbers over 25,000. When they leave their gulf coast wintering grounds in March, the bulk of the population moves in masses gradually moving up the Missouri River Valley and southwest Iowa. The movement of several hundred thousand birds to the Missouri River Valley north of St. Joseph, Missouri, and their gradual movement up this Valley creates conditions hazardous to aircraft in the vicinity of airports at Kansas City, Omaha, Sioux City, and Sioux Falls.

j. Lesser snow geese migrate over a broad front through the Mississippi River Valley with the center of the spring flight passing over Louisiana, Arkansas, Missouri, Iowa, Minnesota, South Dakota, and North Dakota. The full flight spreads further east, reaching into Michigan, Ohio, and Indiana. Birds that winter in the Central Valley of California migrate through Tule Lake in northern California, Malheur Lake in Oregon, and along the coast of British Columbia.

k. Greater snow geese migrate almost nonstop from wintering grounds to breeding grounds. They migrate northward along the Atlantic Coast and then inland up the Hudson and Connecticut Rivers to a stopover on the St. Lawrence, at Cap. Tourmente, Quebec.

l. Lesser snow geese fly at an estimated altitude of 3,000 feet. Greater snow geese have been reported between 800 and 1,500 feet and probably go much higher.

m. Mallard and pintail are the most common North American duck; but more specifically, they concentrate in very large numbers in the Mississippi Valley and in the Central Valley of California. Each migration season about 7,000,000 to 15,000,000 ducks pass through the Mississippi Valley; 3,000,000 to 6,000,000 in the Central Valley of California; and 2,000,000 to 3,000,000 migrate through the Atlantic Coastal States.

n. More ducks pass in the vicinity of Lambert Field, St. Louis, than any other major air terminal east of the Rocky Mountains.

o. Mallard ducks migrate over a broad front, covering most of the Western States. The heaviest concentrations are through the Mississippi and Missouri Valleys. There is also a flight along the West Coast.

p. Pintail ducks migrate over a broad front, covering most of the Western States. In the spring and fall in the east, there are flights between Chesapeake Bay and the Great Lakes and also along the Atlantic Coast and St. Lawrence River.

q. Most bird strikes occur during landing and takeoff at altitudes of 2,000 feet or less and have involved over 25 species of birds; gulls and starlings being the most numerous and hazardous causes of strike incidents. Analysis of the most recent bird strike information reveals that 25.7 percent of the aircraft involved in bird strike incidents received some degree of damage.

6. BIRD STRIKE/INCIDENT REPORTING. FAA Form 3830 (1-68) was prepared for use in gathering technical and repair cost data and vital statistics on accidents/incidents resulting from collisions between aircraft and various bird species. These data will be used to develop standards to cope with this expensive hazard to aircraft, injury to personnel, and for habitat control methods on or adjacent to airports. A copy of the form is in Appendix 1, pages 2 and 3.

7. ACTION.

a. Municipal attention should be taken to fill, level, and clear airports and adjacent land which creates bird refuges and increases bird hazards by providing feeding, bathing, loafing, and nesting places. Birds are attracted to garbage dumps, food and fish processing wastes, feed pens and piggeries, ponds, sloughs, swamps, man-made lakes and reflecting ponds, sewage lagoons and outfalls, seed and fruit producing plants and trees, tall grasses, reeds, and shrubbery. Such areas should be eliminated from the airport vicinity by municipal pressure and influence; by relocation; or by draining, leveling, and surfacing with materials unattractive to bird life such as gravel. Airport outleases to farmers should stipulate crops least attractive to birds, and cooperation of food and waste processors should be actively solicited by airport management. The three most effective bird hazard deterrents are (1) denial of food,

water, and roosting areas; (2) clearing and gravel surfacing of airport open areas not immediately adjacent to pavements; and (3) scare device programs using recorded bird distress and natural enemy calls; carbide exploders, fuse strings, and explosive shotgun shells. Destruction or scaring of bird life is not a true solution as it is contrary to efforts of wildlife preservation and is only temporarily effective due to constant bird migrations. This does not get to the basic problem. The solution is to make the airport unattractive to bird life.

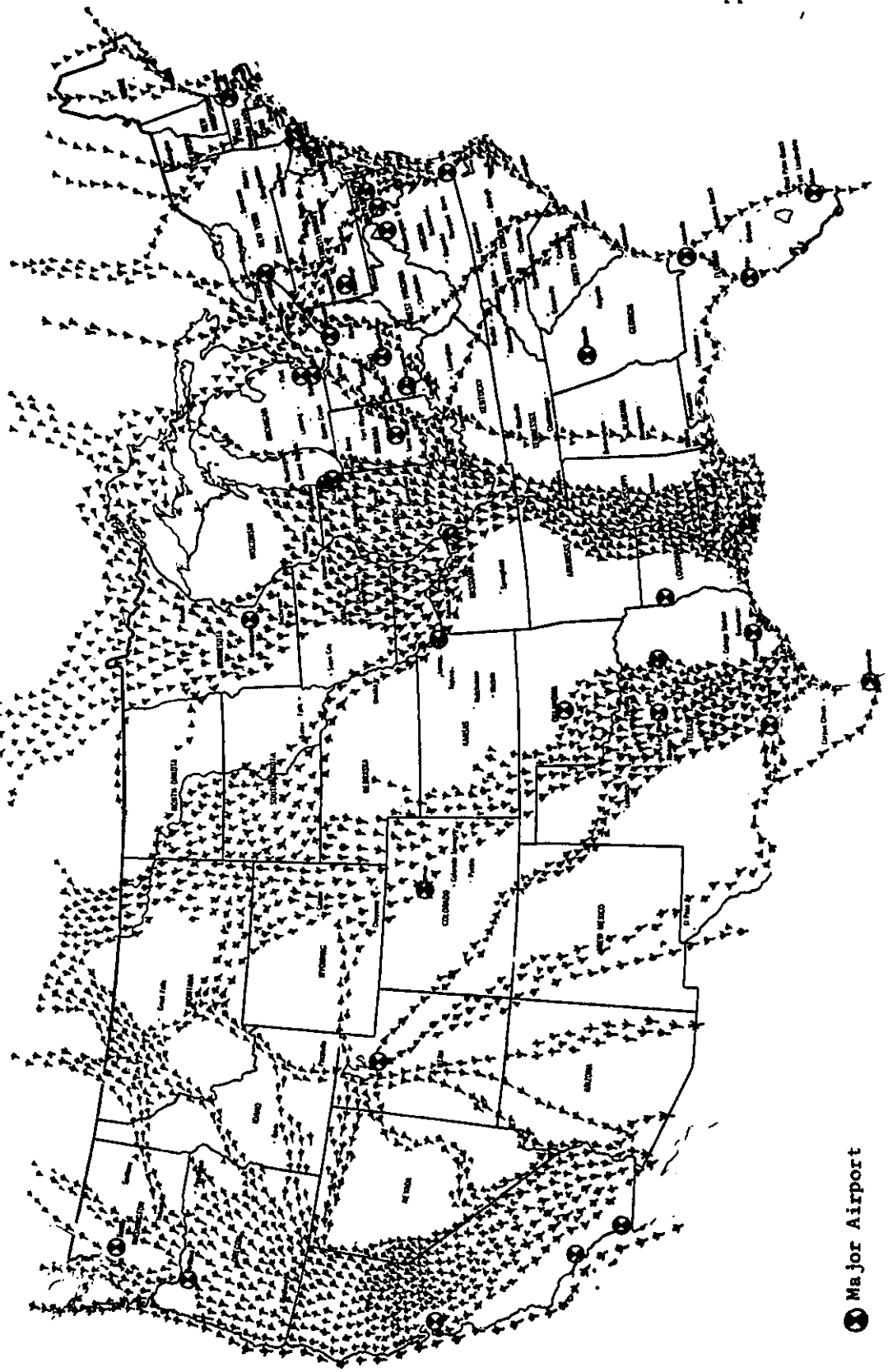
b. For continued research and test programs to improve present aircraft and engine airworthiness standards and to allow the FAA to provide helpful guidance on this subject, it is essential that the FAA have adequate information on how bird activities are affecting aviation. All segments of civil and military aviation are urged to furnish the FAA with all bird strike information requested on FAA Form 3830 and to place special emphasis on completing the damage and cost items. The FAA Form 3830 is available at most FAA facilities.

8. HOW TO OBTAIN THIS PUBLICATION. Obtain copies of this Advisory Circular 150/5200-3A, Bird Hazards to Aircraft, from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

Chester G. Bowers

CHESTER G. BOWERS
Director, Airports Service

MIGRATORY BIRDS FLIGHT PATTERNS



Major Airport

ADDITIONAL COMMENTS

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

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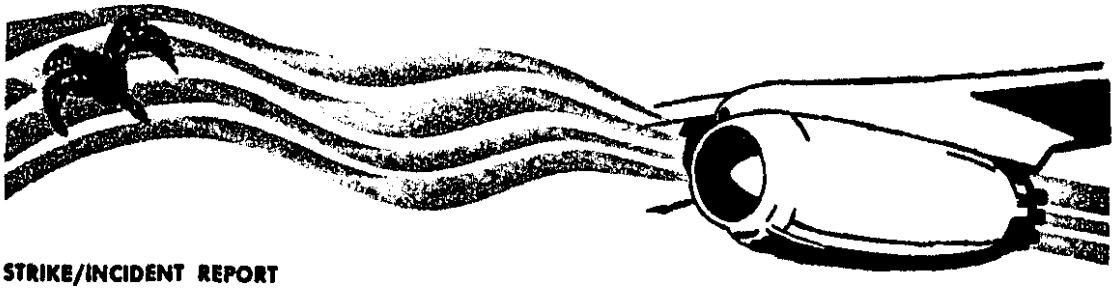

BIRD STRIKE/INCIDENT REPORT

The purpose of this report is to collect pertinent bird/plane strike and near miss en route data. This information will be used to alleviate bird hazards and provide aircraft design data. This report is to be completed for near misses of en route as well as for all bird strikes; also, in cases when evidence of a bird strike is discovered on the ground.

Information requested in items 21, 22, and 23 is important. However, reporting on other items should not be delayed awaiting estimates of damage or revenue loss. As soon as this information is available, it should be sent in by completing items 1-7 and 21-24.

FAA Form 3830 (1-68)

REMOVE THIS STUB BEFORE MAILING -- NO POSTAGE IS REQUIRED

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

BIRD STRIKE/INCIDENT REPORT

Form Approved
Budget Bureau No. 04-R136

1. NAME OF OPERATOR

2. AIRCRAFT TYPE *(Make and model)*

3. POWERPLANT TYPE *(Make and model)*

4. AIRCRAFT NATIONALITY AND REGISTRATION MARK
N

5. DATE OCCURRED

6. TIME *(GMT)* OCCURRED

7. LOCATION OF INCIDENT

☐ ON AIRPORT | NAME OF AIRPORT | RUNWAY NO.

☐ CRUISING | LATITUDE | LONGITUDE

8. ALTITUDE

9. AIRSPEED *(In knots)*

10. FLIGHT PHASE AT TIME OF OCCURRENCE *(Check one)*

☐ TAXIWAY	☐ CRUISE	☐ APPROACH
☐ TAKEOFF	☐ HOLDING	☐ LANDING
☐ CLIMB	☐ LETDOWN	☐ UNKNOWN

11. FLIGHT CONDITIONS *(Check appropriate categories)*

☐ IFR ☐ VMC	☐ BELOW CLOUDS	
☐ VFR ☐ ABOVE CLOUDS	☐ BETWEEN CLOUD LAYERS	
☐ IMC ☐ IN CLOUDS	☐ ICING CONDITIONS	

12. WEATHER CONDITIONS

☐ CLEAR	☐ RAIN	☐ NIGHT
☐ PARTLY CLOUDY	☐ SNOW	☐ DAWN
☐ OVERCAST	☐ DAY	☐ DUSK

OTHER *(Explain)*

13. DID STRIKE/INCIDENT OR DAMAGE CAUSE REVISED FLIGHT PLAN ☐ NO ☐ YES *(Give details)*

14. KIND OF BIRD *(Gull, robin, etc. Bird remains (a feather or more) should be gathered and preserved by freezing or drying and submitted for identification to the U.S. National Museum, Room 601E, 10th and Constitution Ave., N. W., Washington, D.C. 20560, together with a copy of this report form. If a leg band is recovered, it should also be sent to the same address. These species data are extremely important.)*

15. SIZE OF BIRD

☐ SMALL *(Sparrow)*
☐ MEDIUM *(Gull)*
☐ LARGE

16. NUMBER OF BIRDS

☐ SINGLE BIRD
☐ FLOCK

17. PERSONAL INJURY

☐ NO ☐ YES *(Indicate extent of injury to either aircrew or passengers)*

18. PART OF AIRCRAFT STRUCK

19. DAMAGE TO AIRCRAFT ☐ NO ☐ YES

20. DESCRIPTION AND EXTENT OF DAMAGE *(Give details about airframe and engine damage)*

21. COST OR ESTIMATED COST TO REPAIR

22. AIRCRAFT OUT-OF-SERVICE TIME

23. EST. LOSS OF REVENUE

24. WAS A BIRD STRIKE/INCIDENT REPORT FORM PREVIOUSLY SUBMITTED; IF SO, WHEN

25. EXPLAIN ALL "YES" ANSWERS	YES	NO
A. WAS BIRD(S) SEEN PRIOR TO STRIKE		
B. WAS EVASIVE ACTION TAKEN		
C. HAD THE PILOT BEEN ALERTED TO THE PRESENCE OF BIRDS		

EXPLANATION

REPORTED BY

TITLE | DATE

FAA Form 3830 (1-68) *Use reverse side for additional comments* GPO 937-202

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Washington, D.C. 20591

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