Overview

- Bird strikes prove that $KE = \frac{1}{2} MV^2$ is a valid equation. (Kinetic Energy = one half times the mass times the velocity squared.)
- A 12-pound Canada goose struck by a 150-mph airplane at liftoff generates the kinetic energy of a 1,000-pound weight dropped from a height of 10 feet.
  - Or as the US Navy used to say it..."one small bird can tear hell out of an airplane".
Overview

- Though not high on the list of fatal accident causes, bird strikes have killed close to 300 people since we started flinging ourselves into the sky in machines.
  - The first recorded bird strike was reported by the Wright brothers in 1905; the first bird strike fatality was in 1912.
  - One of the most famous bird strike events was the “Miracle on the Hudson” water landing, January 15, 2009, involving a US Airways Airbus 320-214.
- We’re here today to discuss the risk from bird strikes and what we can do about them.
- How many of you have had a bird strike?
The Numbers

- Bird strikes are actually common.
  - 9000 collisions with wildlife occurred in the US during 2010; most of those were bird strikes. (950 collisions occurred with deer and 350 with coyote between 1990 during 2009.)
  - The USAF reported 5000 bird strikes in 2010.

- Bird strike numbers are generally increasing.
  - More birds are in the air because of better conservation efforts.

- Most bird strikes are relatively benign, but there are exceptions.
  - From 1990-2008, there were 106,604 strikes; 2,780 caused “substantial damage”.
The Numbers

- A statistical breakdown of where they hit the airplane:
  - Engine – 44%
  - Wing – 31%
  - Windshield – 13%
  - Nose – 8%
  - Fuselage – 4%

- 81% of bird strikes occur below 3000 ft. AGL (FAA 2005 data).
Bird Strike Myths

- According to recently published research on bird strikes, these are the myths:
  - birds don’t fly at night.
  - birds don’t fly in poor visibility, such as in clouds, fog, rain, or snow.
  - birds can detect airplane landing lights and weather radar and avoid the airplane.
  - airplane colors and jet engine spinner markings help to repel birds.
  - birds seek to avoid airplanes because of aerodynamic and engine noise.
  - birds dive to avoid an approaching airplane.

- Don’t count on any of these to keep you safe!
Mitigations

- Keep up a GOOD lookout -90% outside, 10% inside and scan from wingtip to wingtip!
  - Be looking for anything you can hit—including birds!
  - Deviate to put distance between you and any bird you see.
- Get as high as practical as soon as practical.
  - Most strikes occur in the vicinity of an airport and below 3000 feet,
  - Don’t fly low over wildlife preserves or garbage dumps.
- Slow down as much as you can.
Mitigations

- Note bird activity before takeoff and on the landing approach.
  - If during takeoff, delay takeoff or switch to another runway.
  - If on landing, reduce speed as much as possible.

- Check with your airport to see if they have a Wildlife Mitigation Plan.

- Oppose any landfills or nature preserves within 5 nm of your airport.

- Understand what a collision bearing is and how to get out of it.
If you have a bird strike...

- **FLY THE AIRPLANE!**
- Assess damage to you, your passengers, and your airplane.
  - Declare an Emergency if you need to.
  - For damage you can see, what could it cause?
    - What can you do to mitigate it?
  - Don’t assume you can see all the damage.
    - Listen and feel
    - If anything is out of kilter, land and inspect.
- File a bird strike report with the FAA when feasible. (http://wildlife.faa.gov).