Wildlife Hazard Report 2017

Civil Aviation Authority of Nepal

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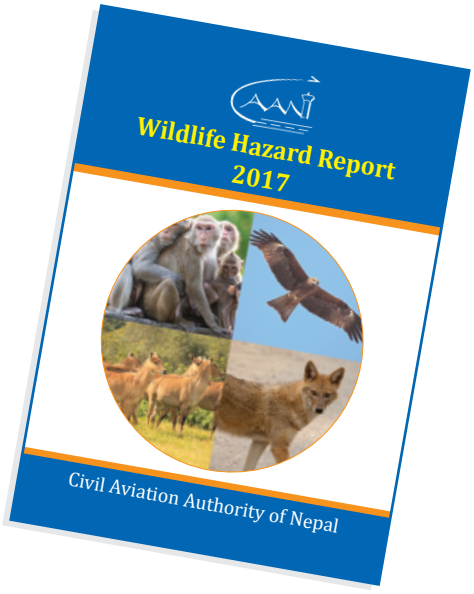

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Foreword

Since flight began, aircraft have time and again encountered with wildlife both in the air and on the ground. The incidents have become more frequent with the emergence of faster and quieter aircraft. The activity of birds and animals in and around an airfield is a recognised potential source of hazard to the safe operation of aircraft. This hazard results from the possibility of collision between an aircraft and birds or animals, thus increasing the potential for serious damage to aircraft and risk to human lives.

According to recent worldwide data, the vast majority of strikes occur either on or within the immediate proximity of an aerodrome. The aerodromes of Nepal have many features that attract wildlife since the diverse topography as well as conducive climatological conditions attract a number of wildlife species including migratory birds. Wildlife strike indicates that some aerodromes of Nepal are prone to wildlife activities. CAAN has adopted various measures to control birds and other wildlife activities in and around aerodromes. Effective management of wildlife in aerodromes cannot be achieved by the sole effort of aerodrome operators rather it depends upon the cooperation and joint efforts of all stakeholders.

This report consists of wildlife data for the period of 2011-2016. The purpose of this Wildlife Hazard Report - 2017 is to give information, increase awareness and enhance stake holder's knowledge about the wildlife activities along with control measures adopted in the aerodromes of Nepal. We hope, this report will also be beneficial for all those involved in study and research of wildlife hazard in aviation.

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(Sanjiv Gautam)
Director General

Contents

Introduction

Wildlife strikes i.e. collisions between aircraft and wildlife is common in aviation across the world. Wildlife strikes are not only the threat to the air safety, but also cost increment factor to the aviation industry. Most wildlife strikes occur in the airport environment. Large open space in the aerodromes provide suitable habitat for wildlife. Human activities such as rampant waste disposal add attraction to the birds. The increased population of wildlife and their mobility in the airport disturbs the safety of the aircraft. Wildlife strikes present a real threat to aviation safety and represent 3.6 percent of all aviation accidents. Usually Take-off and landing of aircraft are considered as the times of high risk for bird strike which can cause major damage to the aircraft and difficulty in continuing the flight.

It is believed that the first bird strike was recorded by the Wright brothers in 7th September 1905. Since then, many people around the world have lost their lives from aircraft crashes due to bird hit and the aviation wildlife hazard has been significantly considered a risk to aviation ever since. The most fatal air crash due to bird hit occurred in Boston, USA in 1960 in which all four engines stalled after take-off killing 62 people on board. Today, the threat is world-wide and the severity magnitude and of such strike is demanding more stringent measures.

Wildlife Strike in Nepal

In Nepal, bird strike was not pronounced problem during early days. The major bird hit incident that took place in Nepal was, Thai Airways (Type of aircraft: A 300) Airbus in 1996. About 5-6 eagles found dead on the runway and left engine fan blades were found damaged. The aircraft was grounded for 4 days in Kathmandu. Nepal Airlines Corporation Boeing 757 aircraft and Jet Airways Boeing 737 aircraft both lost their one each engine due to bird strike in 2000 and 2014 respectively. Besides these incidents, occasional bird hit used to be reported. However, no incident/accident has been reported except a Dornier 228 aircraft which was believed to be struck by Black Kite during take off from Kathmandu for Lukla killing all 16 passengers and 3 crews on board in September 28, 2012.

This was the first ever fatal accident recorded which was caused by bird strike. In later days, significant number of minor wildlife strikes have been experienced in different types of aircraft.

The aviation industry of Nepal has also been affected by wildlife strikes like many other countries across the world. Occasionally, both international and domestic flights were delayed due to bird activities at the airport. Also, complete wildlife hazard prevention on and in the proximity of airport is not practically possible. We can only reduce the chances of collision with the wildlife. A number of serious wildlife incidents have also been experienced in domestic hub airports. Each airport has its own specific bird and wildlife hazard problems that depend on species of birds and types of wildlife involved.

Legal Provisions

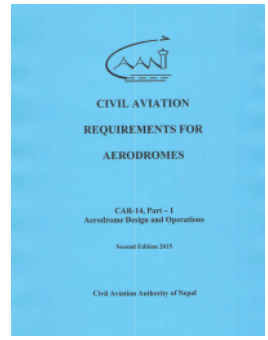
ICAO

- Wildlife strike management, including a collection of bird strike information, forwarded to the ICAO, and measures for decreasing the risk of bird strike, are provided in Annex14 Volume I Chapter 9.

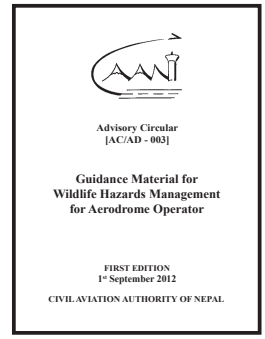
- Detailed measures to control wildlife are provided in Part 3 of the Airport Services Manual (Doc 9137).

Nepal's Regulation

- Local Self Governance Act 1999
- Rule 77 of CAAN, Civil Aviation Regulation, 2058 (2002)
- Civil Aviation Requirements-14, Part I, Aerodrome design And Operation, 2015



- Advisory Circular[AC/AD – 003] Guidance Material for Wildlife Hazards Management for Aerodrome Operator, 2012



- Provision of National and Airport Level Committee for wildlife management (Appendix-5)
- Tribhuvan International Airport, Kathmandu has published the following procedures and manuals to manage and control wildlife at the airport.
  - TIA Bird Control Procedure Manual
  - TIA Bird Control Management Manual
  - TIA Aerodrome Manual 2010
  - TIA Safety Management System (SMS) Manual 2010

Wildlife Hazard in Different Aerodromes

Nepalgunj, Gautam Buddha (Bhairahawa), Biratnagar and Pokhara Airports can be considered as more vulnerable domestic airports in terms of wildlife activities. The airport area has been a good habitat for several birds and mammal species causing to flourish their population increase.

Nepalgunj Airport is enclosed by agriculture land, forest, and settlement. A total of 36 bird species and 2 mammal species are recorded in this airport. Wild boar and Golden Jackal are the mammals found inside the core airport areas which pose serious threat to flight safety. These mammals are major problematic animals in the airport. Beside this, occasional entry of stray dogs and domestic animals into the airport also pose an unforeseen risk.

Most of the area around the Gautam Buddha Airport is agriculture field with different vegetation structure. A total of 28 bird species and 6 mammal species are recorded in this airport. Nilgai, Feral dogs, Jungle cats, domestic cats, Jackal and Wild boar are found in small dense bushes within the airport perimeter. Among them, Nilgai (Blue bull), Jackal and wild boar have been the major problem of this airport.

Biratnagar Airport is also affected by wildlife activities where 37 bird species and 7 mammal species are recorded. Barking deer, Golden Jackal, Large Indian Hare, Indian Porcupine, Jungle cat, Domestic and feral dogs and bats

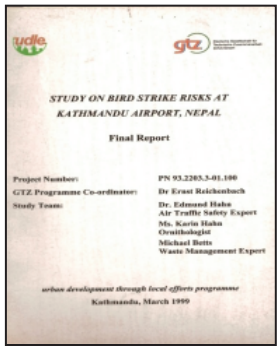
are found inside the airport. This airport is situated near urbanizing settlements where human activities generate solid waste in large scale dumped in open space. Also, it is believed that Golden Jackal and Barking Deer are problematic species of this airport.

Pokhara airport is situated in the Pokhara valley with full of natural flora-fauna and lakes. The activities of wildlife within the airport area is due to the increasing growth of bushes, trees and nearby settlements. A total of 24 bird species and 2 mammal species are recorded in this airport. Large Indian Hare and Golden Jackal are found inside the airport area. Water bodies (Lakes) and forest are very close to the airport and waste management is important issue which poses threat to aviation safety.

Studies on Bird Activities in TIA

Since the problems of wildlife hazards apparently have become serious, some of the following studies were conducted by different organizations regarding birds and other wildlife in TIA:

1. Study on Bird Strike Risks at Kathmandu Airport, Nepal March 1999, conducted by Dr. Edmund Hahn, Air Traffic Safety Expert; Mrs. Karin Hahn, Ornithologist; Mr. Michael Betts, Solid Waste Management Expert appointed by German Agency For Technical Co-operation (GTZ). With following objectives:
   - to undertake a professional assessment of the risks of bird strike at TIA, identify the main causes of such risks, and make appropriate recommendations for mitigation;
   - to prepare guidelines for the current and future selection and development of landfill sites particularly; within 5 km, 10 km and beyond 13 or 15 km radius of TIA;
   - to make appropriate recommendations for the management of sanitary landfill sites with reference where relevant, to existing recommendations; and
   - to recommend appropriate measures for bird deterrence at TIA.


STUDY ON BIRD STRIKE RISKS AT KATHMANDU AIRPORT, NEPAL

Final Report

Project Number: PN 93.2203.3-01.100
GTZ Programme Co-ordinator: Dr Ernst Reichenbach
Study Team: Dr. Edmund Hahn Air Traffic Safety Expert; Ms. Karin Hahn Ornithologist; Michael Betts Waste Management Expert

urban development through local efforts programme
Kathmandu, March 1999

2. Management of Bird and Other Wildlife Hazards at TIA, Kathmandu, Nepal, August 2001: A paper was jointly presented on this topic by Mr. Richard A. Dolbeer, USDA National Wildlife Research Center, Sandusky, OH and Mr. Basanta Kumar Upadhayaya, Civil Aviation Authority of Nepal, Kathmandu, Nepal, with objective to address bird strike situation at TIA and to recommend measures to control such activities with plans.

3. Baseline Information of Birds and Their Habitat at TIA, Kathmandu, April 2002 - was conducted by B. Dahal and D. Bhuju, appointed by Royal Nepal Academy of Science and Technology, Kathmandu with following objectives:
    - to prepare a baseline information of birds visiting TIA;
    - to analyze seasonal variation in bird species and population;
    - to establish birds movement patterns; and
    - to study bird habitat including solid waste relationship.


BASE-LINE INFORMATION OF BIRDS AND THEIR HABITAT AT TRIBHUVAN INTERNATIONAL AIRPORT KATHMANDU

FINAL REPORT

B. Dahal and D. Bhuju
Royal Nepal Academy of Science and Technology
GPO Box 3323, Kathmandu

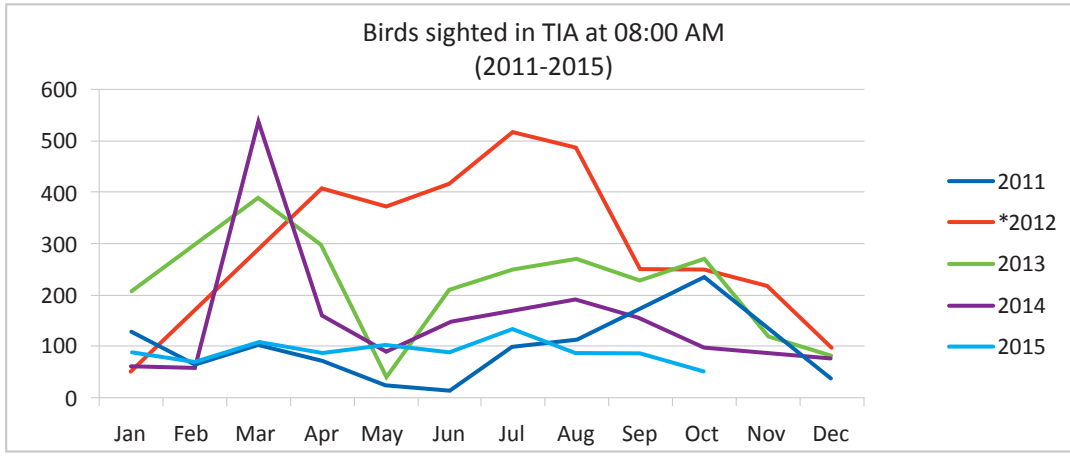
April 2002

4. A Field Study Report to Control Monkeys' Activities at TIA, September 2011 - was conducted by team lead by Mr. Man Bahadur appointed by Department of National Park and Wildlife Conservation, with the objective to access the activities of monkeys posing threat to aircraft operation and to access the controlling measures.

Statistical Analysis of Wildlife data for the years 2011 to 2015

Trend of birds activity in TIA

The available data shows that activity of birds in TIA in day time is highest compared to morning within the period 2011 to 2015. The possible



** data could not be ascertained*

Chart 1: Bird sighted in TIA at 08:00 AM for the years 2011 to 2015(Monthly basis)

reasons could be the easy shelter, water access all around and food attractants within the airport premises and nearby residential area with

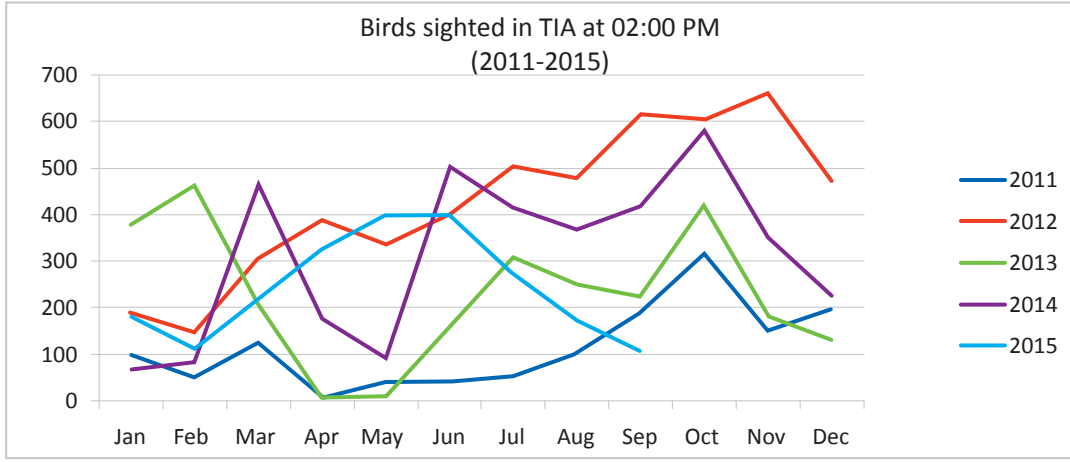


Chart 2: Bird sighted in TIA at 02:00 PM for the years 2011 to 2015(Monthly basis)

gardens, rice and maize cultivation. Apart from these, restaurants, butchery, and grocery shops adjacent to the airport are contributing factors that may cause increase in wildlife activities. In addition, the main rivers Bagmati and Manohara have large areas of surface water and wetland. The wet pasture land is used for grazing, cultivation of maize, vegetables and paddy and extraction of sand. The eutrophication process is detrimental that causes the rivers and the surrounding areas to grow the plants on the surfaces thereby attracting the wildlife activities.

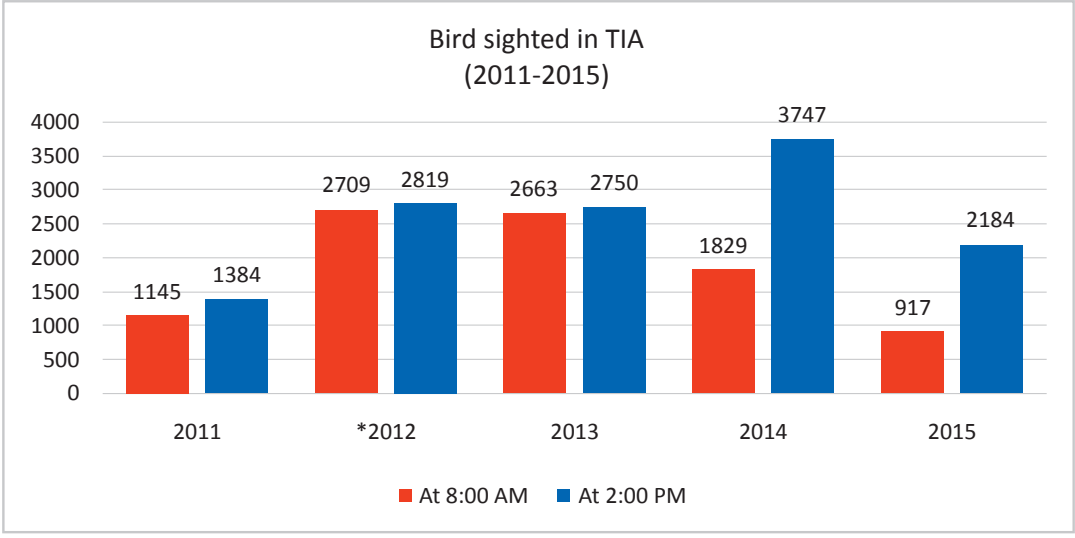


Chart 3: Comparison of birds sighted in TIA at 08:00 AM and 02:00 PM for the years 2011 to 2015

Activity of stray dogs in TIA

Activity of stray dogs in TIA are also a major problem for flight operation. The chart given below shows that dog activities in year 2011 is higher than year 2015 in which such activities is controlled to zero level. The restaurants and dumped garbage within the airport and butchery close to airport are the main attraction for stray dogs. TIACAO has made efforts to control this activity through regular surveillance on airside effectively.

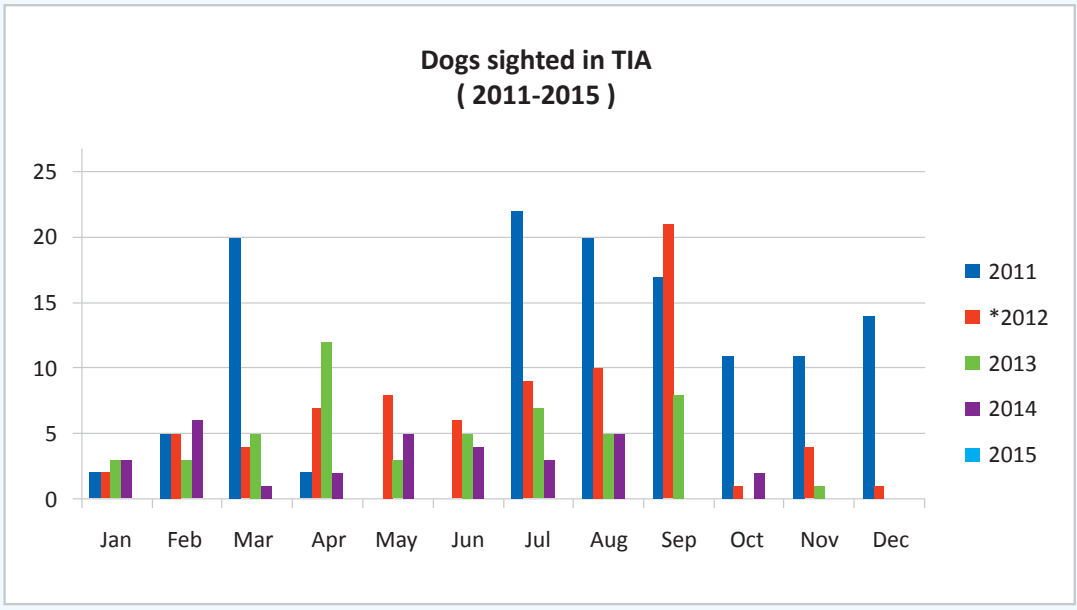


Chart 4: Dogs sighted in TIA for the years 2011 to 2015(Monthly basis)

Activity of monkeys in TIA

Activity of monkeys in TIA is exclusively related with the activity of monkey in nearby Pashupati Nath temple area. The dwellings of some monkey groups at Bankali forest never permits other to enter into their area. Those monkeys who fail to enter get diverted to airport area to seek food and shelter. Accordingly, the number of monkey increases at the airport area. The above chart shows inconsistent activity during the period of five years. In first quarter of year 2012 and 2013 the activity of monkey is high, whereas the activity is less in the end of the year. In the years thereafter, the activities have shown a similar pattern. However in the year 2015, it seems TIACAO is able to manage this activity to some extent.

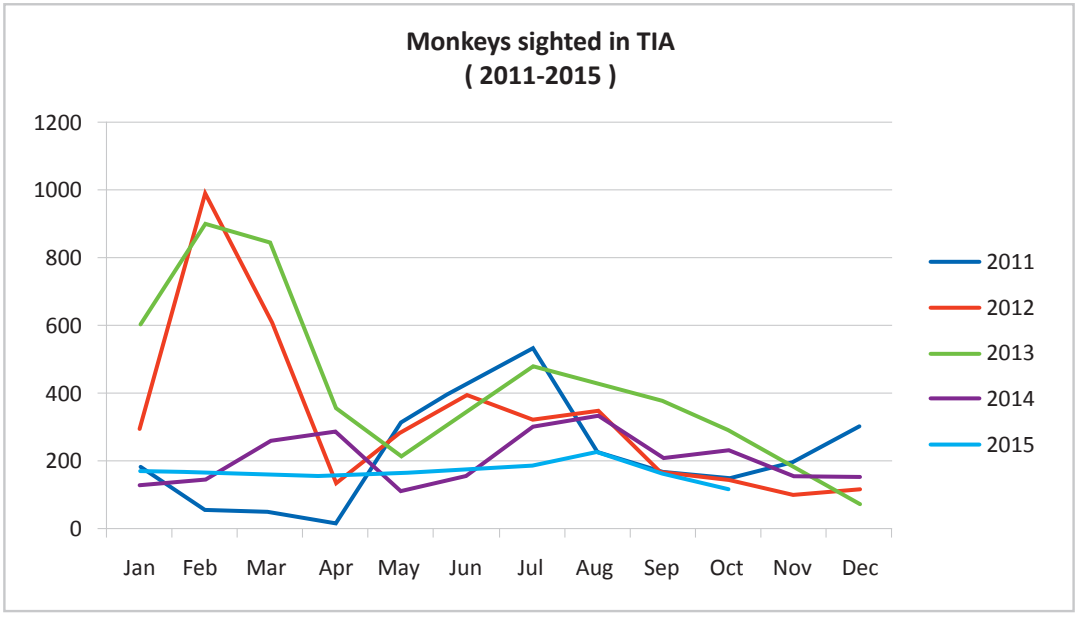
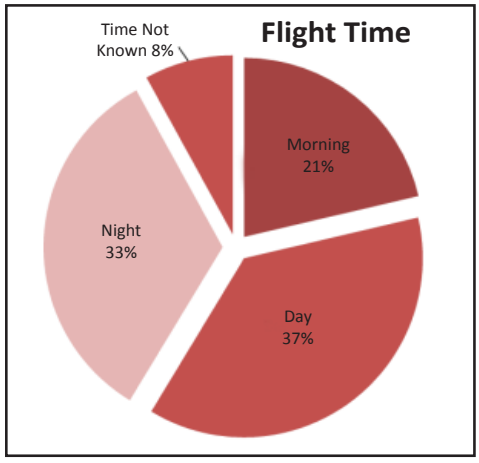


Chart 5: Monkeys sighted in TIA for the years 2011 to 2015(Monthly basis)

Birds strike occurred in TIA

The following chart illustrates that 33% of the strikes occurred at night, 37% these occurred during day time while 21% occurred in morning during the period 2011 to 2016. Similarly, 32% of strikes occurred during the take-off phase while 44% occurred during approach and landing phase.



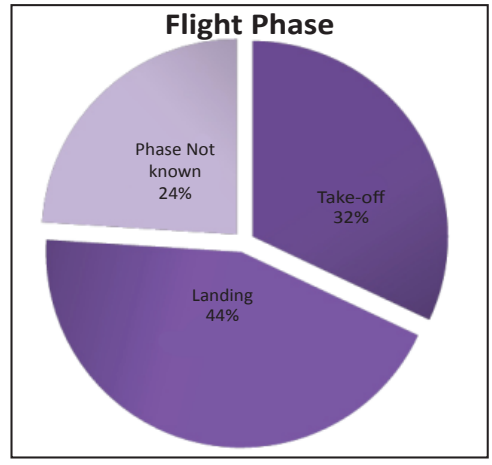


Chart 6: Strikes according to flight time and flight phase (2011-2016)

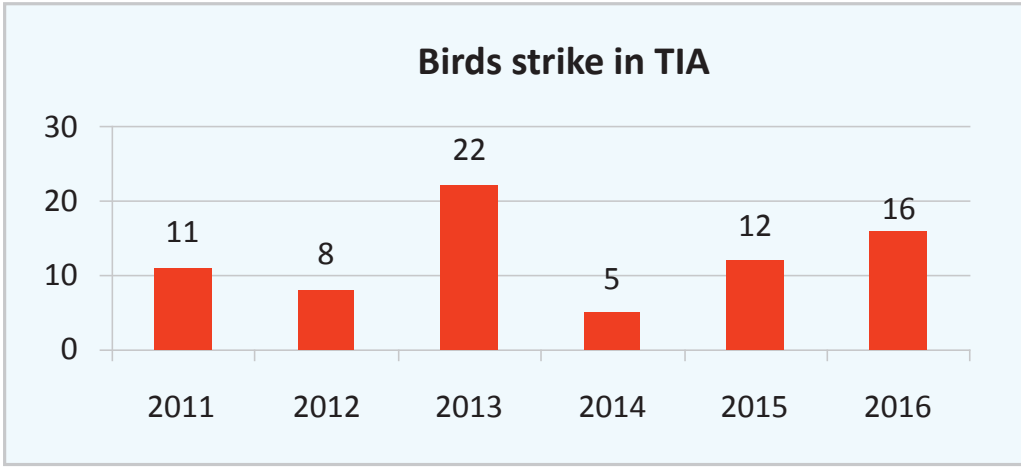


Chart 7: Birds strike in TIA from 2011 to 2016 (Yearly)

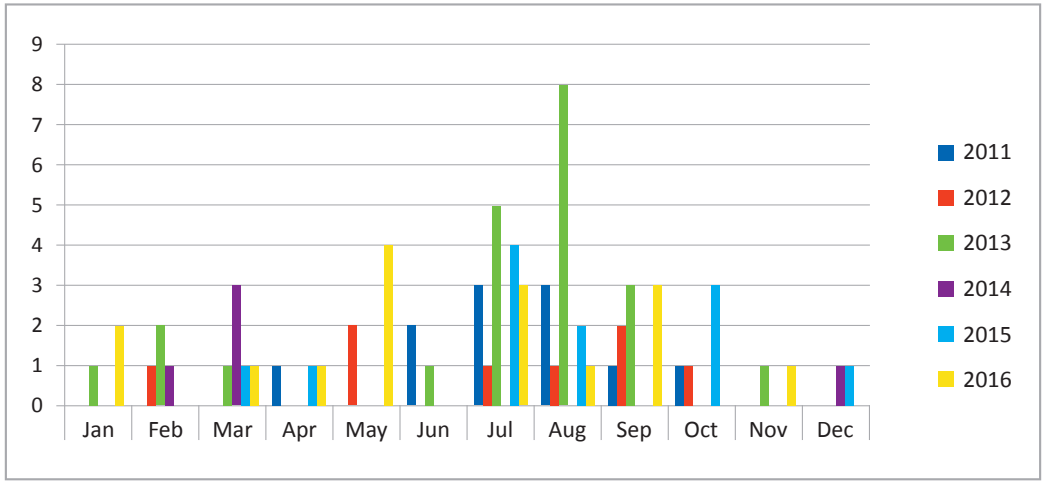


Chart 8: Birds strike in TIA from 2011 to 2016 (Monthly basis)

Causes of Wildlife Activities

Airports provide a wide variety of natural and human made habitats that offer food, water and shelter. One of the first steps in reducing bird hazards is to recognize those attractants. Usually, several attractants acting in combination are responsible for the presence of birds and their behavior in an airport. Birds usually congregate in a place for the following reasons:

Food

Birds require large amount of food to survive. In most of the airports, variety of foods such as seeds, grass, insects, earthworms, rodent, frog and others are available. Occasionally food becomes available through careless waste disposal practices by restaurants and airline companies at the airport. Nearby open slaughter houses in the vicinity of aerodrome and fast food, barbecue(BBQ) restaurants are also the source of food for birds and wildlife. Such circumstances contribute to bird strike hazards which require proper attention to avert unwanted happening.

Water

Major hub airports including TIA are surrounded by rivers which are mostly polluted. These rivers attract birds and wildlife for drinking, bathing, feeding, roosting and protection. Rainy periods provide temporary water pools at many airports. Many airports have permanent bodies of water near or between runways for flood control or waste water purposes. Those permanent sources of water provide a variety of bird foods, including small fish.

Shelter

Wildlife needs shelter for breeding, resting, roosting and nesting. Trees, bushy areas, weed patches, shrubs and airport structures often provide suitable habitats to meet these requirements. Almost any area that is free from human disturbance may provide a suitable shelter for wildlife. Bhairahawa, Biratnagar, Nepalgunj and other airports are covered by small dense forest which may be the shelter for wildlife.

Open airspace

Most of the airports have vast, open and flat area which is almost empty. Such large and flat area of the airport is safe for the activities of wildlife. Also birds suddenly appear in large groups on and in the vicinity of airport on their annual migration in favorable time, even when the airport itself offers no particular attraction.

Wildlife Management at Airports

There are several bird control measures adopted by airports to control the wildlife activities. However, each of such options has its own limitations. CAAN has adopted the following measures to reduce the occurrences of bird and wildlife activities in and around the airports.

Scaring devices

The following ultrasonic scaring devices are used to control wildlife at the airports within the country.

Ultrasonic sound device

It is an electronic device that produces high pitch emissions known as ultrasound at a pressure level of 94db@1m/1w. Burst of sounds are played according to a pre designed program. Over 90 different electronic sounds can be generated and there is also a suite of special natural sounds like predator calls, shot gun blasts distress calls etc. It has been in use in TIA, Kathmandu to disperse birds.

LP Gas cannons

Liquefied Petroleum Gas (LPG) cannon automatically produce high decibel bangs based on a timer setting or by remote to disperse birds and wildlife from airports, landfills and other areas. It produces multiple shots at irregular intervals during a short period of time and 130 decibel bangs to disperse birds and other wildlife. This device has been in use in major domestic airport including Kathmandu.

Scarecrow

It is a device which is placed in open fields like airfield to discourage birds and wildlife. In TIA and Pokhara airport, the bright color, large eye and rotating flashing mirrors has been in use to threaten birds. When activated birds think that they're being watched by a predator.

Distress call devices Bird guard

Bird distress cries have been used

for decades. High fidelity distress cries are recorded and inscribed on microchips, resulting in an excellent sound reproduction that birds cannot differentiate from the original. On hearing the distress cries birds become nervous and agitated. They think that other birds in the area are in danger that is not safe, so they flee.

Bird light

It is also an electronic device that generates one-million candle power light flashes which is intolerable for birds during low light. It has been in use in Kathmandu Airport.

Electronic devices (Quad Blaster)

It is an ultrasonic bird repeller device that generates irritating ultrasonic sound in all directions beyond the capacity of hearing power of human but perfectly audible for birds. Therefore, birds do not linger around when exposed to this sound. The sound so produced do not harm birds, but will attack them aggressively in any enclosed or semi enclosed areas where they roost. The sound pressure level of the device is 112 db @ 1m @ 22 KHZ.

Low voltage electric fence

An electric fence is a barrier that uses electric shocks to discourage wildlife and other domesticated animals from crossing a boundary. One of such devices is recently installed in Kathmandu airport to control wildlife activities.

Intervention

The birds and wildlife activities can be controlled at or in the vicinity of airport by intervention method. For this purpose hunters may use or apply the following activities.

- Producing loud voice
- Showing primitive Guns
- Showing dead birds
- Misfiring
- Slingshot
- Fire cracker
- Shooting (only in absolute danger situation)
- Capturing animals
- Laser light

Chemical method

Chemical has been in use in absolute condition only to control pest, rodent, insects and other wildlife except protected wildlife. The purpose of using such Chemical is not to kill but only to control harmful activities.

- Benomyle (Methyl 1-Butylcarbamoy-2 benzimidazolecarbamate)
- Nimol (Neem, Azadirachta indica) extract.
- Red pepper (oleoresin capsicum)
- Strychnine sulphate (C42H46N4O8S)
- Bleaching Powder (CaOCl2)
- Dart Tranquilizer

Habit and habitat management

Vegetation management

Vegetation management has been proposed as a method for reducing wildlife activities by maintaining height of the vegetation at the airport. Tall vegetation is favorable for feeding activity, and ground movements for wildlife. Recommended size of vegetation does not provide nesting, shelter, breeding, feeding and other activities for such animals.

Management of woody vegetation

The removal of woody vegetation from airport will certainly reduce the wildlife activities because trees and dense bushes provide nesting, roosting and breeding for birds as well as wild animals like

Boar, Deer, Cat, Feral dogs, Nilgai (Blue bull) and others. These wildlife pose serious threat and greatest strike hazard to aircraft.

Management of water bodies

Airports are the better source of water for wildlife in the forms of wetlands and standing water. Water bodies and wetlands on airports attract birds and wild animals. Therefore, these sources should be managed at the airports to reduce the activities. At least, the proper management of drainage water will be one of the solutions for eliminating these temporary attractants.

Rodent check

Rodent and insects are other examples of potential food sources that may attract

birds of prey. Therefore, rodent check should be regularly carried out in interval of every 6 month.

Earthworm control

Earthworms can create hazardous conditions by attracting birds that may pose serious threat to the aircraft. It can be controlled by Spraying chemicals like Binomyl (Methyl 1-Butylcarbamoy-2 benzimidazolecarbamate), lime and bleaching powder.

Cleaning

The cleaning of Runway and Taxiway is carried out as and when required.

Issuance of NOTAM

If the wildlife activities increases on, or in the vicinity of an aerodromes the concerned authority issues NOTAM (Notice to Airmen) to inform regarding the situation. Flight operations may be closed when the situation further aggravates during heavy bird activities.

Waste container

Airports produce a huge amount of waste that passengers and other users generate every day. These waste materials attract wildlife at the airports. Therefore, such materials have been arranged through Close Waste Container.

Public awareness program

Public awareness program is an effective tool to make the environment of airport and surrounding area clean. CAAN has been conducting public awareness program in coordination with local people with the help of NGOs, by fixing hoarding boards, conducting essay competition among the Secondary Level school students and broadcasting through electronic media (Television and FM radio).

Airside vehicle

In TIA, one dedicated airside vehicle fitted with scaring devices has been arranged to control wildlife. RFF personnel also support to disperse wildlife at the airports. They act as a second responder whereas in other airports act as a primary responder to address the problem of the wildlife activities.

Airport Wildlife Hazard Control Mechanism

Various types of birds and wild animals are attracted to the airports due to wide open spaces with grass-lands. Aircraft occasionally collide with birds and other wildlife during taxiing, takeoff, and landing at airport. When wildlife activity on and in the vicinity of an airport increases, together it increases the likelihood of hazardous conditions. The impact of wildlife hazard can be reduced to the acceptable level by implementing effective wildlife hazard management plan. Some of the key elements for an effective wildlife hazard management are as follows:

- Adequate national regulations, requirements and procedures;
- Effective and efficient coordination and cooperation among stakeholders;
- Proficient and result-oriented wildlife control measures including necessary provisions of equipments and facilities;
- Qualified and trained manpower;
- Collection, sharing and evaluation of wildlife data; and
- Awareness program to the local community.

Fig. 1: Airport wildlife control mechanism

Acronyms

ABCR	Airport Bird Control and Reduction
AC	Advisory Circular
CAAN	Civil Aviation Authority of Nepal
CAR	Civil Aviation Requirement
Doc.	Document
GTZ	German Agency for Technical Cooperation
ICAO	International Civil Aviation Organization
LPG	Liquefied Petroleum Gas
RFF	Rescue and Fire Fighting
SMS	Safety Management System
TIACAO	Tribhuvan International Airport Civil Aviation Office
TIA-BCCIU	Tribhuvan International Airport Bird Control Coordination and Implementation Unit
USDA	United States Department of Agriculture
VDC	Village Development Committee

Appendix 1

Bird Species at Tribhuvan International Airport

S.No.	English Name	Zoological Name	Family	Type	Size
1.	Bank Myna	Acridotheresginginiamus	Sturnidae	r	M
2.	Barn Swallow	Hirundorustica	Hirundinidae	r	s
3.	Baya Weaver	PloceusPhilippinus	Ploceidae	r	S
4.	Black Bulbul	Hypsipetesleucocephalus	Pscnotidae	r	S
5.	Black Drongo	Diccrurusmacrocercus	Dicruridae	r	s
6.	Black Headed Shrike	LanniusSchach	Laniidae	r	s
7.	Black Kite	Milvusmigrans	Accipitridae	r,s	L
8.	Blue Rock Pegion	Columba Livia	Columbidae	R	M
9.	Cattle Egret	Bubulcus ibis	Ardeidae	R	M
10.	Common Kestrel	Falco tinnunculus	Falconidae	R	L
11.	Common Myna	Acridotherestristis	Sturnidae	R	M
12.	Common Stonechat	Saxicolatorquata	Turdidae	r,w	S
13.	Common Swift	Apusaffinis	Apodidae	r	S
14.	Crested Serpent Eagle	Spilornischeela	Accipitridae	r	L
15.	Eurasian Tree Sparrow	Passer montanus	Ploceidae	r	S
16.	European Goldfinch	Cardueliscarduelis	Fringillidae	w	S
17.	Gren Bea Eater	Meropsorientalis	Meropidae	r, s	S
18.	Hodgson's Redstart	Phoenicurushodgsoni	Muscicapinae	r, w	S

19.	House Crow	Corvussplendens	Corvidae	r	M
20.	House Sparrow	Passer domesticus	Ploceidae	r	S
21.	Jungle Myna	Acridotheresfuscus	Sturnidae	r	M
22.	Little Egert	Egrettagarzetta	Ardeidae	r	M
23.	Nepal House Martin	Delichonnipalensis	Hirundinidae	r	S
24.	Oriental Magpie Robin	Copsychussaularis	Turdidae	r	S
25.	Paddy Field Pipit	Anthusrufulus	Motacillidae	r	S
26.	Pariah Kite	Elanuscaeruleus	Accipitridae	r	L
27.	Pied Bushchat	Saxicolacaprata	Turdidae	r, s	S
28.	Pied Kingfisher	Cerylerudus	Cerylidae	r	S
29.	Pond Heron	Ardeolagrayii	Ardeidae	r	M
30.	Red Avadavat	Estrildaamandava	Ploceidae	r	S
31.	Red Vented Bulbul	Psycnonotuscafer	Pscnonotidae	r	S
32.	Rose Ringed Parakeet	Psittaculakrameri	Psittacidae	r	S
33.	Scaly Thrush	Zootheramonticola	Turdinae	PM	S
34.	Spotte Owlet	Athenebrama	Caprimulgidae	r	M
35.	Spotted Dove	StreptopeliaChinensis	Columbidae	r	M
36.	Steppe Eagle	Aquila nepalensis	Accipitridae	w	L
37.	White Wagtail	Motacilla alba	Motacillinae	r	S
38.	White-rumpedMunia	Lonchurapunctulata	Fringillidae	r, s	S
39.	White-throated Kingfisher	Halcyon smyrnensis	Alcedinidae	r	S

1. Abbreviations: r: residential; s: spring visitor; w: winter visitor; pm: passing migratory; S; small; M: medium; L: large.

Appendix 2

List of vascular Plants recorded around Tribhuvan International Airport

S. N.	Scientific Name	Nepali Name	Family	Habit
1.	Adiantumcapillus-veneris	KaniUnyu	Pteridaceae	F
2.	Ageratum conyzoides	BokeGhans	Compositae	H
3.	Alnusnepalensis	Uttis	Betulaceae	T
4.	Amaranthusspinosus	Lattle	Amaranthaceae	H
5.	Amaranthusviridis	Latte Sag	Amaranthaceae	H
6.	Artemisia indica	Titepati	Compositae	H
7.	Artemisia sp.	GandheJhar	Compositae	H
8.	Barleriacristata	BhedeKuro	Acanthaceae	S
9.	Bidenspilosa	KaloKuro	Compositae	H
10.	Bidens sp.	Kuro	Compositae	H
11.	Buddlejaasiatica	BhimsenPati	Loganiaceae	S
12.	Callistemon citrinus	Kalkaiphul	Myrtaceae	T
13.	Cannabis sativa	Bhang	Cannabaceae	H
14.	Celtisaustalis	Khari	Ulmaceae	T
15.	Centellaasiatica	Ghodtapre	Umbelliferae	H
16.	Cirsiumwallichii	Khalvun	Compositae	H
17.	Clerodendrum sp.		Verbenaceae	S
18.	Colocasia sp.	Pindalu	Araceae	H
19.	Cynodondactylon	Dubo	Graminae	H
20.	Cyprus iria	Mothe	Cyperaceae	H
21.	Cyperus sp.		Cyperaceae	H

22.	Daturametel	KaloDhgaturo	Solanaceae	H
23.	Daturastramonium	Dhaturo	Solanaceae	H
24.	Dendrocalamusn sp.	Bans	Graminae	B
25.	Durantarepens	Nil Kanda	Verbenaceae	S
26.	Eucalyptus citriodora	Masala	Mytraceae	T
27.	Eupatorium adenophorum	Banmara	Compositae	H
28.	Ficusreligiosa	Pipal	Moraceae	T
29.	Fimbristylismiliaceae	PaniMothe	Cyperaceae	H
30.	Fraxinus floribunda	Lankuri	Oleaceae	T
31.	GalinsogaParviflora	ChitlangeJhar	Compositae	H
32.	Grevillearobusta	KangiyoRukh	Proteaceae	T
33.	Imperata cylindrical	Khar	Graminae	H
34.	Ipomoea aquatica	Kalami Sag	Convovulaceae	H
35.	Ipomoea sp.		Convovulaceae	H
36.	Jacaranda mimosifolia	Jacaranda	Bignoniaceae	T
37.	Lagerstroemia indica	AsarePhool	Lythraceae	T
38.	Lantana camara	Masini Kanda	Verbenaceae	S
39.	Meliaazederach	Bakenu/Khaibasi	Meliaceae	T
40.	Phragmiteskarka	Narkat	Graminae	H
41.	Polygonumplebeium		Plygonaceae	H
42.	Populus deltoids	LahарePipal	Salicaceae	T
43.	Prunuscerasoides	Painyu	Rosaceae	T
44.	Prunuspersica	Aaru	Rosaceae	T
45.	Psidiumguajava	Amba	Myrtaceae	T
46.	Punicagranatum	Aanar	Punicaceae	S

47.	Pyruspashia	Mayal	Rosaceae	T
48.	Ranunculus sp.		Ranunculaceae	H
49.	Saccharum sp.		Graminae	H
50.	Sambucusanadensis	KanikePhul	Sambucaceae	S
51.	Seneciocappa		Compositae	H
52.	Solanumaculeatissimum	Kataiya	Solanaceae	H
53.	Solanumnigrum		Solanaceae	H
54.	Sonchusasper	Dudhe	Compositae	H
55.	Sporobolusdiander	KhudeGhans	Graminae	H
56.	Stellariavestita	KarnaPhulJhar	Caryophyllaceae	H
57.	Thujaorientalis	Mayurpankhi	Cupresaceae	T
58.	Trifoliumrepens	Pyauli	Leguminosae	H
59.	Urticadioca	Sisnu	Urticaceae	H

Major Problematic Wildlife

S.No.	English Name	Zoological Name	Family	Type	Size
1	Black Kite	Milvus migrans	Accipitridae	Residential	L
2	Blue Rock Pegion	Columba Livia	Columbidae	Residential	M
3	House Crow	Corvus splendens	Corvidae	Residential	M
4	Spotte Owlet	Athene brama	Caprimulgidae	Residential	M
5	Domestic Dog	*Canis lupus familiaris* or *Canis familiaris*	*canidae*	Residential	55-65 lbs
6	golden Jackal	*Canis aureus*	*canidae*	Residential	35-40 lbs
7	Blue Bull	*Boselaphus tragocamelus*	Bovidae	Residential	220- 470lbs
8	Wild Boar	*Sus scrofa*	Suidae	Residential	90 -115 lbs
9	Rhesus Monkey	Macaca Mulatta	Cercopithecidae	Residential	10-12 lb

Civil Aviation Authority of Nepal

Bird/Other Wildlife Strike Report Form

(To be filled by Pilots, ATC, Airport operator, Airline, Safety personnel, etc.)

1. CATEGORIES OF OCCURRENCE

ACCID☐ INCID ☐HAZARD☐ BIRDSTRIKE☐WILDLIFE STRIKE ☐ *(Shall fill one of first three boxes and one of the last two boxes.)*

2. Name of Operator	3. Aircraft Make/Model	4. Engine Make/Model
5. Aircraft Registration	6. Date of Incident (dd/mm/yyyy)	7. Time of Incident (UTC) …… ☐Dawn☐Dusk ☐Day ☐Night
8. Airport Name	9. Runway Used	10. Location if en-route (Nearest city, place, etc.)
11. FL/ALT/HT (ft)	12. Speed (IAS- kts)	

13. Phase of Flight

☐A.Parked
☐B.Taxi
☐C.Take-off Run
☐D.Climb
☐E.Enroute
☐F.Descend
☐G.Approach
☐H.Landing Roll

14. Parts of Aircraft Struck or Damaged

	Struck	Damaged		Struck	Damaged
A. Radome	☐	☐	H. Propeller	☐	☐
B. Windshield	☐	☐	I. Wing/Rotor	☐	☐
C. Nose	☐	☐	J. Fuselage	☐	☐
D. Engine No. 1	☐	☐	K. Landing Gear	☐	☐
E. Engine No. 2	☐	☐	L. Tail M. Lights	☐	☐
F. Engine No. 3	☐	☐	N. Other: (Specify)	☐	☐
G. Engine No. 4	☐	☐			

15. Effect on Flight
☐None
☐Aborted Take-off
☐Precautionary Landing
☐Engine Shut Down
☐Other: (Specify)

16. Sky Condition
☐No Cloud
☐Some Cloud
☐Overcast

17. Precipitation
☐Fog
☐Rain
☐Snow
☐None

18. Bird/Other Wildlife Species

19. Number of Bird(s)/Wildlife

Number	Seen	Struck
1	☐	☐
2-10	☐	☐
11-100	☐	☐
More than 100	☐	☐

20. Size of Bird(s)/Wildlife
☐ Small
☐ Medium
☐ Large

21. Pilot warned of Birds ☐ Yes ☐ No

22. Detail Information *(Describe damage, injuries and other pertinent information)*

(Use additional sheet if necessary.)

23. Reported by	24. Title, Office	25. Date

Composition of National and Airport Level Committee

A. Composition of ABCRC Committee:

The composition of Airport Bird Control and Reduction Committee (ABCRC) at National Level is as follows:

1. Secretary, Ministry of Culture, Tourism and Civil Aviation	Chairman
2. Joint Secretary, Ministry of Home	Member
3. Joint Secretary, Ministry of Defense	Member
4. Joint Secretary, Ministry of Population and Environment	Member
5. Joint Secretary, Ministry of Local Development	Member
6. Brigadier General, No11 Brigade, Gaucher	Member
7. Chairman, Kathmandu, Lalitpur and Bhaktapur District Development Committee	Member
8. Mayor, Kathmandu Metropolitan	Member
9. Chairman, Nepal Airlines Corporation	Member
10. Director General, CAAN	Member-Secretary

B. Composition of TIA-BCCIU Committee:

The composition of Tribhuvan International Airport Bird Control Coordination and Implementation committee at airport level is as follows:

1. General Manager, TIA Civil Aviation Office -	Chairman
2. Representative, Kathmandu District Development Committee	Member
3. Representative, Kathmandu District Police Office	Member
4. Representative, Kathmandu District Administration Office	Member
5. Representative, Kathmandu District Forest Office	Member
6. Representative, Kathmandu District Agriculture Office	Member
7. Representative, Kathmandu District Vetenary Office	Member
8. Representative, Ward No 9, 34, 7 of Kathmandu Metropolitan City	Member
9. Mulpani and Gothatar VDCs	Member
10. Specialists designated by Chairman	Member
11. Representative, Nepal Airlines	Member
12. Representative, Nepal Army	Member
13. Representative, Solid Waste Management and Resource	Member
14. Mobilization Centre, Ministry Of Local Development	Member
15. Chief, Bird Control Unit, TIA	Member- Secretary

C. Each airport has its own wildlife control coordination and implementation committee.

Appendix 6

Protected Birds of Nepal

Source: BCN/IUCN

Civil Aviation Authority of Nepal
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