



ICAO

Third Meeting of the Asia/Pacific Wildlife Hazard
Management Working Group (AP-WHM WG/3)
Video Teleconference, 19 to 21 May 2021

Agenda Item 4: Progress Update on Tasks assigned to States and International/Regional Organizations

**ASIA PACIFIC GUIDANCE FOR EVALUATION OF AERODROME WILDLIFE HAZARD
MANAGEMENT PROGRAMME**

(Presented by World Birdstrike Association, Australia, Bangladesh, India, Thailand and ACI)

SUMMARY

This paper presents a Draft Asia Pacific Guidance for Evaluation of Aerodrome Wildlife Hazard Management Programme (WHMP).

This paper is prepared in response to AP-WHM WG Tasks 1/13 and 2/7.

1. INTRODUCTION

1.1 In accordance with Procedures for Air Navigation Services (PANS) – Aerodromes (Doc 9981), an aerodrome operator shall develop, implement and demonstrate an effective WHMP at the aerodrome, and this should be tailored to and commensurate with the size and level of complexity of the aerodrome, and the number of aircraft movements and their type, taking into account the wildlife hazards identified and the risk assessment of those hazards.

1.2 The WHMP should include, as a minimum:

- a) a description of the organization, roles and tasks in the WHMP;
- b) procedures for collecting, reporting and recording data on wildlife strikes and observed wildlife;
- c) a wildlife safety risk assessment method and procedure, including annual reviews;
- d) procedures, means and staff for habitat and land management;
- e) procedures, means and staff for the expelling and deterring of wildlife;
- f) procedures for coordinating with other stakeholders; and
- g) procedures, means and provisions for the training of staff.

1.3 Once a Wildlife Hazard Management Programme (WHMP) is in place, aerodromes should develop a process to review WHMP to provide safety assurance that the programme is fully effective and correctly implemented. The evaluation should be completed on an annual basis but also must include an on-going review process to ensure that the programme is always current and fully functional at all times. The outsourcing evaluation should consider the general workings of the programme with a view to efficiency and effectiveness.

2. DISCUSSION

Draft Asia Pacific Guidance for Evaluation of Aerodrome Wildlife Hazard Management Programme.

2.1 At AP-WHM/WG/1 meeting the Working Group formulated ‘*Task 1/13 - Develop performance measurement indicators/metrics to evaluate the effectiveness of the implementation of Airport Wildlife Hazard Management Programme*’.

2.2 It was agreed that this task would be carried out by group of States and IO with a lead from WBA.

2.3 At AP-WHM/WG/2 meeting, India and WBA presented “*WP/06 Evaluation of Airport Wildlife Hazard Management Programme*” to address Task 1/13”.

2.4 As the materials presented in WP/06 were appropriate to develop *Asia Pacific Guidance for Evaluation of Aerodrome Wildlife Hazard Management Programme*, the group of States and IO developed an initial draft guidance for presenting at and consideration by AP-WHM/WG/3 which is provided in **Appendix A**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this paper;
 - b) Review and update the *Draft Asia Pacific Guidance for Evaluation of Aerodrome Wildlife Hazard Management Programme* provided in **Appendix A to WP/06** and endorse it for approval by AOP/SG; and
 - c) Discuss any other relevant matters as appropriate.
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INTERNATIONAL CIVIL AVIATION ORGANIZATION



**ASIA PACIFIC GUIDANCE FOR EVALUATION OF AERODROME WILDLIFE
HAZARD MANAGEMENT PROGRAMM**

[DRAFT]

First Edition 2021

This Guidance Material was developed by AP-WHM/WG and approved by the **AOP/SG/#** Meeting and published by ICAO Asia and Pacific Office, Bangkok

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1. INTRODUCTION

- 1.1 Wildlife populations in and around the vicinity of aerodromes are constantly changing in response to land use, state and management policies, and environmental factors as climate changes. In addition, wildlife might adapt or habituate to control strategies that were once effective, including new behavioural patterns of feeding, resting and nesting on or near the aerodrome. New wildlife control technologies might become available, or established products or techniques might be withdrawn or banned. Finally, there might be changes in wildlife control and management personnel at an aerodrome.
- 1.2 Once a Wildlife Hazard Management Programme (WHMP) is in place, aerodromes should develop a process to review WHMP to provide safety assurance that the programme is fully effective and correctly implemented. The evaluation should be completed on an annual basis but also must include an on-going review process to ensure that the programme is always current and fully functional at all times. The outsourcing evaluation should consider the general workings of the programme with a view to efficiency and effectiveness.

2. EVALUATION PROCESS

- 2.1 Periodic evaluations of an aerodrome's WHMP and the activities undertaken for its implementation are critical because of the dynamic nature of wildlife hazards and control technologies. The foundation for these evaluations is the maintenance of consistent records of wildlife control activities and wildlife strikes and wildlife-related incidents.
- 2.2 Following should be considered to evaluate aerodrome wildlife hazard management programme:
 - 1) Comprehensive annual report should be prepared and compiled by an appropriately qualified wildlife control team/or outsourcing organisation, who has full knowledge of the programme and the standards required for effective delivery. The completed report along with all conclusion and recommendations must be forwarded to the aerodrome wildlife committee and the senior management responsible for delivery of the programme.
 - 2) The wildlife manager (or appropriate professional) tasked with performing the annual evaluation should undertake de-briefing from staff on general effectiveness and observations on all aspects of the programme. The evaluation seeks areas for improvement. Staff are often best positioned to provide valuable feedback on the plans. Feedback should be sought from WHMP team and staff, Runway Safety Team of the Aerodrome, Airline personnel (in particular aircraft engineers and pilots), Pilot Association(s), Air traffic control, Ground handlers and other parties as required.
 - 3) A wildlife survey is a valuable tool for aerodromes to ensure that WHMP are effective, meets all regulations and standards requirements including environmental protection. The survey will be completed formally on an annual basis by a qualified outsourcing professional/organization. Evaluation of all operational, practical, procedural and technical aspects of wildlife management will form part of this survey.
 - 4) It is extremely important that accurate statistics are gathered and interpreted by a competent person to ensure that aerodromes can have effective control measures in a timely fashion. Reference should be made to previous statistical data over the last five years and recommendations and action points raised accordingly. Particular attention should be placed on the quality and accuracy of aerodrome wildlife activities, incidents and strikes statistics and how these statistics are interpreted so that trends are measured and mitigation measures immediately put into place.

- 5) A full comprehensive review of all control procedures and practices are to ensure that effective control measures are in place and are correctly followed and documented. The Wildlife audit must include seasonal migration.
- 6) A full equipment audit shall be undertaken annually or biannually to establish serviceability and effectiveness of all equipment used to support wildlife management and also consider for new equipment and their effectiveness.
- 7) A systematic review of rotational control procedures and the perceived effectiveness of the process are to be done. Particular attention shall be paid to species of concern to identify the most important risk and prepare proper control measures to reduce the risk.
- 8) Where possible, aerodromes should have a dedicated Wildlife Control Team, internal or outsourced organisation that will ensure that advances in the field of wildlife management and habitat management; whether that is scientific, procedural or proven improved control techniques are reflected in the aerodromes wildlife and habitat management plan and also grass policy of aerodrome also to be reviewed.
- 9) The proper wildlife monitoring on and in the aerodrome vicinity can contribute greatly to ensuring that control measures are effective. As a part of the safety management system (SMS) the WHMP should include awareness part to educate people. A plan for sharing information with other local aerodromes is a useful process of mutual benefit where control measures are compared and evaluated.
- 10) Maintain and annually summarise a record of all training that WHMP team have received. Include attendance at conferences, courses and workshops, self-study courses, and specialized on-the-job training.
- 11) An evaluation of all reports and records to ensure they meet appropriate standards as they must provide accurate information that can be understood and that will be of value in the evaluation process.
- 12) A full check of all WHMP documentation, paying particular attention to following:
 - i. Recording of wildlife activities including migration, feeding, resting patterns, and its analysis;
 - ii. What measures were used, what precise method and how effective?;
 - iii. Identification of Wildlife species of concern;
 - iv. Nuisance species reports, Pest wildlife;
 - v. Protected species, endangered species register;
 - vi. Monthly alert reports;
 - vii. Wildlife Control Unit's survey records;
 - viii. Identify and recording aerodrome wildlife hot spots (on/off aerodrome) and potential high risk or near miss records; must require further analysis to remove the high risk.
 - ix. Analysis of wildlife dispersal techniques records;
 - x. Analysis of reported wildlife strikes and incidents (over last 5 years) reports;
 - xi. Analysis of unconfirmed Wildlife strike e.g. carcasses found;
 - xii. Analysis of the quality of all records in particular daily logs to ensure the good practice so that this information can be reported back into the plan in a timely fashion.

WHMP Evaluation Checklist

Note:- The following checklists are developed based on guidance provided in Section 9.2 Wildlife Hazard Management Programme Evaluation provided in Airport Services Manual (Doc 9137), Part 3 – Wildlife Hazard Management.

- 2.3 The most basic level of WHMP evaluation should be to respond affirmatively or negatively to questions contained in **Table 1**. If the answers to questions below are negative or unclear, measures should be established to address shortcomings.

Table 1: Basic checklist for evaluation of WHMP

S. No	Description	Response (Yes/No/NA)	Remarks
1	Are wildlife management roles, tasks and responsibilities adequately established at the aerodrome? Is the “wildlife manager or coordinator” considered in the WHMP?		
2	Is there a proper communication procedure between the different stakeholders to alert about the presence of strikes with wildlife?		
3	Are the wildlife management personnel aware of the species that pose a risk to air traffic and about attractive areas for wildlife at the airport and its vicinity?		
4	Are wildlife observations and strikes recorded and reported properly? What is the average of identification of species on wildlife strikes?		
5	Does the WHMP include an appropriate wildlife risk assessment conducted by competent personnel?		
6	Are habitat management measures and measures of dispersion and extraction of wildlife taken at the aerodrome? Is the effectiveness of these measures measured?		
7	Is there coordination with external stakeholders? Are regular meetings held with them? Is the local wildlife committee effective?		
8	Is training on wildlife management given to personnel involved in wildlife management (at all different levels)?		
9	Is the self-evaluation of the WHMP being performed?		

- 2.4 Once the base for WHMP is established, complexity can be increased by asking more specific questions as per **Table 2** to determine the degree of compliance.

Table 2: Advance checklist for evaluation of WHMP

S. No	Description	Response
1	Has a land use plan been established with regard to effective land use on and off the aerodrome, as it pertains to the WHMP?	

S. No	Description	Response
2	What ecological measures are implemented to reduce wildlife attractiveness at the aerodrome and in the vicinity?	
3	Are garbage dumps forbidden around the aerodrome? If yes, within what distance are they forbidden?	
4	Is the aerodrome fence suitable to prevent hazardous wildlife incursions?	
5	Which repellent methods are implemented at the aerodrome?	
6	Are aerodrome personnel employed and trained specifically to control and disperse wildlife at the aerodrome?	
7	What is the wildlife strike rate at the aerodrome over the last five years (with or without damage to the aircraft)?	
8	Is there a procedure to regularly collect information about wildlife on, and in the vicinity of, the aerodrome, both dead and living?	
9	Has a procedure for the positive identification of wildlife remains been established?	
10	How many reports from pilots are related to intrusions of wildlife, other than birds, over the last five years?	
11	Has a list of wildlife attractants at, and in the vicinity of, the aerodrome been completed?	

Performance Measurement of WHMP

- 2.5 The most rigorous and systematic method to know how well wildlife is being managed at the aerodrome would be to use a performance measurement mechanism. Performance indicators (parameters used for monitoring and assessing performance) are select metrics that are most closely aligned with the ultimate goal of reducing wildlife risks, and will help to assess if the wildlife hazard is adequately managed by the aerodrome operator.
- 2.6 Performance indicators should be metrics obtained and measured in a simple way, and which are clear about what they measure. They can be primary (lagging) or secondary (leading) indicators.
- 2.7 Lagging indicators are typically output oriented, easy to measure but hard to improve or influence (e.g. number of wildlife strikes), while leading indicators are typically input oriented, hard to measure and easy to influence (e.g. number of repellent activities).
- 2.8 Although there has generally been a tendency to use lagging indicators (number of wildlife strikes related to aircraft movements, percentage of strikes resulting in damage or effect on flight, etc.) as measures of the effectiveness of a WHMP, leading indicators are good indicators. Leading indicators show how personnel are performing their tasks and how the system is prepared to prevent the worst events (incidents and accidents) from happening, through good safety practices, correct use of procedures, etc.
- 2.9 Performance measurement matrix including examples of leading and lagging indicators and targets for different components of the WHMP that may be considered by aerodrome operators is provided in Table 3.

Table 3: Performance Measurement Matrix

S. No	Performance Measurement	Performance Indicators	Performance Target
1.	WHM Programme	Review twice a year and revise based on the learnings from wildlife management	<ul style="list-style-type: none"> ● Status and reporting of Wildlife Strikes and activity. ● Update on wildlife/bird movement and wildlife/bird strike data half yearly ● Adopt probability to forecast strikes by analysis based on previous strike history, activity reporting and number of flights.
2.	Habitat Management	Review at least once a year based on the wildlife and environment.	<ul style="list-style-type: none"> ● Review Status and reporting of habitat measures must be as required and at least annually ● .
3.	Airport Environment Management Committee meeting	Minimum two AEMC (Airport Environment Management Committee) stakeholders comprising of CAA, ATC, WCT, Council/local country Municipality committee meeting in a year	<ul style="list-style-type: none"> ● Prepare planned actions from the meeting outcomes ● Monthly follow up to be recorded based on the planned actions
4.	Airport wildlife assessment	Aerodrome wildlife assessment to be conducted every 2 years	Survey reports to be shared with stakeholders with resolution and adoption plans
5.	Public Awareness Program	1. Inside Airport 2. Outside Airport	Meeting minutes and records to be maintained and published.
6.	Equipment for control of wildlife activities	Maintain Check lists of equipment/pyrotechnics	Serviceability records of individual equipment is to be maintained. Inventory control of usage of pyrotechnics, understand which pyrotechnics work for which species.
7.	Competency of staff	Ensure Staff are adequately resourced with proper wildlife hazard management training and experience.	Records of recruitment
8.	Trainings	Specialised and Refresher courses must be conducted by ICAO recognised authority.	<ul style="list-style-type: none"> ● Minimum 2/3 training/workshops to WHM team (local) in a year ● Records to be maintained and updated. ● Ensure staff are well adverse in new techniques and knowledge share
9.	Wildlife Strikes (ground)	Number of reported wildlife strikes at airports per 10,000 movements	Reduce the number of wildlife strikes - need to determine the reduction by number or percentage

S. No	Performance Measurement	Performance Indicators	Performance Target
10.	Wildlife runway incursion	Number of runway incursions by animal at airport per 10,000 movements	Reduce the number of incursions by wildlife – need to determine the number or percentage
12.	Wildlife Documentation Audit	Annual audit to be conducted by relevant wildlife management authorities recognised by ICAO.	Consolidated report/ record to be available
13.	Annual report	Annual report to contain all WHM related data and analysis	Sharing of report with airport stakeholders
14.	Adoption of technology for wildlife hazard management	Manual paper forms will not be accepted. Ensure new technology is adopted. Reduce manual and excel analysis, adopt automated reporting tools.	Adopt a simple smart WHM tool

3. REFERENCES

- 1) Airport Services Manual (Doc 9137), Part 3 - Wildlife Hazard Management
- 2) Worldbirdstrike Association Recommended Practices No. 1 Standards for Aerodrome