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# Wildlife Hazard Management Manual

***"State Civil Aviation Agency"***
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**Baku**

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**DÖVLƏT MÜLKİ AVİASİYA AGENTLİYİ**
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# ƏMR

## “Vəhşi təbiət təhlükələrinin idarə edilməsi üzrə Təlimat”ın təsdiq edilməsi haqqında

Mülki aviasiya qanunvericiliyinə dair tələblərin uyğunlaşdırılmasının həyata keçirilməsi məqsədilə Azərbaycan Respublikası Nazirlər Kabinetinin 2025-ci il 22 aprel tarixli 123 nömrəli Qərarı ilə təsdiq edilmiş “Aviasiyanın ətraf mühitə təsirinin azaldılması Qaydası”nın 1.6-cı bəndi və Azərbaycan Respublikası Prezidentinin 2025-ci il 21 fevral tarixli 341 nömrəli Fərmanı ilə təsdiq edilmiş “Dövlət Mülki Aviasiya Agentliyi” publik hüquqi şəxsin Nizamnaməsi”nin 2.1.3-cü, 2.1.5-ci, 3.1.9-cu və 4.10.6-cı yarımbəndlərini rəhbər tutaraq,

**əmr edirəm:**

1. “Vəhşi təbiət təhlükələrinin idarə edilməsi üzrə Təlimat” (“Wildlife Hazard Management Manual”) adlı sənədin 1-ci nəşri (bundan sonra – Təlimat) təsdiq edilsin.
2. Keyfiyyətə nəzarət sektoru bu Əmrlə birlikdə Təlimatın “Dövlət Mülki Aviasiya Agentliyi” publik hüquqi şəxsinin (bundan sonra – Agentlik) bütün şəxsi heyətinə çatdırılmasını təmin etsin və rəsmi internet informasiya ehtiyatında yerləşdirilməsi üçün İnzibati idarəetmə departamentinə məlumat versin.
3. Aerodrom istismarçılarına nəzarət (AGA) və yerüstü xidmət təminatçılarına nəzarət departamenti bu Əmrlə birlikdə Təlimatın aidiyyəti mülki aviasiya subyektlərinə müşayiət məktubu ilə çatdırılmasını təmin etsin.
4. Bu Əmr qüvvəyə mindiyi tarixdən Dövlət Mülki Aviasiya Agentliyinin 2022-ci il 19 yanvar tarixində 01 nömrəli əmrlə təsdiq edilmiş “Руководство по Предотвращению Опасного Присутствия Птиц и Диких Животных в Районе Аэропорта” sənədinin 4-cü nəşri (G-AGA-001) qüvvədən düşsün.
5. Əmrin icrasına nəzarət Aerodrom istismarçılarına (AGA) və yerüstü xidmət təminatçılarına nəzarət departamentinin müdiri Aydın Mirzəzadəyə həvalə edilsin.

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***Edition: -*** *Release of a document having incorporated all previous revisions until the current version. New edition of a document will not show revised text in blue colour. Current edition of a document shown on each page in footer.*

***Revision:*** *- A change made to a part of document, where it is reflected with blue text or accompanied with a vertical line on right side of a document. Basic information on revisions (number and date) given in the List of effective Pages and indicated in header of affected page and in context itself.*

## 0.6 Terms and definitions

**Aerodrome:** A defined area on land or water (including any buildings, installation and equipment) intended to be used, either wholly or in part for the arrival, departure and surface movement of aircraft.

**Aerodrome vicinity:** for significant sources of attractants or hazardous wildlife movements across the aerodrome site within a radius of 15 km from the aerodrome reference point.

**Aircraft stand:** A designated area on an apron intended to be used for parking an aircraft.

**Apron:** A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fueling, parking or maintenance.

**Foreign object debris (FOD):** An inanimate object within the movement area which has no operational or aeronautical function and which has the potential to be a hazard to aircraft operations.

**Hazard:** A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

**Runway:** A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

**Safety management system (SMS):** A systematic approach to managing safety, including the necessary organizational structure, accountabilities, policies and procedures.

**Wildlife:** includes all birds, bats, and terrestrial animals and includes insects as a practical definition.

**Wildlife Hazard Management Programme:** a method for aerodrome operators to adopt reasonable wildlife risk control measures, address features that may attract wildlife, control the presence of wildlife on, and in the vicinity of, the aerodrome. A WHMP should be developed based on the wildlife hazard risk assessment, according to the size and complexity of the aerodrome.

**Wildlife strike:** when wildlife and a moving aircraft collide.

**Wildlife incident:** An event where it is likely that a strike could have resulted from a wildlife hazard. A near miss event involving both wildlife and aircraft should be considered a form of wildlife incident.

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## 0.7 Abbreviations

| | |
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| **SCAA** | *State Civil Aviation Agency* |
| **ICAO** | *International Civil Aviation Organization* |
| **SMS** | *Safety Management System* |
| **WHMP** | *Wildlife Hazard Management Programme* |
| **ATC** | *Air Traffic Control* |
| **AIP** | *Aeronautical information Publication* |
| **NOTAM** | *Notice to airmen* |
| **FOD** | *Foreign object debris* |
| **RADAR** | *Radio detection and ranging* |
| **IBIS** | *ICAO Bird Strike Information System* |

## 0.8 Terms shall, should, may

The following terms shall have the meaning outlined below:

“Shall” - An action verb in the imperative sense means that the application of a rule or procedure or provision is mandatory.

“Should” - Means that the application of a procedure or provision is recommended.

“May” - Means that the application of a procedure or provision is optional.

## 0.9 Administration and control

The PDF files will be locked and signed to prevent changes.

This document is regularly revised and amended. All personnel must be familiarized with all revisions done.

This document will be Amended and Revised in accordance with requirements of “Documentation and Control” procedure.

## 0.10 References

This Manual has been developed on the basis of the provisions of the Convention on International Civil Aviation of 7 December 1944 and its Annex 14 — Aerodromes (Volume I), the “Requirements for the Design and Operation of Airports and (or) Aerodromes” approved by Decision No. 29 of the Cabinet of Ministers of the Republic of Azerbaijan dated 19 February 2025, as well as the recommendations and guidance material contained in ICAO's *Airport Services Manual, Part 3 — Wildlife Hazard Management*(Fifth Edition, 2020.

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# 1 Introduction

## 1.1 Regulatory requirements

**1.1.1** In accordance with Decision № 29 of the Cabinet of Ministers of the Republic of Azerbaijan dated 19 February 2025, "Requirements for the Design and Operation of Airports and (or) Aerodromes", aerodrome operators shall ensure the effective management of wildlife hazards.

**1.1.2** Aerodrome operators shall ensure that:

1) procedures are established for the recording and reporting of aircraft accidents and incidents related to wildlife hazards;
2) information on the presence of wildlife that may pose a hazard to aircraft operations is collected from aircraft operators, aerodrome personnel, and other relevant sources, and is analysed and reported to the SCAA;
3) ensuring continuous assessment of natural hazards by competent personnel.

**1.1.3** Aerodrome operator shall to take measures to minimise the likelihood of collisions at the aerodrome between wildlife and aircraft.

## 1.2 Wildlife hazards in the aerodrome environment

**1.2.1** The presence of wildlife (birds and other animals) on and within the aerodrome vicinity may pose a serious hazard to aircraft operational safety. Therefore, to reduce the risk to aviation safety, active assessments, reporting and management of wildlife are necessary.

**1.2.2** Incidents, where aircraft encounter wildlife strikes can endanger passengers and crew, cause damage to aircraft resulting in costly repairs and operational disruptions, potential reputational impact, and potentially insurance related implications for aerodrome and aircraft operators. In rare cases, wildlife strikes may result in the catastrophic termination of a flight.

**1.2.3** Each aerodrome location presents a unique habitat that influences the type and population of wildlife species present. The operator shall carry out a wildlife hazard assessment to identify the risk areas and formulate the most appropriate and effective measures to manage the risks effectively and detail the measures in its wildlife hazard management programme (WHMP).

**1.2.4** Wildlife risks fluctuate with the daily and seasonal cycles of wildlife activity. The species and a number of wildlife at and around aerodromes may vary over the years due to land use and environmental changes (e.g. agricultural practices, urbanization, conservation and climate change). Aerodromes have site-specific characteristics regarding their habitat, climate and surroundings that should be reflected in their respective Wildlife Hazard Management Programmes (WHMP). Increased air traffic and the development of quieter aircraft engines may increase the likelihood of a wildlife strike. Wildlife hazard management methods and techniques should therefore be reviewed annually and updated regularly to ensure that effective control methods are implemented.

## 1.3 Fundamentals of wildlife hazard management

**1.3.1** The objective of wildlife hazard management at aerodromes is to reduce the risk of a wildlife strike by implementing appropriate mitigation measures.

**1.3.2** A strike is described as a collision between wildlife and an aircraft; a “near miss” is considered a potential wildlife strike.

**1.3.3** To manage wildlife hazards, one must first assess the level of risk for each species present. Recording wildlife presence (at a species level) on, and in the vicinity of, the aerodrome, wildlife strikes and near misses is therefore necessary.

**1.3.4** After conducting a thorough assessment of wildlife hazards specific to the aerodrome's location and operating environment, aerodrome operators shall establish standardised procedures within their wildlife hazard management processes, in conjunction with the local environmental controls.

**1.3.5** The following events should be recorded and used for assessing and mitigating the risk of wildlife hazards:

1) any reported collision between wildlife and an aircraft for which evidence in the form of a carcass, feathers, any other remains, or damage to the aircraft is found;
2) any reported collision between wildlife and an aircraft for which no physical evidence is found, but an indication of a collision exists (e.g. visual observation of the collision or acoustic perception of the impact);
3) any wildlife found dead on an aerodrome without any other obvious cause of death;
4) and incidents or observations where the presence of wildlife on or in the vicinity of the aerodrome could have an effect on a flight (e.g. missed approach, aborted take-off, etc.).

**1.3.6** Wildlife hazard management involves influencing wildlife behaviour on or in the vicinity of an aerodrome, in order to achieve a specific goal with regards to altering behaviour, population, or geographic distribution of birds or wildlife. At aerodromes, the goal of wildlife management is to sufficiently alter the behaviour of animals so that they are less likely to occupy critical safety zones where aircraft operate.

**1.3.7** The key to managing wildlife at aerodromes is to understand the basic requirements of the relevant species and how their behaviour can become a hazard to aviation safety. This understanding provides an opportunity to anticipate how animals could behave, and accordingly initiate actions to prevent wildlife activity within and in the vicinity of an aerodrome.

**1.3.8** Aerodrome operators are required to include, or have referenced in their aerodrome manual, procedures to deal with hazards caused by the presence of wildlife to aircraft operations.

**1.3.9** The wildlife hazard management procedures should include:

1) monitoring wildlife hazards at the aerodrome;
2) assessing any wildlife hazard;
3) mitigating any wildlife hazard;
4) reporting wildlife hazards to aircraft may be through one or more of the following, as applicable: the AIP, NOTAM, ATC
5) for proposed or actual sources of wildlife attraction outside the aerodrome boundary — liaising with the relevant planning authorities or proponents to facilitate wildlife hazard mitigation.

**1.3.10** Measures to manage wildlife hazards at aerodromes may include, but are not limited to: manipulating habitats harassment and repellent techniques and removal of wildlife (see Chapter 2). Emerging technology such as bird detection RADAR or remotely piloted aircraft systems (RPAS), may also enhance the detection, monitoring and control of hazardous wildlife.

**1.3.11** In addition to managing the land use on aerodrome property, off-site land use in its vicinity must also be assessed and mitigated, as it can affect wildlife presence or activity. Land use suggestions can be offered to owners around aerodrome property to aid in wildlife management.

**1.3.12** The strategy for assessing wildlife at aerodromes and the control measures for reducing wildlife risk shall be outlined in the aerodrome's WHMP.

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# 2 Wildlife hazard management programme (WHMP)

## 2.1 General

**2.1.1** A wildlife hazard management programme (WHMP) is a method for aerodrome operators to adopt reasonable wildlife risk control measures, address features that may attract wildlife, control the presence of wildlife on, and in the vicinity of, the aerodrome. A WHMP should be developed based on the wildlife hazard risk assessment, according to the size and complexity of the aerodrome.

**2.1.2** An operator shall develop and implement a WHMP tailored to local conditions to reduce the identified wildlife risks at and in the vicinity of its aerodrome. The operator could also use the results from the wildlife hazard assessment to refine its WHMP. Though the scale and details of the WHMP may vary from aerodrome to aerodrome, it shall contain the following information:

1) Procedures for wildlife hazard monitoring and detection;
2) Roles and responsibilities of personnel involved in wildlife hazard management;
3) Training programme for personnel involved in wildlife hazard management;
4) Process for reporting, collecting and recording wildlife data;
5) Analysis of wildlife strike data;
6) Risk management and mitigation;
7) Evaluation of wildlife hazard management programme;
8) Wildlife attractants at the aerodrome;
9) Wildlife attractants in the vicinity of the aerodrome;
10) Habitat Management;
11) Techniques to curb the increase in the wildlife population.

**2.1.3** A WHMP shall be established and tailored to the local environment and be commensurate with the wildlife safety risk assessment.

**2.1.4** The WHMP shall include procedures and measures for reducing the wildlife risk at the aerodrome to an acceptable level.

**2.1.5** Wildlife hazard reduction measures and procedures shall be integrated into the aerodrome operator's safety management system (SMS).

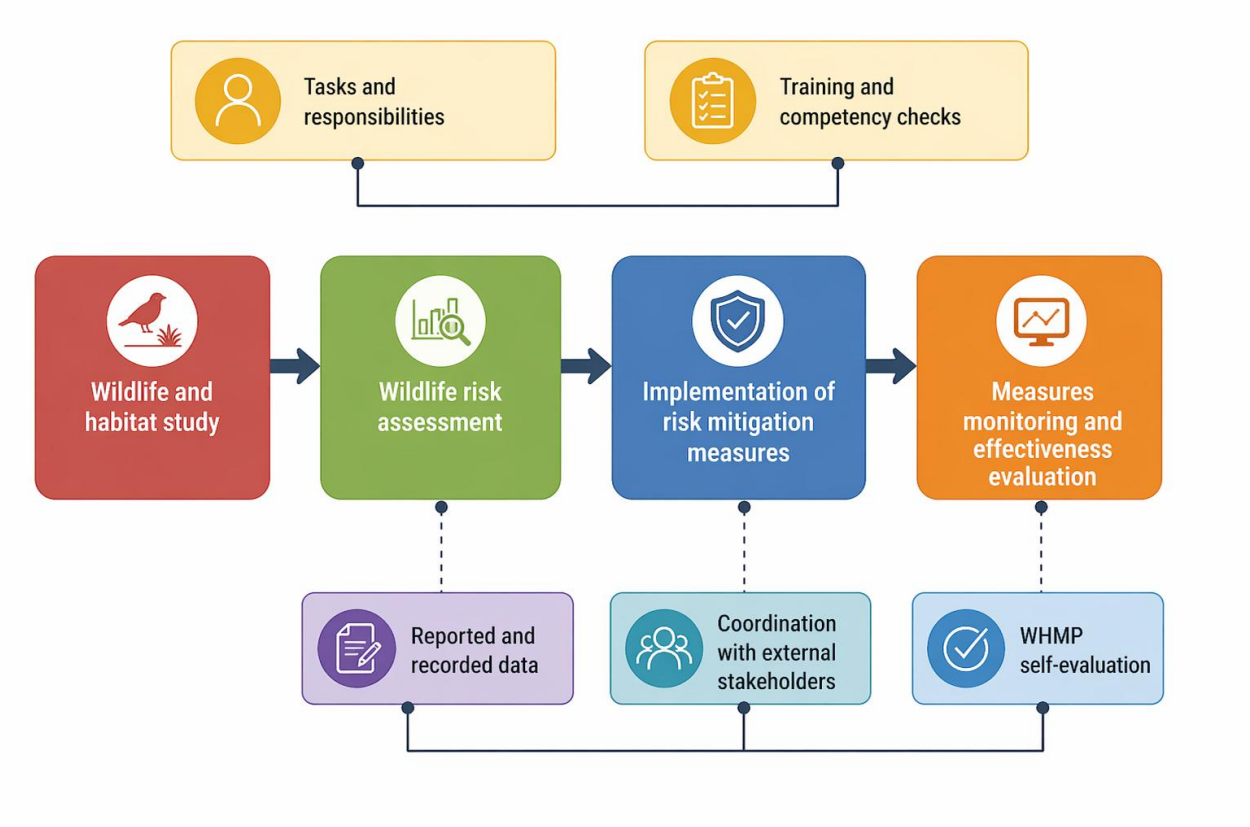
**2.1.6** A wildlife safety risk assessment shall be conducted, covering the aerodrome and its vicinity.

**2.1.7** An aerodrome shall establish procedures for data collection, risk analysis and the implementation of wildlife control measures. Aerodrome personnel shall be competently trained in wildlife hazard management with well-defined roles and responsibilities.

**2.1.8** The WHMP should not only consider the establishment of internal actions specific to the aerodrome operator. For it to be effective, involving different stakeholders and external entities throughout its development will be needed, since they may be linked to the presence of wildlife, attracting habitats, land use, etc.

**2.1.9** Wildlife hazards on, and in the vicinity of, the aerodrome are constantly changing due to modifications in land use, management policies, and environmental factors. In addition, wildlife can adapt or habituate to control strategies that were once effective, or they might develop new behavioural or feeding patterns on, or near, the aerodrome. These factors can affect the efficacy of the WHMP´s success.

**Figure 1 – Wildlife hazard management programme process**




## 2.2 Wildlife hazard monitoring

**2.2.1** For effective wildlife hazard management processes, wildlife activities, including bird activities, should be continuously monitored within and in the vicinity of the aerodrome.

**2.2.2** Aerodrome operators shall implement strategies for continuous monitoring, and they should be documented in the WHMP or program.

**2.2.3** Wildlife monitoring should be conducted regularly, and the frequency should correlate to the severity of the wildlife hazard. In practical terms, the greater the wildlife hazard, the more frequently monitoring should be conducted. The timing of wildlife monitoring should be such that it provides a complete coverage of wildlife activity, day, night, dusk or dawn, as appropriate to the aerodrome.

**2.2.4** Wildlife monitoring shall be conducted regularly, and the frequency should correlate to the severity of the wildlife hazard. In practical terms, the greater the wildlife hazard, the more frequently monitoring should be conducted. The timing of wildlife monitoring should be such that it provides a complete coverage of wildlife activity, day, night, dusk or dawn, as appropriate to the aerodrome.

**2.2.5** For aerodromes, where wildlife hazard management is established, the aerodrome operator shall monitor and record the following as part of the aerodrome serviceability inspection:

1) the presence and behaviour of wildlife on the aerodrome;
2) wildlife activity that is visible:

- in the vicinity of the aerodrome;
- from the aerodrome.

**2.2.6** Where hazard levels and associated risks due to wildlife activities are found considerable, a dedicated wildlife inspection (including recording wildlife counts) may be implemented.

**2.2.7** Furthermore, the aerodrome operator, in consultation with the local planning authorities, shall attempt to monitor sites within 15 km of the aerodrome that do or could attract wildlife.

**2.2.8** Aerodrome operators shall attempt to monitor any reported wildlife aircraft strike events at, or in the vicinity of, the aerodrome.

**2.2.9** The results from wildlife monitoring shall be recorded and maintained to track changes in wildlife activity patterns and identify trends. The recorded data may also be used to develop strategies to mitigate wildlife hazards and improve the safety of aircraft operations.

**2.2.10** Wildlife monitoring techniques within, and in the vicinity of, the aerodrome may vary depending on the aerodrome environment, and some practices are listed in the following sections. Similarly, different strategies may be applied for monitoring wildlife activities before and post wildlife strike incidents.

**2.2.11** Some suggested practices for monitoring wildlife on the aerodrome include:

1) The aerodrome environment should be divided into separate monitoring zones. It is reasonable to expect that the aerodrome operator will select these zones based on:

- geographical size;
- specific environmental factors within the zone such as terrain, soil type, flora, land use etc;
- the operational use of the zone by aircraft such as take-off, approach etc.

2) A trained person should monitor and record wildlife populations and behaviour within each zone.
3) Any wildlife that transits across the zone, either by ground or by air, should be included.
4) Identifying aerodrome infrastructure that provides a habitat for the wildlife to survive within the aerodrome.

**2.2.12** Monitoring practices in the vicinity of an aerodrome:

1) The aerodrome operator shall establish a process to monitor and record the presence of wildlife activity that is visible within the vicinity of the aerodrome, or visible from the aerodrome.
2) Aerodrome operators, in consultation with the local planning authorities should conduct an inventory of sites that attract wildlife within a defined radius around the aerodrome, paying

particular attention to sites close to the airside and the approach and departure paths.

3) The radius for monitoring sites that attract wildlife should be 15 km around the aerodrome reference point. However, the radius may be extended or reduced, based on a wildlife evaluation of the aerodrome vicinity.

4) Monitoring in the vicinity of the aerodrome may include but is not limited to:

- areas used for waste, recycling, offal, or sewage;
- wetlands, marshes, areas of water discharge and open waterways; areas containing significant food sources for high-risk species;
- national parks, wildlife reserves and other significant wildlife corridors.

5) The identification of these areas can be achieved by:

- the observation of wildlife transiting across the aerodrome between separate sources of attraction;
- the physical observation of land uses in the aerodrome environment;
- any wildlife hazard reports received from pilots, authorities and/or the public.

6) Offsite aerodrome attraction sources (such as animal sale centres, picnic areas, aeration facilities, waste disposal and landfill areas etc.).

7) Climatic or seasonal considerations, such as the presence of wildlife at certain times of the year.

**2.2.13** The outcomes from the wildlife monitoring process shall be recorded. These records should be maintained to provide a detailed history of wildlife populations and behaviour over time.

## 2.3 Roles and responsibilities of personnel involved in wildlife hazard management

**2.3.1** The roles and responsibilities of personnel are important elements of the operator's safety management system and contribute to the effectiveness of the WHMP.

**2.3.2** Senior management, or their designate, should be responsible for the overall management of the WHMP on a long-term as well as a daily basis at the site-specific level. This should include the nomination of Wildlife Hazard Management Personnel, coordination of training, safety assurance and ensuring that the necessary resources are available.

**2.3.3** Wildlife hazard management personnel should ensure that patrol of the fence line i.e. the boundaries of the aerodrome, is done regularly. Any washouts, breaks, or other holes in the fence should be fixed as soon as they are discovered to prevent other wildlife species, especially dogs from entering the airside.

**2.3.4** The wildlife hazard management personnel should be responsible for:

1) Surveillance of wildlife activities at and in the vicinity of the aerodrome;

2) Establishing and maintaining the wildlife management log (e.g. strike data, details on wildlife numbers and activity, wildlife control measures undertaken, firearm use details, details on the use of lethal reinforcement, and monthly summaries);

3) Filing of autopsy, wildlife strike and wildlife sighting reports;

4) Reviewing and analysing wildlife strikes/wildlife sighting reports ;
5) Coordinating the wildlife monitoring program (e.g., including wildlife hazard consultant, control tower, airfield inspection team and external agencies/contractors including aircraft operators);
6) Preparing the wildlife strike report and submitting it to SCAA for inclusion to the IBIS;
7) Ensuring that aerodrome operations are consistent with the requirements of the WHMP;
8) Periodic review and updates of the programme;
9) Ensuring that the appropriate permits required for conducting deterrent activities such as culling of wildlife and handling of firearms are current and present on-site;
10) Undertaking deterrent activities;
11) Ensuring all activities undertaken follow strictly to the aerodrome Safety Management System (SMS) guidelines;
12) Identifying equipment, resources and training needs of relevant personnel; and
13) Provision of training and awareness programmes.

**2.3.5** In addition, the operator should form a wildlife hazard management committee to discuss wildlife issues. This committee should be attended by representatives from the various divisions involved in wildlife control, airport planning, maintenance and operations. It should also include air traffic services, aircraft operators and other external agencies/contractors that may affect wildlife control. The committee can be used to review wildlife strike/wildlife sighting reports, safety indicators, and periodic activity records to determine effective control measures to curb wildlife activity on and in the vicinity of the aerodrome. It is also a channel to discuss and to make inter-divisional decisions relating to wildlife hazard management.

## 2.4 Training programme for wildlife hazard management personnel

**2.4.1** It is imperative that wildlife hazard management personnel are able to demonstrate competence, are trained by qualified personnel and are provided with the appropriate resources and equipment to carry out their jobs.

**2.4.2** Aerodrome operators shall provide sufficient training to their wildlife hazard management teams. This training must be delivered by qualified specialists who have demonstrated expertise in this domain, using established competency-based training and assessment principles. The training shall be provided in accordance with the training programme specified in Appendix D, “WILDLIFE CONTROL TRAINING”, of this document.

**2.4.3** The operator shall include the procedures for the training of personnel involved in wildlife hazard management in its WHMP. The following areas of training and levels of skill are suggested for personnel involved in the WHMP:

1) Bird Identification:

- There are many species of birds that reside in or migrate through Azerbaijan. Some species are present in an area all year and others only in the migratory season (around September to April). All these species have unique vocalizations, behaviours and habitat preferences. Knowledge of these unique characteristics is useful to the personnel in field identification of bird species. Thus, to become an expert in field identification of all bird species at a location requires many years of training and practice.

- Bird species may also be different at different aerodromes, making bird identification more challenging for the personnel. personnel require basic training, including on-the–job training so that they can identify these bird species found in the aerodrome.
- Binoculars are essential for detailed, close-up observation. They are also useful for the detection and identification of birds at a distance.
- Every personnel should also be equipped with a wildlife identification field guide, to be carried in the vehicle while on patrol. As a learning aid, personnel should be encouraged to make annotations in their field guides regarding the behaviour or appearance of wildlife.

2) Biology and behaviour of bird species:

- Personnel should have some understanding of the biology and behaviour of these species. Understanding the daily movement patterns between roosting, feeding and loafing areas in relation to the aerodrome of the species of bird is one of the examples. This information will make the job of the personnel more interesting and useful in anticipating problems and deploying control measures more effectively.

3) Other wildlife species identification:

- Other wildlife species commonly found in Azerbaijan aerodromes are dogs, cats, jackals, wolves, foxes. Personnel should be trained to identify, not only by sight but also by signs (e.g. tracks, trails in grass and fecal material).

4) Documentation and Strike Reporting:

- A key component of a WHMP is to develop a system to document the daily activities of the wildlife hazard management personnel involved, log information about wildlife numbers and behaviour at the aerodrome, and record all wildlife strikes.
- Reporting is necessary as a source of data for analysis. This information is extremely useful during evaluations of the WHMP and when revisions to the WHMP are proposed. Such evaluations could be annual or when there is a wildlife strike with aircraft damage or a sudden increase in wildlife strikes. Personnel should be instructed on the importance of documentation and trained to record such information in a standardised format.
- **Appendix A** shows a sample of the flowchart of the reporting procedures for reporting wildlife strikes and wildlife sighting by airside personnel and their respective forms. Operators should have their own reporting procedures in place.

5) Wildlife strike risk assessment, risk management principles and how they integrate with the aerodrome's safety management system:

- An understanding of the methods used for evaluating wildlife strike risk and how this can be applied to the aerodrome environment.

6) Passive and active dispersal techniques:

- An understanding of how to disperse wildlife and the benefits and advantages of using different active and passive management techniques on an aerodrome and the applicability of techniques to different situations including safety aspects relating to the equipment and methods used.
- To ensure that the wildlife hazard management personnel maintain competence, annual refresher or another system of monitoring should be implemented by the operator.

**2.4.4** Wildlife control personnel should be fully aware of the details pertaining to aerodrome operations, the aerodrome environment and should have received appropriate training, including:

1) airside driver training, aerodrome familiarization, air traffic control communications (radiotelephony (RTF)), signs and markings, navigational aids, aerodrome operations and safety, and other matters that the aerodrome operator deems appropriate;

2) aircraft familiarization, including aircraft identification and effect of wildlife strikes on aircraft systems.

## 2.5 Collecting, reporting and recording wildlife data

**2.5.1** A good WHMP depends on good reporting. Data may come from wildlife sightings, wildlife strikes, wildlife control activities and aircraft maintenance problems. Review of this data identifies problems at the site and may indicate the effectiveness of current wildlife hazard management measures.

**2.5.2** All wildlife strikes shall be reported to the operator so as to obtain an accurate assessment of the wildlife risk. Wildlife management hazard personnel shall record all details in a consistent manner. Airline and other airport staff shall also be encouraged to report all details of the strikes. **Appendix A** contains a sample flowchart on the sequence of events that should happen and the recommended forms to use after a wildlife strike or sighting.

**2.5.3** Daily wildlife surveys should be conducted to monitor the wildlife species and their habitats in the aerodrome so as to manage them effectively. The frequency of surveys should correlate to the severity of the wildlife hazard and the timing of the monitoring should be such to provide a complete coverage of wildlife activity as appropriate to the aerodrome. A record of the number, wildlife species and location of wildlife seen should be maintained. It should also contain the actions taken to disperse the wildlife and the results of this action.

**2.5.4** In addition to monitoring wildlife in the aerodrome, the operator shall also conduct wildlife monitoring in the vicinity of the aerodrome for any obvious concentrations of wildlife and/or sources of wildlife attraction (i.e. habitat, migratory routes, feeding and breeding areas) which could contribute to the risk at the aerodrome.

**2.5.5** The outcome of the wildlife monitoring shall be recorded and the records should be maintained to provide details of the wildlife populations and behaviour over time. This, combined with the strike records, will provide the basis for predicting when certain species may be present to cause a problem. In general, aerodromes will be well served by documenting all activities that are undertaken to reduce the presence of wildlife.

## 2.6 Analysis of wildlife strike data

**2.6.1** The review of wildlife strike data identifies problems at the site and may indicate the effectiveness of current wildlife control measures. It is important to note that due care must be exercised while interpreting the data collected. The straightforward total number of strikes at an aerodrome may not be a good indicator of risk, and examination of the data by species struck and the distinguishing of multiple from single strikes are critical. If an increase in recorded strikes is attributable to an increase in incidents caused by encounters with single small wildlife, whereas the number of strikes involving large wildlife species and/or flocks of wildlife is falling, then this may well be indicative of both better wildlife control and better reporting of strikes.

**2.6.2** Actual wildlife strikes may not provide the whole picture. The recording (via routine safety reports of occurrences) of potentially hazardous wildlife activities or near miss events can also be very useful. Such data shall also be analysed to give a better conclusion on the wildlife activity on and in the vicinity of the aerodrome.

**2.6.3** Wildlife strike database shall be analysed to determine a number of trends including but not limited to:

1) Wildlife species that create problems overall and at particular locations;
2) Problematic times of the day and year;
3) Yearly strike trends by location;
4) Phase of flight when strikes are most likely to occur;
5) Types of aircraft most likely to be struck;
6) Parts of the aircraft most likely to be struck;
7) Effects of strikes on aircraft;
8) Percentage of strikes that are damaging and affect flight;
9) Costs associated with strikes; and
10) Altitude at which strikes occur.

**2.6.4** It may also be important to periodically summarise information from the daily wildlife activities log and wildlife strikes records to provide baseline data for analysing and evaluating the WHMP. A logical approach is to conduct monthly summaries which are then incorporated into a quarterly or semi-annual report. These summaries do not need to be complex but must reflect the level of activity for the common control techniques deployed. For example, monthly summaries of runway sweeps to disperse birds, distress call deployments, number of wildlife removed may be useful.

## 2.7 Risk management and mitigation

**2.7.1** A hazard is defined as a condition or an object with the potential to cause or contribute to an aircraft incident or accident. In this context, a hazard is the presence of certain wildlife at or near an aerodrome.

**2.7.2** Safety risk is the predicted probability and severity of the consequences or outcomes of a hazard. In this context, it is the probability of a wildlife strike by a particular group of wildlife multiplied by the severity of damage to the aircraft that might reasonably occur.

**2.7.3** Risk assessment is an important part of a WHMP because it serves to ensure that wildlife management activities are directed at the species that create the highest risk, in a prioritised fashion.

**2.7.4** **Appendix B** shows some suggested factors that should be included into a risk assessment matrix that could be used for the WHMP. Operators are strongly encouraged to conduct their own risk assessment. They shall, at the same time, exercise due care to see what applies at their aerodrome, especially considering the different species of wildlife found at or in the vicinity of the aerodrome.

**2.7.5** The risk assessment would need to estimate the probability that a strike will occur and the likely level of severity that it will result. Based on analysis of various wildlife strike databases around the world, there is a consistent relationship between wildlife mass and the level of damage to aircraft. Strikes involving flocks of birds (even small species) are also more likely to result in damage to the aircraft than strikes with single birds.

**2.7.6** The most common form of risk assessment involves the categorisation of strike probability

and likely severity into arbitrary levels for instance low, medium and high. Strike severity can be estimated based on the mass of wildlife involved, with a correction for their tendency to occur in groups. For strike probability, it would require some specialist knowledge of the behaviour of the wildlife species involved and how that behaviour is influenced by the environment around the aerodrome concerned. A typical option for risk assessment may involve using the number of strikes with different wildlife species over the recent past as a measure of the probability of likely future strikes. However, for this to work reliably, all or most of the wildlife strikes need to be reported consistently from year to year, with wildlife species involved identified correctly.

**2.7.7** Once the risk assessment is completed, the operator shall develop mitigating measures to deal with the risks identified. Operators shall ensure that the measures are reviewed periodically so that the level of effectiveness is maintained at an acceptable level defined by the aerodrome operator. Guidance material on risk assessment is contained in ICAO Safety Management Manual Doc 9859.

## 2.8 Evaluation of wildlife hazard management programme

**2.8.1** The following questions are designed to assist in determining if there is an effective WHMP in place at an aerodrome:

1) Has a WHMP been developed?
2) Has the WHMP been implemented?
3) What is the wildlife strike rate at the aerodrome over the last five years (with and without damage to the aircraft)?
4) Is there a procedure to collect information about wildlife, both dead (carcasses) and living?
5) Has a wildlife hazard management personnel at site been appointed and responsibilities assigned?
6) Has a training programme been developed to train those involved in the WHMP?
7) Has a wildlife hazard management committee been established with well-defined responsibilities?
8) Has a reporting procedure been developed covering all aspects of the WHMP?
9) Has a land-use plan been established with regard to effective land-use on and off the aerodrome as it pertains to the WHMP?
10) Has a list of all wildlife attractants at the aerodrome been completed and updated?
11) Has a list of all wildlife attractants in the vicinity of the aerodrome been completed and updated?
12) Have wildlife hazard management methods been researched and implemented at the aerodrome?

**2.8.2** Wildlife species on and in the vicinity of aerodromes are constantly changing in response to changes in land use, state management policies, and environmental factors. In addition, wildlife might adapt or habituate to control strategies that were once effective, or they might develop new behavioural or feeding patterns on or near the aerodrome. New wildlife control technologies might become available, or established products or techniques might be withdrawn or banned. There might also be changes in wildlife hazard management and management personnel at an aerodrome.

**2.8.3** Thus, once a WHMP is in place, there is a need to develop a process to evaluate the WHMP at least annually and update as needed to ensure that the WHMP remains current to the operating environment.

**2.8.4** The foundation for these evaluations is the maintenance of consistent records of wildlife hazard management activities and wildlife strikes. Consistent records permit easy compilation of events and activities into monthly and annual statistical and narrative summaries. Once these summaries are available, objective examinations and comparisons can be made of trends in strikes, wildlife activities, control methods deployed, and other factors.

**2.8.5** Where a WHMP is established, the aerodrome operator shall constantly review the plan to suit the evolving aerodrome environment.

**2.8.6** The need for reviewing WHMP may include the following circumstances:

1) if an aircraft experiences multiple wildlife strikes b. if an aircraft experiences substantial damage following any wildlife strike
2) if an aircraft experiences an engine ingestion of wildlife
3) if the ongoing presence of wildlife is observed on the aerodrome in size or in numbers reasonably capable of causing an event mentioned
4) at least every 12 months

**2.8.7** Lastly, indicators including leading and lagging indicators may be used as measures of the effectiveness of the WHMP. While lagging indicators (e.g. number of wildlife strikes per aircraft movement, percentage of strikes resulting in aircraft damage) are generally used to measure the effectiveness, leading indicators (e.g. percentage of trained wildlife personnel) could also be used to measure the process being implemented.

## 2.9 Wildlife attractants at the aerodrome

**2.9.1** Wildlife attractants at the aerodrome shall be properly identified and reviewed in a WHMP. The operator shall understand the behaviour of the wildlife and the reasons for their presence at the aerodrome. This would help in eliminating or reducing the number of wildlife strikes and wildlife sightings at these areas.

**2.9.2** Airport development shall be designed such that it will not be attractive to hazardous wildlife and no attraction will be created during construction. This may include denying resting, roosting and feeding opportunities for hazardous wildlife.

**2.9.3** The following is a list (non-exhaustive) of potential wildlife attractants that may be found at the aerodrome:

1) Grass/Turf areas;
2) Water bodies, ditches and drains;
3) Other food sources such as food and beverages stores, food disposal bins;
4) Shelter in hangars and in nooks of other buildings; and
5) Trees and vegetation.

## 2.10 Wildlife attractants in the vicinity of the aerodrome

**2.10.1** In order to have a successful WHMP, the operator shall also identify wildlife attractants in the vicinity of the aerodrome and notify the relevant authorities to remove the attractants if necessary. These wildlife attractants are often overlooked as there may seem to be no direct relationship between the number of wildlife strikes/wildlife sightings and the wildlife attractants found in the vicinity of the aerodrome. This process should be repeated as required to identify new sites or changes in the risk levels produced by existing sites. The following is a list (non-exhaustive) of potential wildlife attractants that may be found in the vicinity of the aerodrome:

1) Food sources (e.g. fish processing facilities, slaughterhouses, food outlets);
2) Waste disposal sites (e.g. dumping facilities, garbage dumps, landfill sites);
3) Agricultural activities (e.g. crop fields, cattle feed lots, animal farms);
4) Water bodies (e.g. lakes, ponds, retention basins);
5) Recreational and sports areas (e.g. golf courses, polo fields);
6) Built infrastructure (e.g. factory roofs, parking areas, buildings suitable for nesting);
7) Wildlife habitats (e.g. refuges, roosting and nesting areas).

## 2.11 Habitat management

**2.11.1** Generally, habitat management may be implemented in two categories:

1) On-aerodrome management;
2) Off-aerodrome management.

**2.11.2** Aerodrome operators should develop an inventory of sites, both within and in the vicinity of the aerodrome, which attract wildlife.

**2.11.3** For on-aerodrome management, consideration should be given to factors like:

1) Design (airport buildings and structures):

- Hangars can be screened to prevent access, and netting can be installed to exclude birds from nesting in the rafters;
- Adding slopes greater than 45 degrees to building edges can deter birds from nesting;
- Netting and anti-perching devices like spikes can be used to eliminate perching sites on existing structures;
- Unused structures should be removed to prevent nesting and roosting;
- Nest removal may be possible in buildings with existing bird nests, but consultation with local and national environmental requirements is necessary.

2) Fencing:

- A complete perimeter fence is an effective method to prevent wildlife (except birds) from entering the aerodrome;
- Electric fences can be used, and cattle gates can be installed at entry and exit points to prevent hoofed mammals from crossing;
- Fencing should be buried underground, when possible, to discourage animals from digging

under it.

3) Grass:

- Grass height should be determined based on the target high-risk species. b. Site-specific studies are recommended to determine the optimal grass height;
- Vehicle access to grass areas should be restricted to minimize damage and alteration to grass heights;
- Undesirable or mildly toxic vegetation can deter wildlife feeding;
- Alternatives to grass, such as wood mulch or artificial turf, can be used to reduce attractants for hazardous wildlife.

4) Forest, vegetation, and agriculture:

- Brush, shrubs, and forests should be eliminated from airport areas, especially near manoeuvring areas;
- Tree species that attract wildlife should be removed or thinned, and large trees should be located far from runways;
- Undergrowth should be removed, and trees should be inspected for nesting or roosting birds;
- Agricultural activities at airports should be avoided, but, if necessary, crop selection and modified practices may be required to decrease risks to aviation.

5) Waste management:

- Wildlife-proof storage of food waste should be implemented, wildlife feeding should be prohibited, and good sanitation and litter control programs should be promoted
- Waste disposal sites should be located off the aerodrome property. If on-site disposal is necessary, measures such as fencing, netting, or overhead wires should be used to prevent access.

6) Availability of water:

- Water bodies should be removed if possible, or drained and filled;
- Drainage ditches can be replaced with buried culverts or cleared of vegetation;
- Where water bodies remain, vegetation should be cleared, slopes should be steep, and physical barriers like fencing, exclusion wiring, or netting can be used to prevent wildlife access;
- Dredging can increase water depth and decrease surface area;
- Storm water management ponds should have a maximum retention period to reduce attractiveness.

**2.11.4** The factors contributing to off-aerodrome wildlife activities depends on how the land use planning is implemented in those regions. The concept of compatible land use planning emphasises the relationship between airports and their neighbouring communities. It involves careful study and coordinated planning to ensure that land use around airports does not negatively impact aircraft safety.

**2.11.5** Aerodrome operators should engage with local planning authorities and relevant stakeholders, to plan and implement compatible land use around aerodromes. Effective communication between aerodrome operators and local authorities is encouraged to raise awareness of safety concerns. Incompatible land use should be prevented or addressed through risk assessment processes.

**2.11.6** The operator shall put in place systems to guard against new or increased wildlife hazards caused by developments both on and in the vicinity of the aerodrome. The WHMP should include details of activities employed by the operator to control or influence areas beyond the aerodrome boundary as determined by risk assessment and where practicable, could include:

1) Establishment of a process with the relevant agencies for consultation on proposed developments that have the potential to be a wildlife attractant in the vicinity of the aerodrome;
2) Means to influence land use and development in the vicinity of the aerodrome such that the wildlife strike risk does not increase and, where practicable, is reduced; and
3) Procedures to conduct and record the results of monitoring visits to off-aerodrome sites.

**2.11.7** Regular monitoring of sites with hazardous wildlife and periodic comprehensive land use surveys are recommended. Modern technology, such as satellite detection, can aid in registering and monitoring different land use types.

**2.11.8** Engaging with neighbourhood groups may also prove beneficial in wildlife hazard management. For instance, collaboration with local farmers is important to encourage agricultural practices that are less attractive to hazardous species.

## 2.12 Techniques to curb the increase in wildlife population

**2.12.1** A successful WHMP shall also include techniques to curb wildlife from coming to the aerodrome. There are passive and active techniques used all over the world and some of these techniques are listed in **Appendix C**. Operators may use this list as a guide to select the appropriate techniques for their aerodromes.

**2.12.2** In addition, for the long-term, operators should be well informed on the latest wildlife hazard management techniques available in the industry and study its suitability and effectiveness. This would also mean that operators need to allocate the required resources towards the study and implementation of updated wildlife hazard management techniques.

**2.12.3** Ongoing wildlife dispersal techniques should be implemented to reduce presence of wildlife, beyond the preventive measures discussed above. These dispersal techniques are generally reactive in nature.

**2.12.4** The choice of appropriate dispersal actions and the frequency depends on several factors such as wildlife density, prevailing environment, nature of aircraft operations, etc.

**2.12.5** Dispersal techniques should be consistently reviewed for effectiveness as wildlife quickly adapt to some mitigation responses implemented and they become alert to any deterrents/repellents. For instance, they adopt a ‘wait and watch’ behaviour in response to routine wildlife control measures such as a bird scarer or an observation jeep.

**2.12.6** Similarly, wildlife controllers at aerodromes should identify appropriate dispersal techniques for the species prevailing in the aerodrome. The type of species may vary according to seasons and therefore the same dispersal technique may not always be beneficial to control wildlife activities.

**2.12.7** Wildlife control personnel shall be appropriately trained and sufficiently equipped to

perform their duties. Aerodrome operators shall ensure resources to deploy the right dispersal technique. Further, any control activities should only be deployed when necessary and not always, since overuse may result in such controls becoming less effective for wildlife dispersal.

# 3 Integration with aerodrome safety management system (SMS)

Where available, the WHMP or program shall be integrated into the aerodrome operator's SMS.

Any investigations into a wildlife strike, wildlife incident etc. should follow the relevant investigation procedures in the SMS.

The WHMP or program should also be subject to the review and audit functions of the SMS.

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## Appendix A: Reporting of wildlife strike and sighting

This appendix presents samples of the reporting flowcharts for wildlife strike and sighting and the associated forms in various figures below.

**Figure 2 – A sample flowchart for reporting of wildlife strike**

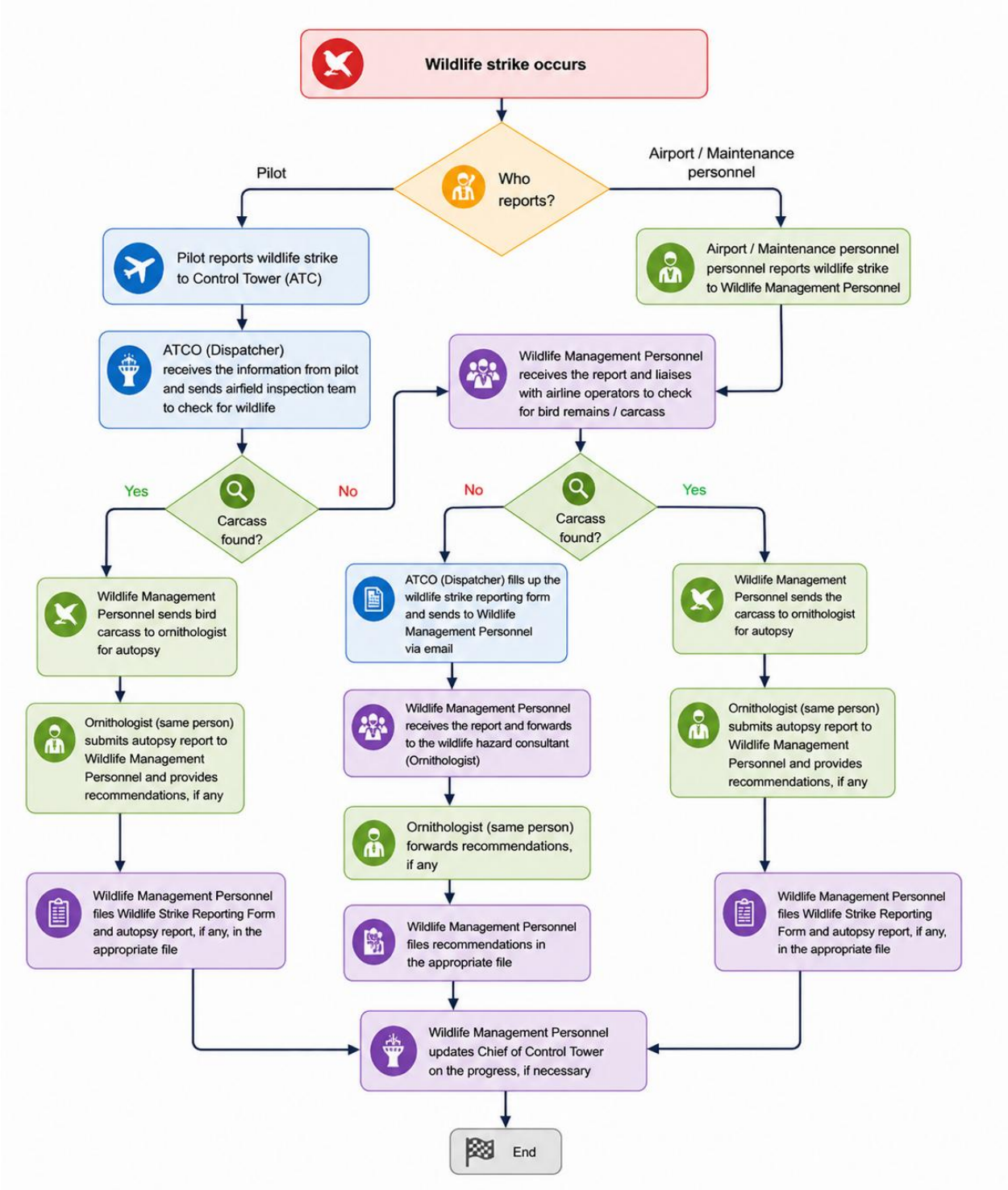
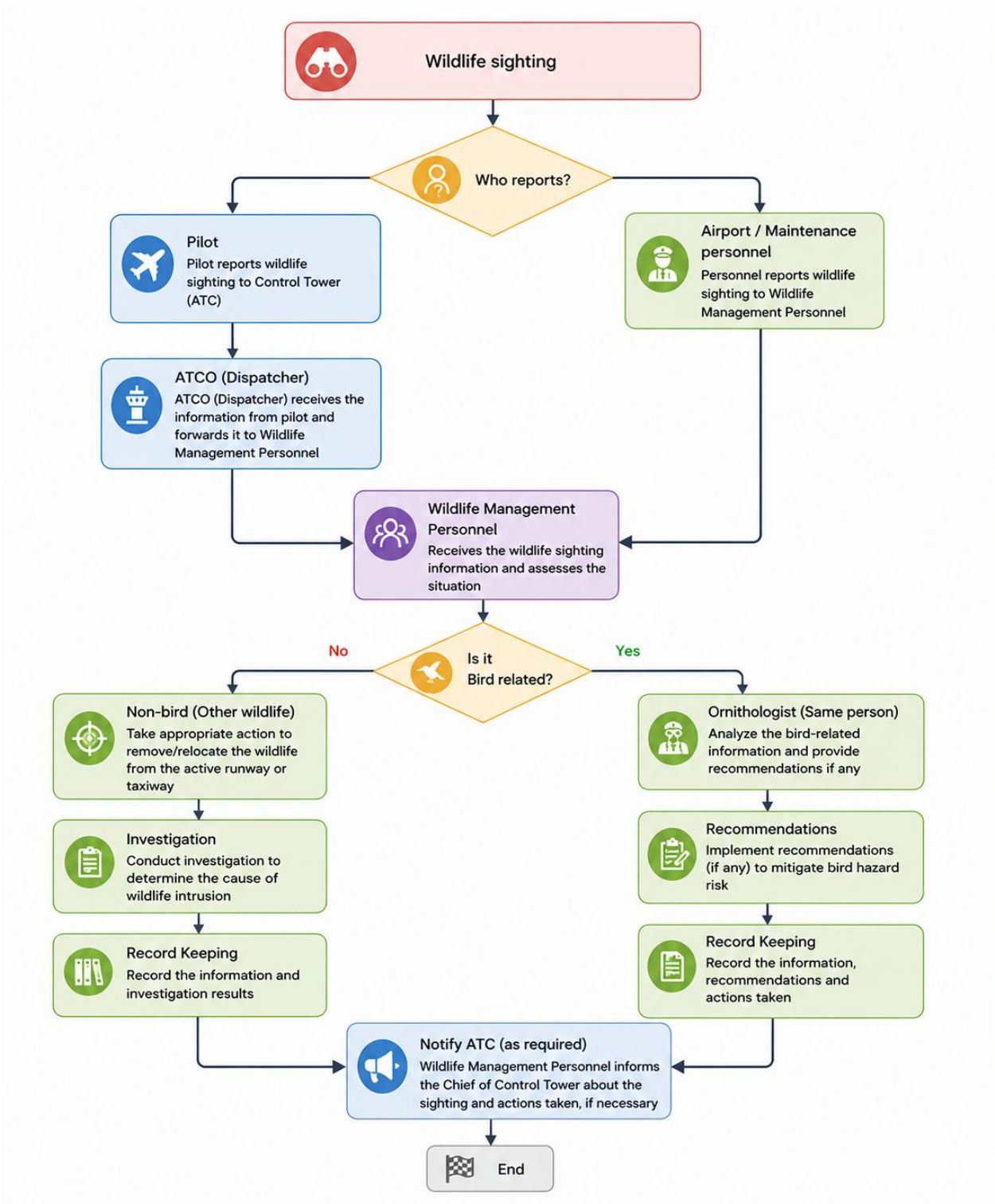


**Figure 3 – A sample flowchart for reporting of wildlife sighting**



## Appendix B: Risk management

The purpose of this appendix is to provide operators with a recommended list of factors to be considered in the risk assessment of WHMP. Each WHMP is unique to the particular aerodrome and it might require some specific types of risk management and measures to curb the increase in the number of wildlife strikes and wildlife sightings. Operators should fully understand these considerations in order to implement the WHMP effectively.

In risk management, operators should consider the identification of hazards (which are wildlife-related hazards), its consequences (which may be aircraft damages, loss of lives, etc) and the related risks (in terms of probability and severity) involved. This is in line with the aerodrome Safety Management System (SMS) that should be put in place by the operator – an aerodrome certification requirement.

A risk assessment matrix should be used in a WHMP. Suggested factors that should be considered in a risk assessment matrix are as follow:

1) Types of aircraft/aircraft classification;
2) Volume of air traffic movement;
3) Wildlife species; and
4) Size of wildlife/wildlife movements.

The probability and severity measures can be combined into a 5 x 5 risk matrix as shown in Table B1 below.

| SEVERITY | PROBABILITY | | | | |
|---|---|---|---|---|---|
| | Very high | Moderate | High | Low | Very Low |
| Very high | 3 | 3 | 3 | 2 | 2 |
| Moderate | 3 | 3 | 3 | 2 | 2 |
| High | 3 | 3 | 2 | 1 | 1 |
| Low | 2 | 2 | 1 | 1 | 1 |
| Very Low | 1 | 1 | 1 | 1 | 1 |

Table B1: A Sample of a 5 × 5 risk assessment matrix

With the risk assessment matrix put in place, the risk indexes should be classified into different categories for example, green, amber and red. An example of such classification and its suggested criteria is as shown in the Table B2.

| Category | Suggested Criteria |
|---|---|
| Red | Risk from this species is currently very high. Additional management actions should be implemented for this species as soon as possible. |
| Amber | Risk from this species merits further review of available options and action if appropriate. Current risk management for this species should be reviewed and additional steps taken if appropriate. |
| Green | Risk from this species is currently low. No further action is required beyond the risk management measures currently in place. |

Table B2: A Sample of Risk Categories

Operators may modify this table to suit their own WHMP. It is essential that the actions are followed up, particularly for those under the Red region, a list of available actions should be developed in consultation with wildlife management specialist. It is also equally important that the effectiveness of

these options is evaluated at appropriate intervals after they are implemented. It is recommended to repeat the risk assessment process annually to determine if the risk is falling to an acceptable level.

More guidance material on risk assessment is contained in ICAO Safety Management Manual, Doc 9859.

## Appendix C: Wildlife dispersal techniques

### Deterring and expelling wildlife

1) Wildlife deterring and expelling techniques should be appropriate to the wildlife situation on the aerodrome and its vicinity and should be based on risk assessment procedures established as part of the WHMP or program.
2) Multiple expelling techniques may be deployed; however, their effectiveness should be reviewed constantly and where necessary, a different strategy should be employed to achieve desired results.

### Some wildlife dispersal techniques

1) **Audio Repellents:** such as stock-whips, distress and alarm call simulators, specific signals, natural and synthetic cries and pyrotechnics, such as medium- and long-range bird fright cartridges and shell crackers;
2) **Optical and visual deterrents:** such as laser devices, flags and streamers, lights, predator models, gull models, hawk kites, balloons;
3) **Other techniques:** such as firearms, chemical repellents, lethal chemicals, trained predators (dogs and falcons), gas cannons, traps, and relocation methods.

The advancements in electronics, remote sensing, and computers have led to the development of systems capable of automatically dispensing repellents (such as noisemakers or chemical sprays) in specific areas when targeted wildlife enters. However, it is important to note that automated repellents cannot replace trained personnel on the ground who can appropriately respond to incursions by different wildlife species. They should only be considered when traditional methods of control and dispersal have been proven otherwise ineffective.

### Audio repellents:

1) Pyrotechnics:

- This includes non-lethal cartridges fired from shotguns, specialised pistols, and stationary cannons, that are commonly used at aerodromes to disperse wildlife. These devices can control the direction of wildlife movement to some extent, but they should be employed alongside trained personnel on the ground for optimal effectiveness.
- Pyrotechnics combined with other harassment techniques can be useful in driving birds away, and their distribution by wildlife management personnel targeting specific species helps associate the pyrotechnics with a perceived threat.
- Firing at a greater angle can extend the impact of cartridges beyond the aerodrome perimeter, particularly on approaching flocks, while detonations near flocks can disperse regrouping wildlife.
- Coordination with ATC is necessary when using pyrotechnics, and proactive fire prevention measures should be taken in dry conditions. Propane cannons (exploders) that produce shotgun sound blasts should be used sparingly and strategically to avoid habituation and scaring birds into flight paths.

2) Distress calls, emitted manually and species-specific, can attract flocking species and stimulate group investigation. It is important to consider the potential attraction of predatory mammals to distress calls.
3) Electronic noise-generating systems, such as long-range acoustic devices, offer the ability to emit targeted sounds over long distances, but caution is needed to control wildlife reactions and avoid drawing birds in from a wider environment.

**Optical and visual repellents:**

1) Presence of Humans and Vehicles**:**

- Is an effective tool for controlling hazardous wildlife at aerodromes. Consistently harassing wildlife within the aerodrome environment creates a learned behaviour where wildlife becomes aware of approaching wildlife controllers and leaves before any control method is implemented.

2) Visual Objects:

- Visual repellents, such as scarecrows, hawk effigies, reflective tape, and flags, have short-term effectiveness but are not suitable as long-term solutions. Displaying dead birds in a "death pose" can scare birds away, but it may also attract scavenging species.

3) Lasers:

- Certain bird species perceive laser beams as a threat and will fly away, making lasers effective during specific times of the day. Caution should be exercised to protect pilots and drivers from the hazards of lasers.

4) Trained Predators:

- Trained predators like dogs and falcons can introduce a predator presence and prompt hazardous wildlife to disperse.

**Other techniques:**

1) Firearms:

This includes the use of lethal cartridges fired from shotguns in cases where it is not otherwise possible to remove the hazard, or in cases where the animal is otherwise harmed and needs to be despatched in a humane manner.

2) Non-Lethal Projectiles:

- Non-lethal projectiles can also be used to elicit a flee response, but proper training and awareness of any restrictions are necessary for their safe handling.

3) Chemical Repellents:

- Non-lethal chemical repellents function by influencing the animal's senses, creating aversion to smell or taste. These repellents can be applied through spraying on roosting sites, food sources, or other areas where hazardous wildlife congregates. However, it should be noted that some chemical repellents, such as predator urine, may inadvertently attract other hazardous wildlife;

- Aerodrome operators must consider the potential impacts of using these repellents. Additionally, it is crucial to use chemical repellents that are registered and approved by the appropriate national, regional, and local authorities.

4) Trap and relocate:

- Hazardous wildlife can be captured and relocated away from the aerodrome. The aerodrome operator must adhere to local laws and regulations concerning the trapping and release of such wildlife. If live bait is employed, regular monitoring and feeding are required. When using bait or decoys, precautions should be taken to avoid attracting additional wildlife to the aerodrome.

Passive techniques are generally those that alter habitat or permanently exclude entry (See Table C1 below). The operator should know which measures are applicable and effective for its aerodrome.

| Examples | Suggested Approaches |
|---|---|
| **Grass/Turf areas** | • Manage height according to hazards at the airport<br>• Adaptive management, experimental manipulation at individual aerodrome |
| **Buildings** | • Ensure entry holes/crevices blocked, screened, netting<br>• Influence design of new buildings, slope ledges<br>• Porcupine wire, electric shocking, sticky caulking<br>• Minimise exposed areas that birds can use for perching and nesting |
| **Open water, ponds, ditches, drains, poorly drained areas** | • Drain, improve drainage<br>• Over-wire, netting, BirdBalls™<br>• Grade slopes steeply, remove vegetation |
| **Shrubs, trees, brush, hedges, woodland** | • Remove, including undergrowth and understorey layers<br>• Reduce biodiversity, habitat niches<br>• Thinning the canopy of trees or selectively removing trees to increase their spacing<br>• Avoid plants that produce fruits and seeds desired by wildlife |
| **Infield perching features** | • Remove when possible<br>• Apply spikes when required |
| **Waste storage** | • All disposal containers must be wildlife proof<br>• Eliminate dumps on the airport |
| **Fencing** | • Proper fencing with suitably sized grilles<br>• Regular inspection to fix any washouts, holes |
| **Outdoor picnic areas** | • Signage<br>• Provide wildlife proof garbage containers |
| **Aircraft** | • Ensure that bird nesting does not occur within parked aircraft through regular inspections. Nettings/covers can be installed to prevent such access as applicable. |

Table C1: A Sample of Passive Techniques

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## Appendix D: Wildlife control training

### Initial training

The minimum requirements for the initial training of wildlife control personnel should cover the following areas:

1) Comprehensive understanding of the aviation wildlife hazard, its nature, and extent, including local hazard identification;
2) Familiarity with national and local regulations, standards, and guidance pertaining to the management of wildlife hazards at airports, emphasizing the adoption of best-practice models;
3) Adequate knowledge about local wildlife ecology and biology, ensuring a broad appreciation of the subject;
4) Recognition of the significance of precise wildlife identification and observations, encompassing the use of field guides;
5) Understanding of local and national laws and regulations concerning protected species, as well as species of special concern, and the corresponding policies of the airport operators in relation to them;
6) Awareness of high-risk species identified during the wildlife risk assessment;
7) Proficiency in procedures for collecting, identifying, and reporting wildlife strike remains;
8) Proficiency in employing established and effective techniques for wildlife removal, dispersal, detection, and control, focusing on active and tactical measures.
9) Competence in documenting wildlife activities, control measures, and reporting procedures, constituting the airport's wildlife management program;
10) Familiarity with the usage of firearms, RPAS, and any other equipment employed at the airport, including the appropriate utilization of personal protective equipment.

### Recurrent training

To ensure the ongoing proficiency of wildlife management personnel, regular training sessions should be conducted, incorporating various essential topics covered during the initial wildlife control training. These recurrent training sessions should encompass:

1) Updates on changes occurring in the local environment;
2) Reviewing recent wildlife events that have taken place at the aerodrome;
3) Familiarizing personnel with any modifications made to active and passive measures employed for wildlife management;
4) Addressing any additional subjects that the aerodrome operator considers relevant and necessary.

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