International Civil Aviation Organization
Fifth Meeting of the Regional Aviation Safety Group – Pan America (RASG-PA/5)
Santiago, Chile, 22 – 24 October 2012

Agenda Item 4: RASG-PA Projects
4.5 Bird Strike Reduction Programme

BIRD STRIKE RISK REDUCTION PROGRAM

(Presented by ALTA/IATA)

SUMMARY

IATA and ALTA have been working closely on a Bird Strike Risk Reduction Program for airports based in the Latin America & Caribbean Region.

28 Airlines have provided IATA/ALTA their historical bird strike data in order to produce a data driven approach for the program and create awareness of the problem in the region.

ALTA/IATA have partnered with the FAA and USDA to use their expertise in our region with a pilot program that will last one year. Panama and Guayaquil Airports were selected for the pilot program, and the second of four visits took place on October 2012. Based on the pilot program results, the model will be exported to other airports in the region applying any lessons learned and best practices achieved.

Strategic Objective	*This working paper is related to Strategic Objective(s) A – Safety*

1. Introduction

1.1 During the 2011 ALTA Safety Summit held in Mexico City, Mexico, airlines were presented with a compilation of historical bird strike data from 25 carriers to highlight the current situation. The collaborative program between IATA and ALTA, with the expert help of FAA and USDA, was presented to the participants, and after general discussion, it was accepted by the airlines.

1.2 A Bird Strike Sub-committee was created to drive the program, headed by IATA and ALTA, with the participation of representatives from COPA, Avianca and LAN.

2. Program Activities

2.1 The sub-committee met four times (conference call and as a group) to share experiences with bird strike programs and design the Bird Strike Risk Reduction Program. The meeting was attended by representatives and bird strike experts from the FAA, USDA, Boeing, Airbus, IFALPA, ACI-LAC, LACSA, LAN Airlines, LAN Peru, LAN Ecuador, Avianca, Copa, Copa Colombia, ALTA and IATA.

2.2 After considering the proposal from the FAA/USDA and the available data, it was decided that a pilot program would be initiated at Panama's Tocumen and Guayaquil Int'l airports. They were chosen based on their high bird strike incident rates, support from airlines and aeronautical authorities, and the similar situation of their natural environments.

2.3 A tentative schedule for the pilot program was presented and accepted by the participants.

2.4 A team of local champions was created to help drive current and future initiatives in key airports that will benefit from lessons learned during the pilot program.

2.5 The FAA and USDA allocated funds for this project in 2012, and letters signed by the FAA, USDA, ALTA, IATA & ACI-LAC were sent to Guayaquil and Panama DGACs and airport Concessionaires to present the program.

2.6 The local DGACs, airport concessionaires and local BAR's of Panama and Guayaquil approved the project in January 2012 and provided the necessary support and funding to carry out the first phase of the project.

2.7 A team of biologists from the FAA and USDA visited Panama and Guayaquil airports for three days each, the last week of June. They met with local authorities and airline industry representatives. They also visited the airports and their surroundings to get to know the current conditions, action plans and establish a relationship with their wild life personnel and local champion team. The FAA produced a detailed report on the visit that can be found as **Appendices A and B** of this WP.

2.8 IATA and ALTA asked their airline members to share their bird strike incident reports from 2008 to 2011 a second time. The collated data will be used by the sub-committee to identify what airports would benefit from this program in the future once the PTY and GYE pilot projects are finished. Results can be found on **Appendix C**.

2.9 The sub-committee team met for the second time in Miami on Thursday, September 27th, at the IATA Miami Headquarters to review the on-going bird strike mitigation assessment at the Tocumen International Airport in Panama City, Panama and at the Jose Joaquin de Olmedo International Airport in Guayaquil, Ecuador and discuss future of the project. The meeting was attended by Avianca, Copa, Copa Colombia, LACSA, LAN Ecuador, TAM, TACA and organizations such as Airbus, FAA, USDA and ACI-LAC (represented by Tocumen International Airport). Volaris, KLM, IFALPA and Boeing continue to provide support to the program, but were unable to attend.

2.10 The sub-committee decided to name the program WIN-CAP: Wildlife Incident Neutralization Cooperative Action Plan. The idea is that the same collaborative model will be used in the future for different initiatives using the acronyms "CAP," and this particular bird strike initiative is called "WIN" for "Wildlife Incident Neutralization."

3. Next Steps

3.1 As a result of the last sub-committee meeting, the following actions will be taken to keep driving the project forward:

- IATA and ALTA will survey which airports have mandatory bird strike reporting, like Colombia has implemented.
- IATA and USDA will explore the possibility of hiring a full-time biologist to perform airport assessments for the next stage of the program.
- Copa Airlines, FAA and USDA will explore the possibility of an agreement with the Smithsonian Institute in Washington D.C. and a local Panama (PTY) Institute to provide bird strike remains analysis for the region.

3.2 The FAA and USDA will participate in the next CARSAMPAF annual meeting in Jamaica and present the advancements of the WIN-CAP. While IATA and ALTA will participate in the RASG-PA/5 Meeting and present the program status and progress.

4. Suggested Action

4.1 The Fifth Regional Aviation Safety Group – Pan America (RASG-PA/5) Meeting is requested to:

a) take note of the information provided in this working paper; especially the bird strike data provided by the airlines in Appendix C and the reports of the USDA/FAA visits to PTY and GYE in Appendices A and B; and

b) provide assistance and/or identify potential resources in order to ensure the success of this RASG-PA initiative in the future when new airports are chosen.

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APPENDIX A
Industry-Government Wildlife Collaboration Initiative
FAA/USDA Report for Panama Tocumen Airport Initial Site Visit

The initial site visit for the Pilot Project Wildlife Hazard Assessment at Tocumen International Airport (PTY) occurred Tuesday, June 26 – Thursday, June 28th, 2012. The purpose of this visit was to introduce the parties involved, become familiar with the airport and surrounding land uses, collect information about the current habitat and wildlife management program, and initiate the wildlife surveys with the airport wildlife team.

The meeting took place Tuesday morning to introduce the project and the participating parties. The panel of speakers included: Cap. Rafael Bárcenas, Director General of Civil Aviation; Claudio Dutary, Operations Manager at Tocumen S.A.; Danny Castro, Federal Aviation Administration; and Cap. José Eduardo Rodriguez, Director of Security and Quality for Copa Airlines. Carol Dominguez from Copa Airlines was our contact person and guide for the trip.

Following the initial meeting, we received a tour of the airport property. It was apparent that the airport faces some significant challenges with regard to the habitat on airport property. Vegetated wetlands with grasses over 7-8' tall are located throughout the southern end of the airport. These areas are difficult to maintain due to the inundation. Forested areas and dead trees are also located scattered throughout the southern end of the airport that allow for the perching of birds such as the black-bellied whistling duck and black vulture, both of which appear to be high-risk species at this airport.

Black-bellied Whistling Ducks roosting adjacent to AOA

The airport has constructed concrete-lined drainage canals which should reduce the attractiveness of this water source to wildlife; however, they are not sufficiently maintained. The grass is growing at heights of 5-7’ along the canal, and there is vegetation and sedimentation in the bottom of the canal. Several species of wading birds, including the great egret, snowy egret, great blue heron, and yellow-crowned night heron were observed feeding in the canal.

Concrete-lined canal next to runway

Drainage ditch overgrown with vegetation

The fencing appears to be 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, roadside hawk, great kiskadee, various doves, and various flycatchers. The presence of these species likely indicates the presence of food sources such as small rodents, reptiles, amphibians and insects on, and adjacent to, airport property.

Ani perched on perimeter fence

The areas directly adjacent to the runways and movement areas are mowed and maintained regularly. The birds observed on and adjacent to the runways included various doves and pigeons, cattle egrets, roadside hawk, crested caracara, red-breasted blackbird, and southern lapwing. These species are attracted to the grassy areas for many reasons, including foraging for insects and nesting. Other areas of the airfield are not mowed as frequently and included areas of small shrubs, which are potential perching and nesting areas for birds.

Tall grass and shrubs near the taxiways and runways

The airport has a wildlife management staff that conducts various mitigation activities on a daily basis. They utilize auditory harassment techniques such as propane canons, bird distress calls, sirens on the vehicles, and pyrotechnics to deter birds using the airport. The staff inspects the perimeter fence regularly for gaps that would allow wildlife entry. They also inspect structures for nests. When nests are discovered, they remove the nests and place netting or other barriers in the area to preclude additional nesting. Trapping is conducted for mammals on the airport when necessary. In order to address some of the off-airport issues, the airport is conducting an awareness campaign to educate local municipalities on proper waste management.

Tuesday afternoon, we met with the PTY wildlife management staff to discuss the potential survey points on the airport and the current habitat and wildlife management program. The wildlife management staff currently records wildlife observations and uses a grid of the airport to record locations of the observations. Surveys are not conducted on a regularly scheduled basis; the observations are made randomly while staff are on the airport. On the grid of the airport, they currently have noted five critical wildlife areas. We incorporated those into our survey points and chose five more locations in order to ensure complete coverage of the airport and other potential critical areas. We discussed when the surveys should be conducted and what types of information should be recorded on the data sheets.

A total of two dawn and two dusk wildlife surveys were conducted with the team during the initial site visit. The surveys generally began 30 minutes prior to sunrise and one hour prior to sunset. During the surveys, we described how the surveys were to be conducted at each of the ten points for three minutes. All wildlife observations made during those three minutes are recorded on a data sheet. General observations during movement between points should also be recorded.

Wildlife team conducting dusk wildlife survey

A large portion of Wednesday was spent visiting off-site wildlife attractants. These include the two illegal dumps (one of which is a cattle slaughterhouse), the University of Panama (alligator and pig breeding projects), a large river bordered by undeveloped land where hundreds of birds were observed roosting and feeding, and La Siesta and The Pantanal residential areas with open dumpsters. We also had the opportunity to see off-site areas adjacent to the airport by helicopter provided by the DG. This allowed us to see privately owned farms and wetland areas that would not have been accessible otherwise. We observed large numbers of black vultures soaring on thermals near the approach and departure areas off airport property.

Alligator pond at the University of Panama

At the end of the visit, we summarized what we had observed and prioritized some of the issues. We also talked about strike reporting and species identification. Michael showed them a snarge collection kit and how to use it. The wildlife team at PTY has begun working with the Smithsonian Tropical Research Institute (STRI) in Panama to help them identify species of birds involved in bird strikes. We think this is a great step and let them know that the Smithsonian Bird I.D. lab in Washington D.C. is another resource that they may want to consider. The airport supplied us with strike reports for 2008-2011 and several of the species were listed as “unknown”. It will be important to be able to identify the species that are the struck the most in order to choose the most effective mitigation techniques.

Specific goals that we will be working on through the next visits are as follows:

<u>Site Visit #2-October 2012</u>

- Conduct dawn and dusk wildlife surveys with wildlife management staff
- Meet with appropriate airport staff to determine the feasibility of removing roosting trees from and adjacent to airport property-PTY should coordinate meeting time and place
- Meet with STRI and PTY to discuss a protocol with STRI for bird and snarge identification-PTY should coordinate meeting time and place
- Determine the appropriate grass heights for the airport and recommend a habitat management plan that will address this issue (this will be an ongoing discussion as more data is collected)
- Determine which current wildlife management techniques work and which are ineffective at PTY and discuss new techniques with wildlife management staff
- Meet with wildlife management team and airport operations to discuss development and logistics of a wildlife management training program for PTY operations and maintenance staff

Site Visit #3-February 2013

- Conduct dawn and dusk wildlife surveys with wildlife management staff
- Determine if there are drainage improvements that can be made to decrease the amount of water on the site
- Conduct training for PTY operations and maintenance staff on habitat and wildlife management
- Strategize with COPA and PTY on additional ways to work with local government authorities on the wildlife attractants located off airport property

Site Visit #4-June 2013

- Conduct final dawn and dusk wildlife surveys with wildlife management staff
- Meet with wildlife management staff to discuss initial results of collected data and how it will be incorporated into final report
- Meet with stakeholders from initial meeting and present a summary of work conducted, general results of collected data, accomplishments-to-date, and what can be expected in final report

The goals listed above may change and new ones may be added as the project evolves.

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APPENDIX B
Industry-Government Wildlife Collaboration Initiative
FAA/USDA Report for Jose Joaquin de Olmedo, Guayaquil Airport Initial Site Visit

The initial site visit for the Pilot Project Wildlife Hazard Assessment at GYE occurred Friday, June 29 – Sunday, July 1, 2012. The purpose of this visit was to introduce the parties involved, become familiar with the airport and surrounding land uses, collect information about the current habitat and wildlife management program, and initiate the wildlife surveys with the airport wildlife management staff.

The meeting took place Friday morning to introduce the project and the participating parties. The panel of speakers included: Adriano Zambrano, Jefe de Aeropuertos GYE; Julio Salazar, Jefe de Proyecto Comite 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 Gestion Ambiental, Gobierno de Guayaquil; and David Diaz, Director Ejecutivo, Fundacion Aves del Ecuador. Monica Chevez, Jefe de Control de Fauna, from TAGSA was our contact person and guide for the trip.

During the meeting, we learned that an Environmental Impact Study (EIS) had been conducted at the airport. As part of the EIS, the airport asked The Birds of Ecuador Foundation to identify and monitor the bird populations on the airport. The study was conducted from March 2008 to February 2009. Based on the results of this study, a wildlife hazard management plan was created and airport staff was trained to conduct wildlife mitigation activities. In addition, LAN Airlines altered the rate of climb of their aircraft to more quickly ascend to a safer altitude where the risk of bird strike is reduced.

Following the initial meeting, we received a tour of the airport property. The habitat on airport property is appropriately maintained with respect to grass height. The airport is currently mitigating for its on-site drainage ditches by covering them with netting to preclude use by wading birds and water fowl. There were two wading birds observed in two different ditches that had managed to get through the netting. The netting was in the process of being replaced at the time of our visit.

Netting covers ditches and grass is mowed and maintained

Piles of construction debris and dirt were located on some portions of the airfield, which provide cover and hunting sites for various species of birds. A large hawk was observed perched on the piles on two different occasions.

Hawk perching on debris on airfield

Areas of 4-6’ shrubs and weeds are located in some areas of the airfield. Blackbirds and doves were observed perching in these areas. The shrubs should be removed and the weeds mowed.

Blackbirds flocking in tall shrubs and weeds

The fencing appears to be 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.

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 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.

GYE is immediately surrounded by residential and commercial development and associated roadways. This type of development could provide a food source for wildlife. In addition, the airport is one of the only open, grassy areas that wildlife may find suitable for nesting or protection.

Friday afternoon, we met with the GYE wildlife management staff to discuss the potential survey points on the airport and the current habitat and wildlife management program. Five survey points were located on the airfield. The airport has conducted wildlife surveys in the past as part of the EIS and the data is included in the report. We discussed the type of surveys that would be conducted for this assessment and what types of information should be recorded on the data sheets.

Members of the wildlife management staff, FAA, and USDA conducting a dusk survey

A total of two dawn and two dusk wildlife surveys were conducted with the staff during the initial site visit. The surveys generally began 30 minutes prior to sunrise and one hour prior to sunset. During the surveys, we described how the surveys were to be conducted at each of the six points for three minutes. All wildlife observations made during those three minutes are recorded on a data sheet. General observations during movement between points were also recorded. The staff quickly adapted to the survey protocol were able to determine the most efficient way to visit each point with the least amount of time spend in movement areas.

A large portion of Saturday was spent visiting the off-site wildlife attractants. The land use surrounding the airport includes commercial, industrial and residential. 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. The approach path for aircraft flying to the airport is located directly over the island. It is absolutely necessary for the airport staff to be able to conduct mitigation activities at this island to preclude the birds from using it in the future. In the past, a grid was constructed over the island using stakes and netting to keep the birds from landing, and it appeared to be successful. Since then, the grid has not been reconstructed and there is the potential that the island will be designated as protected land. If this is the case, then the mitigation activities will not likely be allowed in the future. TAGSA is working with the local government authorities to educate them on the safety issues associated with bird strikes as a result of the birds using the island.

Isla la Palmar in the Rio Guayas

Aircraft approach over Isla la Palmar and Rio Guayas

At the end of the visit, we summarized what we had observed and prioritized some of the issues. We also talked about strike reporting and species identification. Michael showed them a snarge collection kit and how to use it. We let them know that the Smithsonian Bird I.D. lab in Washington D.C. is a resource that they may want to consider to help them identify bird remains from strikes.

Specific goals that we will be working on through the next visits are as follows:

Site Visit #2-October 2012

- Conduct dawn and dusk wildlife surveys with wildlife management staff
- Meet with appropriate airport staff to determine the feasibility of removing the piles of debris and shrubs from the airfield-GYE should coordinate meeting time and place
- Determine which current wildlife management techniques work and which are ineffective at GYE and discuss new techniques with wildlife management staff
- Meet with wildlife management team and airport operations to discuss development and logistics of a wildlife management training program for GYE operations and maintenance staff

Site Visit #3-February 2013

- Conduct dawn and dusk wildlife surveys with wildlife management staff
- Conduct training for GYE operations and maintenance staff on habitat and wildlife management
- Meet with Base Aerea de la FAE and Jardin Centro de Eventos to discuss trees and flooded areas
- Strategize with LAN and TAGSA on additional ways to work with local government authorities on the wildlife attractants located off airport property
- Collect more information on how and when mitigation activities can be conducted on Isla la Palmar (this will be an ongoing discussion throughout the project)

Site Visit #4-June 2013

- Conduct final dawn and dusk wildlife surveys with wildlife management staff
- Meet with wildlife management staff to discuss initial results of collected data and how it will be incorporated into final report
- Meet with stakeholders from initial meeting and present a summary of work conducted, general results of collected data, accomplishments-to-date, and what can be expected in final report

The goals listed above may change and new ones may be added as the project evolves.

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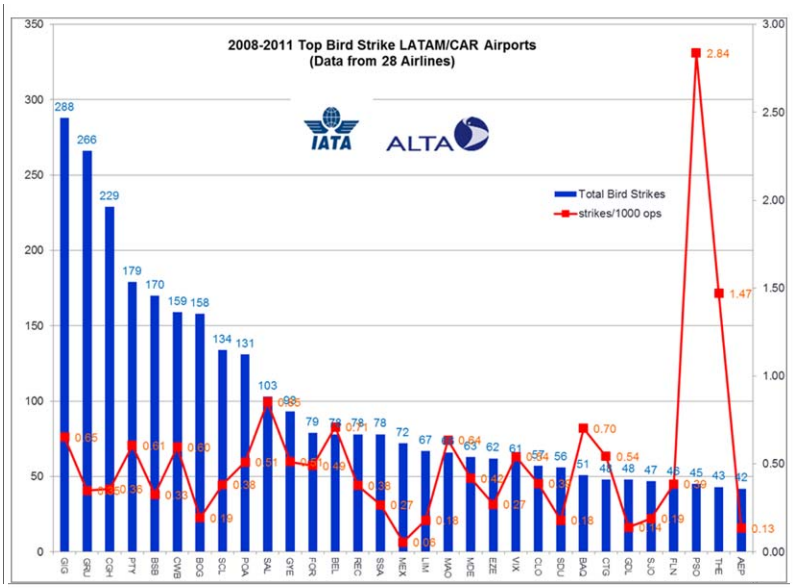
APPENDIX C

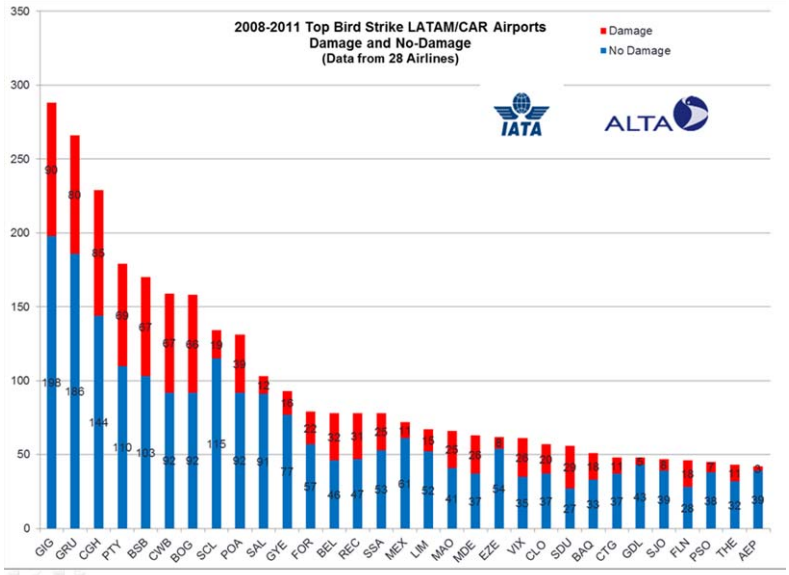
Bird Strike Airline Data

Take into consideration:

- Not all airlines that fly to the LATAM/CAR region shared their data
- The amount of reports presented by an airline can be affected by:
  - When the report system was established
  - Safety report culture
  - Damage to the airplane
  - Airport were it happened (hub vs. quick turn around)
- This data should only be used as an statistical sample for reference purposes, no direct risk to the operations should be establish from it.

- 28 Airlines send data representing more than 185 airports in the region
- In total 4,421 bird strikes were reported
- 1,231 of them caused damage (28%)
- The top 20 airports account for 2,537 bird strikes (57%)
- 5 Brazilian airports, all in the top 10, account for 1,112 bird strikes: GIG, GRU, CGH, BSB, CWB (25%)
- BOG went from 23 B.S. in 2010, to 118 in 2011


2008-2011 Top Bird Strike LATAM/CAR Airports
(Data from 28 Airlines)
IATA
ALTA
Total Bird Strikes
strikes/1000 ops
GIG GRU CGH PTY BSB CWB BOG SCL POA SAL GYE FOR BEL REC SSA MEX LIM MAO MDE EZE VIX CLO SDU BAQ CTG GDL SJO FLN PSO THE AEP


2008-2011 Top Bird Strike LATAM/CAR Airports
Damage and No-Damage
(Data from 28 Airlines)
Damage
No Damage
IATA
ALTA
GIG GRU CGH PTY BSB CWB BOG SCL POA SAL GYE FOR BEL REC SSA MEX LIM MAO MDE EZE VIX CLO SDU BAQ CTG GDL SJO FLN PSO THE AEP

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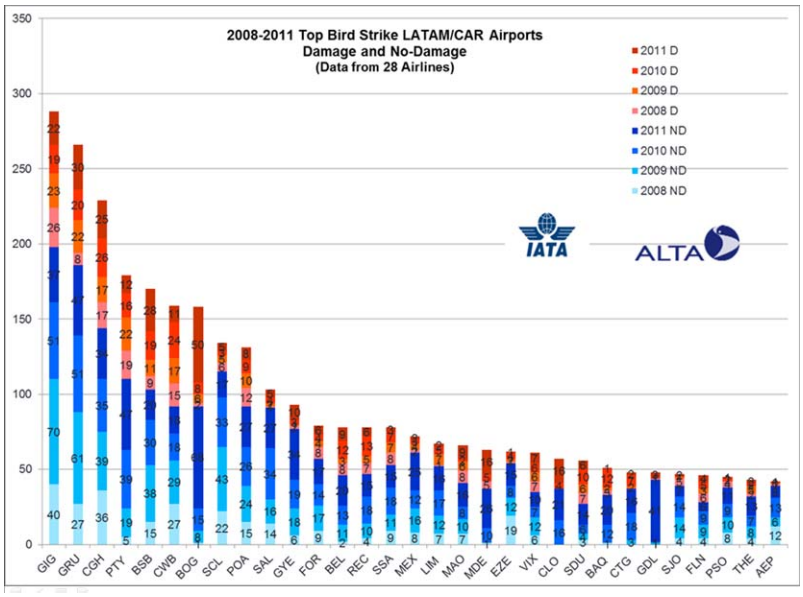
2008-2011 Top Bird Strike LATAM/CAR Airports
Damage and No-Damage
(Data from 28 Airlines)
2011 D
2010 D
2009 D
2008 D
2011 ND
2010 ND
2009 ND
2008 ND
IATA
ALTA
350
300
250
200
150
100
50
0
GIG GRU CGH PTY BSB CWB BOG SCL POA SAL GYE FOR BEL REC SSA MEX LIM MAO MDE EZE VIX CLO SDU BAQ CTG GDL SJO FLN PSO THE AEP

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