



www.PAFwallpapers.com

***Wildlife Hazard Management at Airports in Pakistan***

***by***

***Dr. Sameera Arshad***

***(Ph. D Wildlife Management)***

***Bird Strike Management Consultant***

***and Aviation Ornithologist***

# Introduction

Birds and aircraft collisions (**birdstrikes**) are critical for flight safety throughout the world.

Hundreds of human lives and aircraft have been affected by these strikes. Worldwide annual loss of about **1.2 billion** dollars is attributed to bird strikes.

Wildlife Strikes are becoming an increasing threat to aircraft safety both at **military** and **civil** airports .

# Worldwide Annual Losses due to bird strikes

|           | Damage cost       | Reference                        |
|-----------|-------------------|----------------------------------|
| Worldwide | US \$ 1.2 billion | CSL, UK<br>(Central Science Lab) |



# Worldwide Losses due to birds and other animals

| Losses            | Number | Year        |
|-------------------|--------|-------------|
| Civil Aircraft    | 204    | (1912-2019) |
| Human lives       | 342    |             |
| Military Aircraft | 412    | (1912-2019) |
| Human lives       | 193    |             |
| Total Hull Losses | 616    |             |
| Total Fatalities  | 535    |             |

(Shaw et al. 2019)

# International Civil Aviation Organization

## Annex 14

“There is a need for states to adopt measures, as necessary, for discouraging the presence on, or in the vicinity of an airport of birds constituting hazard to aircraft operations”



DOC (9137-AN/898)  
AIRPORT SERVICES MANUAL  
(ICAO) UN

- ICAO Standards place a responsibility on ICAO contracting States to have a State Safety Programme (SSP).
- This SSP is based on comprehensive analyses of the State's aviation system, state safety policies (based on hazard identification) and safety risk management.

# CONVENTION ON INTERNATIONAL CIVIL AVIATION

- Convention on International Civil Aviation
- Known as Chicago Convention - 7th Dec 1944
  
- Date of Ratification
- Pakistan – 6th Nov1947

**Out of 193 Signatory States**



**A Member State**



## CIVIL AVIATION LEGISLATIONS

- Civil Aviation Ordinance, 1960
- Pakistan Civil Aviation Authority Ordinance, 1982
- Civil Aviation Rules, 1994
- Airport Security Force Act, 1975

Why Do We Fail?

“Before a problem is solved it must  
be understood first.”

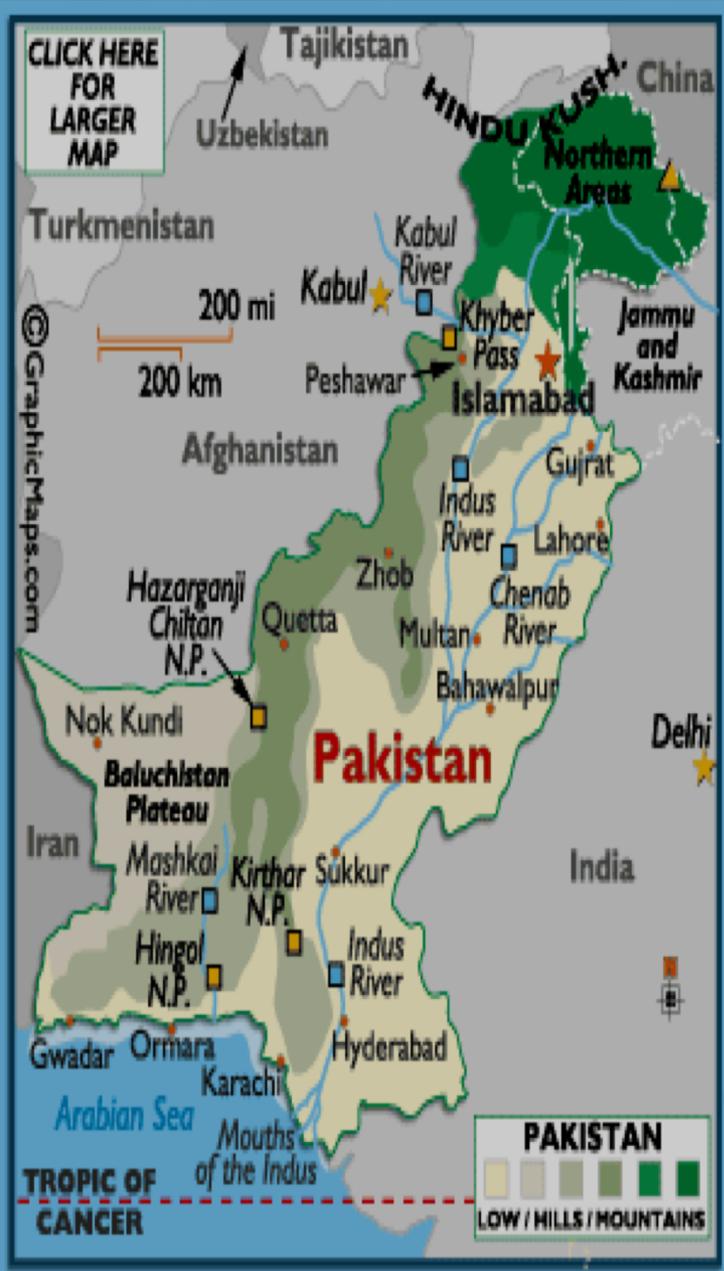


# Bird Strike Hazard Assessments

No two airfields are exactly alike; accordingly, bird hazards vary from airport to airport.

Therefore, it is essential to carry out site-specific bird strike risk assessment of each airfield to have comprehensive data about **geographical, biological and ecological conditions** contributing to bird strike problem. Pakistan is rich in biodiversity and the landscape varies

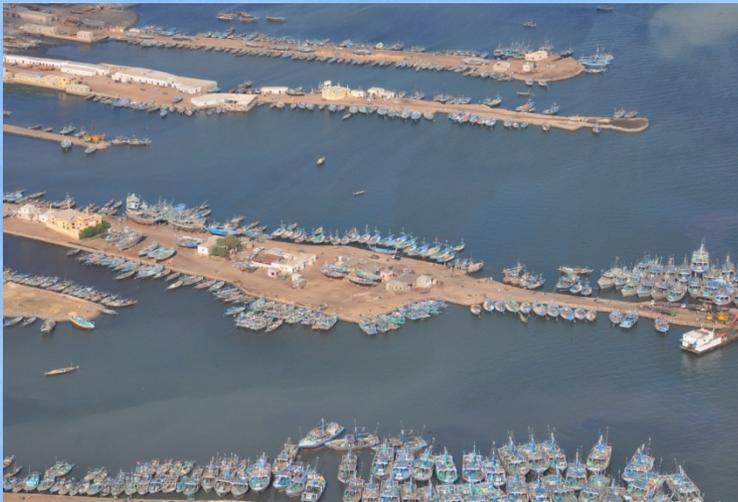
Knowledge about potentially hazardous **bird species, plant species, bird attractants** and other factors existing at and around the airport environment, help to draw meaningful management solutions.





Flyway No.4 Siberia- Kazakhstan- Pakistan-India

## *Habitat Variation around different airports in Pakistan*



## *Biodiversity and landscape of Pakistan*





*Pakistan International Airlines Flight PK-310  
attacked by swarm of Locust before it prepared to land at Quetta  
December, 2019*



**June 14<sup>th</sup> , 2020**

*Snake stuck in plane's tyre at Islamabad International Airport*



Effective Management Strategies that helped to  
reduce wildlife strikes in Pakistan

# International Standards - Scientific Approach - Site Specific Hazard Assessment

- Exploring environmental and biological factors that resulted in attraction of the problem birds/wildlife species at and around airports
- Identifying hazardous bird species and their habitat
- Reviewing available bird strike data and data recording procedures
- Understanding bird/other wildlife behavior
- Applying behavioral management techniques

# Species Identification

Species identification is an integral part of an aerodrome bird hazard management. Birds/ bats vary greatly in terms of their size, feeding, breeding , nesting and roosting behavior. Exact knowledge about species involved is important so that preventive measures could be taken according to animal behavior.

Bat species: Mega and Micro chiropteran



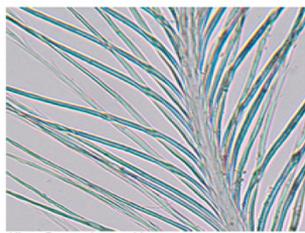
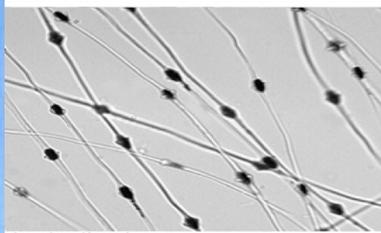
# Feather Identification

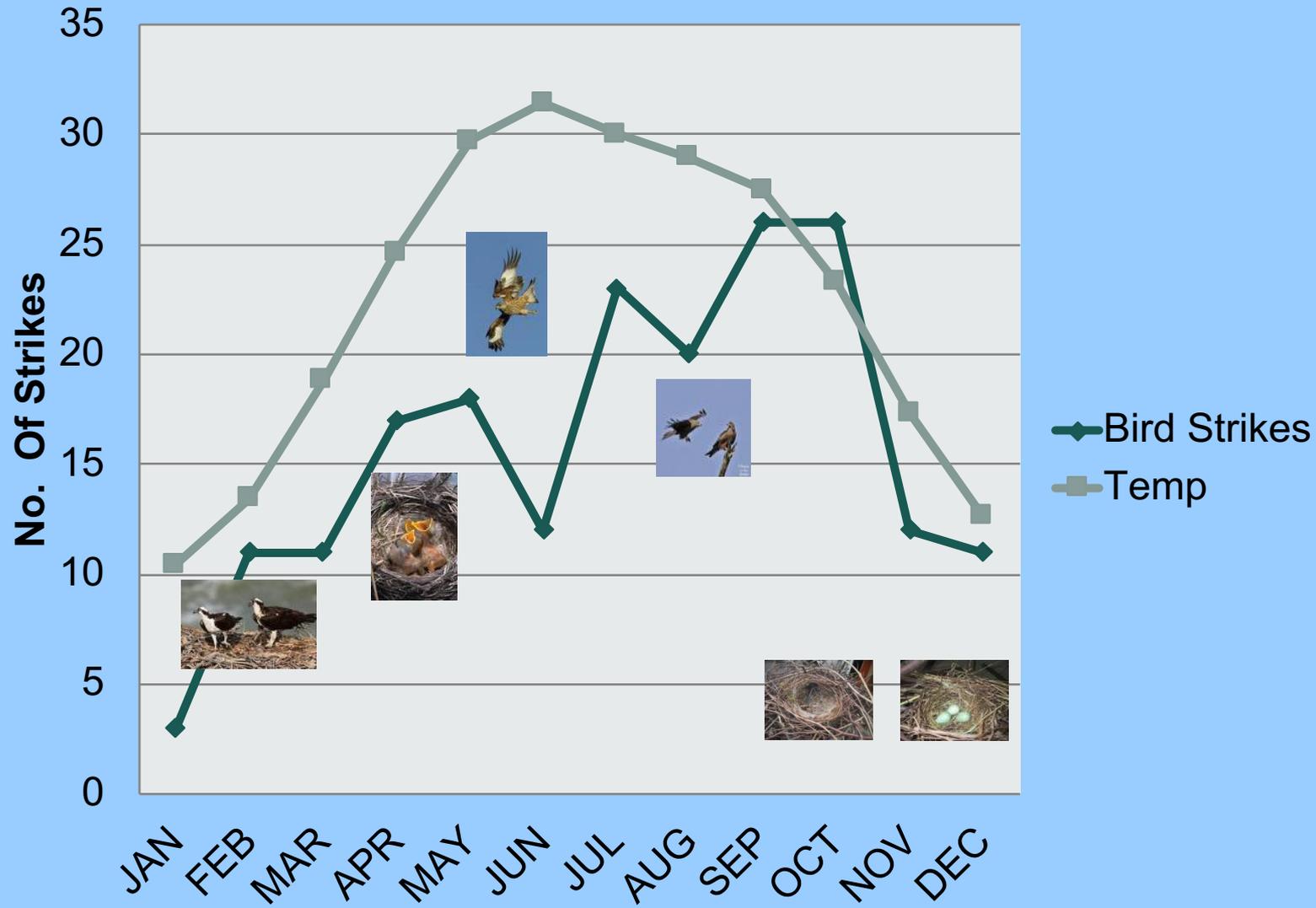
Whole feather

“Gross” morphology



Microstructure





## On-Airfield Survey and Off- Airfield Habitat Surveys

Research studies have shown that **97 percent** of all wildlife strikes with aircraft are caused by birds. **74 percent** of bird collision occur near or at airport (i.e. at or below 152 m above ground level) during landing and takeoff phases,(Dolbeer *et al.*, 2011). However, some strikes have been reported at the height of 6000 to 9000 m above ground level.

Therefore, in order to explore land use practices in relation to bird/wildlife population it was important to characterize habitat at and in the vicinity of the Pakistani airports.

# On-Airport Attractants

Vegetation ( Providing feeding, nesting and roosting sites)

Weeds, construction debris

Aquatic Vegetation, water

Ditches, creeks, waterways, adjacent ponds

Insects, animal carcass, worms, birds

Nesting and perching sites like towers, signs, poles, fence

## OFF-Airfield Surveys

- According to **International Civil Aviation Organization, (ICAO, Doc 9137)**, any significant bird or wildlife attractant, falling within 13 km radius of an aerodrome, should be assessed to reduce its attractiveness to birds.
- Off airfield factors including agricultural activity, fruit farming, poultry farms, fish farms, cattle market, open garbage dumps in the vicinity of the airfield, water sources, and other factors that contribute to bird strikes should also be managed, especially in 2-3 km radius (visual traffic zone) of the airfield and also in 13 km. safeguard zone.
- National rules and regulations as mentioned in The Aircraft (Removal of Danger to Safety) ordinance 1965 Pakistan are implemented to control these off airfield bird attracting sites.

## **Off-Airport Attractants**

Agricultural activities, grains, dense trees, fruit bearing trees

Aquaculture facilities, feed lots, grain storage, dairy farms

Outdoor eating areas, garbage dumps, retention ponds, streams, drains, ditches, swamps, marshes, mud flats

Nesting sites, roosting sites

Potential threat tannery zone, new residential colonies

# Conclusion

- Robust **Scientific Approach** is needed to address **WHM** issue
- **Site-Specific Wildlife Hazard Risk Assessment** of airports is mandatory for effective Bird/Wildlife Hazard Management Plans.
- **Data Analysis:**  
Complete data recording procedures and statistical analysis of wildlife strikes provide sound foundation for decision making and resource allocation.
- **Species Identification:**  
Recording species, number, size, population, behavior, feeding habits, roosting sites, breeding cycles would help mitigating the bird strike hazard.  
- Species and remains must also be identified and recorded.
- **On- Airfield and Off- Airfield Surveys for identifying attractants:**  
Identification of ecological, biological and geographical factors, contributing in bird strike hazard, is mandatory. This information is used for habitat modification that is the best passive technique for long-term bird control.
- **Active Management Short term Solution**
- **Passive Management Long term Solution**





Thank You



Sameera\_mm1@hotmail.com