Aviation and Mitigation

Aviation Safety Considerations

Presented to: ASWM
By: Michael Lamprecht
Date: April 12, 2018
SNARGE (Def.):
• the remains of a bird after it has collided with an airplane (Wiktionary)
• the residue smeared on an airplane after a bird/plane collision (Collins Dictionary)

This presentation contains some graphic photos depicting what happens when animals and airplanes meet.
Goals:

• Give a history of wildlife strikes and aviation safety.
• Inform you of FAA mitigation policy
• Increase awareness of the dangers posed to safe aviation by wildlife and mitigation near airports
• Improve future mitigation success for both aviation and wildlife
REPORT WILDLIFE STRIKES

FIRST FLIGHT – DECEMBER 17, 1903
FIRST REPORTED STRIKE – SEPTEMBER 7, 1905

Galbraith Rodgers  (Jan 12, 1879 – Apr 3, 1912)

First person to be killed in a wildlife strike  (April 3, 1912)
1960 Boston Crash

Lockheed Electra

62 Fatalities
WHAT WE KNOW (1990 – 2015)

- Larger animals and flocking birds represent significant hazards to aviation
- Globally - wildlife strikes have resulted in >262 fatalities and >247 aircraft destroyed (1988 – 2015)
- USA strikes – birds (529 species; 97% of all strikes); terrestrial mammals (43 species); bats (22 species); reptiles (18 species)
- About 37 strikes reported / day (<5% = damage)
The Poster Child for Bird Strike Awareness
$KE = \frac{1}{2} MV^2$

What Part Don’t You Understand?
<table>
<thead>
<tr>
<th>Species Group</th>
<th>Damage</th>
<th>Major Damage</th>
<th>Effect on Flight</th>
<th>Composite Ranking</th>
<th>Relative Hazard Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Vultures</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>64</td>
</tr>
<tr>
<td>Geese</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>55</td>
</tr>
<tr>
<td>Cormorants/pelican</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>54</td>
</tr>
<tr>
<td>Cranes</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>47</td>
</tr>
<tr>
<td>Eagles</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>41</td>
</tr>
<tr>
<td>Ducks</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>39</td>
</tr>
<tr>
<td>Osprey</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>39</td>
</tr>
<tr>
<td>Turkey/peasants</td>
<td>9</td>
<td>7</td>
<td>11</td>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>Herons</td>
<td>11</td>
<td>14</td>
<td>9</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Hawks (buteos)</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Gulls</td>
<td>12</td>
<td>11</td>
<td>13</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Rock pigeon</td>
<td>13</td>
<td>10</td>
<td>14</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Owls</td>
<td>14</td>
<td>13</td>
<td>20</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>H. lark/s. bunting</td>
<td>18</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Crows/ravens</td>
<td>15</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Coyote</td>
<td>16</td>
<td>19</td>
<td>5</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Mourning dove</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>Shorebirds</td>
<td>19</td>
<td>21</td>
<td>18</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Blackbirds/starling</td>
<td>20</td>
<td>22</td>
<td>19</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>American kestrel</td>
<td>21</td>
<td>18</td>
<td>21</td>
<td>21</td>
<td>9</td>
</tr>
<tr>
<td>Meadowlarks</td>
<td>22</td>
<td>20</td>
<td>22</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Swallows</td>
<td>24</td>
<td>23</td>
<td>24</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>Sparrows</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>24</td>
<td>4</td>
</tr>
<tr>
<td>Nighthawks</td>
<td>23</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>1</td>
</tr>
</tbody>
</table>
Varied Thrush (< 3 ounces)
261 Knots @ 14,000' AGL
• Wildlife / Aircraft Strikes from the ground up -

0-3,500 ft AGL = 92% of strikes

* 0-1,500 ft AGL = 82% of strikes

0-500 ft AGL = 71% of strikes

0 ft AGL = 41% of strikes
Separation Distances

5 miles
Policy:

- **Wildlife Hazard Management Plans (Part 139)**
  - Must be completed when:
    - An air carrier aircraft experiences multiple wildlife strikes
    - An air carrier aircraft experiences substantial damage
    - An air carrier aircraft experiences engine ingestion of wildlife
    - Wildlife of size or numbers have access to airport flight pattern
FAA Policy continued…

- **AC 32 Reporting Wildlife Aircraft Strikes**
  - Set protocols for reporting
  - Shows how to access database

- **AC 33 Hazardous Wildlife Attractants On or Near Airports**
  - Provides guidance on certain land uses that have the potential to attract wildlife hazardous to aviation
  - Discusses airport development projects that may affect aircraft movement near hazardous wildlife attractants
AC 38 - PROTOCOL FOR THE CONDUCT AND REVIEW OF WILDLIFE HAZARD SITE VISITS, WILDLIFE HAZARD ASSESSMENTS, AND WILDLIFE HAZARD MANAGEMENT PLANS.

– defines the minimum acceptable standards for the conduct and preparation of:
  • Site visits
  • assessments and
  • management plans

– Provides guidelines when a site visit can be conducted verse a hazard assessment must be conducted

– defines and explains continual monitoring programs
Airports Are Unique Environments

• Qualified airport Wildlife Biologist

• So when looking at mitigation near an airport please coordinate with the airport.

• Memorandum of Agreement Between the FAA, USAF, USA, EPA, USFWS, and USDA to Address Aircraft-Wildlife Strikes: Efforts intended to minimize wildlife risks to aviation while protecting environmental resources
QUESTIONS?