Integration of Bird Banding Laboratory and National Wildlife Strike Databases to enhance data quality and aviation safety

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Bird Strike Committee-USA, 21-23 Aug 2018, Baltimore
Acknowledgements

U.S. Federal Aviation Administration
U.S. Department of Agriculture, Wildlife Services
U.S. Geological Survey, Bird Banding Laboratory

Findings and recommendations do not necessarily represent the position of the Federal Aviation Administration
USGS Bird Banding Laboratory Database (BBLD):
• Established in 1920.
• Collection, management and dissemination of information from banded birds in North America.
• About 100,000 band encounter reports /year.

FAA National Wildlife Strike Database (NWSD):
• Established in 1990.
• Collection, management and dissemination of information from civil aircraft strikes with birds/other wildlife in USA.
• Over 13,000 bird strikes reported/year (200,000 total).
FAA Form 5200-7 (Reporting a bird/other wildlife strike)

<table>
<thead>
<tr>
<th>17. Bird/Other Wildlife Species</th>
<th>18. Number Seen and/or Struck</th>
<th>19. Size of Bird(s)</th>
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<tr>
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<td></td>
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<td></td>
<td>11 - 100</td>
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</tr>
<tr>
<td></td>
<td>more than 100</td>
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</tbody>
</table>

20. Pilot Warned of Birds/Wildlife? □ Yes □ No

21. Remarks (Describe damage, injuries, and other pertinent information such as bird band numbers, fuel jettisons)
Developing the Bird Band Strike Database (BBSD)

**NWSD:** Search Remarks field (200,000 records) for band #s.

**BBSD:**
Enter from NWSD: Index #, band #, species, strike date, airport.
Send band #s to BBL to obtain:
  * Date, species, and age at banding,
  * Banding status (released at capture site or relocated),
  * Lat/Long of capture (and release site if relocation),
  * Date and Lat/Long (airport) of band encounter.

**BBLD:**
*Obtain “Band encounter” records for birds struck by aircraft.
*Cross check with NWSD; add new strikes into NWSD & BBSD.
Voilà!!

Bird Band Strike Database (BBSĐ)

<table>
<thead>
<tr>
<th>ID</th>
<th>Index Nr</th>
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<th>Band Date</th>
<th>Band Age</th>
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When you band birds during relocation programs:

• Timely report banding data to BBL (within 90 days):
  • Banding status code = 02 (bird relocated from capture site),
  • Airport where bird captured (this is in remarks),
  • Location where released (this is banding location).

When you find a band on a bird struck at your airport:

• Enter band numbers/tags in Remarks section of 5200-7 (e.g., USGS band 1427-15630),
• Report band numbers to BBL (date, species, location, “how obtained” code = 39).
The Tragic Life of Jetta

By Ricky Dolbeer
The Tragic Life Of Jetta

By Ricky Dolbeer


A Red-tailed hawk is hatched into a good nest in an affluent suburb of Milwaukee.

Like most suburban youngsters, he is surrounded by love and well provisioned.

He is an above-average student who enjoys playing Whac-a-Mole with friends.
Chapter 2. Fall 2008.

When the teenager leaves the supervision of his parents, he starts hanging out with a bad crowd at MKE and huffing Jet A fuel.
His punk friends start calling him Jetta.

He develops an “attitude”.

After repeated, unheeded warnings from the authorities, Jetta is captured and incarcerated on September 15, 2008.

After a stern lecture, the teenager has a tarsal monitor attached and is released on probation at a Wildlife Refuge, 21 miles from MKE.

The authorities believe the clean air, pastoral surroundings, and good role models in this foster home will be therapeutic for Jetta, transitioning him to a productive, virtuous life.
Chapter 3. Year 2010. Jetta struggles to stay clean but cannot establish a territory in the already overcrowded foster home. He leaves the home and relapses into his old lifestyle.

Jetta gets flipped on his back by a Fed-X truck while snorting diesel fumes along a busy highway on January 31, 2010.
The Tragic Life of Jetta

Medics take the stunned bird to a rehab/detox facility to sober up and undergo PT and counselling for 2 weeks.

Then Jetta has a second tarsal monitor (USGS band) attached and is released into another wildlife park-foster home 10 miles from MKE on February 12, 2010.
Chapter 4. Year 2011. Jetta stays clean for over a year and things are looking up.

He finds a girlfriend and considers marriage but cannot find a good territory due to his disruptive relocations.

Thus, Jetta suffers a third relapse. He violates his restraining order and starts huffing Jet A at MKE again.

This time his luck runs out.

Jetta is fatally struck by an aircraft on Runway 19R on October 22, 2011 at age 3.5 years.
Epilogue:

• Jetta was buried in a pauper’s grave at MKE alongside the remains of other notable birdstrike victims.

• Jetta’s family is suing MKE & others for the repeated exposures to petroleum fumes and disruptive relocations to overcrowded foster homes. The claimants state these actions resulted in Jetta’s loss of self esteem and untimely death.
A “Tail” of Two Airports
By Ricky Dolbeer, PhD (Piled higher & Deeper)
The eerie story of the long-distance recovery of a banded red-tailed hawk
With a lot of help from:

Edgar Allen Poe, 1809-1849
Charles Dickens, 1812-1870
A “Tail” of Two Airports

Once upon a midnight dreary, as Ricky pondered weak and weary, Over many a quaint and curious volume of forgotten lore*,
While he nodded, nearly napping, suddenly he heard a tapping, as if someone gently rapping, rapping at his cranium door!

He rubbed his eyes; the data were irrational, a banded red-tailed hawk, bestruck at Honolulu International!

“’Tis some aberration,” he muttered, “tapping at my cranium door—only this and nothing more.”

*Bird Banding Laboratory Database
A “Tail” of Two Airports

Why was this band recovery such “an aberration tapping at Ricky’s cranium door”?

First, red-tailed hawks are not in the Hawaiian Islands!

Furthermore……..

14 Sep 2012. This HY red-tailed hawk was captured and banded at Portland International Airport (PDX); then relocated and released 60 miles away at Ankeny National Wildlife Refuge, Oregon.

09 Apr 2013. The relocated red-tailed hawk had returned to PDX and was observed at airport.

17 Apr 2013 (8 days later). This bird is found 2,700 miles away via the Pacific Ocean on a runway at HNL.
A “Tail” of Two Airports

Could this bird have flown to Honolulu where it was struck? Quoth the Raven “Nevermore”!

**Conclusion:** After discussions with PDX and BBL personnel, we concluded that this red-tail was:

- struck at PDX during take-off by one of the daily flights to HNL,
- carried across the Pacific in the landing gear compartment, and
- dislodged as a frozen carcass when the aircraft touched down.

Entries in the NWSD, BBLD, and BBSD were revised accordingly.
A “Tail” of Two Airports

Epilogue: This incident demonstrates:

• Another example of relocated red-tailed hawks struck at airport.
• Diligence needed to minimize the entry of erroneous records.
• Means to introduce invasive plant seeds/parasites/diseases.

Quoth the Raven, “Nevermore”!
"Not knowing how he lost himself, or how he recovered himself, he may never feel certain of not losing himself again."

— Charles Dickens, A Tale of Two Cities
### BBSD: Banded birds struck by aircraft in USA, 1990-2018

<table>
<thead>
<tr>
<th>Rank</th>
<th>Species</th>
<th>Relocated from airport</th>
<th>Released at capture site</th>
<th>Total</th>
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<td>128</td>
<td>131</td>
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<td>Red-tailed hawk</td>
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<tr>
<td>3</td>
<td>American kestrel</td>
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<td>58</td>
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<td>4</td>
<td>Canada goose</td>
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<td>Barn owl</td>
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<td>Osprey</td>
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<td>Grand total</td>
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75% <15 miles from airport

Canada geese (N = 37)

Bar graph showing percentage of geese in different distance bands from the airport:
- 0-5 miles: 40%
- 6-10 miles: 30%
- 11-15 miles: 20%
- 16-20 miles: 10%
- 21-25 miles: 5%
- 26-30 miles: 5%
- >30 miles: 5%
Population of Peregrine Falcons in North America, post-DDT Era

Peregrine falcon - civil aircraft strikes_USA

$R^2 = 0.90$
Mean age of bird when struck by aircraft

Banded in hatching year
Birds banded in hatch year

- Peregrine falcon
- Red-tailed hawk

Percent of total strikes

- Hatch year
- Second year
- After second year
### Relocated banded birds struck by aircraft in USA, 1990-2018

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<tr>
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<td><strong>Total</strong></td>
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<td><strong>19</strong></td>
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</table>
Mean distance for relocated RTHAs struck at capture airport

Capture Airport → 52 RTHA = 74 miles → Release site

Mean distances for relocated RTHAs struck at new airport

Capture Airport → 7 RTHA = 56 miles → Release site

RTHA = 51 miles

Capture Airport → New Airport

RTHA = 51 miles

New Airport → Release site

RTHA = 82 miles
Time (years) from banding to bird strike for red-tailed hawks

- HY: 22 years
- AHY: 37 years

Steps:
1. Age at banding
2. Relocated from airport

Graph indicates:
- Younger birds (HY) have a shorter time to strike
- Older birds (AHY) have a longer time to strike
Min. Population = 2,600,000
Min. Population = 2,500,000
Conclusions (Part 1)

- PEFAs are particularly vulnerable to bird strikes in their first summer/fall.
- For CAGOs, band recovery data support reduction in resident geese populations near airports.
Conclusions (Part 2): Relocation issues:

• Documented 101 cases of raptors relocated from airport struck at same (82) or different (19) airport.

• For RTHAs & AMKEs, no difference in interval of time between relocation and strike for HY and AHY birds.

• Are relocation programs reducing strikes?

  **RTHAs:** Given the 1) increasing population, 2) increasing number of strikes, and 3) high hazard, do we need to focus more on habitat management at airports and less on relocation?

  **AMKEs:** Declining population but increasing number of strikes. Given the low risk that AMKEs pose to civil aircraft, is trap and relocation a good policy? Do we need to focus more on habitat management at airports and less on relocation?

• I commend efforts to refine relocations to reduce return rates.
Goal of NWSD and BBSD: Provide a scientific foundation for policies and management actions to mitigate risk.

Safer Skies for all who fly .... Birds and People!