Interagency Aviation Lessons Learned

Subject: Bird strikes

Area of Concern: Flight Safety

Distribution: All Aviation Activities

Discussion: At approximately 1440 MST on May 12, 2018, a contractor owned and government operated Beech 200 King Air departed the Phoenix-Mesa Gateway airport in response to a fire located in southeast Arizona. The aircraft was dispatched as an Aerial Supervision Module (ASM) to provide aerial supervision and as a lead plane on the fire. On board the aircraft was the pilot and an Air Tactical Supervisor (AITS).

The pilot stated that there were no bird hazard advisories broadcast on the Automatic Terminal Information Service (ATIS) prior to departure. After departing runway 30L, the aircraft commenced a right turn for a downwind departure.

At an altitude of approximately 1500 feet above ground level (AGL) with an airspeed of approximately 180 knots, the aircrew observed a large bird ahead and slightly above their flight path. The pilot stated that it appeared the bird would pass above them. As they got closer, the bird dove and passed down the left side of the aircraft. The bird struck the aircraft in the area just outboard of the left engine nacelle. The pilot stated that he could see a small amount of blood on the wing near the inboard end of the de-ice boot, but was unable to observe any distortion to the wing skin or boot. He assumed that the bird had hit the propeller and all that remained was residual material on the wing skin. The pilot stated that there were no indications of any negative impact to the propeller/engine by feel, sound, smell or abnormal instrument indications.

The aircrew decided that the aircraft was airworthy and continued with the mission.

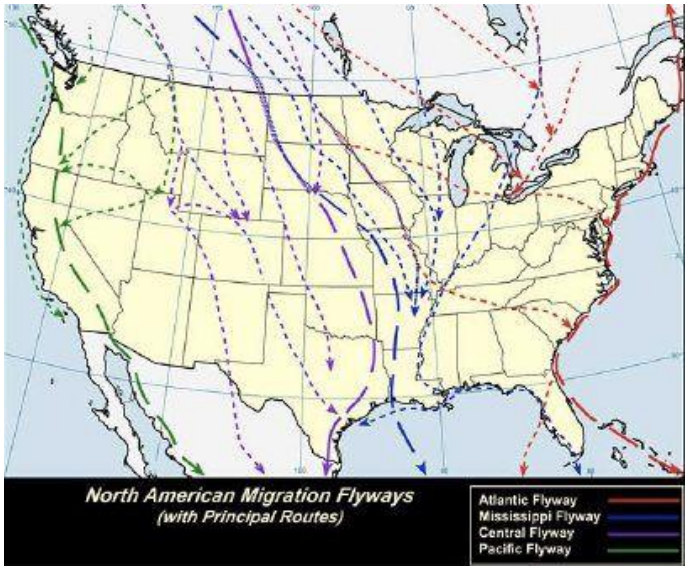
Upon return to the Phoenix-Mesa Gateway air tanker base approximately 2.3 hours later, the aircrew discovered the damage from the bird strike on post-flight. The damaged section of the wing could not be seen by the pilot from inside the aircraft as it was hidden by the engine nacelle.

On May 17, 2018, the NTSB determined that the damage did not meet accident criteria within 49 CFR 830.2.

The remains of a bird after colliding with an aircraft (referred to as snarge) can be collected and sent to the Smithsonian Institute's Feather Identification Lab for testing and analysis to determine which bird species was involved in the collision. Unfortunately in this event, there was only a blood smear on the leading edge of the wing and a sample was not collected.

The population of birds in the United States has been increasing steadily over the past two decades, including large birds. The Canada goose population has tripled in the last decade, and there are now more than 5 million residing in the United States. These geese weigh an average of 12 pounds. Along with those that live in the United States, there are also between 500 million and 1 billion birds that migrate over the United States each year. This is why more bird strikes occur during the migratory season, which falls between July and November. A majority of bird strikes occur during the day, but about 25 percent occur at night. Birds can often be spotted at altitudes above 20,000 feet, though they usually fly around 7,000 feet above ground level.

There are four major migratory flyways: Atlantic (following the East coast); Mississippi (following the Mississippi River from Canada); Central (representing a broad area east of the Rockies, stretching from Canada through Central America); and Pacific (following the west coast). The Mississippi flyway contains the largest number of birds, followed by the Pacific, Central, and Atlantic.



About 90 percent of bird strikes take place at or near airports, usually during taking off or landing. One of the first things you should do is avoid areas in which there is a known risk of a bird strike. You can do this by checking NOTAMS for bird activity near airports.[1]

The U.S. Air Force Bird Aircraft Strike Hazard (BASH) Team, FAA and Helicopter Association International (HAI) offer the following guidance for avoiding and/or dealing with bird strikes:

- Avoid low altitude flight as much as feasible to reduce the risk of a strike.
- Strikes are most likely in July, August, September, and October - particularly in migratory flyways. These tend to be the larger birds.
- Keep a lookout, just as you would for other flying objects.
- Turn on landing or recognition lights. This helps birds see oncoming aircraft.

[1] AOPA Bird and Wildlife Strikes, https://www.aopa.org/training-and-safety/active-pilots/safety-and-technique/bird-and-wildlife-strikes

- Plan to climb. Birds almost invariably dive away, but there are exceptions.
- Slow down. This will allow birds more time to get out of your way and will lessen the impact force if you do hit one.
- If a collision seems likely, duck below the glare shield to avoid being hit by the bird and flying Plexiglas. Advise passengers to do the same. Protect your eyes and head.
- Birds are more likely to be struck during the landing (i.e., descent, approach or landing roll) phase of flight compared to take-off and climb.
- 72% of the bird strikes occur below 500 feet AGL; 92% occur at or below 3,000 feet AGL.
- Less than 2 percent of bird strikes occur above 10,000 feet AGL.
- If your helment has a visor, keep it down from startup to shutdown.

In the event of a bird or wildlife strike, the pilot should land as soon as possible and inspect the aircraft for damage. Any damage will need to be inspected by qualified maintenance personnel and any injuries assessed by qualified medical personnel. Any event involving damage or injury shall be reported by the most expeditious means available [888-4MISHAP (888-464-7427)]. Be sure to fill out the **FAA Bird/Wildlife Strike Report** as well.

The following are Lessons Learned from this event:

1. Wildlife strikes to an aircraft must be inspected regardless if the damage is known or suspected. Discontinue the mission and land as soon as possible. Don't risk flying an unairworthy aircraft.

2. Mission urgency can affect decision making. Continuing a mission when suspected or unknown damage to your aircraft poses significant unacceptable risk. No mission is worth losing your life or the life of the aircrew.

3. Qualified personnel are required to inspect aircraft, assess injuries, and report using the most expeditious means available. Wildlife strikes should be reported to the FAA in accordance with *AC 150/5200-32B Reporting Wildlife Aircraft Strikes*. Quick reporting by the aircrew following the post flight inspection of the aircraft (as in this event) is essential.

4. Airfield managers should post information on known wildlife hazards that are in and around the airfield.

For further information, see:

- The Air Force BASH site: http://www.safety.af.mil/Divisions/Aviation-Safety-Division/BASH/
- The Bird Avoidance Model (BAM) site: https://catalog.data.gov/dataset/bird-avoidance-model
- The Bird Strike Committee USA site: http://www.birdstrike.org

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