

# *“High-tech Bird Bling”: Can Advanced Animal Tracking Tools Be Useful for Reducing Bird-Aircraft Collisions?*



**Dr. Brian Washburn**

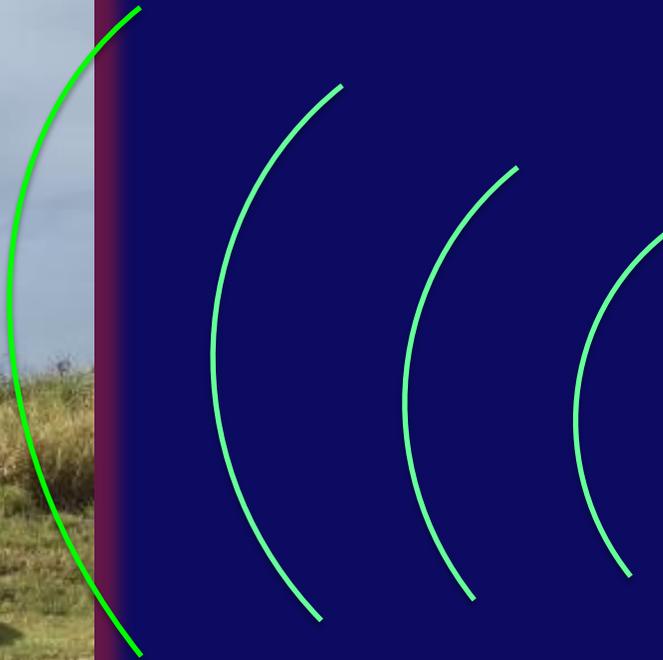
*NWRC*

*Ohio Field Station*





# *VHF Radio-telemetry*





**Wildlife Services**

Protecting People ♦ Protecting Agriculture ♦ Protecting Wildlife



**Wildlife Services**

Protecting People ♦ Protecting Agriculture ♦ Protecting Wildlife



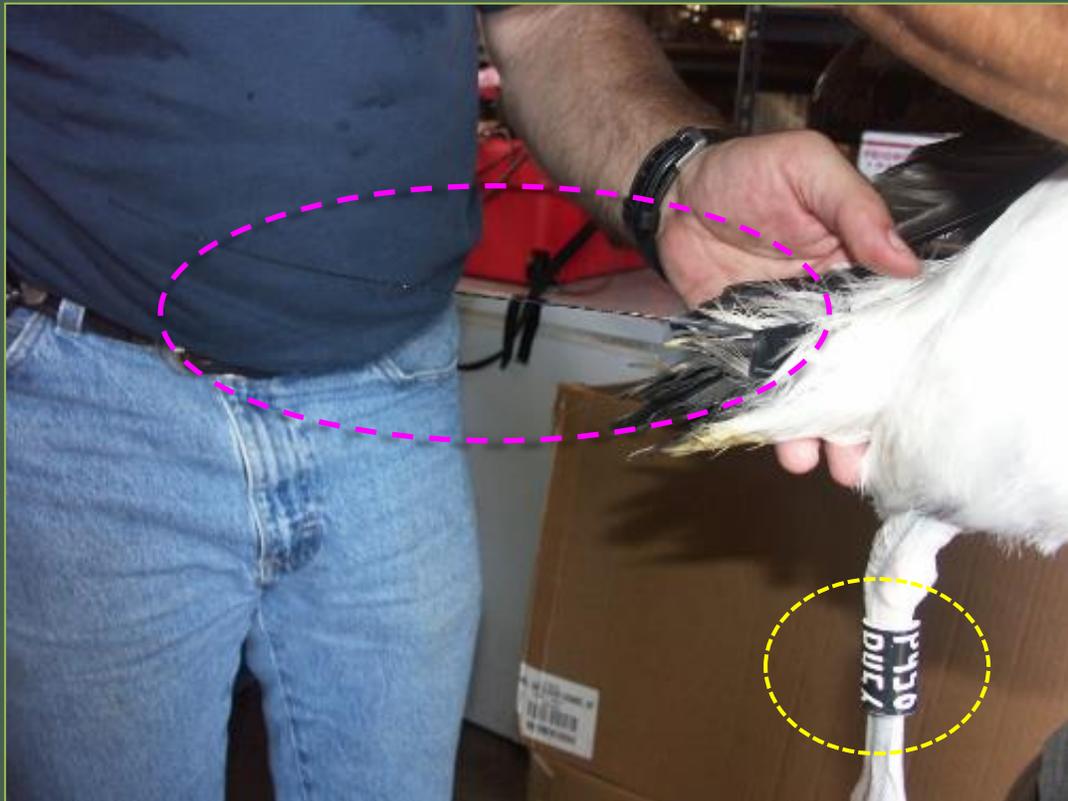
Wildlife Se



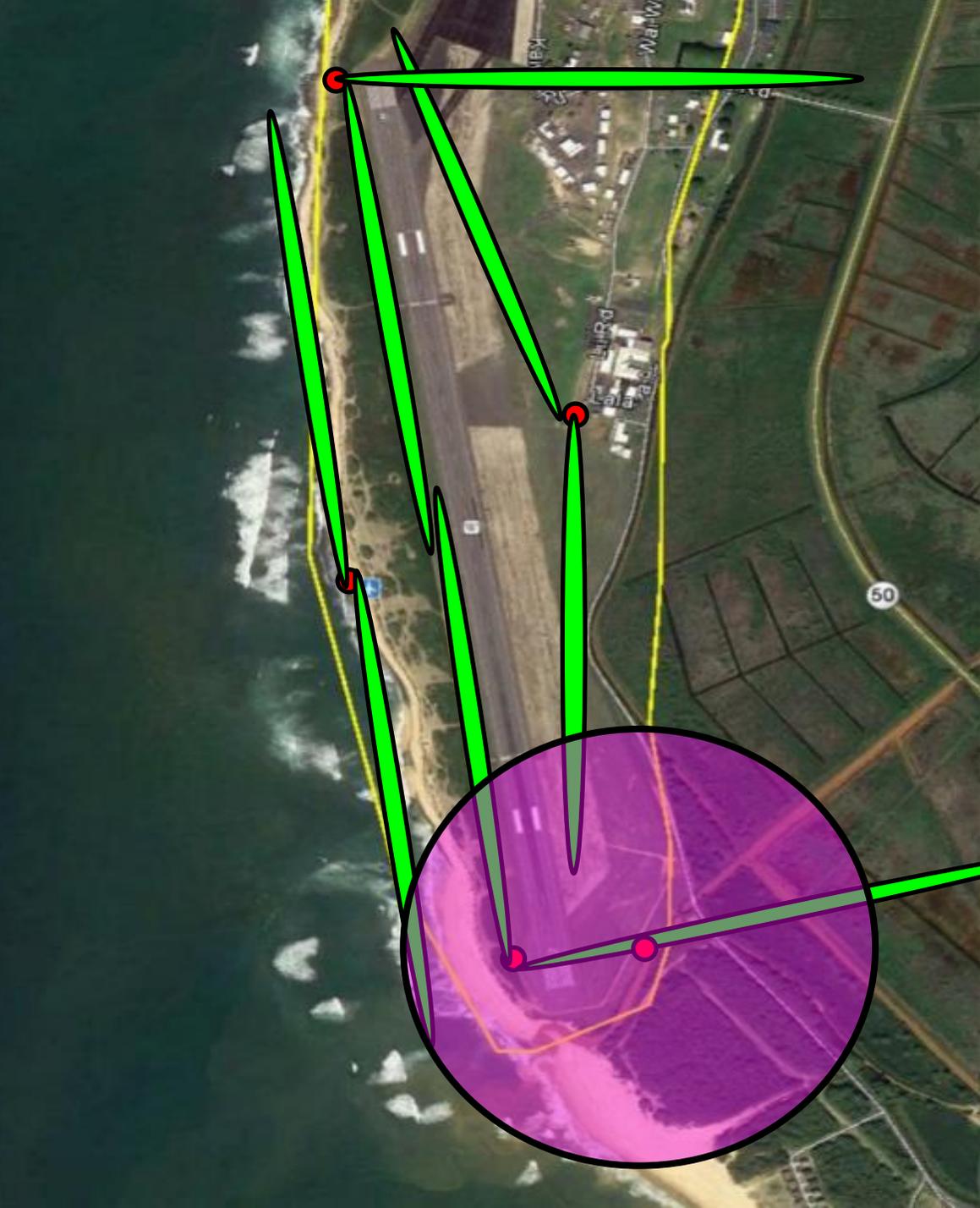
# US Navy Pacific Missile Range Facility Barking Sands



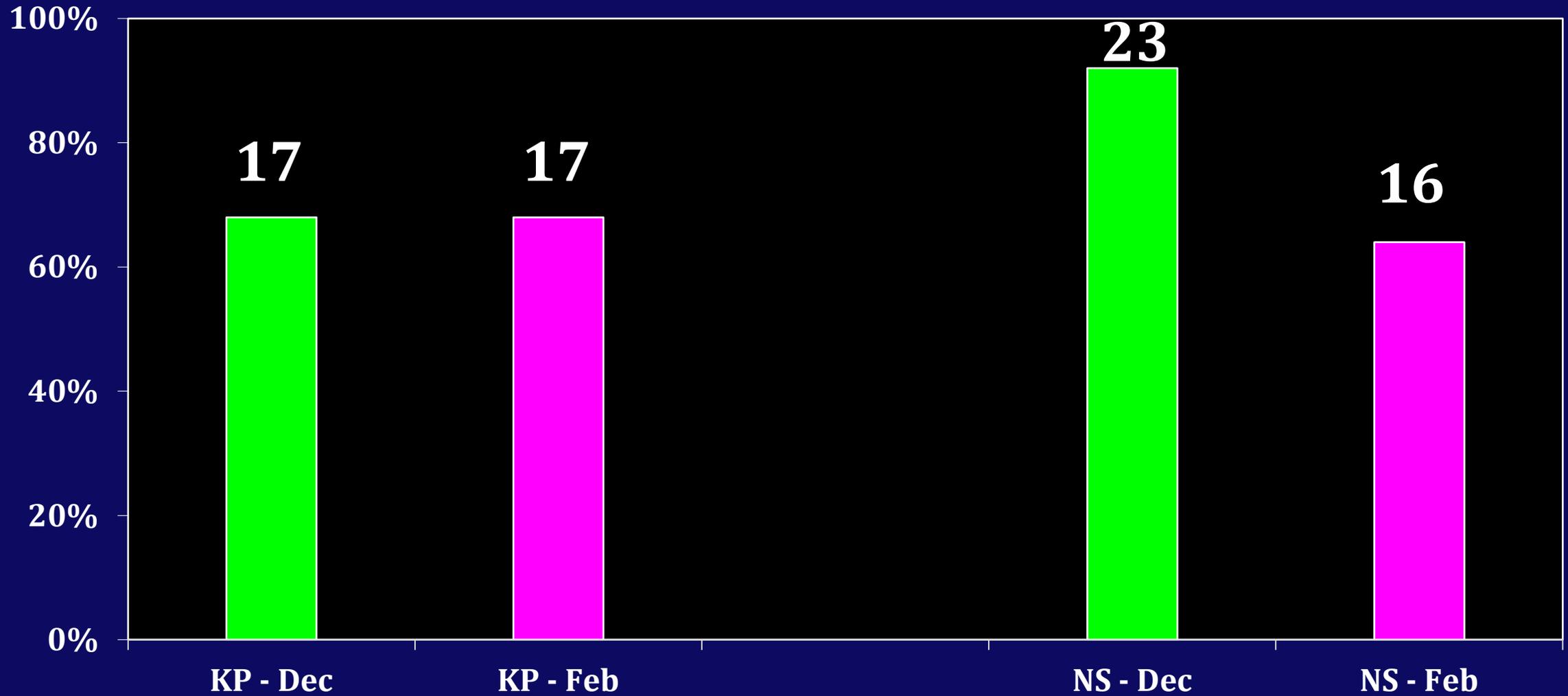
# *LAAL Research*



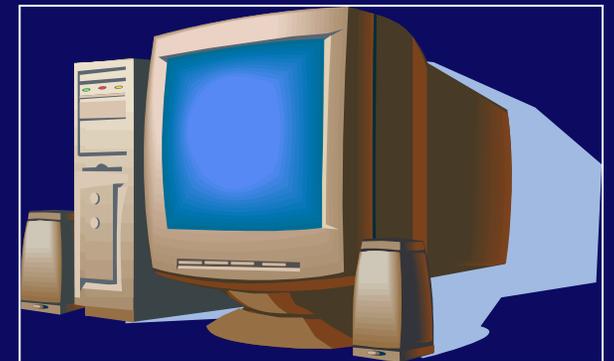
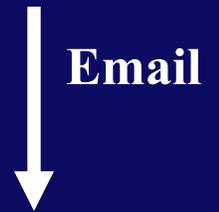
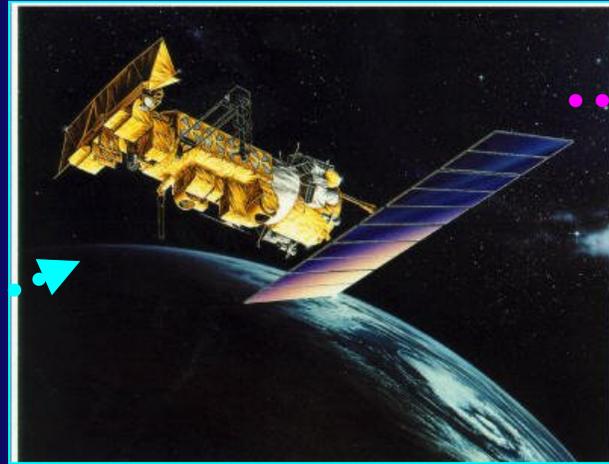




# Tagged LAAL Returning to PMRF



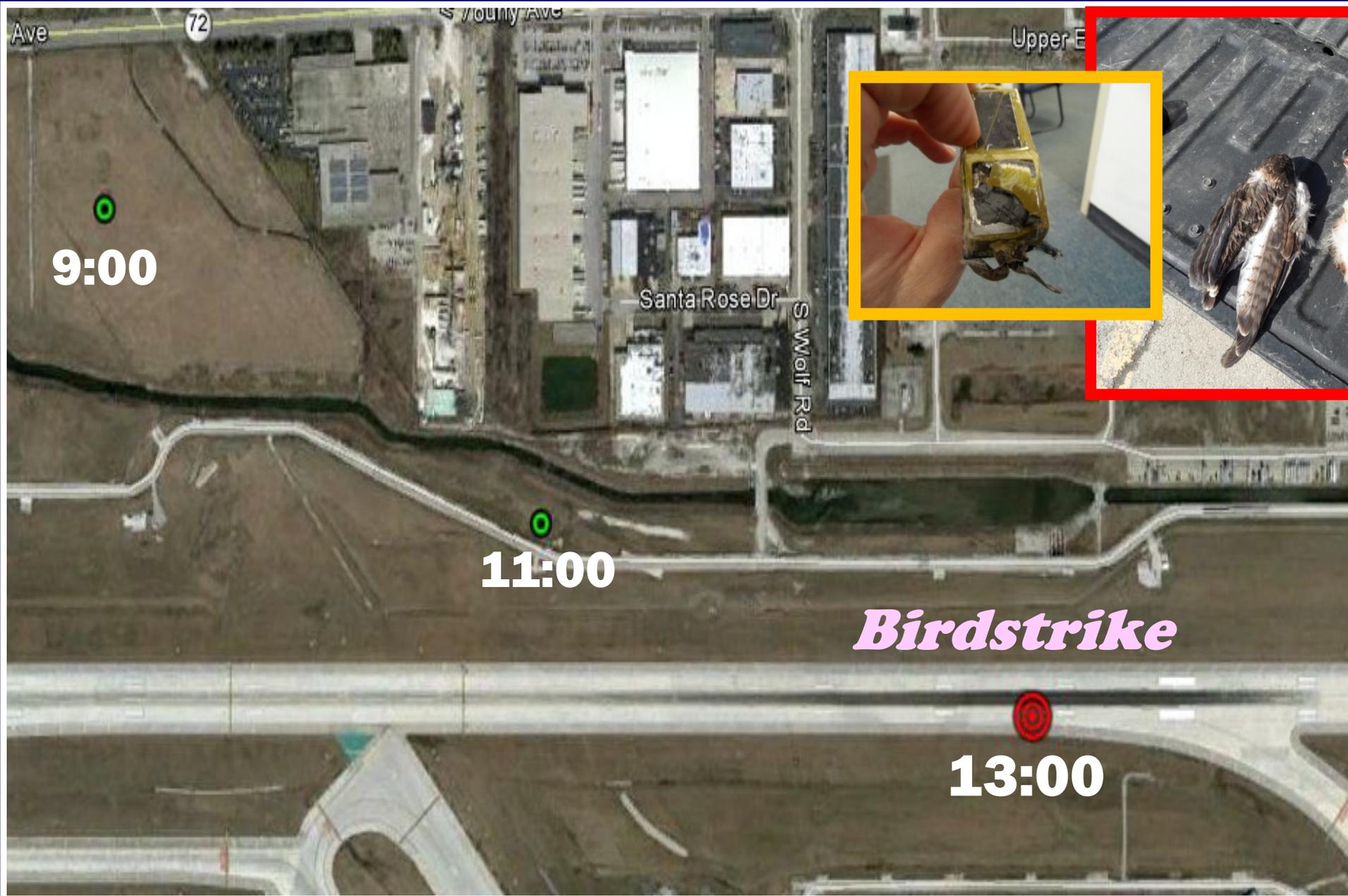
# Satellite Telemetry





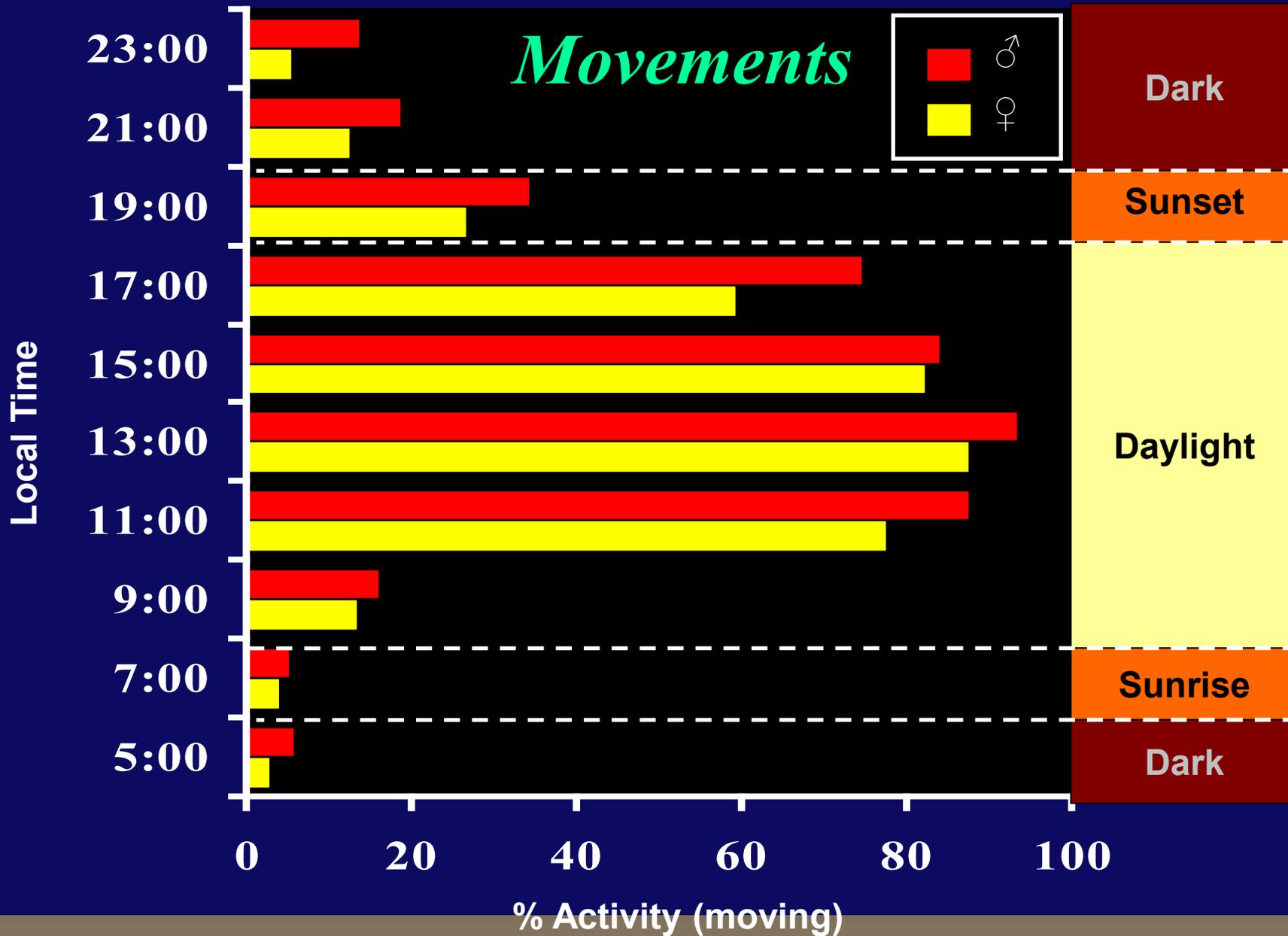
ORD  
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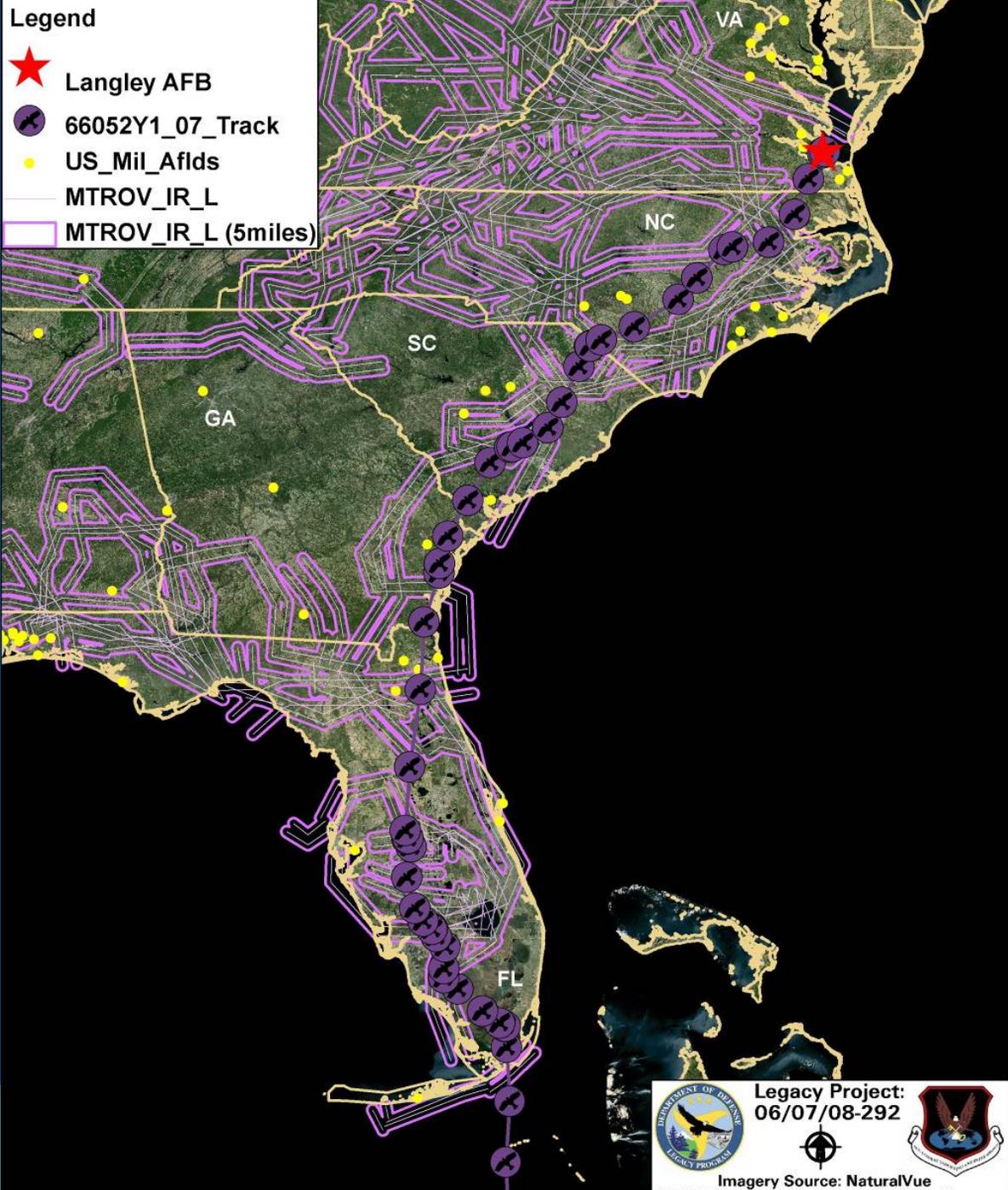


*Birdstrike*





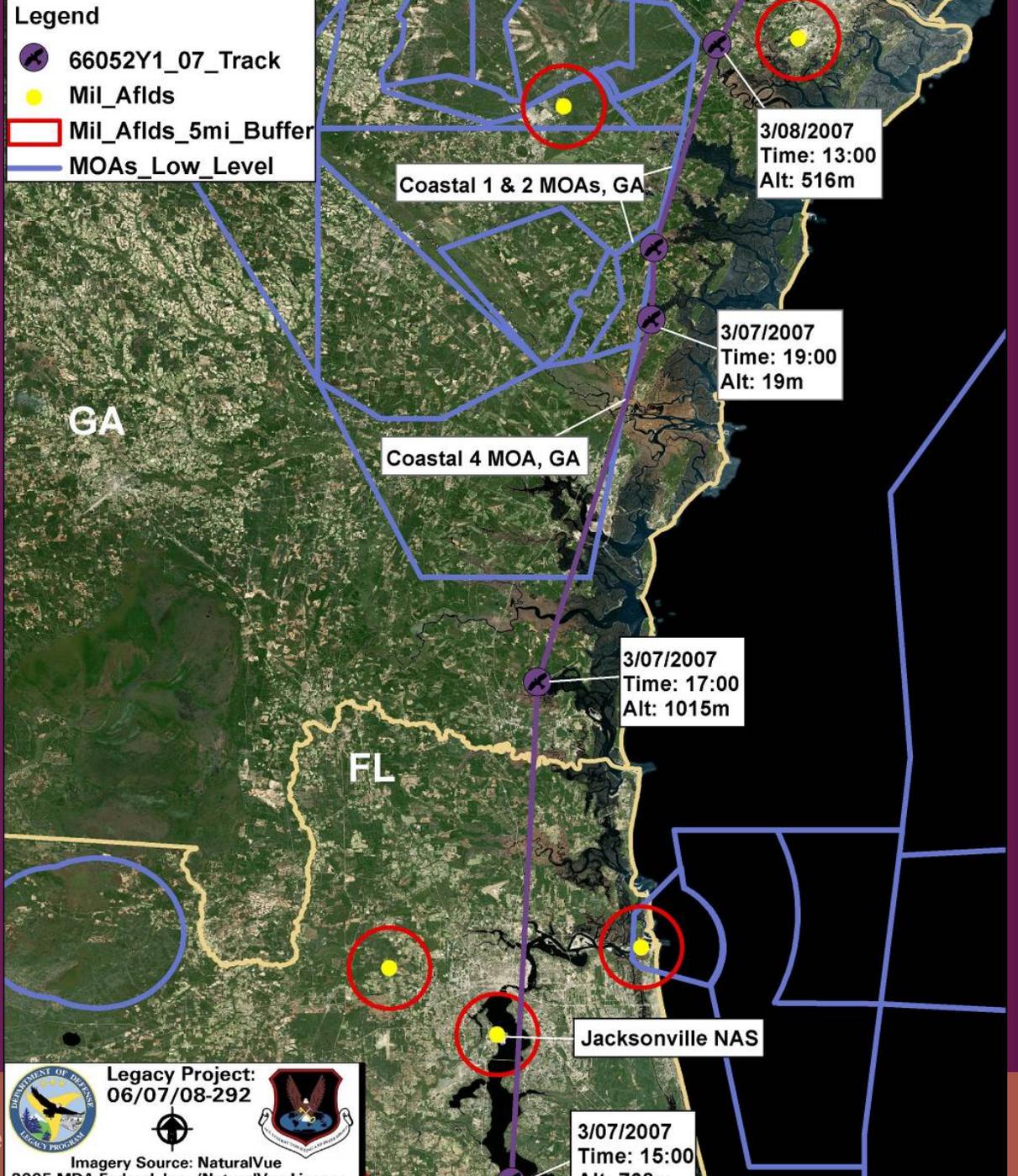
- Legend**
- ★ Langley AFB
  - ✈ 66052Y1\_07\_Track
  - US\_Mil\_Aflds
  - MTROV\_IR\_L
  - ▭ MTROV\_IR\_L (5miles)




**Legacy Project:**  
 06/07/08-292
 

Imagery Source: NaturalVue  
 2005 MDA Federal, Inc. /NaturalVue License  
 Produced By: 36IS / ING MIPS Team

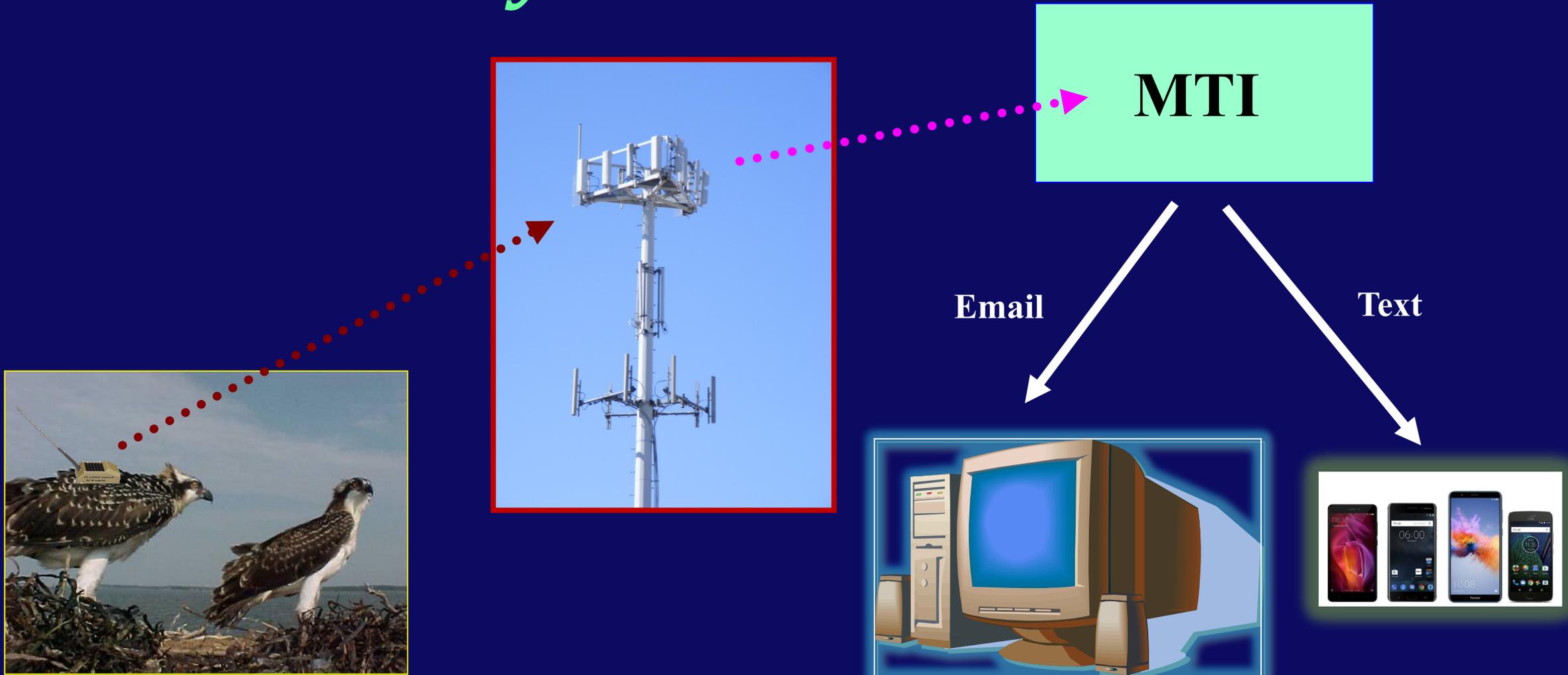
- Legend**
- ✈ 66052Y1\_07\_Track
  - Mil\_Aflds
  - ▭ Mil\_Aflds\_5mi\_Buffer
  - MOAs\_Low\_Level




**Legacy Project:**  
 06/07/08-292
 

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# *GSM Telemetry*

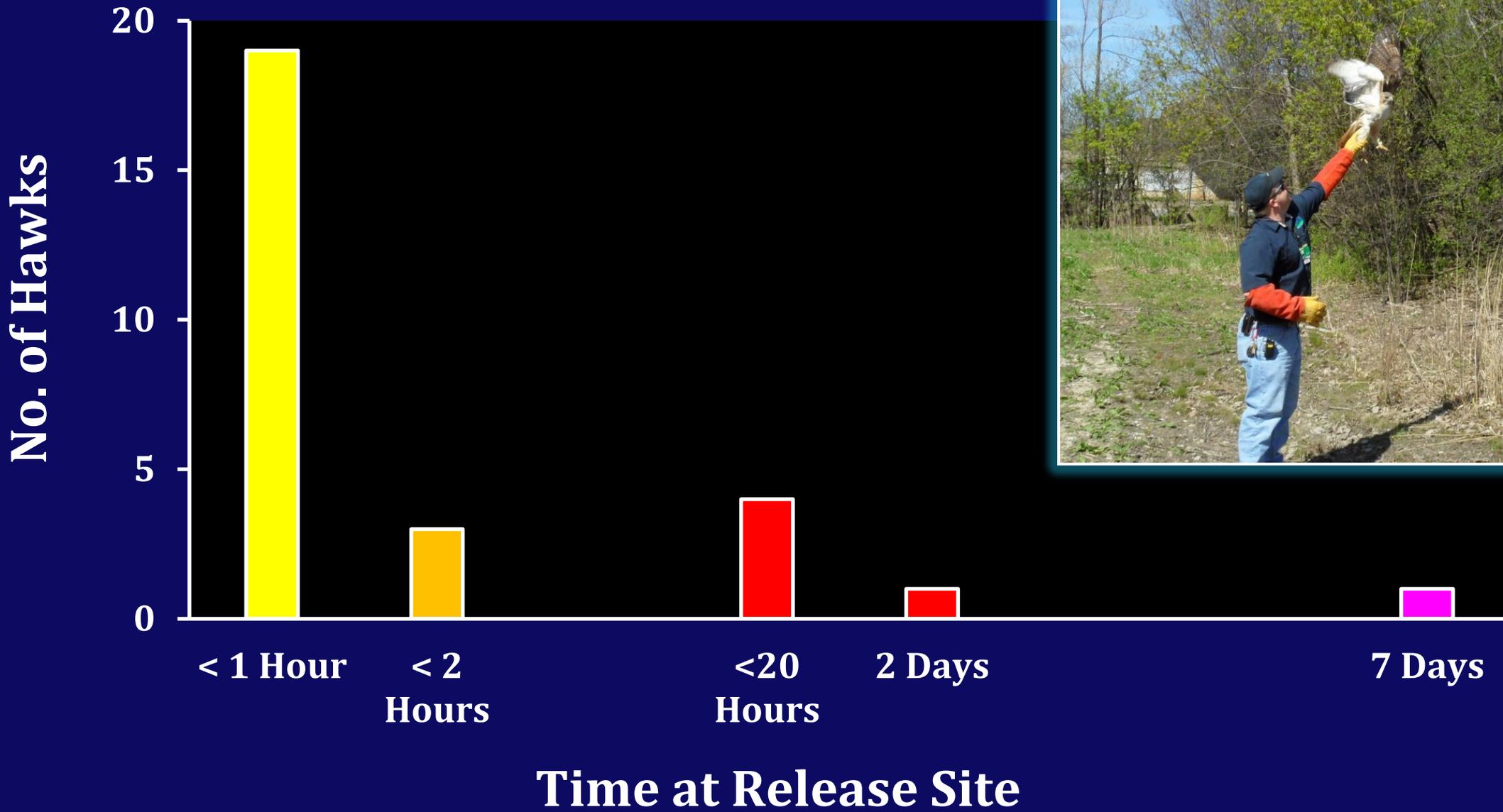




**HY = 9**  
**SY = 10**  
**ASY = 10**



*Translocated 75 miles  
to Castle Rock  
State Park*



# *Where did the hawks go?*

<b>Age Class</b>	<b>Returned to &lt;5 miles</b>	<b>Returned to the Airfield</b>
<b>Hatching-year</b>	<b>22%</b>	<b>0%</b>
<b>Second-year</b>	<b>56%</b>	<b>56%</b>
<b>After-second-year</b>	<b>60%</b>	<b>40%</b>

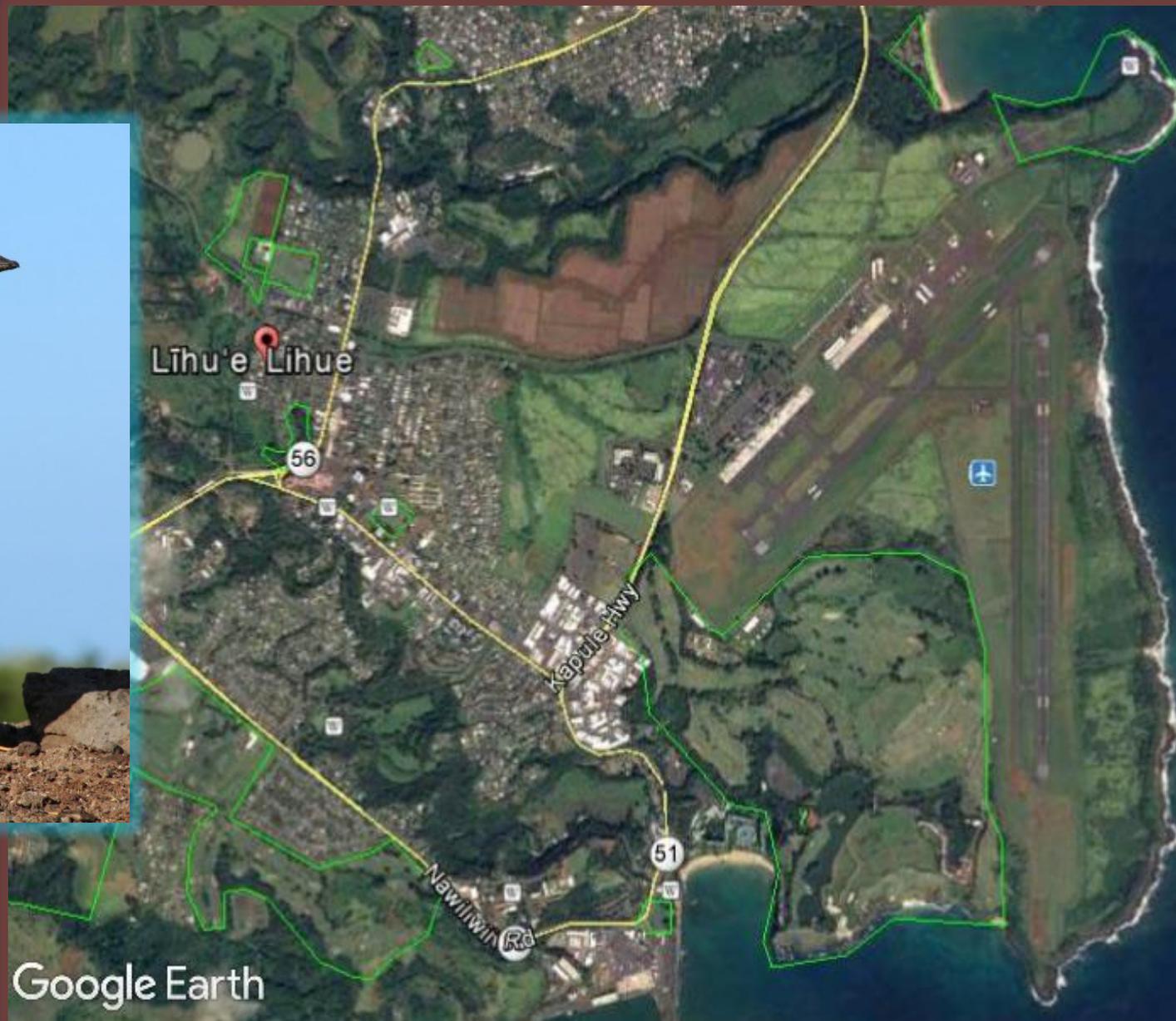
**\*\*\* 3 birds returned to be Aircraft Strikes**



7/10/2014 10 am 10/8/2014 10 am  
7/2014 10/2014



318



Google Earth

# Līhu'e Airport

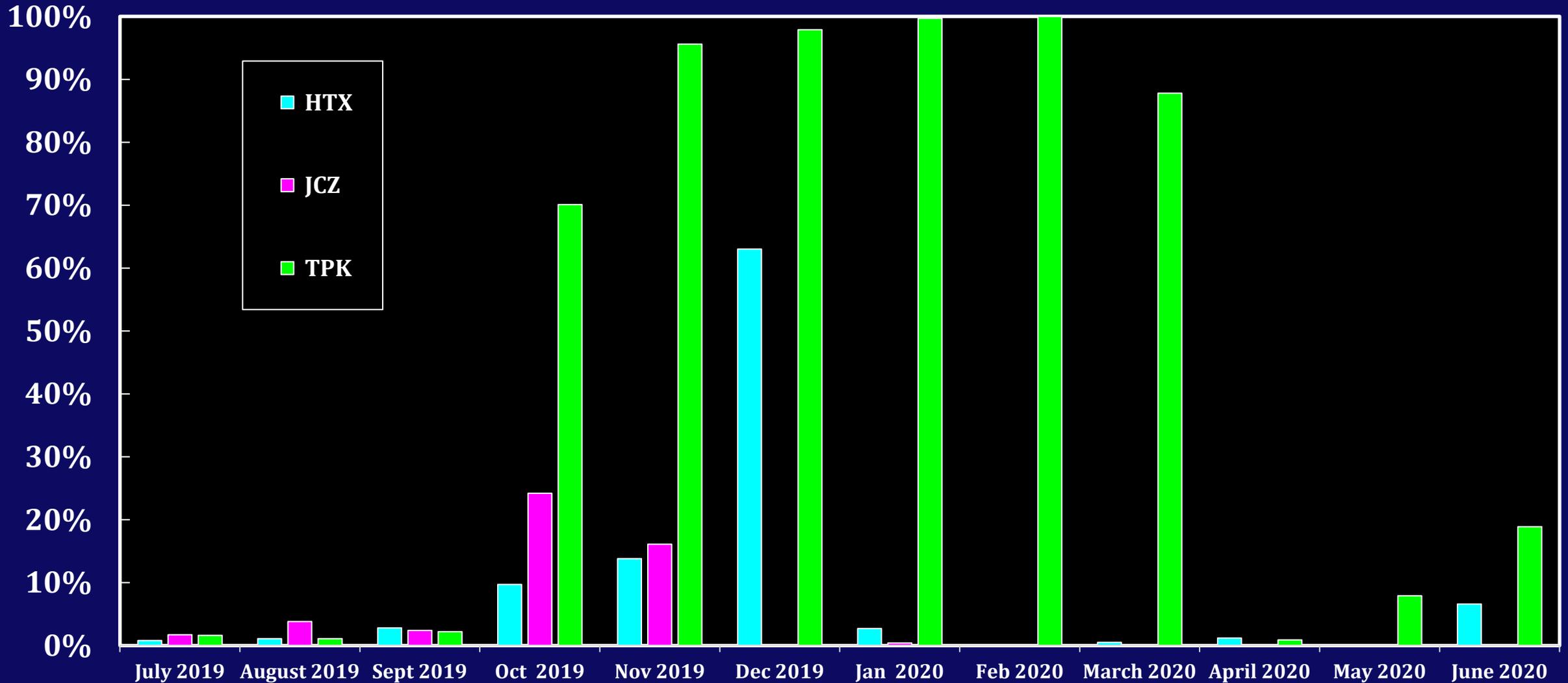


# ***Mortalities***

- **Vehicle collisions**
  - 2 near LIH fuel farm
  - 1 on Hōkūala Resort
- **Unknown cause**



# *Locations on Hōkūāla Resort*

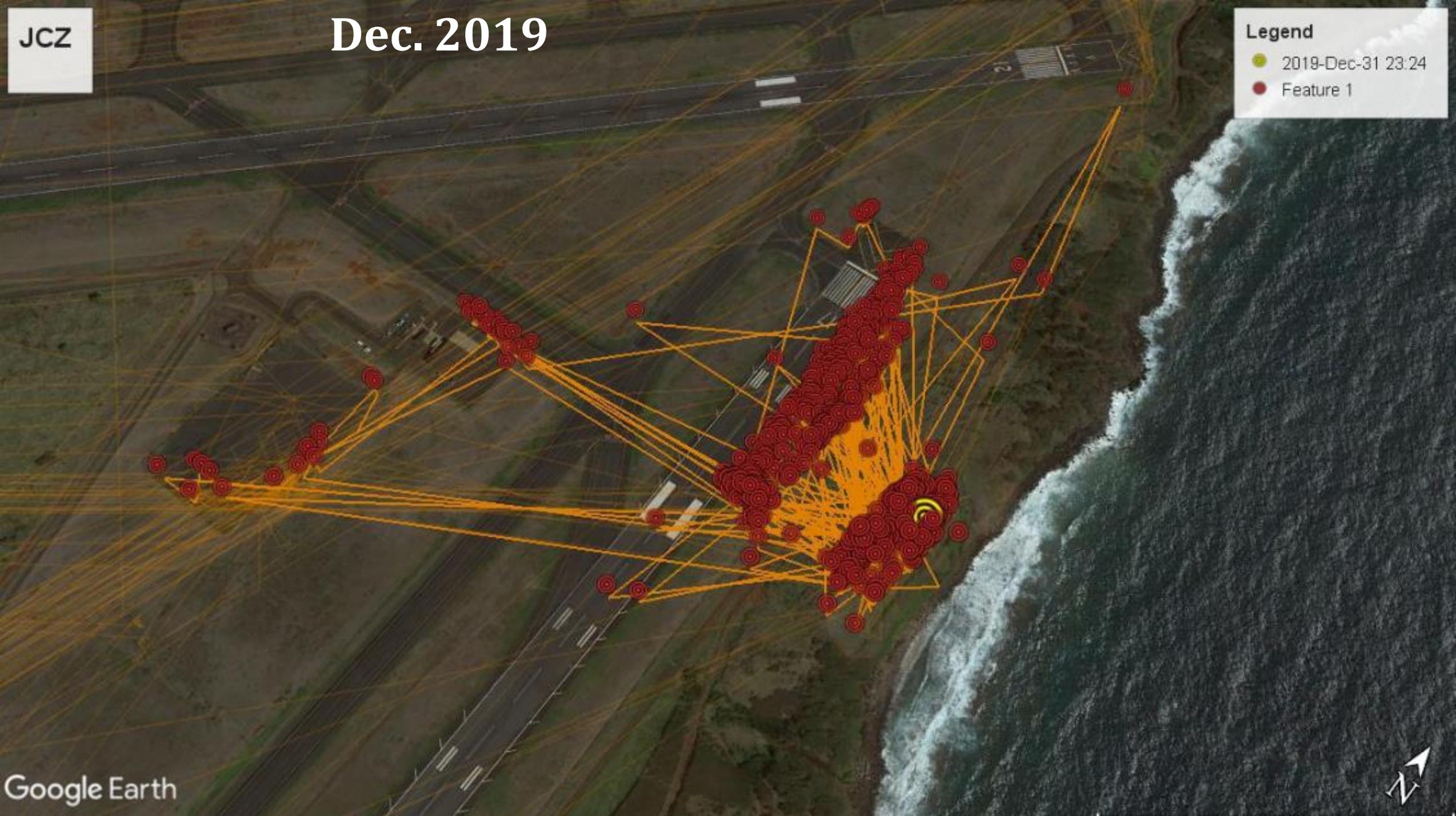


JCZ

Dec. 2019

**Legend**

- 2019-Dec-31 23:24
- Feature 1



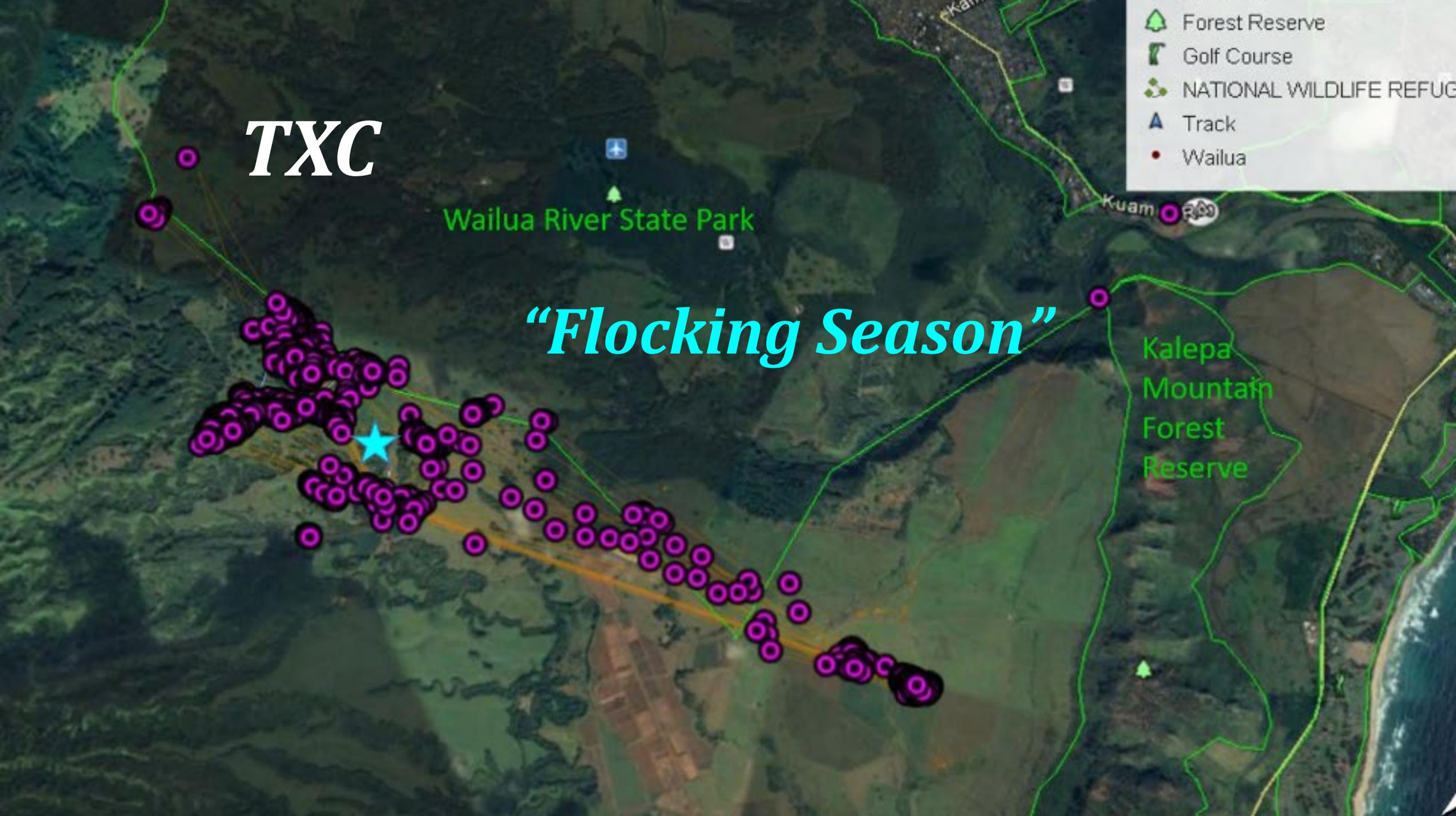
*TXC*

Wailua River State Park

*“Flocking Season”*

- Forest Reserve
- Golf Course
- NATIONAL WILDLIFE REFUG
- Track
- Wailua

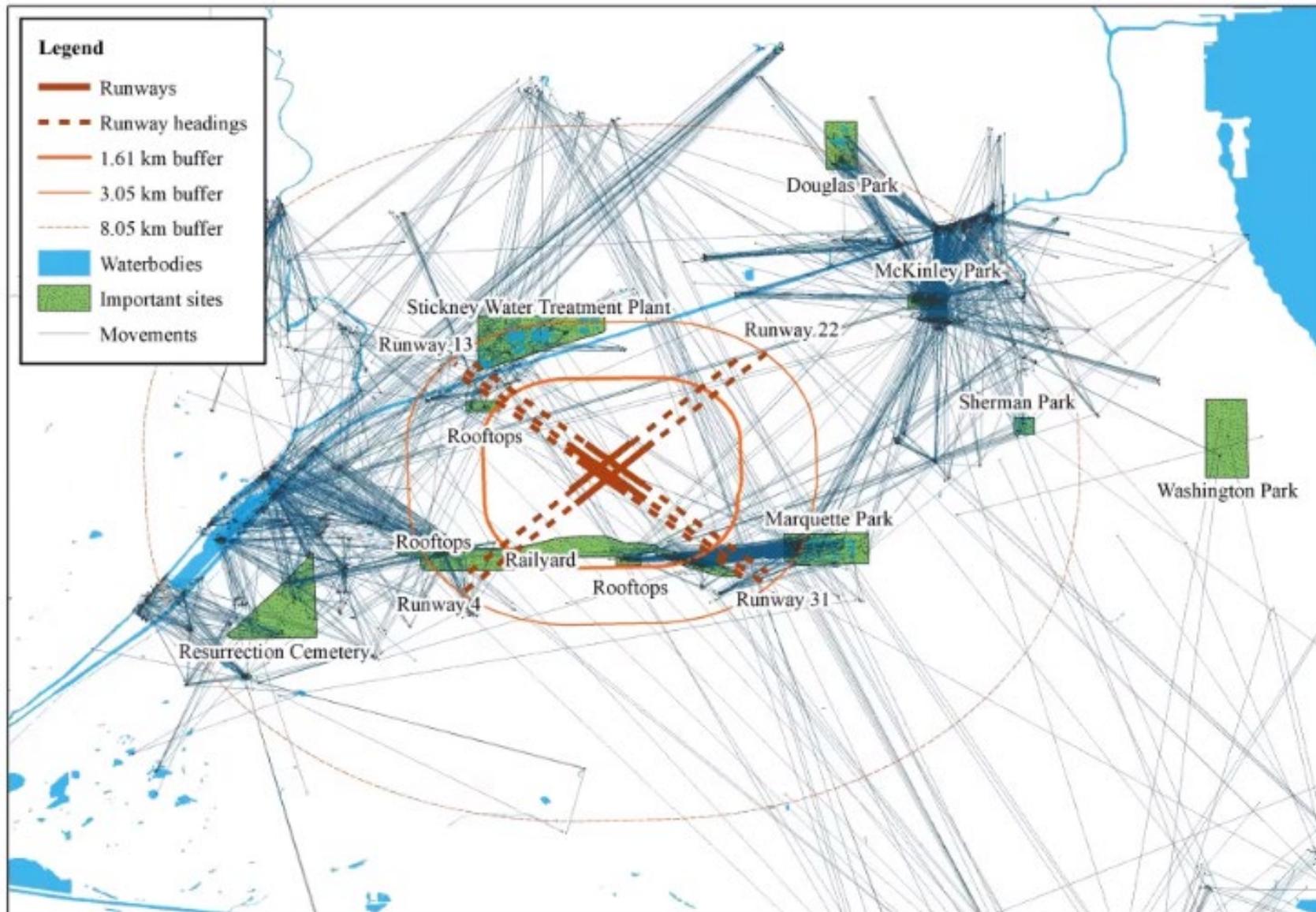
Kalepa Mountain Forest Reserve

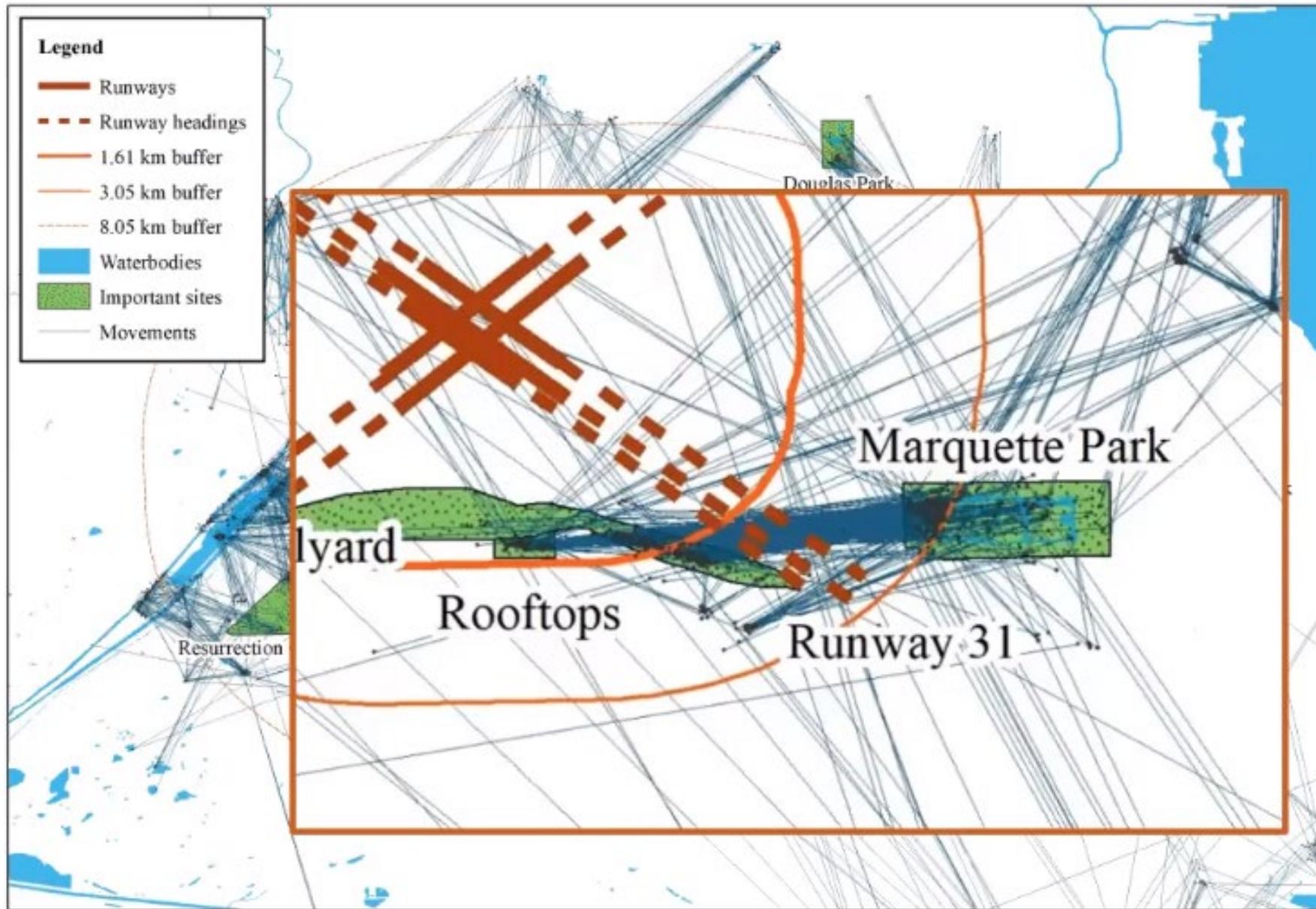


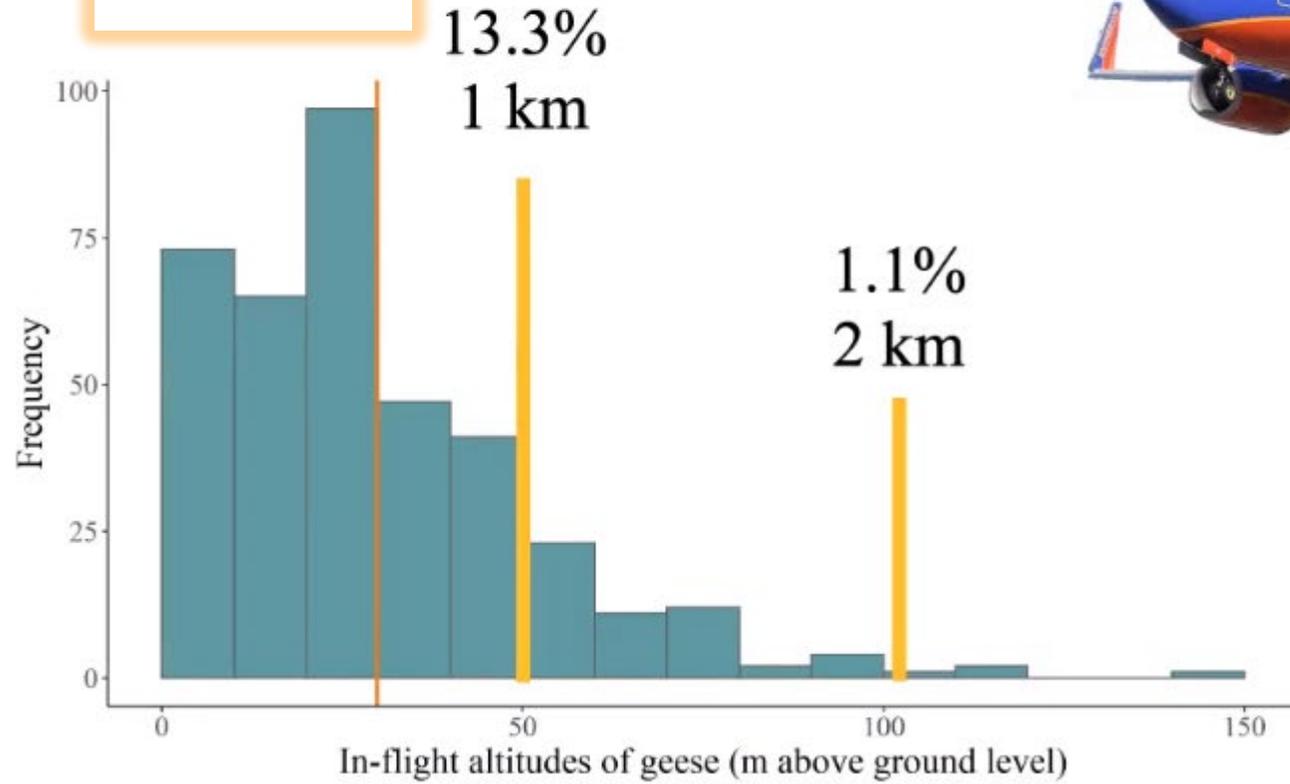


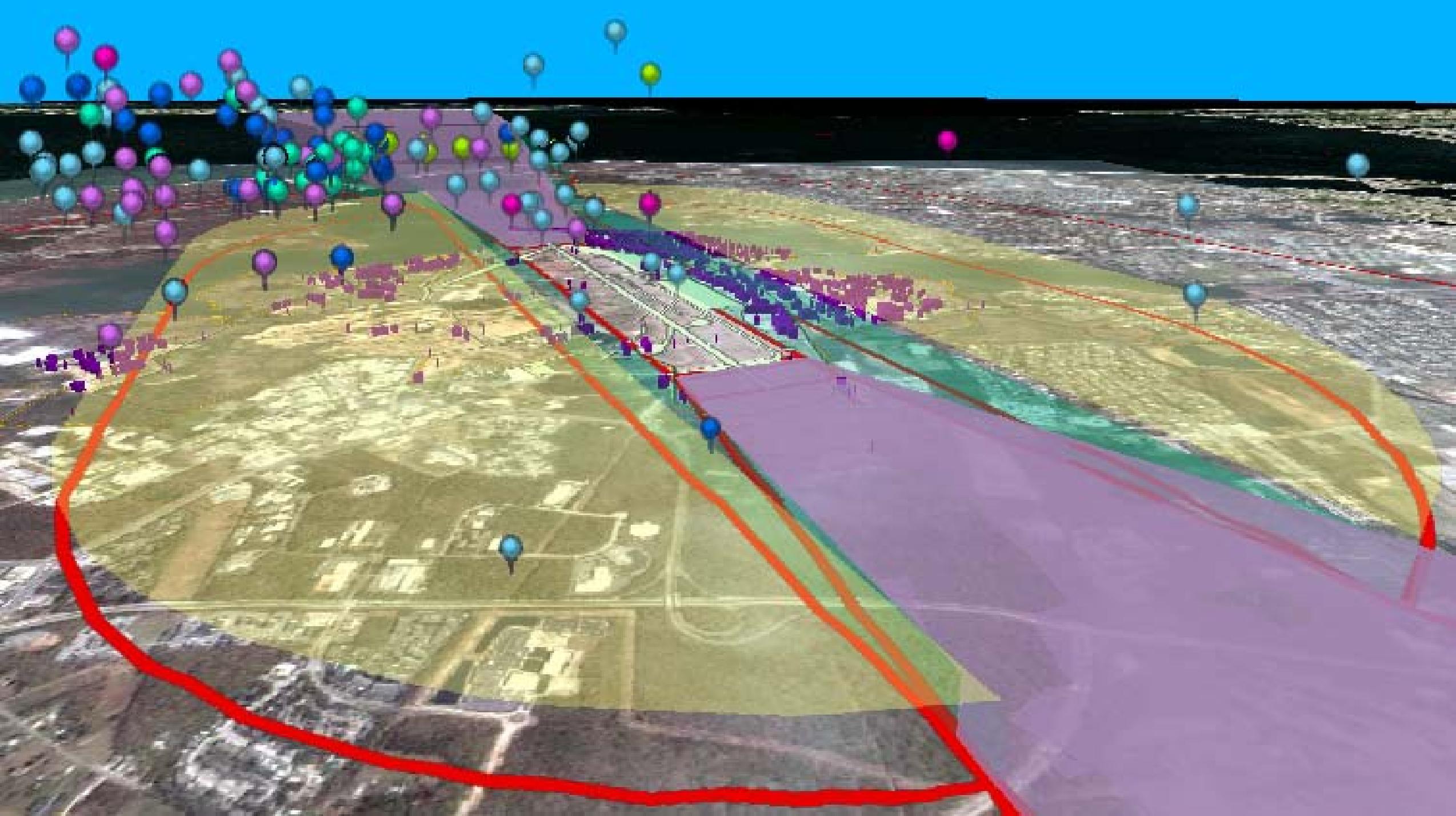
## Wildlife Services

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## ***In Summary.....***

- **Examine local movements of hazardous birds**
- **Evaluate management strategies**
- **Dynamic seasonal movements / migration**
- **Identify wildlife attractants within the landscape**
- **Quantify risk to aircraft operations in time & space**

**Brian.E.Washburn@usda.gov**



**Cell:  
419-656-2030**