



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Reporting Wildlife Aircraft Strikes

Date: DRAFT

AC No: 150/5200-32C

Initiated by: AAS-300

Change:

1. Purpose.

This Advisory Circular (AC) explains the importance of reporting collisions between aircraft and wildlife, more commonly referred to as wildlife strikes. It also explains recent improvements in the Federal Aviation Administration's (FAA's) Bird/Other Wildlife Strike Reporting system, how to report a wildlife strike, what happens to the wildlife strike report data, how to access the FAA National Wildlife Strike Database (NWSD), and the FAA's Feather Identification program.

2. Applicability.

The FAA provides the standards and practices in this AC as guidance for all public-use airports, aviation industry personnel (e.g., Air Traffic Control, pilots and airline personnel, and engine manufacturers), and others who possess strike information. The FAA strongly recommends that the above aviation representatives and others possessing strike information participate in reporting.

3. Cancellation.

This AC cancels AC 150/5200-32B, Reporting Wildlife Aircraft Strikes, dated May 31, 2013.

4. Background.

The FAA has long recognized the threat to aviation safety posed by wildlife strikes. About 97 percent of all wildlife strikes reported to the FAA involved birds, about 2 percent involved terrestrial mammals, and less than 1 percent involved flying mammals (bats) and reptiles. Overall, from 1990 to 2021, 620 species of birds, 52 species of terrestrial mammals, 44 species of bats, and 29 species of reptiles were identified as struck by aircraft. Waterfowl (ducks and geese), gulls, and raptors (mainly hawks and vultures) are the bird species that cause the most damage to civil aircraft in the United States, while European starlings are responsible for the greatest loss of human life. Vultures and waterfowl cause the most losses to U.S. military aircraft. Artiodactyls (mainly deer) and carnivores (mainly coyotes) are the terrestrial mammals with the most damaging strikes. Although the percentage of wildlife strikes with reported damage has averaged 7 percent for the 32-year period, this number has declined from a peak of 18 percent in 1995 to 4 percent in 2021. Between 1990 – 2021 there have been over 255,000 strikes submitted into the NWSD. Of the 32,742 reports indicating the strike had an adverse effect on the aircraft and/or flight, 12,570 provided an estimate of the aircraft downtime (1,179,425 hours, mean = 93.8 hours/incident, Tables 18, 23, 24). Regarding monetary losses, 4,879 reports provided an estimate of direct aircraft repair costs (\$840.6 million, mean = \$172,297/incident), and 4,400 reports gave an estimate of other monetary losses (\$109.7

million, mean = \$24,931/incident)¹. Other monetary losses include such expenses as lost revenue, the cost of putting passengers in hotels, re-scheduling aircraft, and flight cancellations. Assuming (1) all 32,742 reported wildlife strikes that had an adverse effect on the aircraft and/or flight engendered similar amounts of downtime and/or monetary losses and (2) that these reports are all of the damaging strikes that occurred, wildlife strikes annually cost the USA civil aviation industry, on average, 107,230 hours of aircraft downtime and \$208 million in monetary losses (\$173 million in direct costs and \$35 million in other costs), 1990–2021. For 2021 only, the estimates would be 139,469 hours of downtime and \$328 million in direct and indirect costs. Estimating the economic costs of wildlife strikes is complex because of the many variables involved and the skewed nature of reported strikes and costs.

Studies have shown that strike reporting has steadily increased over the past two decades; however, strike reporting is not consistent across all stakeholders (pilots, air carriers, airport operators, air traffic control personnel, etc.) in the National Airspace System. Although larger 14 CFR Part 139 airports and those with well-established wildlife programs have improved strike reporting, there is a wide disparity in overall reporting rates between Part 139 airports and general aviation (GA) airports in the National Plan of Integrated Airport Systems (NPIAS).

While overall reporting rates are much higher for strikes at Part 139 airports than at NPIAS GA airports, there is also a major disparity in reporting rates among Part 139 airports. Larger Part 139 airports, especially those with well-established wildlife hazard management programs, have reporting rates about four times higher on average compared to other Part 139 airports. The pattern of disparity in strike reporting among Part 139 airports is also found in reporting rates for commercial air carriers. However, the FAA believes the current voluntary reporting rate is adequate to track national trends in wildlife strikes, to determine the hazard level of wildlife species that are being struck, and to provide a scientific foundation for FAA policies and guidance about the mitigation of risk from wildlife strikes.

Ultimately, improvements can be made in the quantity and quality of strike reporting. In addition to the above-mentioned gaps in reporting to the NWSD, there is an overall bias toward the reporting of damaging strikes compared to non-damaging strikes, especially for NPIAS GA airports and certain Part 139 airports. The quality of data within a strike report can also be improved by providing as much information as possible, including species struck and cost of strike.

The FAA has initiated several programs to address this important safety issue, including the collection, analysis, and dissemination of wildlife strike data. The effectiveness of a Wildlife Hazard Management Plan (WHMP) to reduce wildlife hazards both on and near an airport and the reevaluation of all facets of damaging/non-damaging strikes from year to year requires accurate and consistent reporting. Therefore, every WHMP should include a commitment to document and report to the NWSD all wildlife strikes that occur within the separation distances described in sections 1-2 and 1-3 of Advisory Circular 150/5200-33, Hazardous Attractants On or Near Airports (current version), to better identify, understand, and reduce threats to safe aviation.

¹ Costs from years prior to 2021 are inflation-adjusted to 2021 U.S. dollars.

5. Types of Animals to Report if Involved in a Strike with Aircraft.

- a. All birds.
- b. All bats.
- c. All terrestrial mammals larger than 1 pound (454 grams) or more (e.g., report rabbits, muskrats, armadillos, Marmots, squirrels, foxes, coyotes, dogs, cats, deer, livestock, etc., but not small mammals such as rats, mice, voles, chipmunks, pocket gophers, moles, shrews, etc.). If in doubt, report the incident with a note in the comment section, and the Database Manager will determine whether to include the report into the NWSD based on body mass.
- d. Reptiles: All alligators, caimans, iguanas, and turtles larger than 1 pound (454 grams) or a minimum 1 foot (30 centimeters) in length. Report snakes 1 foot (30 centimeters) or longer in total length. Biologists or airport employees who discover wildlife struck should use their best judgement when determining whether or not to report if the animal doesn't fit into one of these categories (e.g., multiple small animals such as diamond terrapins are involved in a single incident).
- e. Animals that are known to be a Federal or State listed species.

6. When to Report a Wildlife Aircraft Strike to the NWSD.

A wildlife strike has occurred when:

- a. A strike between wildlife and aircraft has been witnessed.
- b. Evidence or damage from a strike has been identified on an aircraft.
- c. Non-desiccated bird or other wildlife remains, whether in whole or in part, are found:
 - (1) Within 250 feet of a runway centerline or within 1,000 feet of a runway end unless another reason for the animal's death is identified or suspected.
 - (2) On a taxiway or anywhere else on or off the airport that you have reason to believe was the result of a strike with an aircraft. Examples might be:
 - (i) A bird found in pieces from a prop strike on a taxiway.
 - (ii) A carcass retrieved within 1 mile of an airport on the final approach or departure path after someone reported the bird falling out of the sky and a report of a probable wildlife strike.

Note: only fresh (not desiccated or decayed) remains that, in the judgment of observer was struck by an aircraft, should be reported. Carcasses (or remains reported as a wildlife/aircraft strike) should ultimately allow identification of the species (or at least genus) and a reliable estimation of the strike incident date.

- d. The presence of birds or other wildlife on or off the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, or the aircraft left pavement area to avoid collision with wildlife).

7. How to Report a Bird/Wildlife Strike.

The FAA strongly encourages pilots, airport operations, aircraft maintenance personnel, Air Traffic Control personnel, engine manufacturers, or anyone else who has knowledge of a strike to report it to the NWSD. The FAA makes available an online reporting system at the Airport Wildlife Hazard Mitigation web site (<http://www.faa.gov/go/wildlife>) or via mobile devices at

<http://www.faa.gov/mobile> so that all strikes can be reported electronically. Anyone reporting a strike can also print the FAA's Bird/Other Wildlife Strike Report Form (Form 5200-7) at the end of this AC or download it from the web site to use when collecting information from a strike incident. Paper copies of Form 5200-7 may also be obtained from the appropriate Airports District Offices (ADO), Flight Standards District Offices (FSDO), and Flight Service Stations (FSS) or from the Airman's Information Manual (AIM). It is important to include as much information as possible on the strike report.

Note: These forms can be used to report strikes that have bird remains associated with them (instructions with addresses for sending remains to the Smithsonian Institute Feather Identification Lab are discussed in Paragraph 11, Instructions for Collecting and Submitting Bird/Wildlife Remains for Identification, of this AC). Please do not send bird remains to the FAA.

8. FAA National Wildlife Strike Database Management and Data Analysis.

The FAA NWSD Manager edits all strike reports to ensure consistent, error-free data before entering a single, consolidated report into the database. This information is supplemented with non-duplicated strike reports from other sources. About every 2-4 weeks, the FAA posts an updated version of the database on the web site. Annually, the FAA sends a current version of the database to the International Civil Aviation Organization (ICAO) for incorporation into ICAO's Bird Strike Information System (IBIS) Database. Also, the FAA prepares and makes available a report summarizing wildlife strike results from 1990 through the most current year online at http://www.faa.gov/airports/airport_safety/wildlife/.

Analyses of data from the FAA NWSD have proved invaluable in determining the nature and severity of the aviation wildlife strike hazard. The database provides a scientific basis for identifying risk factors, justifying and implementing corrective actions at airports, and judging the effectiveness of those corrective actions. Table 1 (Appendix A) depicts the number of damaging strikes, total strikes, relative hazard score (RHS), and risk estimates for 79 bird species, selected from strike records from across the United States. The data for the analysis are from the NWSD. The database is invaluable to engine manufacturers, aeronautical engineers, and wildlife biologists as they develop new technologies for the aviation industry. Each wildlife strike report contributes to the accuracy and effectiveness of the database. Moreover, each report contributes to the common goal of increasing aviation safety and reducing the cost of wildlife strikes.

9. Access to the FAA National Wildlife Strike Database.

On April 24, 2009, the FAA made the NWSD available to the public. The FAA began systematically analyzing wildlife strike data in the 1990s for use by the FAA's Office of Airports, academia, and researchers as a means of improving airport safety and reducing wildlife hazards. The NWSD web site (<http://www.faa.gov/go/wildlife>) was retooled to make it more user-friendly and to allow more advanced data mining. The site has search fields that enable users to find data on specific airports, airlines, aircraft, and engine types, as well as damage incurred, date of strike, species struck, and state without having to download the entire database.

10. Bird/ Wildlife Identification.

Accurate species identification is critical for wildlife-aircraft strike reduction programs. The identification of the exact species of bird struck (e.g., ring-billed gull, Canada goose, mallard, mourning dove, or red-tailed hawk as opposed to gull, goose, duck, dove, or hawk) is particularly important. This species information is critical for airports and biologists developing

and implementing wildlife hazard management programs at airports because a problem that cannot be measured or defined cannot be solved. Wildlife biologists must know what species of wildlife they are dealing with in order to identify local attractants and to make proper management decisions within the framework of the Migratory Bird Treaty Act and state and local regulations. The FAA, the U.S. Air Force, the U.S. Navy, and the U.S. Department of Agriculture – Wildlife Services work closely with the Feather Identification Lab at the Smithsonian Institution, Museum of Natural History, to improve the understanding and prevention of bird-aircraft strike hazards. Bird strike remains that cannot be identified by airport personnel or by a local biologist can be sent (with FAA Form 5200-7) to the Smithsonian Museum for identification. Remains may also be submitted to the Smithsonian for verification of the field identification and for long-term storage of the evidence.

Bird strike identification using feathers, DNA, or other body parts or materials from birds involved in bird-aircraft strikes will be provided free-of-charge to all U.S. airport operators, all U.S. aircraft owners/operators (regardless of where the strike happened), and to any foreign air carrier if the strike occurred at a U.S. airport.

11. Instructions for Collecting and Submitting Bird/Wildlife Remains for Identification.

Please observe the following guidelines for collecting and submitting feathers or other bird/wildlife remains for species identification. These guidelines help maintain species identification accuracy, reduce turn-around time, and ensure a comprehensive FAA National Wildlife Aircraft Strike Database². Many airports have found it beneficial to construct strike reporting kits for use by airport personnel and aircraft operators. Having pre-made kits available improves strike reporting and encourages the sampling of strike remains. A kit suitable for collecting remains from most strikes would include the following materials stored in a 1-quart, re-sealable plastic bag: (1) collection instructions, (2) a pre-packaged alcohol hand-wipe for softening/removing tissue/blood (“snarge”³) off of the aircraft, (3) a Whatman FTA® collection card for preserving blood/tissue for DNA identification, and (4) a pair of disposable gloves⁴.

a. Collect and submit remains from known/suspected bird strikes or strike remains that involved an unknown animal from each impact location as soon as possible and send to the Feather Lab (Smithsonian). If remains are known to be other than those of birds, please contact the Smithsonian before mailing them at (202) 633-0801. Collect remains using the criteria listed in item c below. If you cannot send the remains as soon as possible, refrigerate or freeze them in a sealed plastic bag until you can mail them.

b. Provide complete information about the incident.

(1) Fill out FAA Form 5200-7 – Bird/ Other Wildlife Strike Report.

(i) Print a copy of Form 5200-7 at the end of this AC or download a copy at <http://www.faa.gov/go/wildlife>.

² Please see Appendix B. *Diagram: How to Collect Birdstrike Evidence* for quick reference.

³ Snarge is the term used for the residue and feathers left on an aircraft after an animal (typically a bird) collides with it.

⁴ Appendix C. *Birdstrike Collecting Kits* provides additional guidance for “make-your-own” birdstrike collecting kits.

- (ii) File a report online and print a copy to send with the remains.
 - (2) Mail the report with feather material (see address below).
 - (3) Provide your contact information if you wish to be informed of the species identification.
- c.** Collect as much material as possible in a clean plastic/ Ziplock® bag. (Please, do not send whole birds.)
- (1) Pluck/pick a variety of many feathers representing color or patterns from the wings, tail, and body.
 - (2) **Do not** cut off feathers. This removes the downy region needed to aid in identification.
 - (3) Include any feathers with distinct colors or patterns.
 - (4) Include any downy “fluff”.
 - (5) Include beaks, feet, and talons if possible.
 - (6) Where only a small amount of snarge material is available, such as scrapings from an engine or smears on wings or windshields, send all of it.
- (i) **Dry material** – Scrape or wipe off into a clean re-sealable bag **or** wipe the area with pre-packaged alcohol wipe **or** spray with alcohol to loosen material then wipe with clean cloth/gauze. Include the alcohol wipe or piece of cloth in the bag. (Do not use water, bleach, or other cleansers – they destroy or degrade DNA.)
 - (ii) **Fresh material** – Wipe the area with alcohol wipe and/or clean cloth/gauze **or** apply fresh tissue/blood to an optional Whatman FTA® DNA collecting card.
- (1) **Do not** use any sticky substance such as tape or post-it notes to attach feathers.
 - (2) Collect remains from each impact location and place them in separate, labeled bags. Indicate the location on aircraft from which each sample came (i.e., windshield, radome, etc.) on the bag.

Please send whole feathers (tip and base) whenever possible as diagnostic characteristics are often found in the downy barbules at the feather base. Wings, as well as breast and tail feathers, should be sent whenever possible. Beaks, feet, bones, and talons are also useful diagnostic materials. Even blood smears can provide material for DNA analysis. Do not send entire bird carcasses through the mail. However, photographs of the carcasses can be very useful supplemental documentation.

If you send fresh blood/ tissue samples frequently for DNA identification, you may want to consider getting Whatman FTA® DNA cards. The material is sampled with a sterile applicator and placed onto the surface of the card that “fixes” the DNA in the sample. For more information about ordering these items, contact the Feather Lab. Otherwise, if you only occasionally send blood/ tissue samples, consider using a paper towel soaked with alcohol or an alcohol wipe to collect this type of material. Ethanol is the preferred type of alcohol.

Additional information on sending bird remains to the Smithsonian is available at <http://www.faa.gov/go/wildlife>.

d. Mail the Bird/Other Wildlife Strike Report and collected material to the Smithsonian’s Feather Identification Lab. The lab will forward the report to the National Wildlife Strike Database Manager.

For Material Sent via Express Mail Service:	For Material Sent via US Postal Service:
Feather Identification Lab Smithsonian Institution NHB, E600, MRC 116 10 th & Constitution Ave NW Washington DC 20560-0116 (This can be identified as “safety investigation material,” overnight priority/damaging strikes.)	Feather Identification Lab Smithsonian Institution PO Box 37012 NHB, E600, MRC 116 Washington DC 20013-7012 (Regular/non-damaging strikes, not recommended for priority cases.)

The species identification turn-around time is usually 24 hours from receipt if sufficient material is submitted and unless the sample is submitted for DNA analysis. DNA results usually take 6 to 10 days. Once processed, the lab sends the reports and species identification information to the Database Manager for entry into the FAA National Wildlife Strike Database. Persons wishing to be notified of the species identification must include contact information (e-mail, phone, etc.) on the report.

For more information contact the FAA National Wildlife Biologist at (202) 267-8731 or the Smithsonian’s Feather Identification Lab at (202) 633-0801.

John R. Dermody
 Director, Office of Airport Safety and Standard

U.S. Department of Transportation
Federal Aviation Administration**BIRD / OTHER WILDLIFE STRIKE REPORT**

Paperwork Reduction Act Statement: The information collected on this form is necessary to allow the Federal Aviation Administration to assess the magnitude and severity of the wildlife-aircraft strike problem in the U.S. The information is used in determining the best management practices for reducing the hazard to aviation safety caused by wildlife-aircraft strikes. A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0045. Public reporting for this collection of information is estimated to be approximately 6 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. The information collected is voluntary. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, AES-200.

1. Name of Operator		2. Aircraft Make/Model		3. Engine Make/Model																																																							
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6A. Flight Number		6B. Wildlife/Bird Remains: <input type="checkbox"/> Collected <input type="checkbox"/> Sent to Smithsonian																																																									
7. Airport Name/ID		8. Runway/Taxiway Used		9. Location if En Route (Nearest Town/Reference & State/Airport)																																																							
10. Height (AGL)		11. Speed (IAS)		9A. Distance (NM) from Airport (Nearest Town/Reference & State Airport)																																																							
12. Phase of Flight <input type="checkbox"/> A. Parked <input type="checkbox"/> B. Taxi <input type="checkbox"/> C. Take-off Run <input type="checkbox"/> D. Climb <input type="checkbox"/> E. En Route <input type="checkbox"/> F. Descent <input type="checkbox"/> G. Approach <input type="checkbox"/> H. Landing Roll		13. Part(s) of Aircraft Struck or Damaged																																																									
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14. Effect on Flight <input type="checkbox"/> None <input type="checkbox"/> Aborted Take-Off <input type="checkbox"/> Precautionary Landing <input type="checkbox"/> Engines Shut Down <input type="checkbox"/> Other: (Specify)		15. Sky Condition <input type="checkbox"/> No Cloud <input type="checkbox"/> Some Cloud <input type="checkbox"/> Overcast		16. Precipitation <input type="checkbox"/> Fog <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> None																																																							
17. Bird/Other Wildlife Species		18. Number of birds seen and/or struck			19. Size of Bird(s) <input type="checkbox"/> Small <input type="checkbox"/> Medium <input type="checkbox"/> Large																																																						
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		more than 100	<input type="checkbox"/>	<input type="checkbox"/>																																																							
20. Pilot Warned of Birds <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown																																																											
21. Remarks (Describe damage, injuries and other pertinent information)																																																											
DAMAGE / COST INFORMATION																																																											
22. Aircraft time out of service _____ hours		23. Estimated cost of repairs or replacement (US \$) \$ _____		24. Estimated other Cost (U.S. \$) (e.g. loss of revenue, fuel, hotels) \$ _____																																																							
Reported by (Optional)			Title		Date																																																						
Email			Phone																																																								

**Directions for FAA Form 5200-7
Bird/Other Wildlife Strike Report**

1. Name of Operator - This can be an airline (abbreviations okay - UAL, AAL, etc.), business (Coca Cola), government agency (Police Dept., FAA), or if a private pilot, his/her name.
2. Aircraft Make/Model - Abbreviations are okay, but include the model (e.g., B737-200).
3. Engine Make/Model - Abbreviations are allowed (e.g., PW 4060, GECT7, LYC 580).
4. Aircraft Registration - This means the N# (for USA registered aircraft).
5. Date of Incident - Give the local date, not the ZULU or GMT date.
6. Local Time of Incident - Check the appropriate light conditions and fill in the hour and minute local time and check AM or PM or use the 24-hour clock and skip AM/PM.
- 6A. Flight Number - Self-explanatory.
- 6B. Wildlife/Bird Remains - If remains were found at the airport or on the aircraft, check "Collected". If the remains were also sent to the Smithsonian for identification, also check "Sent to Smithsonian".
7. Airport Name - Use the airport name or 3 letter code if a US airport. If a foreign airport, use the full name or 3 letter code and location (city/country).
8. Runway / Taxiway used - Self-explanatory.
9. Location if En Route - Put the name of the nearest city and state.
- 9A. Distance (nm) from Airport (Nearest Town/Reference and State/Airport)
10. Height AGL - Put the feet above ground level at the time of the strike (if you don't know, use MSL and indicate this). For take-off run and landing roll, it must be 0.
11. Speed (IAS) - Speed at which the aircraft was traveling when the strike occurred.
12. Phase of Flight - Phase of flight during which the strike occurred. Take-off run and landing roll should both be 0 AGL.
13. Part(s) of Aircraft identified as Struck, Damaged or Ingested - Check which parts were struck and damaged. If a part was damaged but not struck, indicate this with a check on the damaged column only and indicate in comments (#21) why this happened (e.g., the landing gear might be damaged by deer strike, causing the aircraft to flip over and damage parts not struck by deer).
14. Effect on Flight - You can check more than one. If you check "Other", please explain in Comments (#21).
15. Sky condition - Check the one that applies.
16. Precipitation - You may check more than one.
17. Bird/Other Wildlife Species - Try to be accurate. If you don't know, put unknown and some description. Collect feathers or remains for identification for damaging strikes.
18. Number of birds seen and/or struck - check the box in the Seen column with the correct number if you saw the birds/other wildlife before the strike and check the box in the Struck column to show how many were hit. The exact number can be written next to the box.
19. Size of Bird(s) - Check what you think is the correct size (e.g. sparrow = small, gull = medium, and geese = large).
20. Pilot Warned of Birds - Check the correct box (even if it was an ATIS warning or NOTAM).
21. Remarks - Be as specific as you can. Include information about the extent of the damage, injuries, anything you think would be helpful to know (e.g., number of birds ingested).
22. Aircraft time out of service - Record how many hours the aircraft was out of service.
23. Estimated cost of repairs or replacement - This may not be known immediately, but the data can be sent at a later date or put down a contact name and number for this data.
24. Estimated other cost - Include loss of revenue, fuel, hotels, etc. (see directions for #23).
25. Reported by - Although this is optional, it is helpful if questions arise about the information on the form (a phone number could also be included).
26. Title - This can be Pilot, Tower, Airport Operations, Airline Operations, Flight Safety, etc.
27. Date - Date the form was filled out.

APPENDIX A. COMPOSITE RANKING OF RISK ASSOCIATED WITH HAZARDOUS WILDLIFE SPECIES

Table 1. Number of damaging strikes, total strikes, relative hazard score (RHS), and risk estimates for 79 bird species, selected from strike records reported to the Federal Aviation Administration National Wildlife Strike Database (2010–2015) from across the United States. Risk represents RHS squared (range $\frac{1}{4}$ 0– 10,000) multiplied by the number of strikes for that species, scaled to 100, squared (range $\frac{1}{4}$ 2.21–10,000). Total reported cost represents all direct and indirect costs associated with strikes reported for a species. Species are listed in decreasing order of risk.⁵

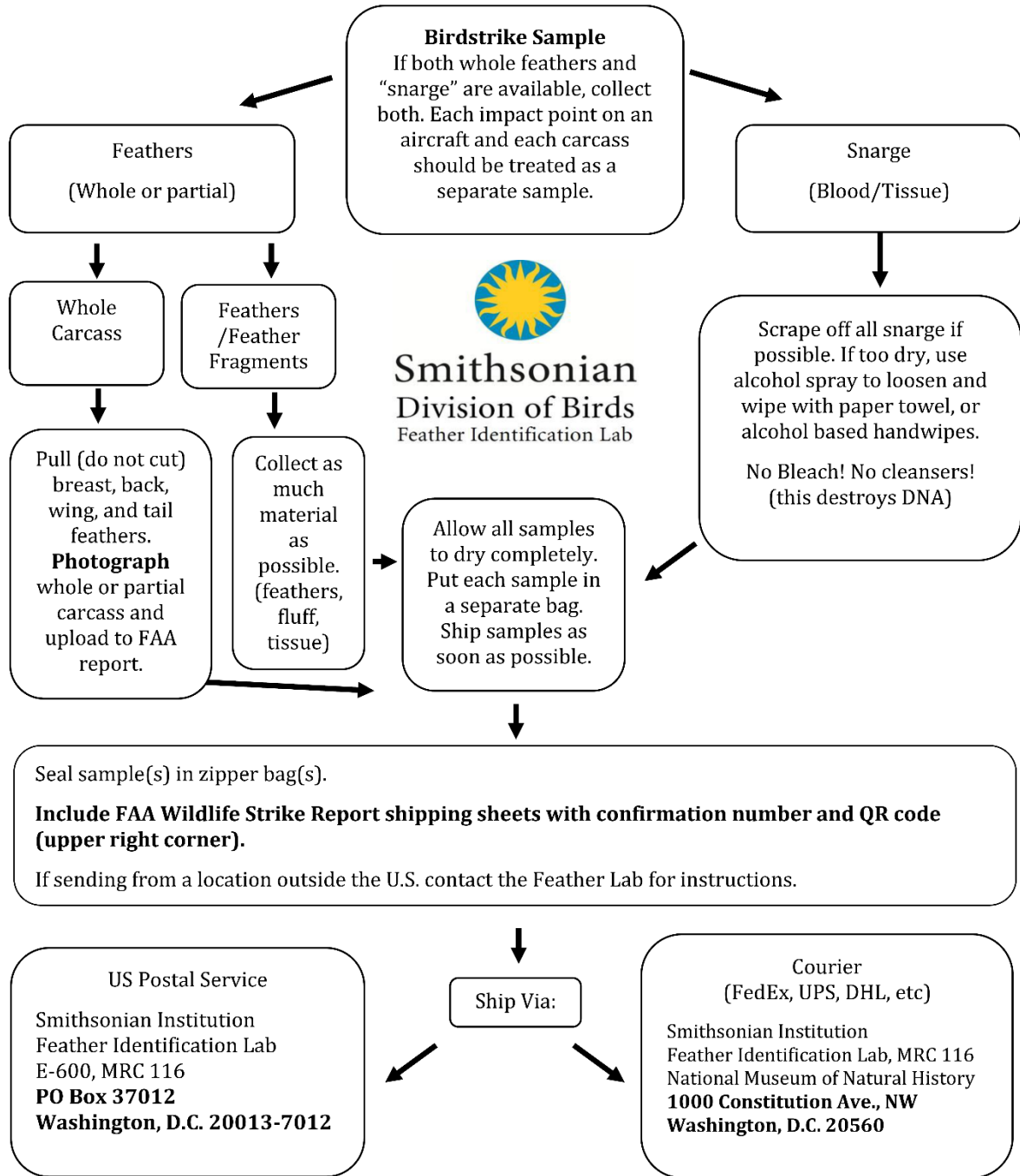
Species	Risk rank	Damaging strikes	Total strikes	RHS	Risk	Total reported cost (\$US)
Red-tailed hawk (<i>Buteo jamaicensis</i>)	1	118	515	44	2,780,325	17,660,362
Canada goose (<i>Branta canadensis</i>)	2	121	232	87	2,233,249	10,872,559
Turkey vulture (<i>Cathartes aura</i>)	3	89	158	94	1,229,499	4,444,706
Rock pigeon (<i>Columba livia</i>)	4	40	493	23	680,923	3,982,209
Mourning dove (<i>Zenaida macroura</i>)	5	36	1,080	9	560,248	569,698
European starling (<i>Sturnus vulgaris</i>)	6	28	698	11	315,575	697,385
Mallard (<i>Anas platyrhynchos</i>)	7	34	129	57	299,799	5,617,599
Ring-billed gull (<i>Larus delawarensis</i>)	8	28	252	23	189,512	537,910
Herring gull (<i>Larus argentatus</i>)	9	26	147	37	163,056	2,011,880
Bald eagle (<i>Haliaeetus leucocephalus</i>)	10	28	64	80	145,365	8,693,343
Black vulture (<i>Coragyps atratus</i>)	11	30	48	100	127,361	564,402
American kestrel (<i>Falco sparverius</i>)	12	5	685	6	99,146	5,400
Osprey (<i>Pandion haliaetus</i>)	13	22	86	42	72,175	451,143
Barn swallow (<i>Hirundo rustica</i>)	14	6	1,345	3	69,181	39,951
Killdeer (<i>Charadrius vociferus</i>)	15	9	719	5	65,127	498,060
Great blue heron (<i>Ardea herodias</i>)	16	19	70	46	57,086	178,957
Sandhill crane (<i>Grus canadensis</i>)	17	16	28	100	43,220	155,500
American coot (<i>Fulica americana</i>)	18	15	38	69	38,431	5,157,700
Double-crested cormorant (<i>Phalacrocorax auritus</i>)	19	10	25	100	34,303	960,000
Cattle egret (<i>Bubulcus ibis</i>)	20	10	86	29	33,508	133,300
Northern pintail (<i>Anas acuta</i>)	21	11	40	58	29,599	5,540,520
Eastern meadowlark (<i>Sturnella magna</i>)	22	5	325	7	24,838	556,600
Peregrine falcon (<i>Falco peregrinus</i>)	23	9	56	35	21,023	234,550
Snowy owl (<i>Bubo scandiacus</i>)	24	11	56	34	19,759	1,450,792
California gull (<i>Larus californicus</i>)	25	10	47	38	17,420	197,420
Horned lark (<i>Eremophila alpestris</i>)	26	2	715	2	16,387	72,890
Barn owl (<i>Tyto alba</i>)	27	8	162	10	14,222	35,200
Swainson's hawk (<i>Buteo swainsoni</i>)	28	10	36	44	14,159	193,227
Wild turkey (<i>Meleagris gallopavo</i>)	29	10	24	66	13,793	131,500
Great horned owl (<i>Bubo virginianus</i>)	30	12	38	39	12,217	95,500
American crow (<i>Corvus brachyrhynchos</i>)	31	4	67	16	6,080	1,292
Glaucous-winged gull (<i>Larus glaucescens</i>)	32	7	26	36	4,751	1,000
American robin (<i>Turdus migratorius</i>)	33	6	124	7	4,323	103,115
Pacific golden-plover (<i>Pluvialis fulva</i>)	34	6	114	7	3,857	300,468
Short-eared owl (<i>Asio flammeus</i>)	35	3	59	14	3,746	101,250
Snow bunting (<i>Plectrophenax nivalis</i>)	36	2	95	9	3,732	17,200
Western gull (<i>Larus occidentalis</i>)	37	5	22	37	3,672	1,045,000
Rough-legged hawk (<i>Buteo lagopus</i>)	38	5	21	38	3,544	60,000

⁵ DeVault, Travis L.; Blackwell, Bradley F.; Seamans, Thomas W.; Begier, Michael J.; Kougher, Jason D.; Washburn, Jenny E.; Miller, Phyllis R.; and Dolbeer, Richard A., "Estimating Interspecific Economic Risk of Bird Strikes With Aircraft" (2018). USDA National Wildlife Research Center - Staff Publications. 2074. https://digitalcommons.unl.edu/icwdm_usdanwrc/2074

Species	Risk rank	Damaging strikes	Total strikes	RHS	Risk	Total reported cost (\$US)
Dunlin (<i>Calidris alpina</i>)	39	3	24	33	3,463	35,099
Cliff swallow (<i>Petrochelidon pyrrhonota</i>)	40	0	417	2	2,620	251,700
Laughing gull (<i>Leucophaeus atricilla</i>)	41	3	66	10	2,528	200
Red-winged blackbird (<i>Agelaius phoeniceus</i>)	42	1	53	12	2,312	20,000
Common myna (<i>Acridotheres tristis</i>)	43	1	35	14	1,276	0
Purple martin (<i>Progne subis</i>)	44	2	39	12	1,229	79,100
Great egret (<i>Ardea alba</i>)	45	4	20	23	1,158	20,500
Lapland longspur (<i>Calcarius lapponicus</i>)	46	1	24	19	1,092	0
Savannah sparrow (<i>Passerculus sandwichensis</i>)	47	0	72	6	1,026	12,800
Zebra dove (<i>Geopelia striata</i>)	48	0	37	11	836	1,000
Western meadowlark (<i>Sturnella neglecta</i>)	49	0	189	2	786	285
Tree swallow (<i>Tachycineta bicolor</i>)	50	0	258	1	674	500
Cedar waxwing (<i>Bombycilla cedrorum</i>)	51	2	55	6	577	3,750
Western sandpiper (<i>Calidris mauri</i>)	52	2	43	7	575	34,100
Chimney swift (<i>Chaetura pelagica</i>)	53	1	171	2	565	13,800
Western kingbird (<i>Tyrannus verticalis</i>)	54	2	47	6	391	1,500
Franklin's gull (<i>Leucophaeus pipixcan</i>)	55	1	21	12	357	200
Common grackle (<i>Quiscalus quiscula</i>)	56	1	22	11	342	430
House sparrow (<i>Passer domesticus</i>)	57	1	40	6	328	2,050
Spotted dove (<i>Streptopelia chinensis</i>)	58	0	37	6	301	0
Upland sandpiper (<i>Bartramia longicauda</i>)	59	1	24	8	197	0
American golden-plover (<i>Pluvialis dominica</i>)	60	1	25	7	190	0
Black-bellied plover (<i>Pluvialis squatarola</i>)	61	2	25	7	190	0
Common nighthawk (<i>Chordeiles minor</i>)	62	0	60	3	165	0
Burrowing owl (<i>Athene cunicularia</i>)	63	1	24	7	146	500
Scissor-tailed flycatcher (<i>Tyrannus forficatus</i>)	64	0	46	3	140	550
N. rough-winged swallow (<i>Stelgidopteryx serripennis</i>)	65	1	26	6	139	0
Bank swallow (<i>Riparia riparia</i>)	66	0	156	1	139	8,014
Brown-headed cowbird (<i>Molothrus ater</i>)	67	0	30	3	41	0
Scaly-breasted munia (<i>Lonchura punctulata</i>)	68	0	33	3	38	5,000
House finch (<i>Haemorhous mexicanus</i>)	69	0	31	3	36	50
American pipit (<i>Anthus rubescens</i>)	70	0	60	1	35	0
Gray catbird (<i>Dumetella carolinensis</i>)	71	0	21	4	33	8,500
Semipalmated sandpiper (<i>Calidris pusilla</i>)	71	0	21	4	33	500
Dark-eyed junco (<i>Junco hyemalis</i>)	73	0	23	0	0	0
Eurasian skylark (<i>Alauda arvensis</i>)	73	0	23	0	0	0
Lark bunting (<i>Calamospiza melanocorys</i>)	73	0	21	0	0	0
Least sandpiper (<i>Calidris minutilla</i>)	73	0	34	0	0	0
Song sparrow (<i>Melospiza melodia</i>)	73	0	20	0	0	500
White-throated sparrow (<i>Zonotrichia albicollis</i>)	73	0	26	0	0	500
Yellow-rumped warbler (<i>Setophaga coronata</i>)	73	0	40	0	0	0

APPENDIX B. DIAGRAM: HOW TO COLLECT BIRDSTRIKE EVIDENCE

How To Collect Birdstrike Evidence



(Revised Feb 2023)

APPENDIX C. BIRDSTRIKE COLLECTING KITS**“MAKE-YOUR-OWN” - BIRDSTRIKE COLLECTING KITS**

Birdstrike Collecting Kits are cheap to make and easy to assemble. Having pre-made kits available improves birdstrike reporting and encourages the sampling of bird strike remains. Most folks assemble the contents into individual bags or envelopes and keep a supply in field vehicles or office supply cabinets for quick access. Below is a list of recommended items to include in your bird strike collecting kits. Mix and match as budgets permit.

MATERIALS**Re-sealable plastic bags**

A variety of sizes for various amounts of debris; Re-sealable bags help contain liquids and keep odors to a minimum.

Sharpie Markers

Permanent markers are water resistant and used for writing data (date, time, aircraft, etc.) directly on the bag of remains.

Alcohol Wipes

Pre-packaged alcohol hand-wipes can be used to wipe “snarge” off aircraft. Alcohol is better than water at preserving DNA, preventing mold growth, and is more sanitary for humans. Ideally, use ethanol (also called ethyl alcohol) 70% or higher concentration if available. Alcohol content should be a minimum of 40% or greater. Alternatively, use a spray bottle with 70% alcohol to spray the area before wiping with paper towels.

*Do not use wipes with bleach or other cleansers, it destroys DNA.

FTA® Micro Card and Sterile Applicators

If you send a lot of fresh blood/tissue samples for DNA identification, you may want to look into getting Whatman FTA® DNA cards. The material is sampled with a sterile applicator and placed onto the surface of the card that “fixes” the DNA in the sample. For more information on ordering these items contact the Feather Lab.

*Note: If you only occasionally send blood/tissue samples, a paper towel with alcohol, or alcohol wipe is still a good option for this type of material.

Miscellaneous Items for Birdstrike Collecting

Kitchen shears – good for cutting feet, wings, bills (but DO NOT CUT FEATHERS) Tongue depressors, tweezers, cotton swabs/cotton-tipped applicators

Extra Safety Items Hand sanitizing gels Latex Gloves

Protective Eyewear/Safety Glasses

Face Masks (if avian flu is a concern): the CDC recommends NIOSH rated N95 face masks. (These may be referred to as respirators -There is a disposable version of these masks by 3M that looks similar to the regular “cup” style face masks.)

REMINDERS

- Always encourage proper hygiene & provide personnel easy access to cleaning/hygiene supplies.
- Do not cut off the fluffy down at the bottom of feathers.
- Do not use water, bleach or other cleansers on samples, this destroys DNA.
- Be sure personnel are briefed on proper carcass disposal protocols.
- Stay informed to the status of the HPAI H5N1 avian flu virus.
- If sending from overseas contact Feather Identification Lab for instruction.

HEALTH AND SAFETY RESOURCES

The following websites have excellent coverage on current avian flu and zoonotic disease info:

U.S. Geological Survey Wildlife Health Center

<https://www.usgs.gov/centers/nwhc>

Centers for Disease Control and Prevention

<https://www.cdc.gov/flu/avianflu/>

The American Ornithologists' Union Ornithological Council

<https://birdnet.org/wp-content/uploads/2020/11/Avian-Influenza-Fact-Sheet-2020.pdf>

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-300, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5200-32C

Date: _____

Please check all appropriate line items:

An error (procedural or typographical) has been noted in paragraph ____ on page _____.

Recommend paragraph _____ on page _____ be changed as follows:

In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

Other comments:

I would like to discuss the above. Please contact me at (phone number, email address).

Submitted by: _____

Date: _____