

Update ICAO Doc 9137

Albert de Hoon

ICAO Wildlife Hazard Management Expert Group

Recent development of ICAO on wildlife strike hazard reduction

Albert de Hoon

ICAO Wildlife Hazard Management Expert Group

Yong Wang

Chief, Airport Operations and Infrastructure, ANB/ICAO

13 January 2021

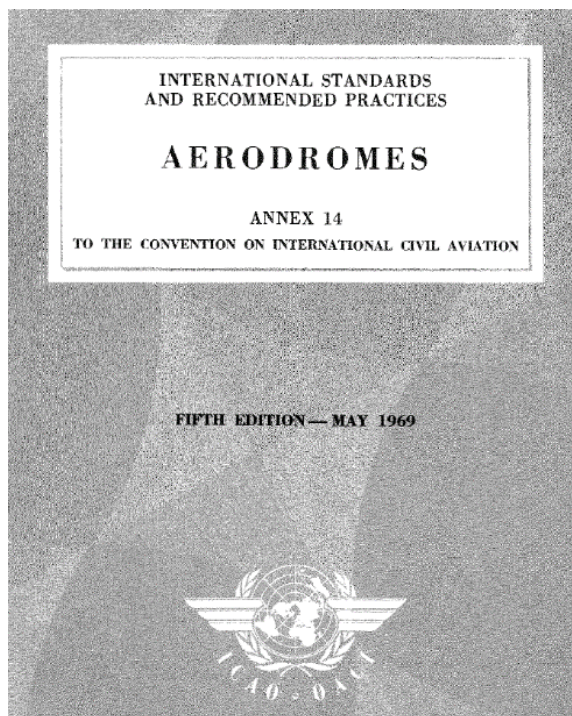
WBA 2021 Conference, virtual

www.worldbirdstrike.com

https://www.worldbirdstrike.com/images/WBA_Virtual_conference_2021/update_ICAO_WHM_2021_by_Albert_de_Hoon_and_Yong_Wang.pdf

1969 – Annex 14

5th edition



PART VII. — AERODROME SERVICES

†† Chapter 1.—Rescue and Fire Fighting Services

Introductory Note.—The principal objective of a rescue and fire fighting service is to save lives.

This contingency must assume at all times the possibility and need for the extinction of a fire which may occur either immediately following an incident or at any time during rescue operations.

For this reason, the provision of means of dealing with incidents on and in the immediate vicinity of aerodromes assumes primary importance because it is within this area that there are the greatest opportunities of saving life.

The most important factors bearing on effective rescue in survivable aeroplane

†† See Part I, 2.4.

crash rescue and fire incidents at aerodromes are the training received, the effectiveness of the equipment and the speed with which personnel and equipment designated to rescue and fire control duty, can be put into use.

1.1 Rescue and fire fighting equipment and services shall be provided at aerodromes.

Note 1.—Contracting States may, as appropriate, designate public or private organizations suitably located and equipped for giving prompt fire fighting and rescue assistance at the scene of an accident on or near aerodromes, and define the function of those organizations.

Note 2.—Guidance to assist the Competent Authority in providing rescue and fire fighting equipment and services is

given in Attachment C and in the Aerodrome Manual, Part 5, Volume I.

Chapter 2.—Bird Hazard Reduction Services

2.1 RECOMMENDATION.—*The Competent Authority should take action, as necessary, to decrease the number of birds constituting a hazard to aeroplane operations by adopting measures for discouraging their presence on or in the vicinity of aerodromes.*

Note.—Guidance on effective measures for establishing whether or not birds, on or near an aerodrome, constitute a hazard to aeroplane operations and on methods for discouraging their presence is given in the Aerodrome Manual, Part 5, Volume II.

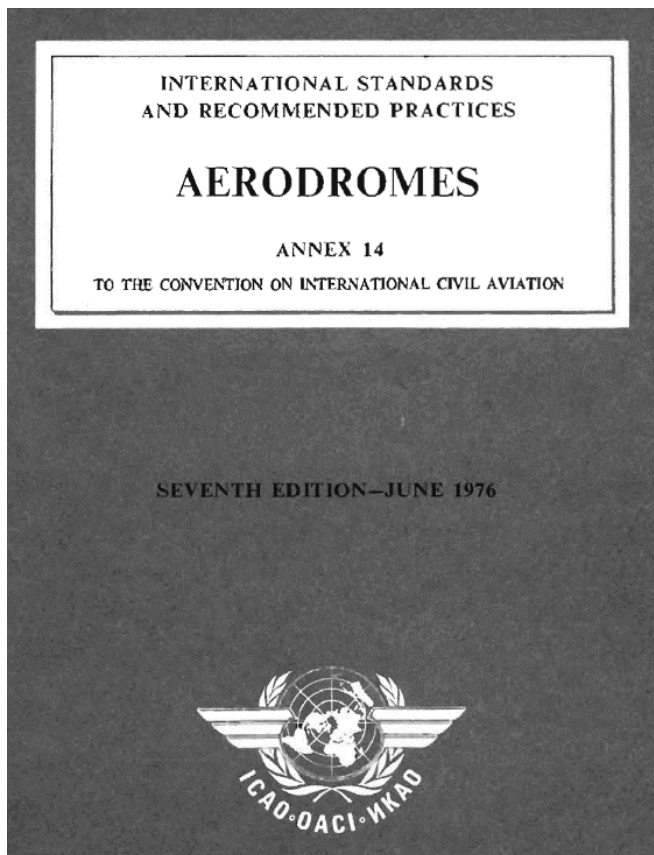
1975 – ICAO Doc 9137

1st edition

Bird Control and Reduction

1976 – Annex 14

7th edition



8.4.—Fencing

Application

8.4.1 Recommendation.— *A fence or other suitable barrier should be provided on an aerodrome to prevent the entrance to the movement area of animals large enough to be a hazard to aircraft.*

9.3.—Bird hazard reduction

9.3.1 Recommendation.— *The Appropriate Authority should take action, as necessary, to decrease the number of birds constituting a hazard to aircraft operations by adopting measures for discouraging their presence on or in the vicinity of an aerodrome.*

Note.—*Guidance on effective measures for establishing whether or not birds, on or near an aerodrome, constitute a hazard to aircraft operations and methods for discouraging their presence is given in the Airport Services Manual, Part 3.*

1975 – ICAO Doc 9137

1st edition

Bird Control and Reduction

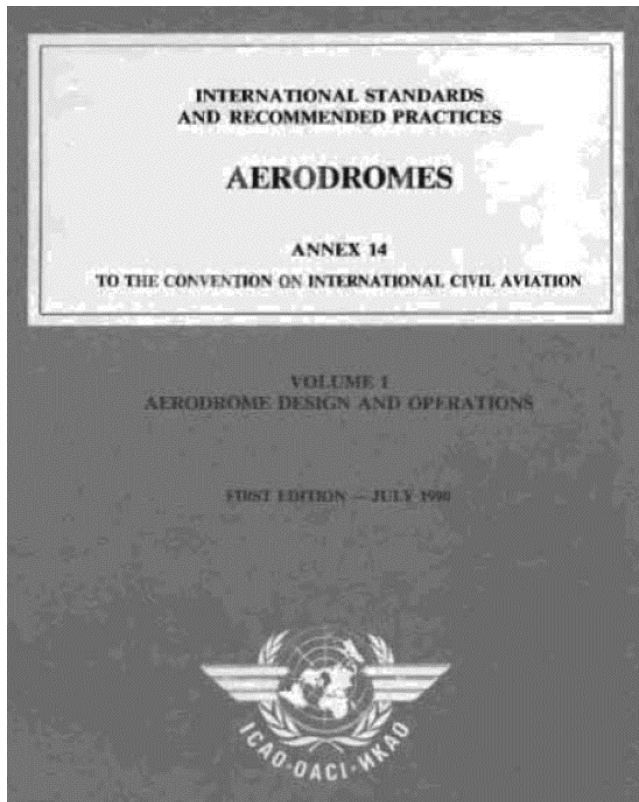
1978 – ICAO Doc 9137

2nd edition

Bird Control and Reduction

1990 – Annex 14

Volume I – 1st edition



9.5 Bird hazard reduction

9.5.1 **Recommendation.**— *The bird strike hazard on, or in the vicinity of, an aerodrome should be assessed through:*

- a) *the establishment of a national procedure for recording and reporting bird strikes to aircraft; and*
- b) *the collection of information from aircraft operators, airport personnel, etc. on the presence of birds on or around the aerodrome.*

Note.— *The ICAO Bird Strike Information System (IBIS) is designed to collect and disseminate information on bird strikes to aircraft. Information on the system is included in the Manual on the ICAO Bird Strike Information System (IBIS).*

9.5.2 **Recommendation.**— *When a bird strike hazard is identified at an aerodrome, the appropriate authority should take action to decrease the number of birds constituting a potential hazard to aircraft operations by adopting measures for discouraging their presence on, or in the vicinity of, an aerodrome.*

Note.— *Guidance on effective measures for establishing whether or not birds, on or near an aerodrome, constitute a potential hazard to aircraft operations, and on methods for discouraging their presence, is given in the Airport Services Manual. Part 3.*

9.5.3 **Recommendation.**— *Garbage disposal dumps or any such other source attracting bird activity on, or in the vicinity of, an aerodrome should be eliminated or their establishment prevented, unless an appropriate study indicates that they are unlikely to create conditions conducive to a bird hazard problem.*

8.4 Fencing

Application

8.4.1 **Recommendation.**— *A fence or other suitable barrier should be provided on an aerodrome to prevent the entrance to the movement area of animals large enough to be a hazard to aircraft.*

1990 – 4 Recommendations:

- 1. Install a fence***
- 2. Assess the bird strike hazard***
- 3. Take action to discourage the presence of hazardous birds***
- 4. Eliminate or prevent garbage dumps or any other source attracting hazardous birds.***

1975 – ICAO Doc 9137

1st edition

Bird Control and Reduction

1991 – ICAO Doc 9137

3d edition

Bird Control and Reduction

**AIRPORT SERVICES
MANUAL**



PART 3

BIRD CONTROL AND REDUCTION

THIRD EDITION — 1991

*Approved by the Secretary General
and published under his authority*

INTERNATIONAL CIVIL AVIATION ORGANIZATION

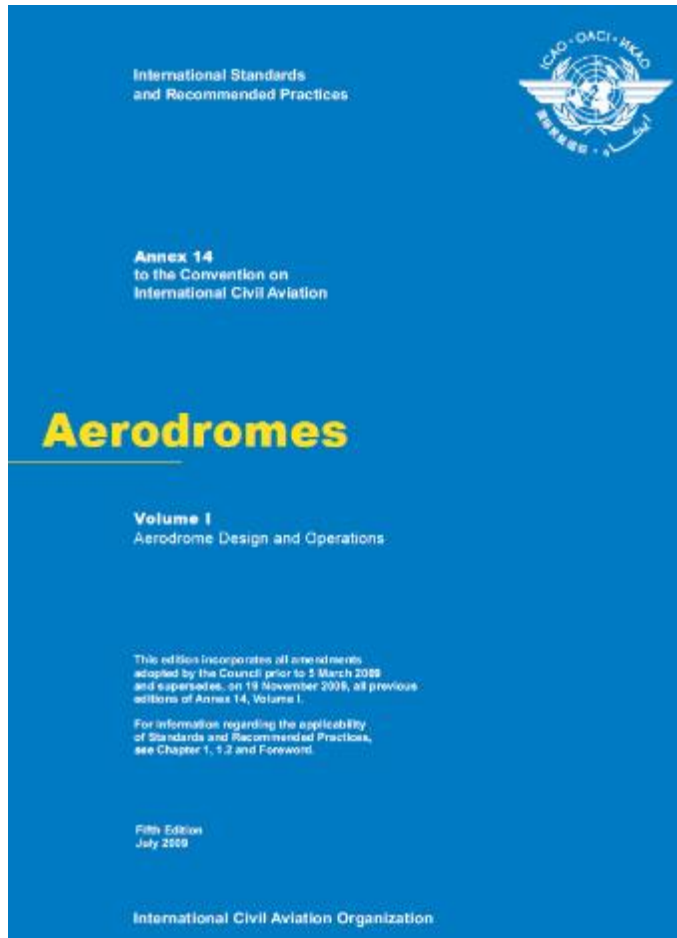
1978 – ICAO Doc 9137

2nd edition

Bird Control and Reduction

2009 – Annex 14

Volume I – 5th edition



13 January 2021

9.4 Wildlife strike hazard reduction

Note.—The presence of wildlife (birds and animals) on and in the aerodrome vicinity poses a serious threat to aircraft operational safety.

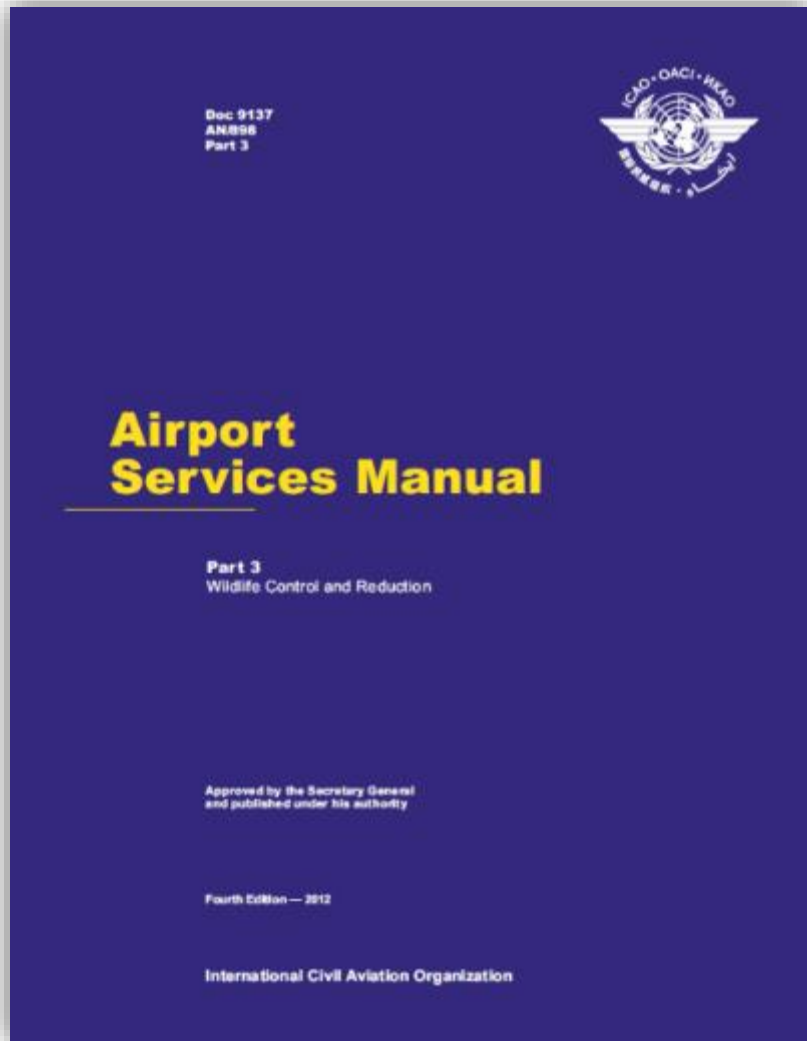
9.4.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome shall be assessed through:

- a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;
- b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and
- c) an ongoing evaluation of the wildlife hazard by competent personnel.

Note.— See Annex 15, Chapter 8.

9.4.2 Wildlife strike reports shall be collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.

Note.— The IBIS is designed to collect and disseminate information on wildlife strikes to aircraft. Information on the system is included in the Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332).



2012

ICAO Doc 9137

fourth edition

Wildlife Control and Reduction

2018 – Annex 14

Volume I – 8th edition



International Standards
and Recommended Practices



This edition supersedes, on 8 November 2018, all previous editions of Annex 14, Volume I.

For information regarding the applicability of the Standards and Recommended Practices, see Chapter 1, 1.2 and the Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

9.4 Wildlife strike hazard reduction

Note.— *The presence of wildlife (birds and other animals) on, or in the vicinity of an aerodrome poses a serious threat to aircraft operational safety.*

9.4.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome shall be assessed through:

- a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;
- b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and
- c) an ongoing evaluation of the wildlife hazard by competent personnel.

Note.— *See Annex 15, Chapter 5.*

9.4.2 Wildlife strike reports shall be collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.

Note.— *The IBIS is designed to collect and disseminate information on wildlife strikes to aircraft. Information on the system is included in the Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332).*

2018 – Annex 14

Volume I – 8th edition



International Standards
and Recommended Practices



This edition supersedes, on 8 November 2018, all previous editions of Annex 14, Volume I.

For information regarding the applicability of the Standards and Recommended Practices, see Chapter 1, 1.2 and the Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

9.4.3 Action shall be taken to decrease the risk to aircraft operations by adopting measures to minimize the likelihood of collisions between wildlife and aircraft.

Note.— Procedures on the management of wildlife hazards on and in the vicinity of an aerodrome, including the establishment of a wildlife hazard management programme (WHMP), wildlife risk assessment, land-use management and personnel training, are specified in the PANS-Aerodromes (Doc 9981), Part II, Chapters 1 and 6. Further guidance is given in the Airport Services Manual (Doc 9137), Part 3.

9.4.4 The appropriate authority shall take action to eliminate or to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity, unless an appropriate wildlife assessment indicates that they are unlikely to create conditions conducive to a wildlife hazard problem. Where the elimination of existing sites is not possible, the appropriate authority shall ensure that any risk to aircraft posed by these sites is assessed and reduced to as low as reasonably practicable.

9.4.5 **Recommendation.**— *States should give due consideration to aviation safety concerns related to land developments in the vicinity of the aerodrome that may attract wildlife.*

9.10 Fencing

Application

9.10.1 A fence or other suitable barrier shall be provided on an aerodrome to prevent the entrance to the movement area of animals large enough to be a hazard to aircraft.

In the meantime....

2015:

Aerodrome Design and Operations Panel (ADOP):

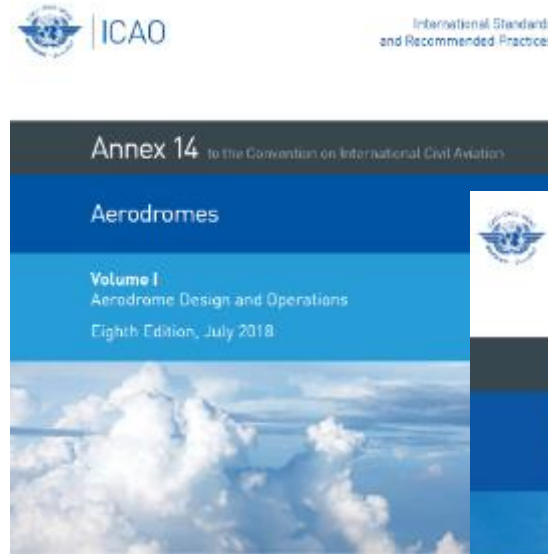
Job card 15:

- 1. Write WHM procedures for Doc 9981 (PANS Aerodromes)**
- 2. Update Doc 9137**

Annex 14 Aerodromes

Doc 9981 PANS Aerodromes

Doc 9137 WHM Manual



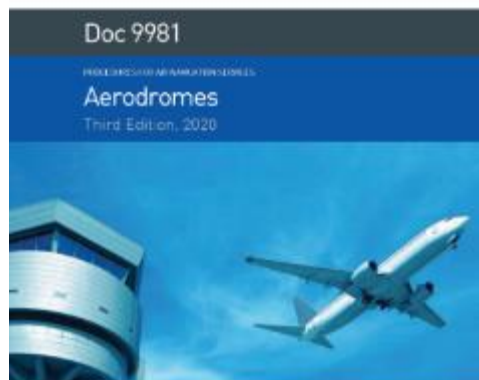


International Standards
and Recommended Practices



Annex 14:
- Standards
- Recommended
practices

Adopted by Council



PANS:
**Procedures for Air
Navigation
Services**

Approved by Council



Manual:
Guidance

Approved by and
published under
the authority of
the Secretary
General



*ICAO Wildlife Hazard Management
Expert Group*

PANS Aerodromes

2015: 1st edition

2016: 2nd edition

2020: 3^d edition



The PANS

1. Are complementary to Standards and Recommended Practices
2. Specify in greater detail procedures to be applied

Chapter 6. Wildlife hazard management

6.1 General

6.2 Objectives

6.3 Operational practices

Appendix 1 to chapter 6:

Wildlife control training

Appendix 2 to chapter 6:

Wildlife incident reporting criteria

Attachment to Chapter 6:

Land use on and around aerodromes



Doc 9137

Airport Services Manual

Part 3 — Wildlife Hazard Management
Fifth Edition, 2020



Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION

13 January 2021

2020

ICAO Doc 9137

fifth edition

Wildlife Hazard Management

WBA 2021 Conference, virtual



Chapter 1. Introduction

1.1 What is a wildlife hazard?

1.2 Historical background

1.3 Fundamentals of wildlife hazard management



Chapter 1. General





Chapter 2. Stakeholders

2.1 Introduction

2.2 Aerodrome operators

2.3 Stakeholders within the aerodrome

2.4 Identifying external stakeholders in the community

2.5 Civil aviation authorities (CAAs)

2.6 Methods of communication

2.7 Establishment of a national committee or forum



Chapter 2.
Establishment of a
national committee

Various paragraphs





Chapter 3. Aerodrome wildlife safety risk assessment

3.1 Introduction to safety risk management

3.2 Estimating the probability of a strike

3.3 Estimating the severity of a strike

3.4 Estimating the safety risk of wildlife species



Chapter 6.
Assessment of the risk of
bird/wildlife strikes.

Severity ↘			Higher ↗	
Likelihood ↑			Lower ←	
		<i>Acceptable with Mitigation</i>	<i>Unacceptable</i>	
More Less ↓		<i>Acceptable</i>	<i>Acceptable with Mitigation</i>	

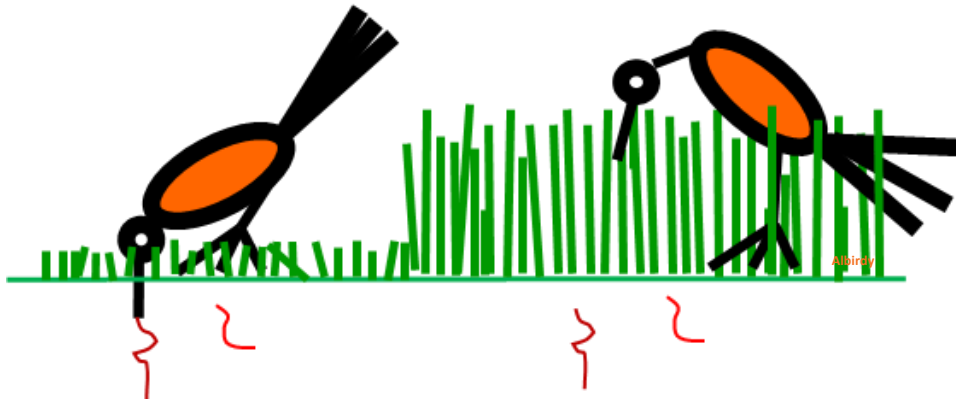
Chapter 4. Habitat management

4.1 General

4.2 Attractants

4.3 On-aerodrome management

4.4 Off-aerodrome management





Chapter 5. Management of hazardous wildlife

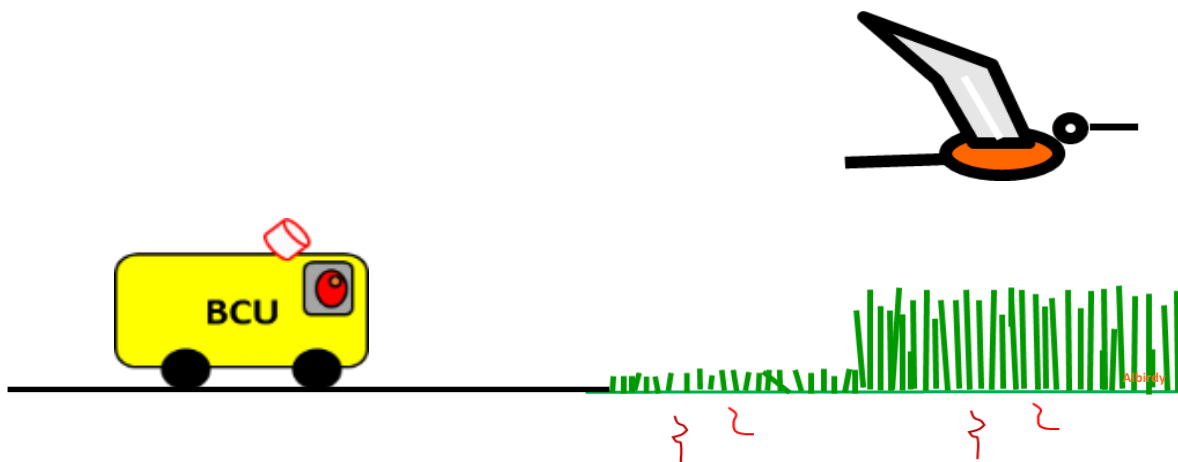
5.1 The importance of understanding animal behavior

5.2 Patrols and observations

5.3 Repellents



Chapter 8.
Repellent techniques





Chapter 6. Advancements in technology

6.1 General

6.2 Satellites for land use monitoring

6.3 Geographical information system (GIS)

6.4 Detection systems

6.5 Remotely piloted aircraft systems (RPAS) and drones

6.6 Pulse lights on aircraft and aerodrome use of flashing light patterns

6.7 Database





Chapter 7. Training

7.1 Training requirements

7.2 Content of a training plan



Paragraph 4.9

Staff training



Chapter 8. Operational notifications

8.1 General

8.2 Automatic terminal information service (ATIS)

8.3 Notice to airmen (NOTAM)

8.4 Pilot report

8.5 Aeronautical information publication (AIP)



Paragraph 12.3

Communications and procedures





Chapter 9. Wildlife hazard management programme

9.1 Aerodrome wildlife hazard management programme (WHMP)

9.2 Wildlife hazard management programme evaluation

9.3 CAA evaluation of wildlife hazard management programme effectiveness

9.4 CAA evaluation of their safety oversight system for wildlife hazard



Chapter 3.

Roles and responsibilities within a bird/wildlife strike control programme

Chapter 4.

Organization of an airport bird/wildlife strike control programme

