

WILDLIFE RISK ASSESSMENT



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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.







Identification of wildlife at an aerodrome

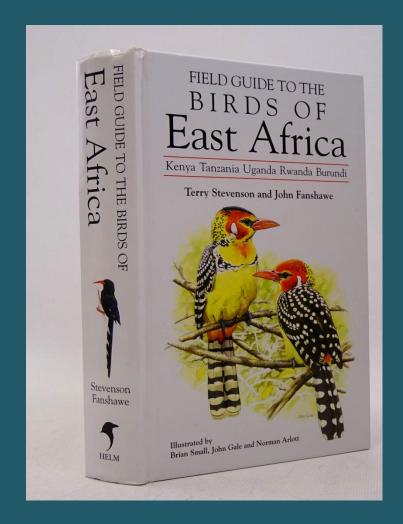




PLATE 121: HORNBILLS I



Eastern Yellow-billed Hornbill Tockus flavirostris

Special bush hornbill easily identified by combination of banana-yellow bill and whire-spotted weng-coverts. Adult make has slightly larger bill with thicker casque than female, and rich rese-pink rather than bare block throat patches. Immature has smaller dusky-yellow bill and is less



Red-billed Hornbill Tockus erythrorhynchus

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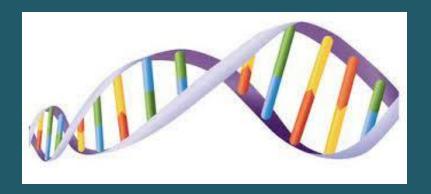
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Other identification methods

- Remote sensing
- Feather identification
- DNA analysis
 - Blood smears/tissue









Some of the bird species at EIA and its surroundings



Black Kite *Milvus migrans*



Barn Swallow *Hirundo rustica*



Cattle Egret Bubulcus ibis



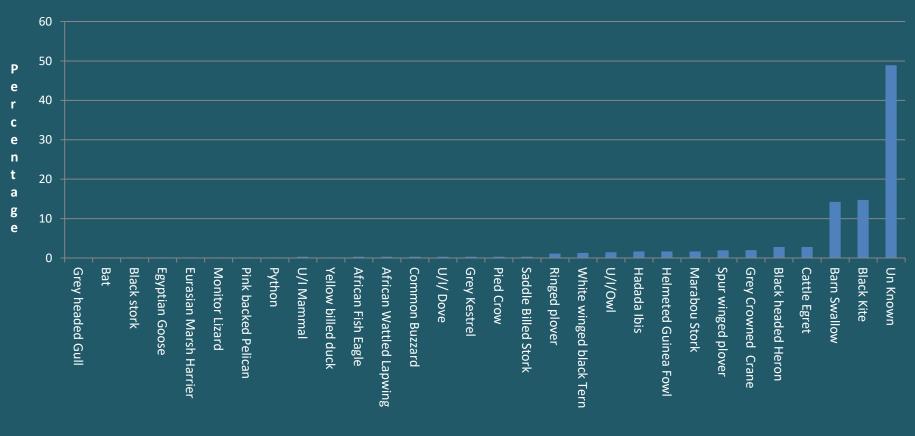
Gulls and Terns



Hadada Ibis Bostrychia hagedash



Estimating Probability using Wildlife strikes – 2010-2020



Wildlife species

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

$E = 1/2 \text{ MV}^2$

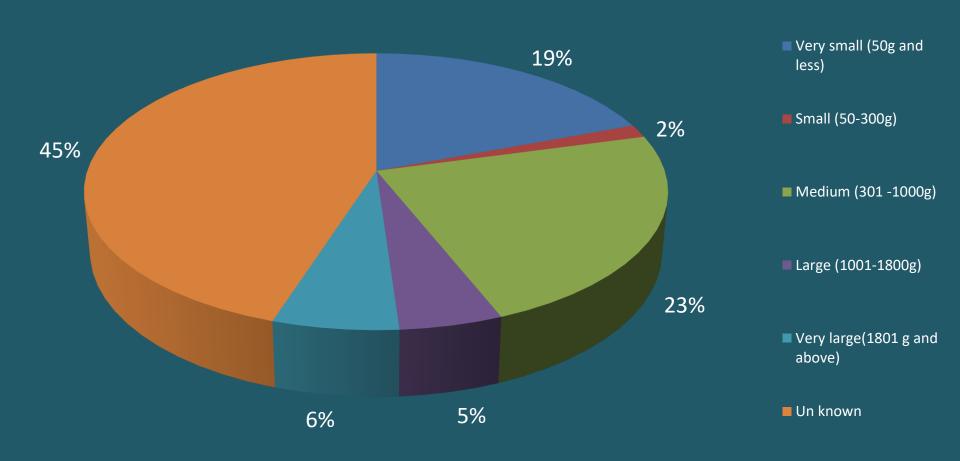
E = energy (joules): capacity of matter to perform work as the result of its motion or its position in relation to forces acting on it.

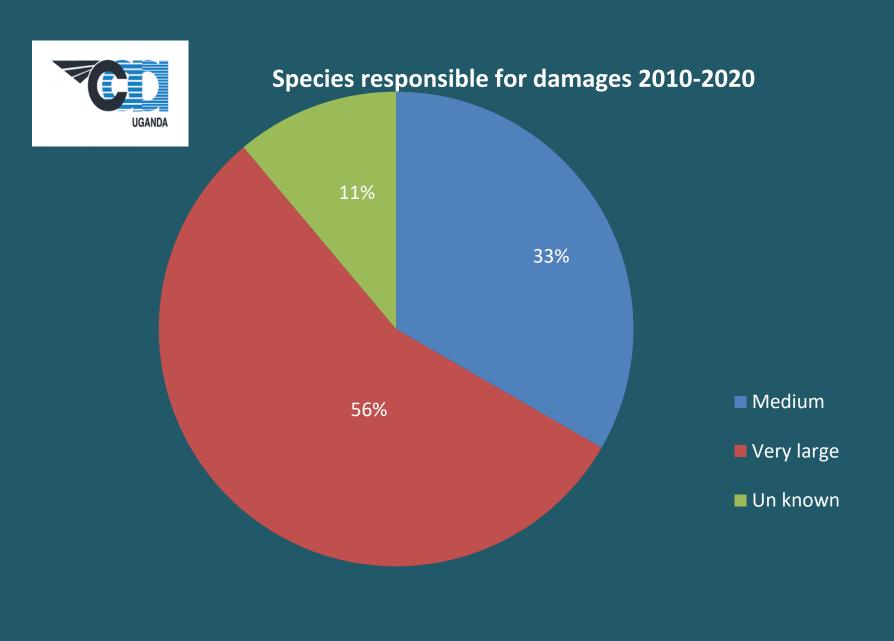
M = mass in (kilograms)

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.

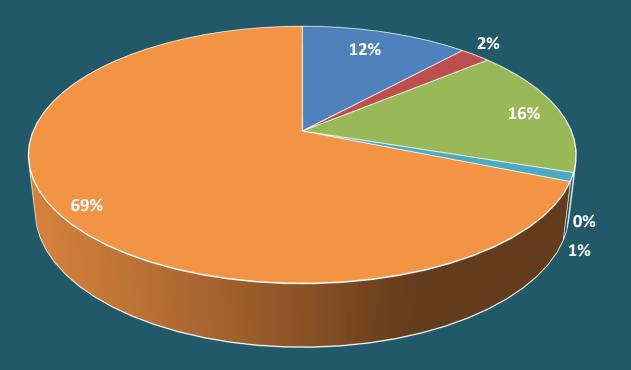
Wildlife size (Weight) - 2010 to 2020







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



Likelihood & Impact

Likelihood

- Frequency in bird strike records.
- Presence on the aerodrome

Impact

- Weight
- Damage



RISK ASSESSMENT MATRIX – 2010-2020

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

High

Medum High

Medium

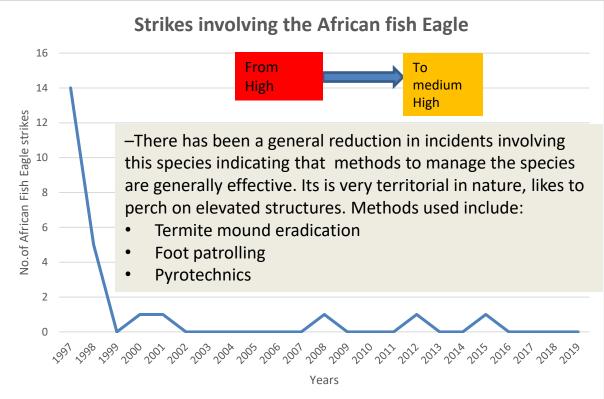
Low medium

Low



Example -African fish Eagle





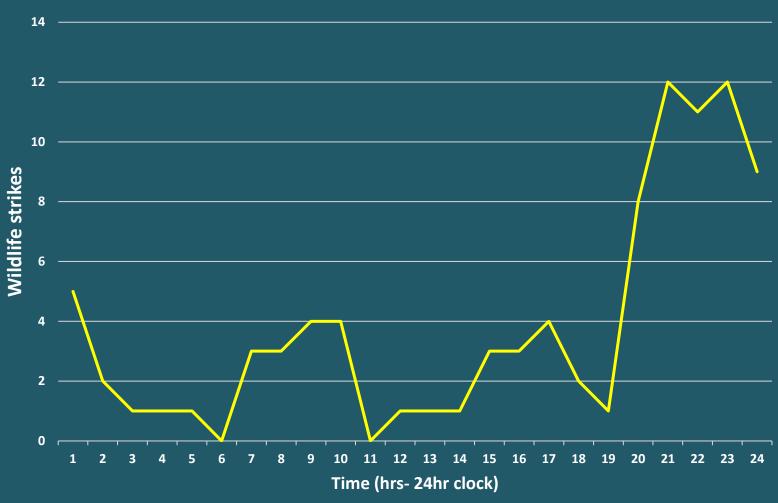


Other things to consider when making a risk assessment

- 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?



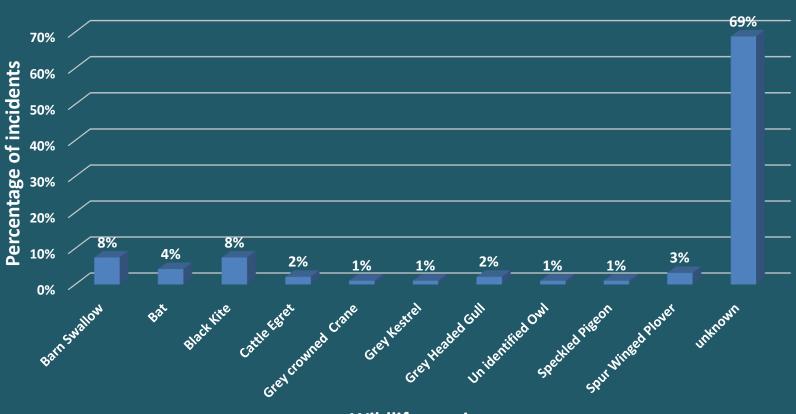






Challenges/Way Forward:

Wildlife strikes- January to December 2021

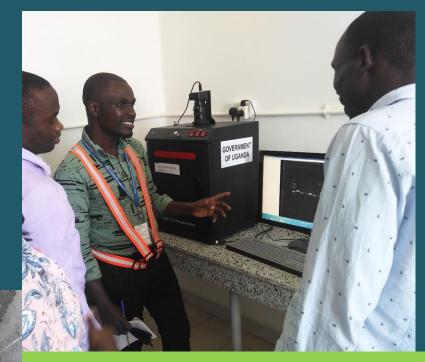


Wildlife species



- 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
- ☐ Community engagement

Engineering section.



- 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

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