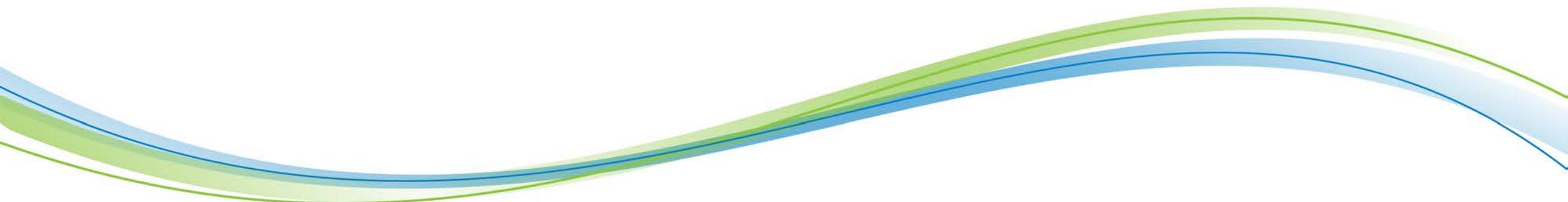


The Raptor Relocation Network

An Innovative Partnership on Bird Strike Reduction



THE PORT AUTHORITY OF NY & NJ



United Airlines Eco-Skies

United Airlines is committed to operating an environmentally sustainable and responsible airline in the air and on the ground.

Focusing on:

- Fuel efficiency and emissions reduction
- Sustainable fuel sources
- Sustainable products and waste management
- Stakeholder, employee and customer engagement

Fuel efficiency and emissions reduction



Sustainable fuel sources



Sustainable products & waste management



Stakeholder and customer engagement



United Airlines Eco-Skies

GREEN RANKING 2017

ONE OF THE MOST RECOGNIZED
ENVIRONMENTAL PERFORMANCE
ASSESSMENTS OF THE WORLD'S
LARGEST PUBLICLY TRADED
COMPANIES

United Airlines:

- #1 airline globally
- #59 among top 500 US
- #100 among top 500 globally

Newsweek IN PARTNERSHIP WITH Corporate Knights 

BEST IN INDUSTRY GLOBAL

LARGEST PUBLICLY
TRADED COMPANIES IN
THE U.S. + GLOBALLY BY
MARKET
CAPITALIZATION



United Airlines Challenge

Challenge

- Bird strikes with damage can cost United tens of thousands of dollars per event
- Nearly all of United's hub airports are in major migratory bird routes
- Airports and USDA manage bird programs, but can lack suitable relocation areas

Solution

- United – official airline of the PGA TOUR – reached out to Audubon International to identify suitable golf course habitats within the Audubon International Cooperative Sanctuary Program (ACSP)

Benefits

- Decreased likelihood of dangerous and costly airplane bird strikes
- Citizen science engagement through the Raptor Release Network
- Education and outreach on endangered/threatened species

Who is Audubon International?

Independent non-profit environmental organization

Mission: Environmentally sustainable property management

- We work where the natural and built environments meet

Position: *THE* trusted name in environmental certification

- Six program areas

ACSP for Golf and the Raptor Relocation Network

Goals

- Conserve natural resources
- Enhance wildlife habitat
- Protect water quality
- Improve communication

Six Key Environmental Focus Areas

- Environmental Planning
- Wildlife and Habitat Management
- Chemical Use Reduction & Safety
- Water Conservation
- Water Quality Management
- Outreach and Education

Ideal Raptor Areas

- High vantage perches and open views
- Wide variety of habitats
- Excellent nesting opportunities

Raptor Relocation Network Kick Off Mini-Summit

Summit Goals

- Build trust
- Establish cooperation
- Educate airport/golf course representatives
- Program buy-in

Representatives

- Audubon International
- USDA APHIS
- United Airlines
- Raptor Specialists
- Port Authority of NY & NJ
- Area Golf Course Managers

Outcomes

- Group discussion on raptors, habitats, and research
- Tracking of migratory birds to establish patterns
 - Focus on American Kestrels
- Development of volunteer citizen science tracking website

Requirements for Becoming a Release Site

Complete Habitat Evaluation Checklist

- Natural plant communities
- Nesting habitats and structures
- Water and food sources
- Pest management practices

Host a Site Visit

- Site visits completed by Audubon International staff

Designate Raptor Relocation Network Point Person

- Receives alerts from wildlife biologists and Audubon International during active relocations

Designate Citizen Scientist Monitors

- Record sightings and observations after each relocation

Site Research and Selection

Distance from Surrounding Airports

- Five miles from any public airport
- AMKE: minimum 15-20 miles from major airports
- Larger raptors: minimum 30-40 miles from major airports

Travel time for relocation teams

Sites Evaluated: 48

Sites Selected: 9

- **New Jersey**
 - **2** sites selected for smaller raptors (i.e. American Kestrels)
 - **2** additional sites selected for larger raptors
- **New York**
 - **5** sites selected for a variety of raptor species

Site Visits

Program Materials for Official Release Sites



- Official Release Site Agreement
- Raptor Relocation Network Release Protocol
- Form 12A (USDA)
- Official Release Site Press Release
- Official Release Site Signage

Trapping and Releases

Banding:

- Each bird receives two bands
 - USGS metal band
 - Orange and white auxiliary band

Release:

- Must occur within 24 hours of trapping

Reporting:

- AI Raptor Tracking Website (by relocation site contact)
- USGS Bird Banding Laboratory (by USDA APHIS)



Banded American Kestrel
(photo provided by PANYNJ)

Observation and Tracking






Please complete this form after each monitoring session. An online version can be completed and submitted online at <https://www.surveymonkey.com/r/RRNCitizenScienceMonitoringForm>.

Date _____ Time _____ Weather _____

Name of Monitor _____ Title (staff, golfer, volunteer) _____

Phone Number _____ Email Address _____

Golf Course Name _____

City _____ State _____ Zip Code _____

Did you see a raptor? Y N If yes, where was raptor seen? _____

Species Type (if known) _____ Band Number(s) (if known) _____

- Protocol for Monitoring and Reporting Sightings

Week One: Daily monitoring required

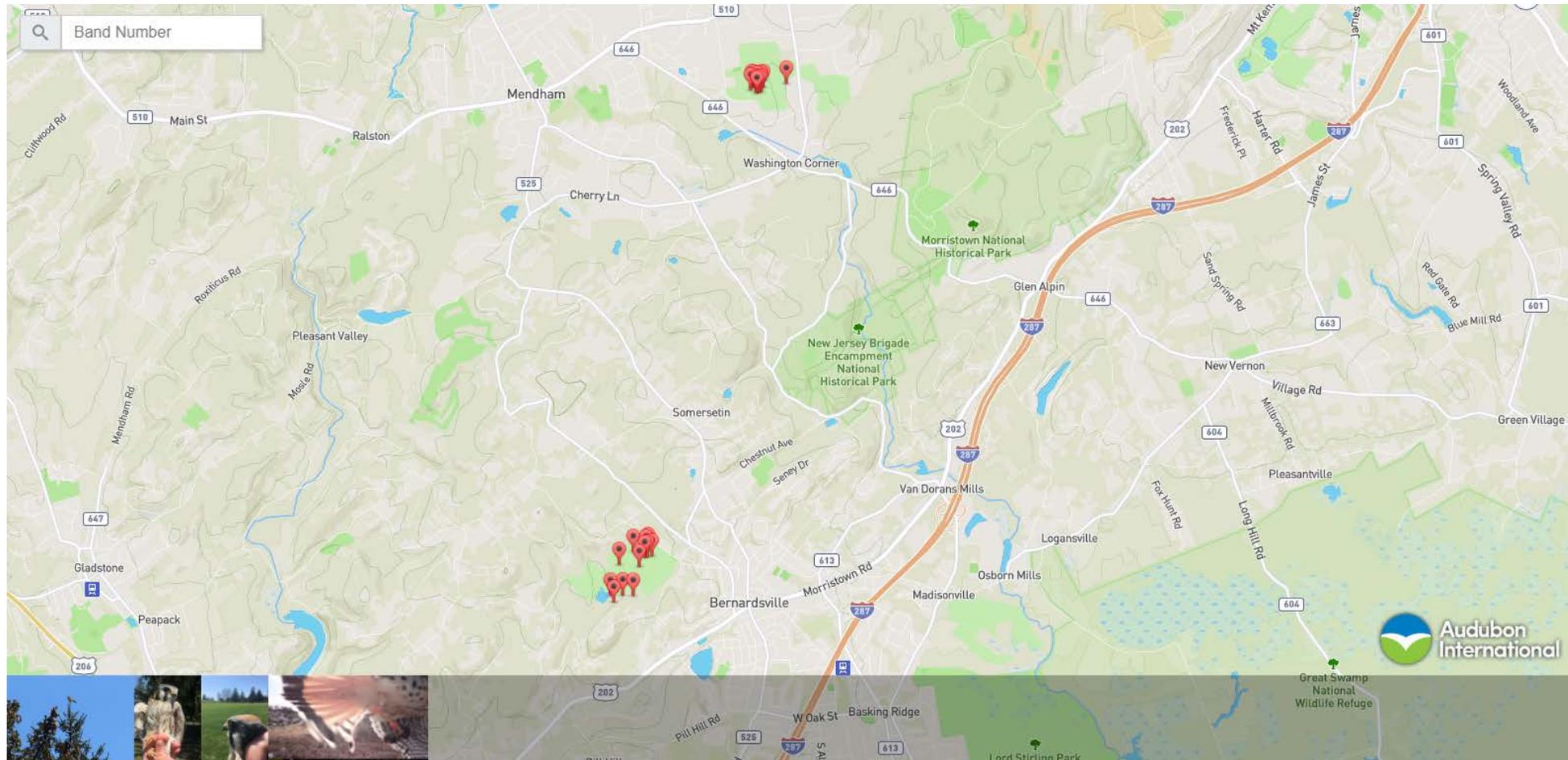
Week Two: Monitoring required at least 3x

Daily monitoring strongly encouraged.

Weeks Three and Four: Monitoring should occur at least once a week.

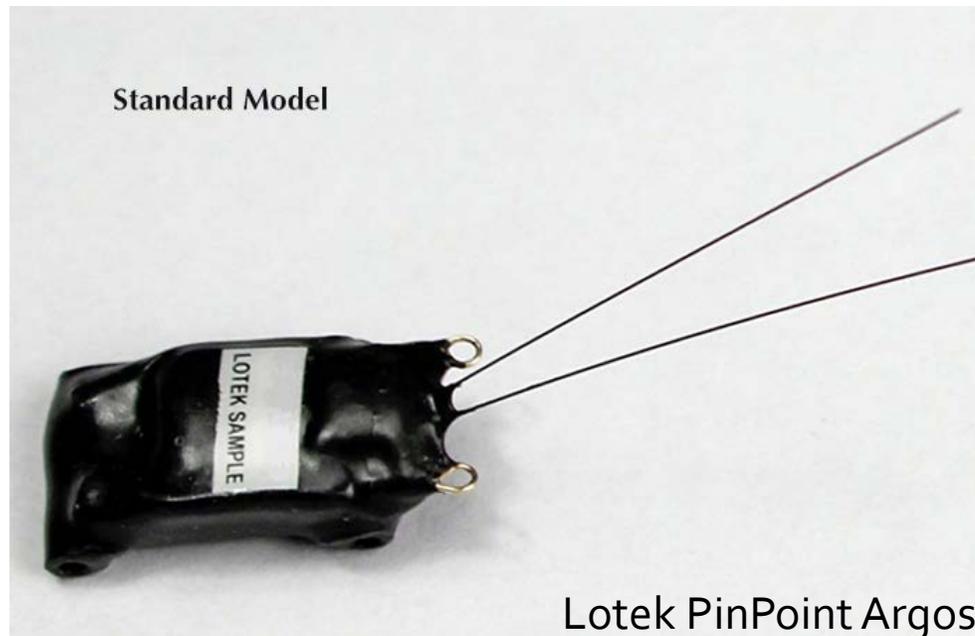
- Citizen Science Monitoring Form
- Raptor Sighting Website and Tool

Raptor Sighting Website



<https://auduboninternationalraptorprogram.org/>

Satellite Telemetry on American Kestrels



Selection

- Factors to consider
 - Type of transmitter (radio, geolocator, GPS)
 - Weight of transmitter: maximum of 4-5 grams
 - Cost
- Selected Lotek PinPoint Argos

Permits

- USGS Bird Banding Laboratory (BBL) federal banding permit
- State required permits

Outcomes to Date

9 Official Release Sites in New York and New Jersey

26 raptors relocated (American Kestrels)

Information recorded for:

- 26 initial relocations
- 6 re-sightings

Satellite telemetry selected

Raptor Trapping at The Port Authority of NY & NJ

Background:

- PANYNJ operates 5 airports in the NYC region
 - EWR, JFK, LGA, TEB, SWF
- Raptor trapping and relocation initiated in 2010 (NJ) and expanded in 2013 (NY)
- Relocated 558 raptors (387 AMKE) since inception
 - 223 in 2017 (180 AMKE)

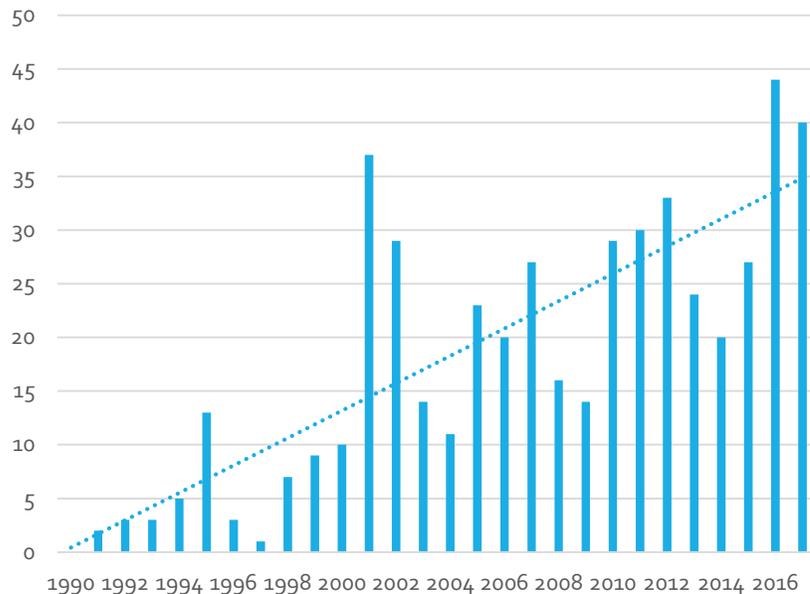
Challenges:

- Densely populated urban area (traffic)
- High density of airports
- Limited suitable relocation sites
- Lack of data post-release

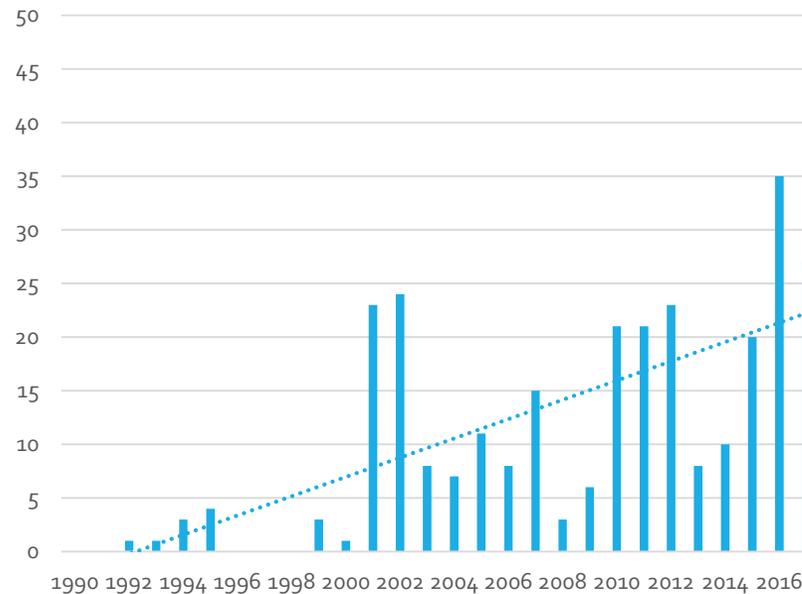
American Kestrels in New Jersey

- Most frequently struck species at EWR and TEB

Raptor Strikes at EWR & TEB



American Kestrel Strikes at EWR & TEB



Species	# of Strikes
American Kestrel	283
European Starling	205
Barn Swallow	184
American Robin	128
Mallard	107
Killdeer	103
Mourning Dove	91
Rock Pigeon	88
Herring Gull	83
Ring-billed Gull	71

Hazards Posed by Kestrels

- Although small in size, strikes with kestrels do pose a hazard to safety at the airport, can result in damage to aircraft, injuries to crew and passengers, and negative impacts on flights.
- American kestrel populations have been declining throughout much of their range. They are currently listed as threatened species in NJ (Feb 2012).



Program Successes & Future Work

Success:

- Outside the box thinking has helped identify additional relocation sites for raptor relocations
- Increased awareness about our raptor relocation program
- Post-release sightings
- Fewer strikes and recovery of a state-listed species

Future Work:

- Working to expand this coordination for other species and into NY State
- Learn more about post-release movements

Contact Information

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