



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

WORKING PAPER

RASG-PA/7 — WP/08  
25/08/14

**Seventh Regional Aviation Safety Group – Pan America Annual Plenary Meeting (RASG-PA/7)**  
Willemstad, Curaçao, 11 -12 September 2014

**Agenda Item 4: RASG-PA Project Reports**  
**4.4 Bird Strike Reduction Programme**

**BIRD STRIKE REDUCTION PROGRAMME**

(Presented by ALTA/IATA)

**EXECUTIVE SUMMARY**

The ALTA/IATA Safety Committee has led the Bird Strike Reduction Programme in the Airports of Latin America and the Caribbean.

Over 28 airlines that operate in the region have shared impact data. The ALTA/IATA Safety Committee teamed up with the FAA and the USDA in order to bring the US bird strike mitigation program to Latin America and Caribbean region.

Based on the data recollected, a pilot program was established in the Panama City Tocumen International Airport and the International Airport TAGSA in Guayaquil. The programme consists of at least 4 visits of FAA and USDA biologists in one year period, where they will work with local experts to analyze and identify the problems.

<b>Action:</b>	The recommended action is presented in Section 4.
<i>Strategic Objective:</i>	<ul style="list-style-type: none"><li>• Safety</li></ul>

**1. Introduction**

1.1 In 2011, during the Second Safety Summit held in Mexico City, airlines presented historic data of bird strike impacts that allowed to identify the top impact based on operations airports in the region.

**2. Programme Activities**

2.1 ALTA and IATA included this programme under its Safety Committee.

2.2 The programme was named Wildlife Industry Neutralization Action Plan (WINCAP).

2.3 Three visits were completed to Tocumen International Airport in Panama City, Panama. The results were positive since a series of effects contributing to high bird populations were identified. One of these findings was the lack of vegetation control inside the airport.

2.4 For Guayaquil Airport, the fourth visit wasn't done since TAGSA had a very complete bird impact mitigation programme. However, there were some procedures implemented based on data recollection that will allow the airport to identify risks. Currently, one of the main problems was a small island formed in the river.

2.5 Last but not least, IATA, Copa and Tocumen airport are currently working with the Smithsonian Institute to work together for the bird remain process needed as part of the assessment of this programme.

2.6 The report for the Guayaquil Jose Joaquin de Olmedo International Airport was delivered in February 2014. The following documents were sent:

- **Appendix A:** Cover letter with a project briefing that will be sent to the local authorities (DGAC Director, Airport General Manager, Airlines)
- **Appendix B:** Final WINCAP report for Guayaquil International Airport

2.7 The Panama City Tocumen's International Airport report was delivered at the final visit. (**Appendix C**). Currently the local biologists are taking the recommendations given by FAA and USDA to elaborate the final assessment. FAA and USDA are supporting with the elaboration of this document.

### 3. Next Steps

3.1 As it was mentioned in the previous ESC, the next WINCAP project will take place in Brazil. Currently the FAA and ANAC are working closely to hold a workshop to share best practices planned for February 2015. Following to this, an assessment will be done at the Rio de Janeiro Galeo International Airport.

3.2 The FAA with its commitment to the WINCAP programme is currently analyzing options on how to target more airports from throughout the region.

3.3 ACI-LAC, FAA, IATA, USDA and ALTA are currently looking into new options to fund the programme to expand to other airports in the region.

### 4. Recommended Actions

4.1 The following actions are recommended:

- a) Review report and support its recommendations through RASG-PA; and
- b) Take the WINCAP model for future RASG-PA programmes.

**APPENDIX A**  
**COVER LETTER**

(Date)  
(Name )  
(Title)  
(Organization)  
(City- Country )

Dear (Suffix and name):

The International Air Transport Association (IATA), Latin American and Caribbean Air Transport Association (ALTA), Airport Council International-Latin America and Caribbean (ACI-LAC), US Federal Aviation Administration (FAA), and US Department of Agriculture (USDA) have come together to help airports, local governments, and the International Civil Aviation Organization address bird strike issues in the Latin American and Caribbean region. The initial phase of the project includes the conduct of year-long wildlife hazard assessments at Tocumen/Panama International Airport and José Joaquín de Olmedo/Guayaquil International Airport (GYE).

As part of the assessment at GYE, three site visits were conducted by an FAA wildlife biologist and a USDA wildlife biologist. The purpose of the site visits was to assist the airport's wildlife staff with collecting data on hazardous wildlife on and near the airport, as well as habitat that attracts wildlife on and near the airport. We also provided wildlife hazard training and recommendations to the airport for mitigation techniques to add to their existing wildlife mitigation plan.

During the initial site visit, the FAA and USDA wildlife biologists discovered that GYE had recently conducted an Environmental Impact Study that included collecting data between March 2008-February 2009 regarding wildlife use of the airport. The airport has a wildlife team and a mitigation plan in place to deter wildlife from utilizing the airport.

Wildlife mitigation included maintaining appropriate grass heights on the airfield, maintaining vegetation in the drainage ditches and covering them with nets, and using pyrotechnics to deter/harass wildlife at the airport. The airport is also diligent about maintaining the recycling and trash area to keep it from attracting birds and other wildlife.

The wildlife team explained that one of the biggest wildlife hazards to the airport is an island located in the Rio Guayas called Isla la Palmar. Migrating waterfowl use the island as a resting area and can number in the thousands during certain parts of the year. The island is located in the approach path to the airport. We recently learned that the decision had been made to dredge and remove the island due to concerns regarding the erratic currents it causes in the river. This is very good news for the airport, as it will remove that major wildlife hazard.

In addition, LAN has modified their flight operations for aircraft to take off at a steeper incline in order to get above the elevations where the majority of the birds are located quickly. This has reduced the number of strikes with LAN's aircraft.

It was determined, after meeting with the airport stakeholders and spending time with the wildlife team, that GYE has a proactive wildlife hazard mitigation plan and are well aware of the hazards and are monitoring them closely. We have provided recommendations during the three site visits and are included in the quarterly and final reports.

One of the most important recommendations is for the airport to try to identify the birds species involved in their bird strikes. Many of the reported strikes are attributed to species “unknown”. Knowing the species of the birds that are struck most frequently will help to develop appropriate mitigation strategies.

We are very happy that we had the opportunity to be involved in the Pilot Project with GYE. It has been a very important learning experience and we enjoyed meeting the airport stakeholders and wildlife team.

Last but not least, following ICAO’s recommendation regarding this subject, the report recommends that a National Wildlife Committee to be formed with all the local stakeholders (airlines, airports, authorities, air force, FAA)

The attached report summarizes the third site visit and finalizes the pilot project at José Joaquín de Olmedo/Guayaquil International Airport.

Eduardo Iglesias  
Director Ejecutivo  
ALTA

Peter Cerda  
Vicepresidente Regional de las Américas  
IATA

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APPENDIX B  
WIN-CAP REPORT

# Wildlife Incident Neutralization-Cooperative Action Plan

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José Joaquín de Olmedo/Guayaquil International

FINAL SITE VISIT AND REPORT

**4/01/2014**

The International Air Transport Association, Latin American and Caribbean Air Transport Association, Airport Council International-Latin America and Caribbean, US Federal Aviation Administration, and US Department of Agriculture have come together to help airports, local governments, and the International Civil Aviation Organization address bird strike issues in the Latin American and Caribbean region. The initial phase of the project includes the conduct of year-long wildlife hazard assessments at Tocumen/Panama International Airport and José Joaquín de Olmedo/Guayaquil International Airport. This report summarizes the third site visit and finalizes the pilot project at José Joaquín de Olmedo/Guayaquil International Airport.

### **FINAL Report for José Joaquín de Olmedo/Guayaquil International Airport (GYE) Final Site Visit**

The Pilot Project Wildlife Hazard Assessment at José Joaquín de Olmedo/Guayaquil International Airport (GYE) began with an initial site visit on June 29, 2012. During the initial site visit, we met with the parties involved to introduce the project. The panel included: Adriano Zambrano, Jefe de Aeropuertos GYE; Julio Salazar, Jefe de Proyecto Comité Peligro Animal, GYE; Angel Cordova, Gerente, TAGSA; Octavio Perez, Gerente de Seguridad Operacional, LAN Ecuador; Camilo Ruiz Alvarez, Director de Medio Ambiente; Nestor Berrones Rivera, Jefe de Gestión Ambiental, Gobierno de Guayaquil; and David Diaz, Director Ejecutivo, Fundación Aves del Ecuador. Monica Chevez, Jefe de Control de Fauna, from TAGSA was our contact person.

The objectives and goals for the Pilot Project included:

- Meet with stakeholders
- Discuss current wildlife program and learn about on-airport and off-airport issues
- Work with the wildlife team to conduct wildlife surveys
- Determine possible habitat and wildlife management techniques that are appropriate for the airport and provide recommendations
- Help facilitate coordination with off-airport entities and government agencies
- Help educate airport staff
- Compile and present preliminary results and a summary of the project to stakeholders
- Develop wildlife assessment report and assist airport with development of wildlife hazard management plan

Over the subsequent months, two additional site visits by the USDA wildlife biologist occurred. The second visit was conducted Thursday, October 4, 2012 and Friday, October 5, 2012. The final site visit was conducted Thursday, March 14, 2013 and Friday, March 15, 2013. The purpose of these two visits was to continue collecting survey data, work with off-airport entities, determine possible habitat and wildlife management techniques, and conduct wildlife hazard training for the airport staff responsible for the airport's wildlife mitigation program.

Due to the Environmental Impact Study (EIS) study conducted from March 2008 to February 2009, the wildlife management staff at GYE was well versed in the operational aspects of conducting the bird surveys. The wildlife management team did a great job conducting the GYE wildlife surveys and collecting the necessary data. Methodologies used for data collection were consistent throughout the project. The team was efficient with their time and paid close attention to detail.



Airport Wildlife Team

### Airport Habitat Observations

The airport fencing appeared adequate to preclude mammals from gaining access to the runways. Several species of birds were observed perching on the fence, including the smooth-billed ani, great-tailed grackle, parakeets, various doves, and various flycatchers. The presence of these species likely indicates the presence of food sources such as small rodents, reptiles, and insects on, and adjacent to, airport property.

Observations of the vegetation at GYE during the site visits were favourable. Vegetation was maintained at a manageable height, drainage ditches were continually being maintained with netting, and cleared of vegetation. Vegetation which provided roosting sites and shelter for various bird species observed during our initial visit was removed. This action minimized roosting and loafing locations on the airfield.



Before removal



After removal

Potential perching sites had been observed on the airfield during the initial site visit. Piles of construction debris and dirt were located on some portions of the airfield where the perimeter road was being built.

This debris provided cover and foraging sites for various bird species. It was noted during the second site visit that the construction piles and mounds of dirt had been removed as recommended. This action eliminated perching areas used by hawks and other birds.



Large construction piles and mounds of dirt removed along canal

During the second site visit, the GYE trash and recycling area was toured. The trash collection area and recycling transfer station were very well maintained and free of wildlife and birds.



Trash collection area

The Base Aerea de la FAE and Jardin Centro de Eventos are two areas on/near the airport that attract large numbers of birds due to the presence of trees for perching, nesting, and feeding. In addition, there are areas here that flood during rain events and birds are attracted to the standing water. The airport is working with these entities to coordinate removal of the attractants.

The Rio Guayas is located to the east of the airport. A small, uninhabited island, Isla la Palmar, is located in the middle of Rio Guayas, directly east of the airport. Isla la Palmar is one of the biggest hazards to the airport, as it used as a stopover for hundreds, possibly thousands, of migrating birds during the spring and fall. According to the airport, the predominant species is the black-bellied whistling duck. The fact that this is a large bird that flies in large flocks, makes it especially hazardous to aircraft. Recently, the decision was made to dredge the island because of the erratic currents its presence was causing in the river. The island, therefore, will no longer be an issue for the airport with respect to wildlife hazards.



Isla la Palmar

### **Habitat and Wildlife Management Activities**

The airport and the wildlife management staff conduct various mitigation activities as part of GYE's wildlife hazard management plan. The grass height is maintained at the recommended height, drainage ditches are covered with netting and cleared of vegetation, herbicide and pesticide is applied to the airfield, and propane cannons and firecrackers are used for auditory dispersal. The wildlife management staff also recently acquired a SCARECROW Bioacoustics system to disperse birds using local bird distress calls.

The wildlife staff currently uses various forms of pyrotechnics to deter/harass wildlife at the airport. The pyrotechnics available for use at GYE are fire crackers and bottle rockets.

During the final site visit, LAN discussed how they modified flight operations at GYE to reduce the risk of bird strikes. The pilots utilize a steeper incline during takeoff to get above the elevation where the strike risk is higher as quickly as possible.

## Airport Personnel Training

The USDA wildlife biologists provided a full day of training to airport personnel who are involved in the airport wildlife hazard mitigation plan. The training covered habitat management, wildlife management, and how to develop a wildlife hazard management plan.



Training class at GYE

At the end of each site visit, observations were summarized and issues were prioritized. We spoke of continuing data collection beyond the initial pilot project and how to manage and use the data. We spoke of the importance of identifying bird strike remains and the possibility of utilizing the Smithsonian Tropical Research Institute in Panama as their source for bird strike identification. In addition, plans for continuing vegetation management and developing a preferred standard for vegetation height at GYE were discussed with GYE staff. Finally, the importance of coordinating with entities outside GYE to help with addressing wildlife threats outside the boundary of GYE property was stressed and encouraged.

Based on the fact that the airport has been very proactive with wildlife hazard mitigation and they have a wildlife team committed to continually monitoring and mitigating airport wildlife hazards, as well as the recently conducted environmental assessment and report, we determined that a fourth site visit was not necessary at GYE.

We do want to reiterate the following recommendations made as a result of the site visits:

- Continue to monitor/survey wildlife presence at the airport
- Conduct regular training for GYE operations and maintenance staff on habitat and wildlife management
- Improve bird strike identification
- Determine roles and responsibilities for data input and development
- Determine best methods for managing data (i.e. Excel, ArcGIS etc.)
- Determine which current wildlife management techniques work and which are ineffective at GYE and discuss new techniques and tools with wildlife management staff

- Strategize with LAN and TAGSA on additional ways to work with local government authorities on the wildlife attractants located off airport property
- Continue to monitor Isla la Palmar removal process

This report will serve as the finalization of the Pilot Project at GYE. For additional information, please contact Amy Anderson, FAA Wildlife Biologist at [amy.anderson@faa.gov](mailto:amy.anderson@faa.gov) or Michael J. Begier, National Coordinator, USDA Airports Wildlife Hazards Program at [mike.begier@aphis.usda.gov](mailto:mike.begier@aphis.usda.gov).

This project was possible thanks to the collaboration and funding of the following organizations



or



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# Industry/Government Collaboration Wildlife Hazard Mitigation

## PILOT PROJECT SUMMARY:

### Panama Tocumen International Airport

Amy Anderson, FAA  
Panama City, Panama  
July 9<sup>th</sup>, 2013



**Federal Aviation  
Administration**



## Current Challenges:

- ❖ **Bird populations are increasing.**
- ❖ **Wildlife populations are being protected.**
- ❖ **Birds are staying in urban areas rather than migrating.**
- ❖ **Commercial aircraft movements are increasing. Throughout the world overall operations have increased.**
- ❖ **Aircraft are quieter.**



# Common Goals:

1. Conduct wildlife hazard assessments to determine wildlife issues at the airport
2. Develop effective wildlife hazard mitigation plan
3. **Reduce wildlife strikes with aircraft!**



**How does an airport with limited resources conduct a professional wildlife hazard assessment and develop a proper mitigation plan?**



Idea: Industry and government working together to address hazardous wildlife issues in a regional, cooperative and prioritized manner.



# Pilot Project FAA/USDA Objectives:

1. Meet with stakeholders
2. Discuss wildlife program and learn about on-airport and off-airport issues
3. Work with wildlife team to conduct wildlife surveys
4. Determine possible habitat and wildlife management techniques that are appropriate for airports and provide recommendations
5. Help facilitate coordination with off-airport entities and government agencies
6. Help educate airport staff
7. Compile and present preliminary results and a summary of the project to stakeholders
8. Develop wildlife assessment report and assist airport with development of wildlife hazard management plan



# PTY Project Visit Summary

## Tocumen International Airport

- Initial site visit: June 26-28, 2012
- 2<sup>nd</sup> quarter site visit: October 1-2, 2012
- 3<sup>rd</sup> quarter site visit: March 10-11, 2013
- Final site visit: July 9-10, 2013



# PTY Project Visit Summary

## Initial Site Visit

### Objective 1: Meet with stakeholders

- ❖ Had initial meeting with DGC, Airport Manager, COPA,

### Objective 2: Discuss wildlife program and learn about on-airport and off-airport issues

- ❖ Met with wildlife team and toured on-site and off-site wildlife attractants

### Objective 3: Work with wildlife team to conduct wildlife surveys

- ❖ Conducted initial dawn/dusk wildlife surveys with wildlife team.



# PTY Project Visit Summary

## 2<sup>nd</sup> Quarter Site Visit

**Objective 3 (continued):** Work with wildlife team to conduct wildlife surveys

- ❖ Conducted dawn and dusk surveys with team

**Objective 4:** Determine possible habitat and wildlife management techniques that are appropriate for airport and provide initial recommendations

- ❖ Met with wildlife team and airport maintenance manager to discuss vegetation and drainage management improvements.

**Objective 5:** Help facilitate coordination with off-airport entities and government agencies

- ❖ Met with Dr. Matthew Miller at Smithsonian Tropical Research Institute (STRI) to discuss ID of bird remains



# PTY Project Visit Summary

## 3rd Quarter Site Visit

**Objective 3 (continued):** Work with wildlife team to conduct wildlife surveys

**Objective 6:** Help educate airport staff

- ❖ Conducted wildlife hazard mitigation training for airport staff



# PTY Project Visit Summary

## Final Site Visit

**Objective 7:** Compile and present preliminary results and a summary of the project to stakeholders

**Objective 8:** Develop wildlife assessment report and assist airport with development of wildlife hazard management plan



Federal Aviation  
Administration

# Tocumen International Airport, Panama (PTY)



Federal Aviation  
Administration

# On Airport Wildlife Attractants



# On Airport Wildlife Attractants



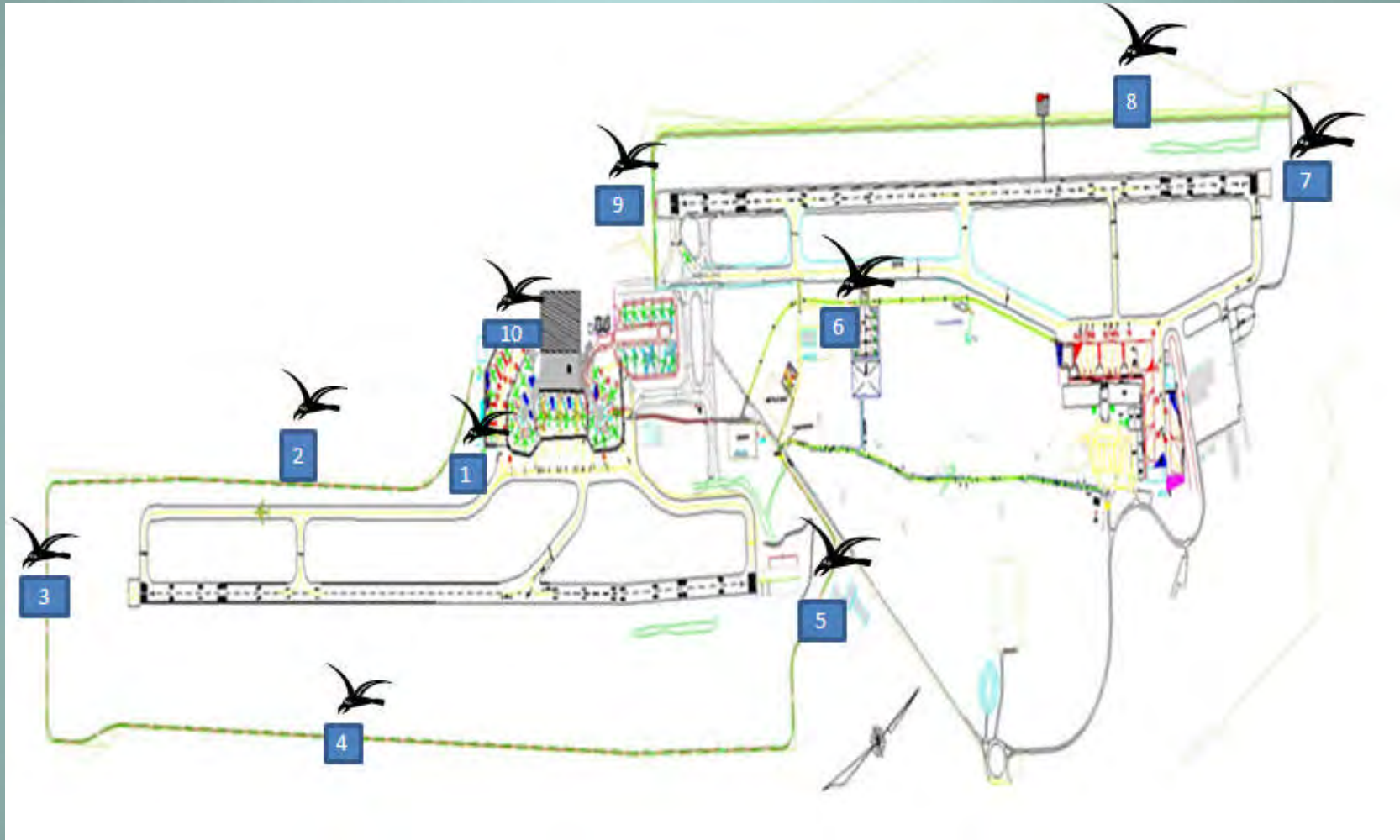
# Off Airport Wildlife Attractants



# Off Airport Wildlife Attractants

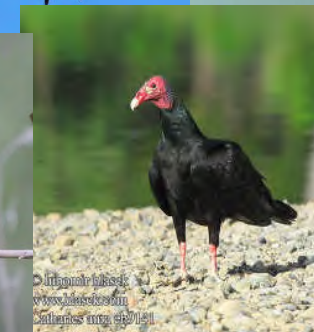
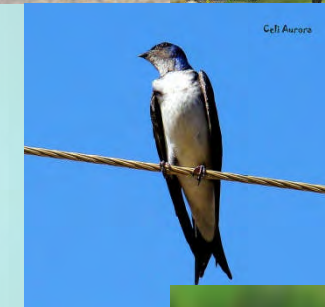
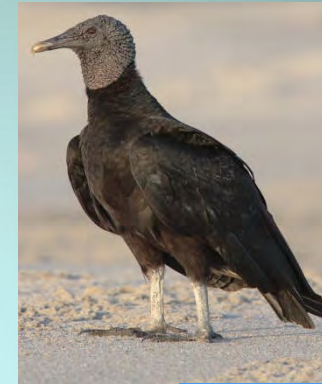


# Wildlife Survey Points



# Preliminary Wildlife Survey Results

- ❖ 1,588 bird observations during 18 survey iterations over 7 months
- ❖ 81 different species of birds observed
- ❖ 5 most observed species:
  - Black vulture (*Coryagyps atratus*)
  - Great-tailed grackle (*Quiscalus mexicanus*)
  - Gray-breasted martin (*Progne chalybea*)
  - Turkey vulture (*Cathartes aura*)
  - Smooth-billed ani (*Crotophaga ani*)



# Preliminary Wildlife Survey Results

- ❖ Need to continue analyzing the data
- ❖ Determine which survey points had most observations
- ❖ Determine which species are most hazardous based on size/flocking behavior/activities
- ❖ This data will help determine what mitigation efforts will have the biggest effect in minimizing dangerous strikes



## Wildlife Mitigation Efforts Completed / In Progress Since Pilot Project Began

**Very Important!!** The airport has the Wildlife Control Department that is dedicated to minimizing wildlife hazards to aircraft.

- Agreement with Smithsonian Tropical Wildlife Institute for the identification of bird remains from aircraft strikes-final paperwork necessary.
- Contract with company to maintain green areas in Terminal-contract will be finalized with signature of Comptroller General of the Republic.
- Adjustments were made to the perimeter external drains 03R and work is being done on the inside drains to promote better drainage of stormwater



## Wildlife Mitigation Efforts Completed / In Progress Since Pilot Project Began

- Pruned trees in flight path that served as shelter for birds.
- Increased bird surveys during migration and began taking pictures in order to create an educational newsletter as a tool for airlines and pilots to identify the hazardous bird species.
- Acquired equipment including pigeon traps, acoustic deterrents, and spikes/barbed signage on taxiways and runways to prevent birds from landing and roosting.



## Wildlife Mitigation Efforts Completed / In Progress Since Pilot Project Began

- Purchase pending on two 4x4 vehicles for wildlife patrols.
- Improving perimeter fence.
- Once drainage project is complete-mesh will be added to the drainage system.
- Installation of cameras and traps to survey wildlife activity found in peripheral areas of the airport.



## Proposed Wildlife Mitigation Efforts

The airport is evaluating the potential for the following projects and equipment:

- ❖ Falconry
- ❖ Merlin Radar
- ❖ Bird Robot



## Continuing Challenges

- ❖ Working with local government authorities
- ❖ Increasing awareness and strike reporting with species information
- ❖ Working with environmental agencies regarding wildlife management
- ❖ Prohibition of use of certain harassment/deterrent techniques
- ❖ Habitat management in wetland areas
- ❖ Dealing with off-site landowners



# Questions?

