



**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

*A United Nations Specialized Agency*

# **Regional Bird/Wildlife Strike Prevention Conference**

## **Conferencia de Prevención del Peligro Aviario y Fauna**

ICAO Regulations – Land use / Reglamentos de OACI –  
Utilización del terreno

**Jaime Calderon**  
**Regional Officer, Aerodromes and Ground Aids,**  
**ICAO NACC Regional Office**

# Issues

- ✈️ Obstacles affecting aircraft flight operations
- ✈️ Obstruction of visual aids
- ✈️ Aircraft bird/wildlife strikes in-flight and on the ground
- ✈️ Reduced visibility due to smoke affecting flight operations
- ✈️ Noise, air, water and soil pollution
- ✈️ Constraints on airport expansion and capacity

# Measures

- ✈️ Airport master planning
- ✈️ Land use planning and safeguarding
- ✈️ Land use management
- ✈️ **Wildlife hazard management**
- ✈️ Environmental management
- ✈️ Legislation and regulation

# Land Use Objectives

## Ensuring Safety

Bird/wildlife hazards

Obstacles

Visibility

Interference

## Protecting the Environment

Aircraft noise exposure

Air quality

Water quality

Waste and energy management

## Safeguarding Capacity

Airport expansion

# ICAO References



# ICAO References

## Annex 14 – Aerodromes, Volume I - Aerodrome Design and Operations (Sixth Edition July 2013)

### Physical Characteristics

### Obstacle Restriction and Removal

- Obstacle limitation surfaces & requirements
- Objects outside the obstacle limitation surfaces
- Obstacle protection surface for PAPI / T-VASIS
- Nav Aids protection areas (Annex 10)

### Wildlife strike hazard reduction



## *9.4 Wildlife strike hazard reduction*

Shall be assessed through:

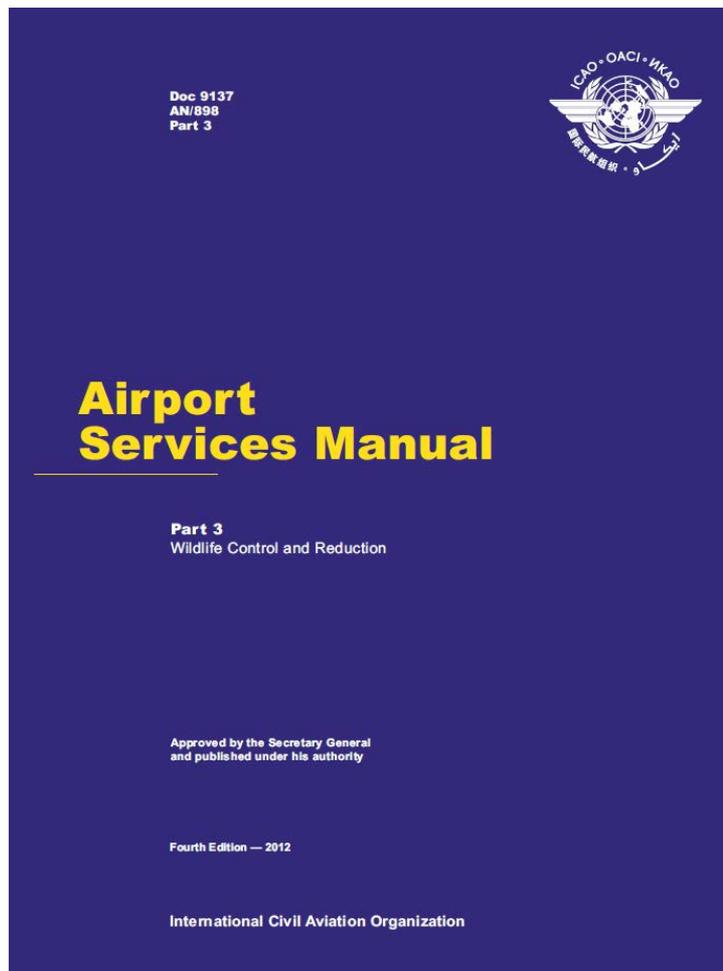
- a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;
- b) the collection of information; and
- c) an ongoing evaluation of the wildlife hazard by competent personnel.

# Annex 14 – Aerodromes, Volume I – Aerodrome Design and Operations



- ✈️ Wildlife strike reports shall be collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.
- ✈️ *Information on the system is included in the Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332).*
- ✈️ Action shall be taken to decrease the risk to aircraft operations by adopting measures to minimize the likelihood of collisions between wildlife and aircraft.

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction



# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)

-  The analysis of bird/wildlife data can reveal trends that will assist airport authorities to recognize areas of concern.
-  Bird/wildlife strike statistics can also be analyzed to determine those times of year or day when bird/wildlife control is needed the most.

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



- ✓ Establishment of a national committee:
  - Such committees have proven to be popular forums to gain and **exchange information on research and development** in airport wildlife control
  - National committees have very little authority in decision making and usually act as an **information source** for those in the aviation community

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



✓ Roles and responsibilities within a bird/wildlife strike control programme:

- The CAA should ensure that any procedures in the **airport certification manual** relating to bird/wildlife control are developed and implemented as part of the aerodrome SMS

- Role of the Airport Operator:

to develop, implement and demonstrate an effective bird/wildlife strike and **wildlife control programme** at the airport

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



- Role of the Airport Operator (Cont.):
  - identification of the bird hazard and the risk assessment of that hazard;
  - should appoint an airport bird/wildlife control **coordinator** who is responsible and accountable for the airport's bird/wildlife hazard control policy and the personnel involved.
  - This may include the formation of a local airport bird/wildlife committee that will develop and implement the specific programme.

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



## Role of the Airport Bird/Wildlife Strike Committee and the Airport Bird/Wildlife Strike Control Coordinator:

- should include those involved in bird/wildlife control, airport planning, maintenance and operations; air traffic services, flight operators, RFFS, security, duty managers,
- The coordinator should coordinate the activities of the wildlife control programme with air traffic control (ATC) & other stakeholders.
- review strike reports, monitor daily activity records and maintenance reports to determine the requirements for short- and long-term management programmes

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



- ✓ Habitat management and site modification;
  - Modifications to the airport's habitat/environment to eliminate or exclude food, water and shelter can limit the attractiveness of an airport to birds and other wildlife
  - Habitat management provides the foundation for an airport's bird/wildlife hazard management programme because it offers ecologically based, long-term measures for reducing the number of hazardous birds/wildlife at the airport

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



## ✓ Repellent techniques;

- Repellent and harassment techniques should be used to keep hazardous wildlife away from specific areas on or near an airport.
- The long-term cost-effectiveness of repelling hazardous wildlife does not compare favourably with habitat modification or exclusion techniques
- Repellents work by affecting the animal's senses through chemical, auditory or visual means

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



- ✓ Summary of best practices for aerodrome bird control;
  - The International Bird strike Committee (IBSC) has produced recommended best practices for aerodrome bird control which, in the opinion of its members, are required to achieve fully effective bird control.
  - Details can be found at [www.int-birdstrike.org](http://www.int-birdstrike.org)

# Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction (4<sup>th</sup> Edition 2012)



## ✓ Incompatible land use around airports;

- ICAO's *Airport Planning Manual* (Doc 9184), Part 2 — *Land Use and Environmental Control* contains valuable guidance on land-use planning in the vicinity of aerodromes. Included in this guidance is a table in Appendix 2 providing land-use guidelines for the avoidance of bird hazards in the vicinity of aerodromes.

# Land-use Guidelines for the Avoidance of Bird Hazards – Doc 9184 Airport Planning Manual Part 2

## Land-use guidelines

<i>Land Use</i>	<i>Area A</i>	<i>Area B</i>	<i>Land Use</i>	<i>Area A</i>	<i>Area B</i>
<b>Agriculture</b>			<b>Commercial*</b>		
landscape nurseries*	YES	YES	offices	YES	YES
tree farming*	YES	YES	retail sales	YES	YES
stock farming*	YES	YES	hotels and motels	YES	YES
dairy farming*	YES	YES	restaurants	YES	YES
sod farming	NO	YES	parking lots	YES	YES
piggeries	NO	YES	indoor theatres	YES	YES
fruit tree farming	NO	YES	warehouses	YES	YES
			shopping centres	YES	YES
<b>Wildlife Sanctuaries</b>			service stations	YES	YES
bird sanctuaries	NO	NO	cemeteries	YES	YES
game reserves	NO	NO	drive-in restaurants	NO	YES
			food-processing plants	NO	YES
<b>Recreational</b>			<b>Municipal Utilities*</b>		
golf courses*	YES	YES	water treatment	YES	YES
parks*	YES	YES	non-food garbage landfill	YES	YES
playgrounds*	YES	YES	food garbage disposal	NO	NO
athletic fields*	YES	YES			
riding trails*	YES	YES			
tennis, lawn bowling*	YES	YES			
picnic and campgrounds	YES	YES			
riding academies	NO	YES			
racetracks	NO	YES			
fair grounds	NO	YES			
outdoor theatres	NO	YES			

Source: Transport Canada, *Land Use in the Vicinity of Airports*.

\* These are general guidelines for planning and land-use zoning only. The avoidance of bird hazards during airport operations is another subject that can involve special controls to keep land free from food and shelter for birds.

# ICAO References

## Airport Planning Manual (Doc 9184), Part 1 -Master Planning (1987)

### Airport Site Evaluation and Selection

- Physical planning – airspace, land area
- Environmental planning – people, flora & fauna noise, air, water, soil
- Hazards – smoke, **wildlife**
- Surrounding land use - compatibility

# ICAO References

## Airport Services Manual (Doc 9137), Part 8 – Airport Operational Services (1983)

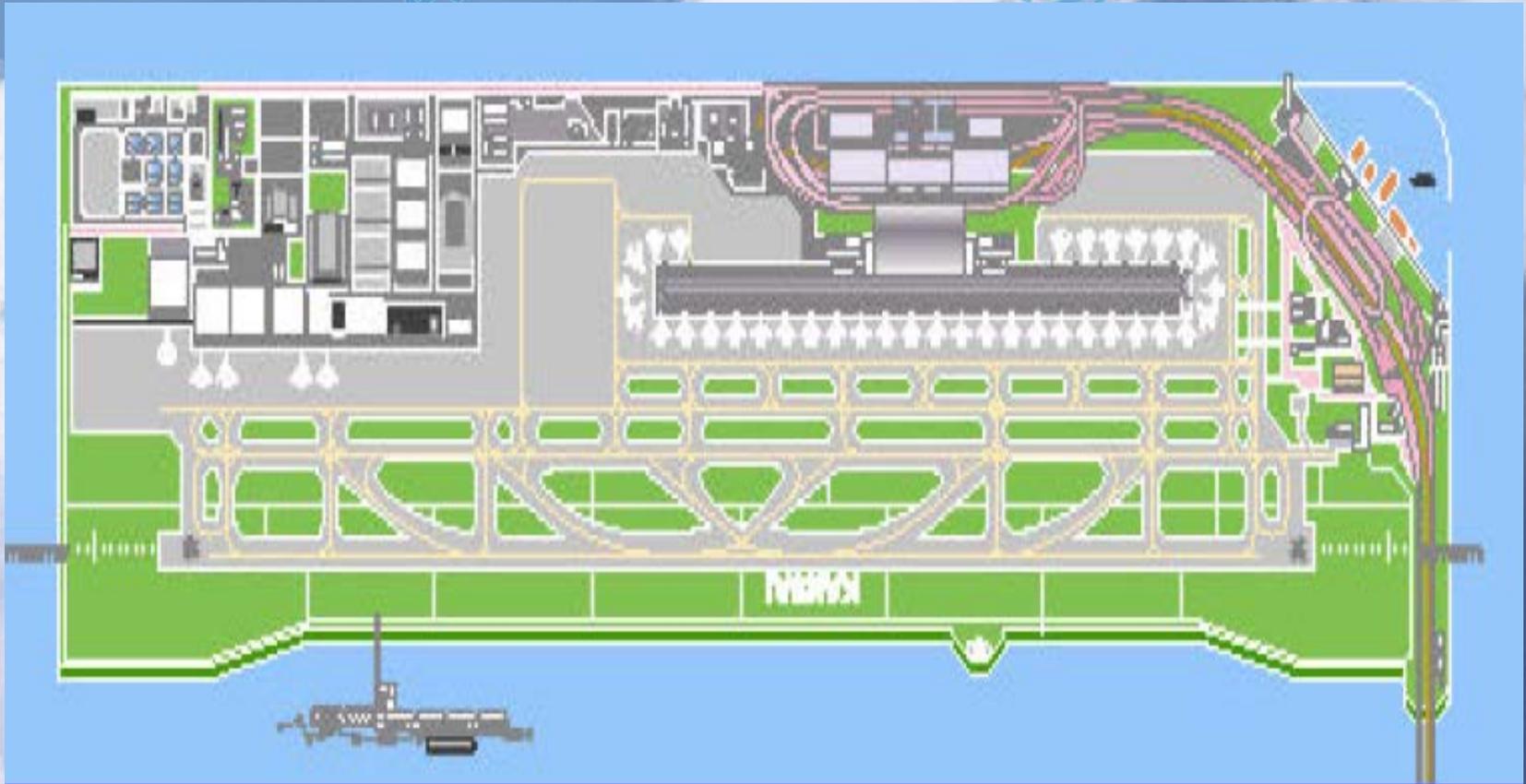
- **Bird hazard reduction**
- Control of ground noise
- Airport zoning and obstacle clearance
- Incidents affecting people and property outside the airport boundary

# ICAO References

- Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332)
- PANS-AGA
- Manual on the Use of the Collision Risk Model (CRM) for ILS Operations (Doc. 9274)
- Recommended Method for Computing Noise Contours around Airports (Circ 205)
- PANS/OPS – Aircraft Operations (Doc. 8168), Volume I – Flight Procedures

# ICAO Meetings

ICAO



# ICAO Meetings

- ✿ **Eight CAR/SAM Regional Bird/Wildlife Hazard Prevention Committee Meeting and Conference (CARSAMPAF/8) - San José, Costa Rica, 31 August to 3 September 2010**
- ✿ **Ninth CAR/SAM Regional Bird/Wildlife Hazard Prevention Committee Meeting and Conference (CARSAMPAF/9) and First FAA Workshop on Bird/Wildlife Hazard Management - Medellin, Colombia, from 6 to 9 September 2011**
- ✿ **Tenth CAR/SAM Regional Bird/Wildlife Hazard Prevention Committee Meeting and Conference (CARSAMPAF/10) - Montego Bay, Jamaica, 22 to 26 October 2012**
- ✿ **Eleventh CAR/SAM Regional Bird/Wildlife Hazard Prevention Committee Meeting and Conference (CARSAMPAF/11) - Asuncion, Paraguay, 4 to 8 November 2013**



North American  
Central American  
and Caribbean  
(NACC) Office  
Mexico City

South American  
(SAM) Office  
Lima

**ICAO  
Headquarters  
Montreal**

Western and  
Central African  
(WACAF) Office  
Dakar

European and  
North Atlantic  
(EUR/NAT) Office  
Paris

Middle East  
(MID) Office  
Cairo

Eastern and  
Southern African  
(ESAF) Office  
Nairobi

Asia and Pacific  
(APAC) Office  
Bangkok

**Thank You**

[www.icao.int/nacc](http://www.icao.int/nacc)