WILDLIFE RISK ASSESSMENT

Gloria Kirabo Bitebekezi

ENTEBBE INTERNATIONAL AIRPORT –UGANDA

UCAA

Topics

- Introduction:
- Identification of wildlife at an aerodrome
- Estimating probability of a strike
- Estimating severity of a strike
- wildlife risk assessment matrix

Introduction

- Step by step process or method where:

  – Identify the Hazard
  – Analyse and evaluate the risk associated with that hazard.

- Hazard= Potential

- **Safety Risk = (probability of a strike) × (severity of damage caused)**

Importance of risk assessment

- Helps aerodromes understand what they are dealing with and therefore offer an appropriate WHM program.

- Focus resources and defend WHM budgets.

- Helps with adequate day to day deployment of staff and other resources.

- Helps to set clear targets for WHM improvement.

- Useful information for air operators.

- Litigation/Liability – airport operators need to show that they did what was humanly possible to manage the hazard.

Identification of wildlife at an aerodrome

Other identification methods

- Remote sensing

- Feather identification

- DNA analysis

  - Blood smears/tissue
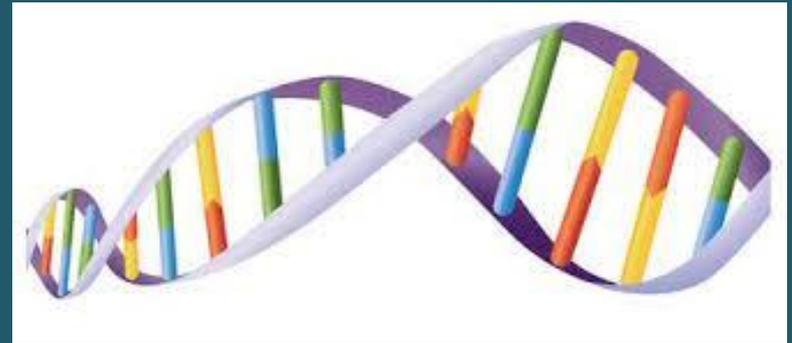
Some of the bird species at EIA and its surroundings

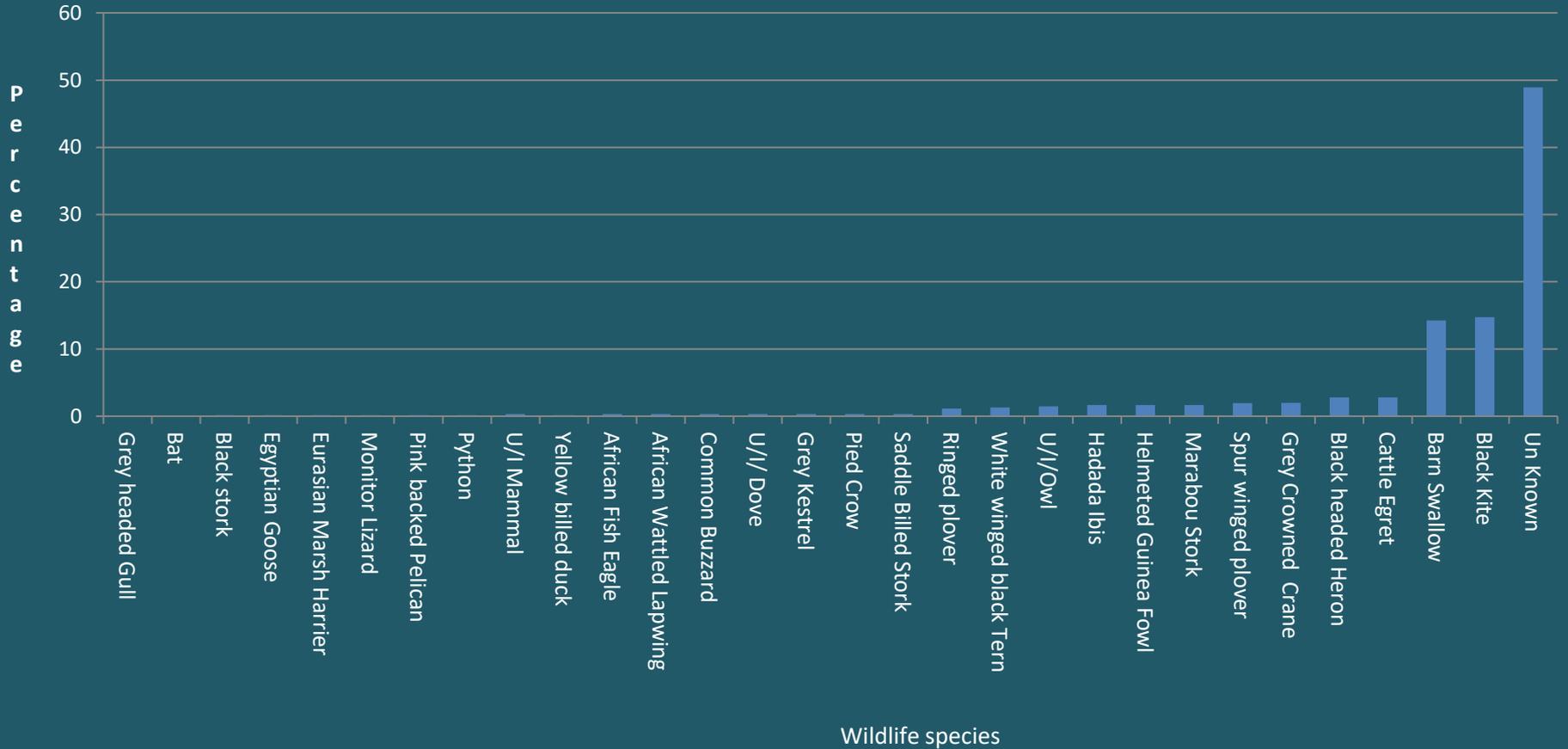
Black Kite
Milvus migrans

Cattle Egret
Bubulcus ibis

Gulls and Terns

Hadada Ibis
Bostrychia hagedash

Barn Swallow
Hirundo rustica

Estimating probability using wildlife presence

- Presence of a particular species on the aerodrome increases its chances of being hit even though there are no records to show it was ever hit.

- This is also very useful for aerodromes that do not have many aircraft movements. The higher the number of aircraft movements, the higher the chances of wildlife being hit.

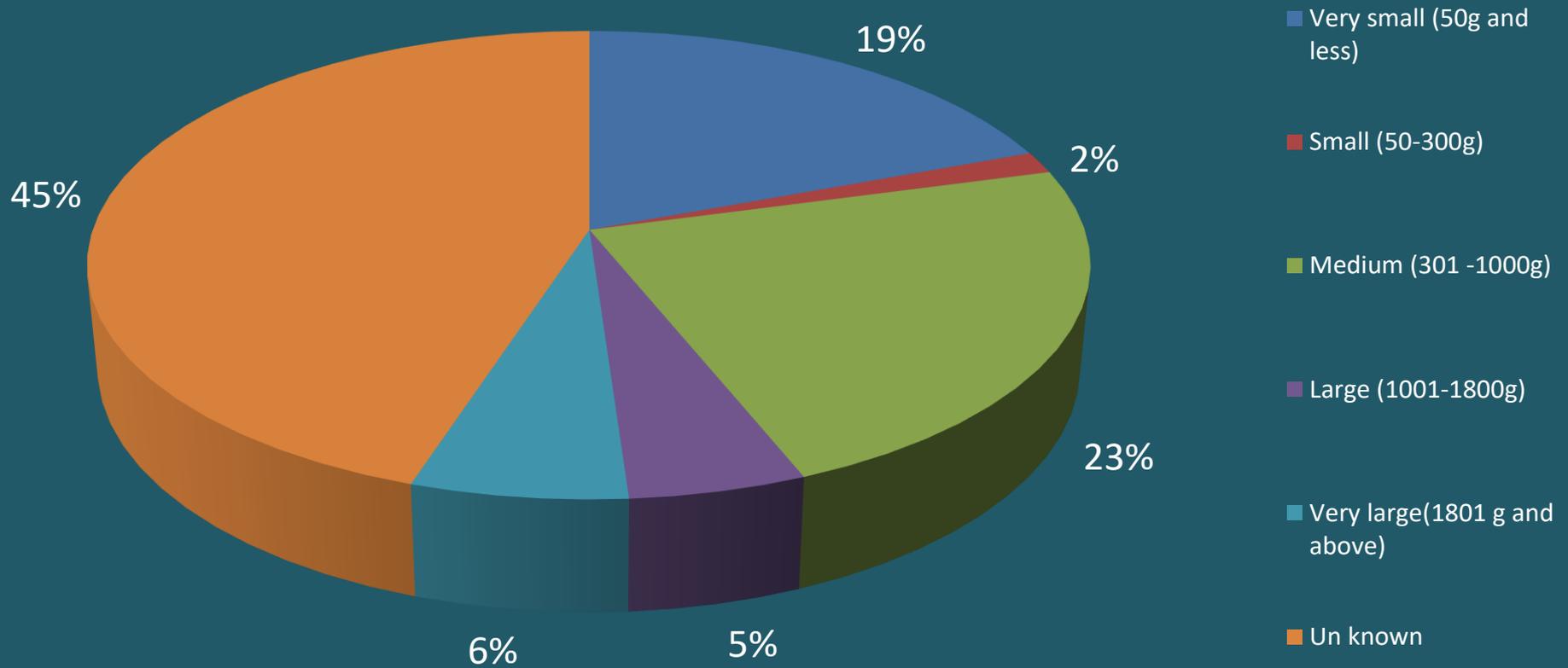# Estimating severity of a strike

$$E = 1/2 \, MV^2$$

E = energy (joules): capacity of matter to perform work as the result of its motion or its position in relation to forces acting on it.

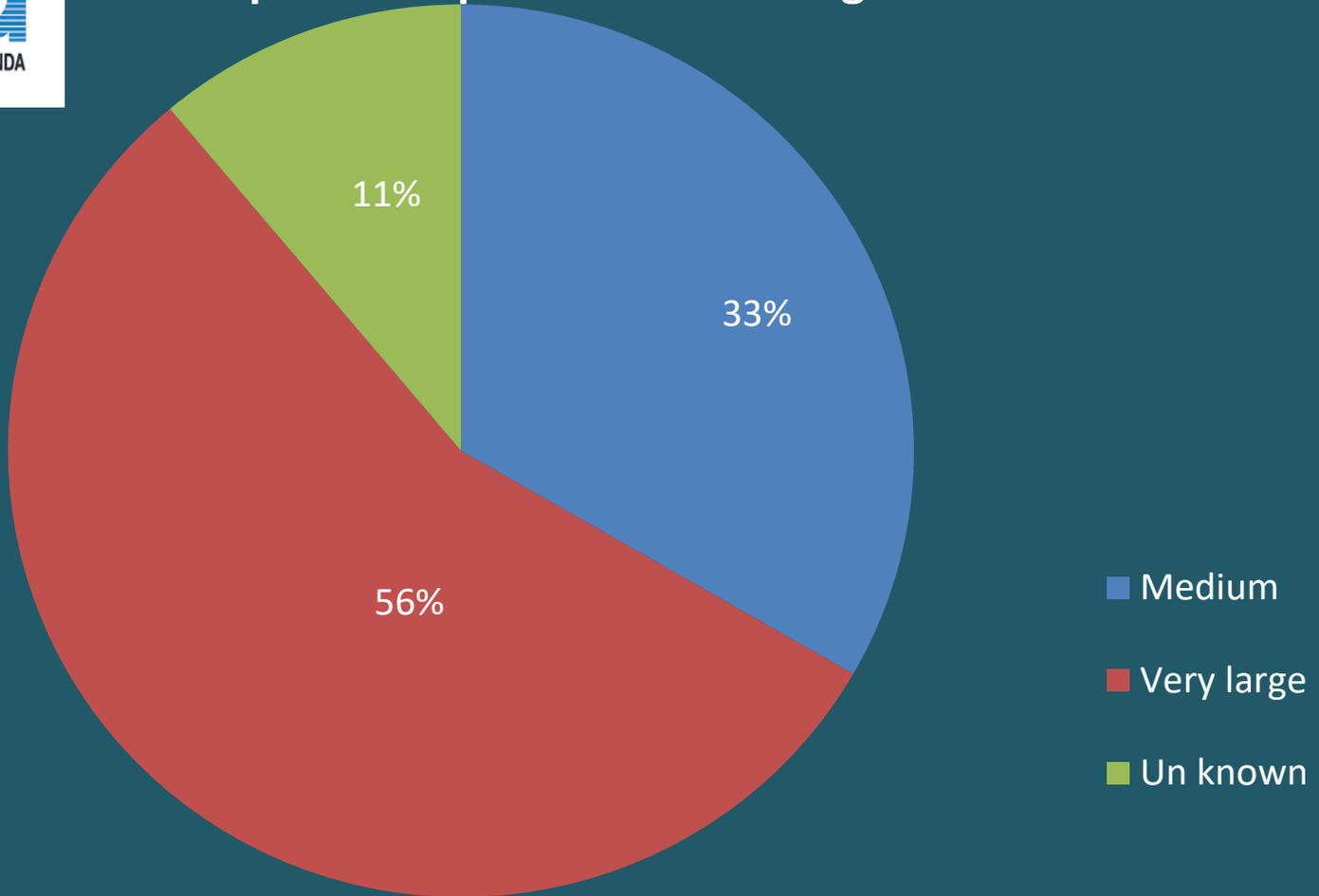M = mass in (kilograms)

V = velocity (speed) in (meters/second)

- Therefore, the higher the mass, the greater the potential to cause damage.
- The higher the velocity, the greater the damage caused.

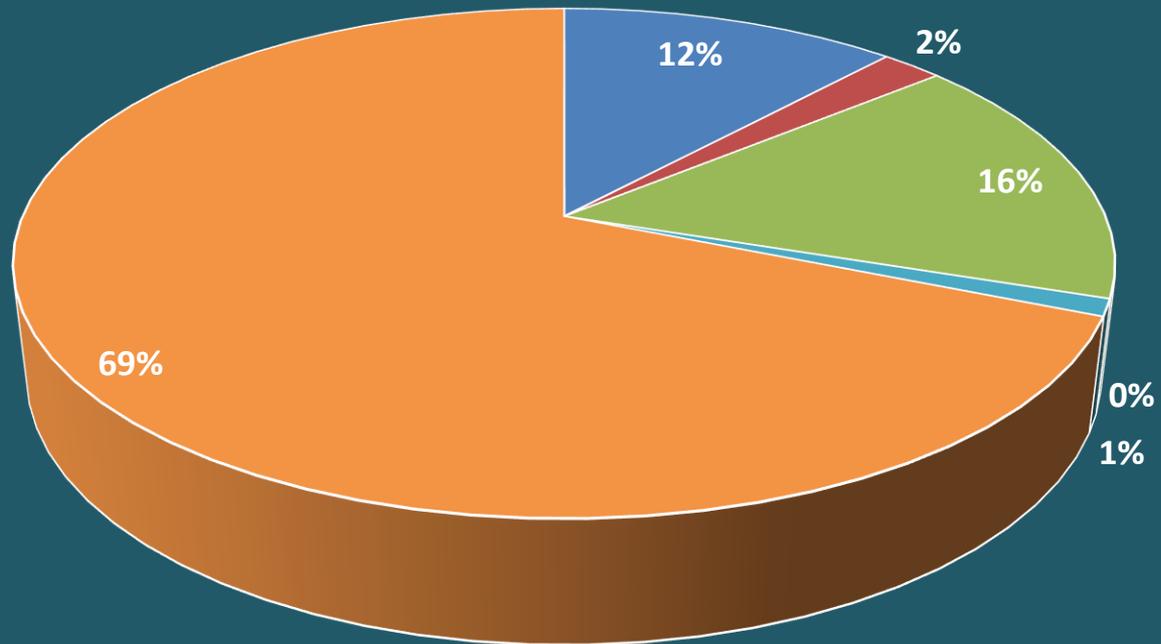Wildlife size (Weight) - 2010 to 2020

- Very small (50g and less)
- Small (50-300g)
- Medium (301 -1000g)
- Large (1001-1800g)
- Very large(1801 g and above)
- Un known

19%
2%
23%
5%
6%
45%

Species responsible for damages 2010-2020

Medium — 33%
Very large — 56%
Un known — 11%

Wildlife strike incidents by weight of species – Jan to Dec 2021

- Very Small (Less than 50g)
- Small (50-300g)
- Medium (300 -1Kg)
- Large(1-1.8Kg)
- Very Large (Above 1.8Kg)
- Unknown

12% 2% 16% 0% 1% 69%

Likelihood & Impact

Likelihood

- Frequency in bird strike records.

- Presence on the aerodrome

Impact

- Weight

- Damage

RISK ASSESSMENT MATRIX – 2010-2020

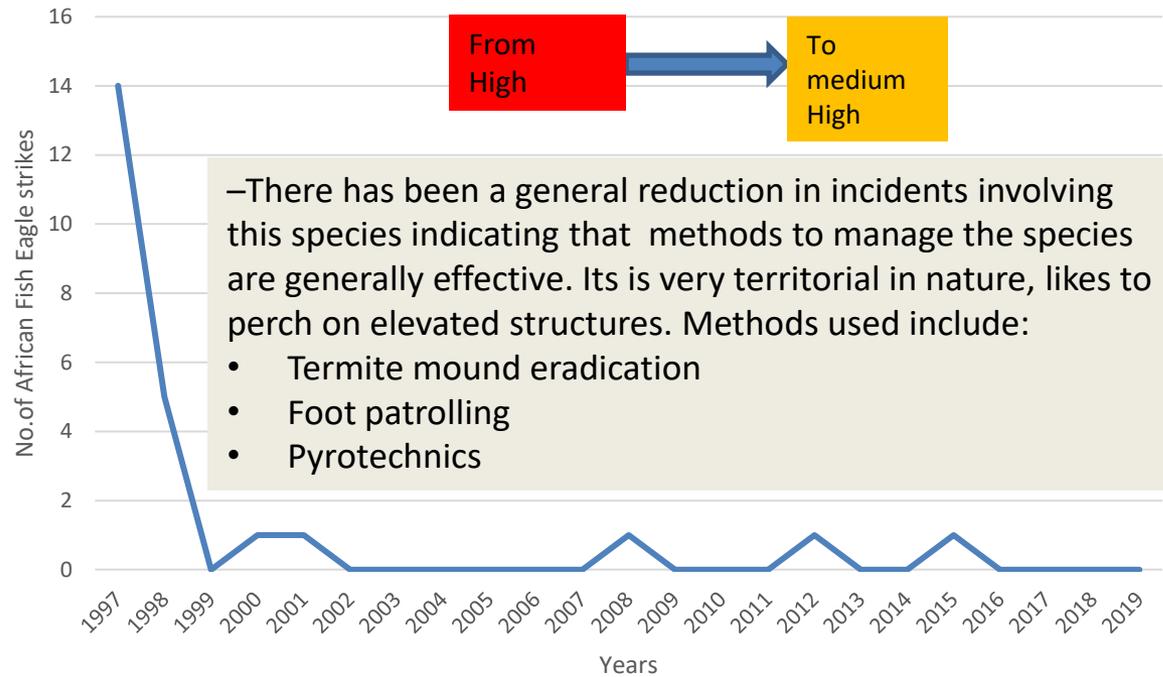| Likelihood \ Impact	Negligible- Very Small	Minor -Small	Moderate - Medium	Significant - Large	Severe - Very Large
Very likely			Black Kite		
Likely					
Possible	Bat, Barn Swallow, Rupell's long tailed Starling.	Spur winged Plover , African wattled Lapwing	Cattle Egret, White winged Black Tern, Grey headed Gull		Egyptian Goose, Grey crowned Crane, Black headed Heron
Unlikely				Owl	Black Stork, Hadada Ibis, Helmeted Guinea fowl,Python ,Monitor Lizard, Saddle billed Stork,Marabou Stork
Very unlikely	Ringed Plover,				African Fish Eagle,

High	High
Medum High	Medum High
Medium	Medium
Low medium	Low medium
Low	Low

Example -African fish Eagle

Strikes involving the African fish Eagle

From High → To medium High

–There has been a general reduction in incidents involving this species indicating that methods to manage the species are generally effective. Its is very territorial in nature, likes to perch on elevated structures. Methods used include:
- Termite mound eradication
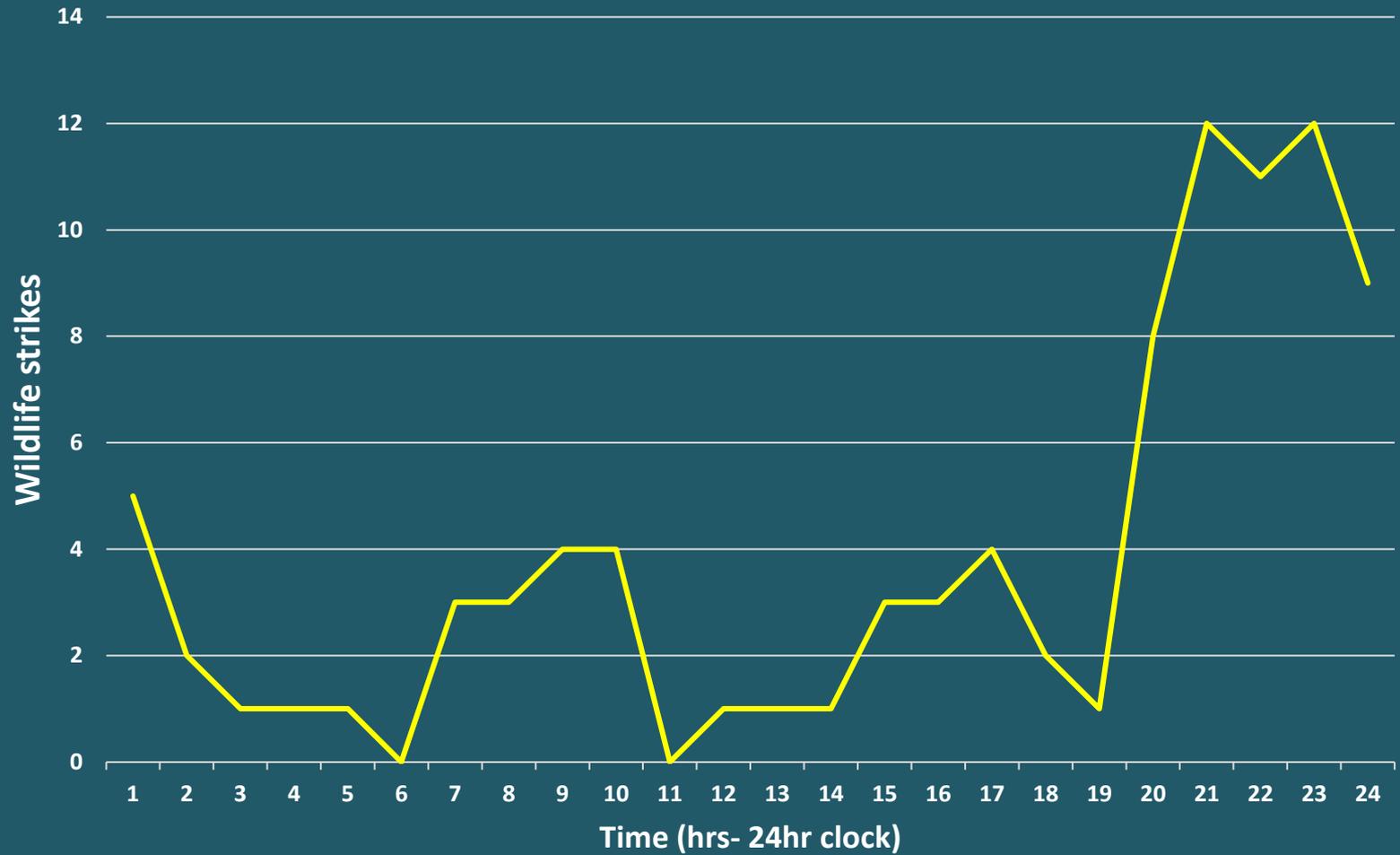- Foot patrolling
- Pyrotechnics

Other things to consider
when making a risk assessment

- Seasonality

- Time

- Behaviour of species

- Weather

- Location

- No. of Aircraft movements.

- ETC

Wildife strikes and Time - Jan to Dec 2021

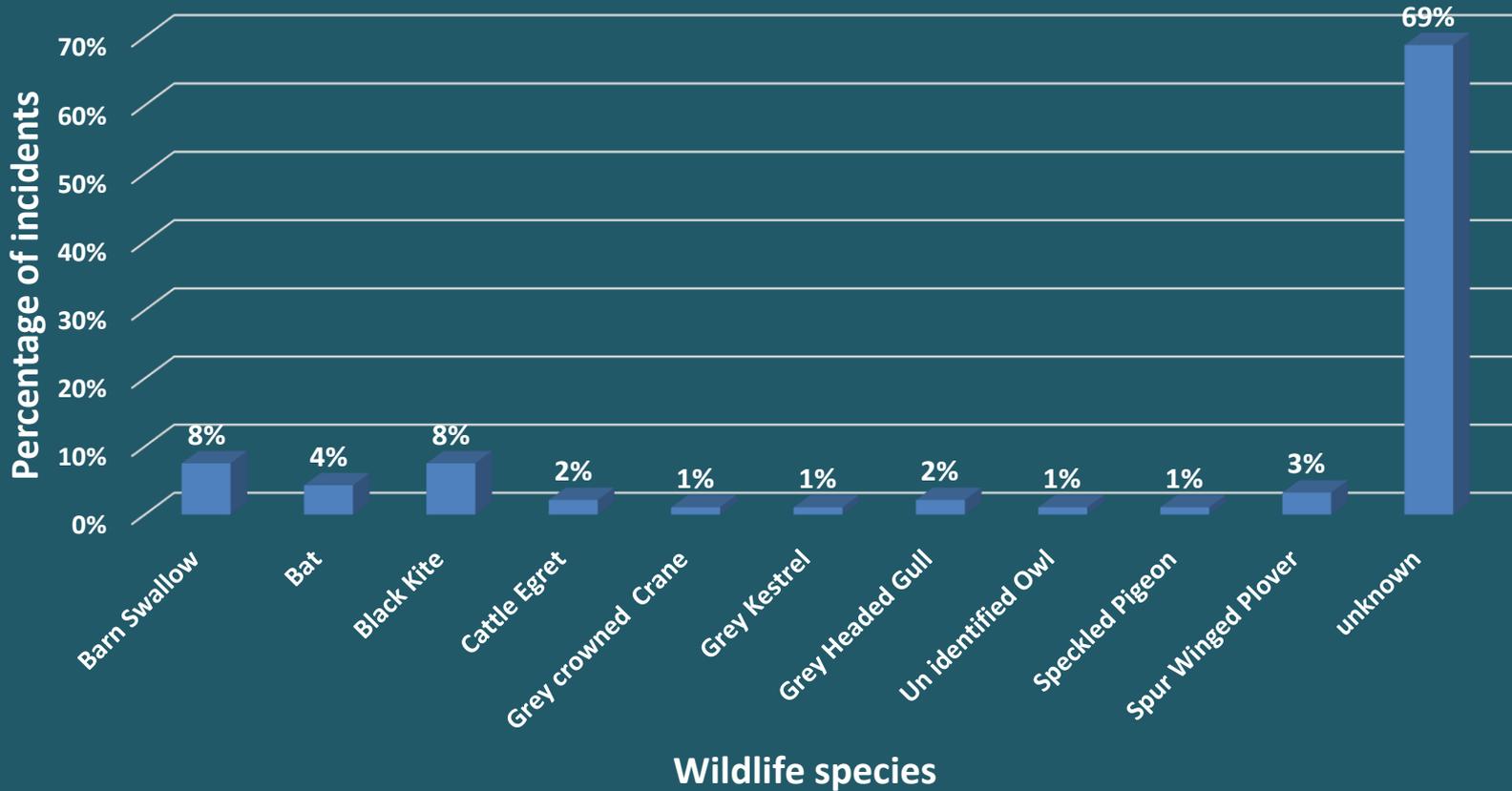– Activity of species: What are they doing and where are they?
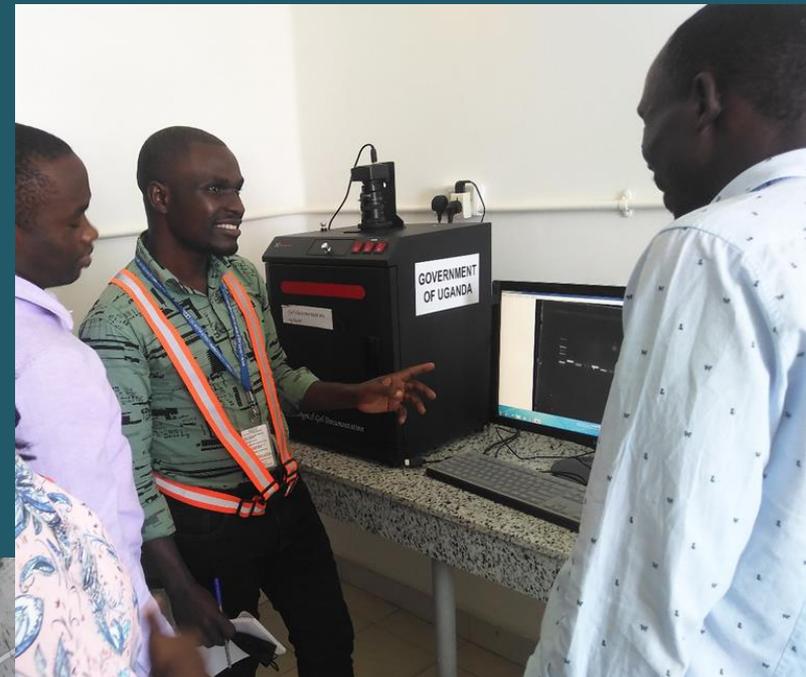
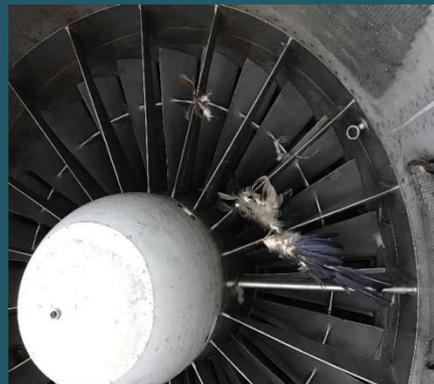• Seasonality – Availability of food, Migrations.

Challenges/Way Forward:

Wildlife strikes- January to December 2021

- The unresolved issue of 'unknowns'
- ❏ Continuous research – Ecological studies

- ❏ DNA analysis

UCAA visiting the Genetic Lab at NAGRC - for DNA analysis

- Changes in the aerodrome environment = Introduction of new species.
  – Destruction of habitats like wetlands =species find other homes including the aerodrome.
  – Construction works on aerodromes.

☐ National Landuse/environmental regulations
☐ Environmental and Social Impact Assessments with input from the aviation sector to ensure that Environment and Social Management Plans include assessments of wildlife changes and offer appropriate mitigation measures.
☐ Interactions between the Wildlife hazard management section and Engineering section.
☐ Community engagement

- Ineffective measures in mitigating certain species – E.g. Black Kite
❑ Continuous research
❑ Introduction of new technologies/mitigation measures

- Climate change - migratory species changing their patterns
❑ Continuous research and making the necessary changes in the WHM programs.

Thank you

- Contacts: BHWC section
- Uganda Civil Aviation Authority
  - +256-31-2-352-267
  - gkirabo@caa.co.ug