

AIRBORNE PUBLIC SAFETY ASSOCIATION



The

Safety

Wire

June 2018

BIRD STRIKES were one of the first topics covered when I started writing this newsletter in 2012. Among their many 'firsts', the Wright Brothers also claim the first recorded bird strike when Orville hit one in 1905. The first bird strike related fatal accident occurred in 1912 when a seagull got jammed in the controls of a Wright Model EX, piloted by Cal Rogers in Long Beach, California. Most of us have hit several throughout our careers and, according to reports, the likelihood of future impacts is higher than it has ever been due to increased bird populations, among other reasons. We have all read the accident reports and seen the pictures. Despite all of the information, the 'take away' from most informational sessions about birds is, "Be careful and try not to hit one!" We tend to throw our hands in the air and declare it's just part of doing business, giving up on trying to do anything because there will always be birds in the same air we are sharing. Well, there are ways to mitigate the risk.



APSCON 2018

We will have an opportunity to listen to industry expert Phyllis Miller speak about bird strikes during APSCON 2018 in Louisville:

- Friday 14:00 Tech Talk Theater # 1 on the exhibit floor

Severity:

Personal Protective Equipment (PPE), chiefly a helmet and eye protection, is the most effective way to lower severity. In reading bird strike reports, the outcome is significantly different if a helmet was being worn by at least the pilot. There is simply no arguing that if you get hit in the head with a bird and glass, your chances for survival are exponentially better if your noggin and face are properly protected. I am willing to guess getting hit in the face by a large bird at 100 knots is more uncomfortable than wearing a helmet ever could be.

Fixed-wing flyers are not immune to this PPE requirement. I have heard people say that their fixed-wing operations are conducted at altitudes where bird strikes are less common. The most severe bird strike I ever had was in a Cessna 210 returning from a patrol flight. I would also suggest reading Iowa State Patrol pilot Scott Pigsley's harrowing story of hitting a flock of geese at night in a Cessna (*Air Beat*, Sept-Oct 2012, p. 22).

Preparation is another way to reduce the severity of a bird strike. The first time you discuss what to do in case of a bird strike should not be immediately after a duck takes out your canopy. This preparation should include a discussion about communications, injuries and possible pilot incapacitation. Teaching non-pilot crewmembers to fly the aircraft in an emergency (a.k.a. Pinch Hitter training) is a topic worthy of an entire newsletter. Following a bird strike, a trained TFO or second pilot can be the difference between the outcome being an incident with minor injury or an accident with total aircraft loss and multiple fatalities.

The aircrew training does not need to be limited exclusively to pilot incapacitation. A severe strike could lead to flight control, airframe or engine damage. The crew of the aircraft in the picture here took this photo after a large bird struck the tail rotor driveshaft and splattered aft the gearbox.





Cockpit glass upgrades are another interesting approach to reducing the severity of hitting a bird in flight. One state police aviation unit had six bird strikes in two years, two of which penetrated into the cockpit. The agency decided to mitigate the risk involved in future incidents by installing polycarbonate canopies in their Bell 407s.

Probability:

Of the two options for mitigating risk, reducing probability is the more difficult option when it comes to bird strikes. As mentioned above, aircrew training is an important part of bird strike safety efforts and should occur before the feathers start to fly. Teaching a new crewmember basic ideas about strike avoidance should be part of initial training. One of my favorite tips for new unit members is to immediately look for additional 'wingmen' when the first bird is spotted. You may also consider formalizing hand signals so a pilot doesn't misinterpret a TFO pointing out a bird as a signal to fly in that direction.

Location can play an important role in bird strike probability reduction. Birds tend to congregate in certain areas such as landfills, piers, popular nesting areas, etc. Identifying these and minimizing flights through those areas is an easy way to reduce risk in this category.

Altitude is a major factor in bird strike mitigation. According to the FAA, more than 50% of strikes occur below 500 feet AGL. Their studies show that flying above the 500' mark lowers the chance of a bird strike by 40%. Most of the thermal imagers we use today can be comfortably used well above 500 feet AGL. Actually, in many ways, using a modern camera system from a higher altitude is easier and more effective. Lowered risk of a bird strike is just one more good reason to operate from higher altitudes, especially at night.

Lights seem to encompass an area of great debate in the bird strike avoidance world. From my early days of flying, I was told of a military study that showed a decrease in bird strikes on aircraft that used landing lights at lower altitudes. The USDA also did a study and found that lights, specifically pulsating ones, had an effect on birds. However, the effect was influenced greatly by the type of bird, time of day and lighting, etc. For each article I find supporting the use of



of landing lights at lower altitudes, I can find one that says it doesn't matter. One study supporting the benefit of aircraft lighting can be accessed here:

http://www.avweb.com/avwebflash/news/Report_LightsHelpPreventBirdStrikes_206986-1.html

Additional Tips:

- Familiarize yourself with local and national bird migration routes.
- Avoid sanctuaries, landfills, fish processing plants and other bird havens.
- Avoid low flights along rivers or shorelines.
- When the presence of birds is likely, use landing lights during all phases of flight.
- Keep your visor lowered in flight to deal with windshield penetration.
- Up to 90 kts, birds might take evasive action, but the greater your speed, the greater the chance they can't.
- If one bird is avoided, be on the lookout for others nearby.
- If the windshield is penetrated, slow the aircraft to reduce the confusion from wind-blast, debris or precipitation.
- Fly the aircraft first and always. Don't get distracted by the blood, feathers, noise and wind.

**I THINK WE CONSIDER TOO MUCH THE GOOD LUCK OF THE EARLY BIRD,
AND NOT ENOUGH THE BAD LUCK OF THE EARLY WORM.**

~ FRANKLIN DELANO ROOSEVELT

RESOURCES

- ✓ <http://www.birdstrike.org>
- ✓ <http://birdcast.info>
- ✓ <https://wildlife.faa.gov>
- ✓ https://www.faa.gov/airports/airport_safety/wildlife/media/Wildlife-Strike-Report-1990-2015.pdf
- ✓ <https://www.aopa.org/training-and-safety/active-pilots/safety-and-technique/bird-and-wildlife-strikes>
- ✓ <https://www.easa.europa.eu/sites/default/files/dfu/Final%20report%20Bird%20Strike%20Study.pdf>

APSA ONLINE MEETINGS

The schedule for upcoming APSA online meetings is as follows.
If you would like to join, send an email to: Safety@PublicSafetyAviation.org



UAS:

Wednesday, August 8, 2018
1:00 PM - 2:00 PM EDT (1800 UTC)

Safety Officers:

Friday, August 17, 2018
1:00 PM - 2:00 PM EDT (1800 UTC)

Maintenance:

Friday, August 24th, 2018
1:00 PM - 2:00 PM EDT (1800 UTC)

IF YOUR SYSTEM INVOLVES ACCIDENTS, THEN THE SOLUTION IS NOT TO FIND EXCUSES FOR THE ACCIDENTS. THE SOLUTION IS TO CHANGE THE SYSTEM.

*~ RICHARD BACH
THE GIFT OF WINGS*

REALITY CHECK...

Note: *The following reports are taken directly from the reporting source and edited for length. The grammatical format and writing style of the reporting source has been retained. My comments are added in red where appropriate. The goal of publishing these reports is to learn from these tragic events and not to pass judgment on the persons involved.*

Aircraft: Jabiru SK Tavira

Injuries: 1 minor

The aircraft was on the final approach about 1 km from the landing strip when the pilot dodged a bird by turning and diving. The aircraft struck power lines, which became entangled with the aircraft. It crashed 180 metres from the displaced threshold. The two occupants escaped, the pilot suffering a minor arm injury but the aircraft was destroyed by fire.

Aircraft: Bell-47

Injuries: 1 fatal

During cruise pilot heard a loud bang and felt vibration in rudder pedals then lost all yaw control. Pilot thought the tail rotor struck a large sea bird, as many were in the area. He maintained directional control and tried to lower the helicopter so that the passenger (a ship's captain) could reach small boats being lowered by his ship nearby. The passenger jumped before the pilot gave the okay and was killed. The pilot subsequently made a running landing on the water and was hoisted on board the ship.

Aircraft: Cessna 208

Injuries: none

During approach to landing a bird strike jammed the elevator. Pilot landed safely using power and elevator trim. Bird hit the end of the left stabilizer and peeled back some skin, which jammed the elevator in the neutral position.

Aircraft: Sikorsky S-76C++

Injuries: 8 fatal, 1 serious

Data from the helicopter's flight data recorder indicated that the helicopter established level cruise flight at 850 feet mean sea level and 135 knots indicated air speed. About 7 minutes after departure, the cockpit voice recorder recorded a loud bang, followed by sounds consistent with rushing wind and a power reduction on both engines and a decay of main rotor revolutions per minute. Due to the sudden power loss, the

helicopter departed controlled flight and descended rapidly into marshy terrain.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

(1) The sudden loss of power to both engines that resulted from impact with a bird (red-tailed hawk), which fractured the windshield and interfered with engine fuel controls.

(2) The subsequent disorientation of the flight crewmembers, which left them unable to recover from the loss of power.



There are no new ways to crash an aircraft...

...but there are new ways to keep them from crashing.

Safe hunting,

Bryan 'MaGi' Smith

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