



ICAO VIRTUAL REGIONAL WORKSHOP ON WILDLIFE HAZARD MANAGEMENT (WHM) 26 - 27 JULY 2022

Development And Implementation Of Wildlife Hazard Management Programme- Ghana

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GACL

OUTLINE

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- RECORD KEEPING AND PERFORMANCE
- THE CHALLENGE
- ADDRESSING THE CHALLENGE



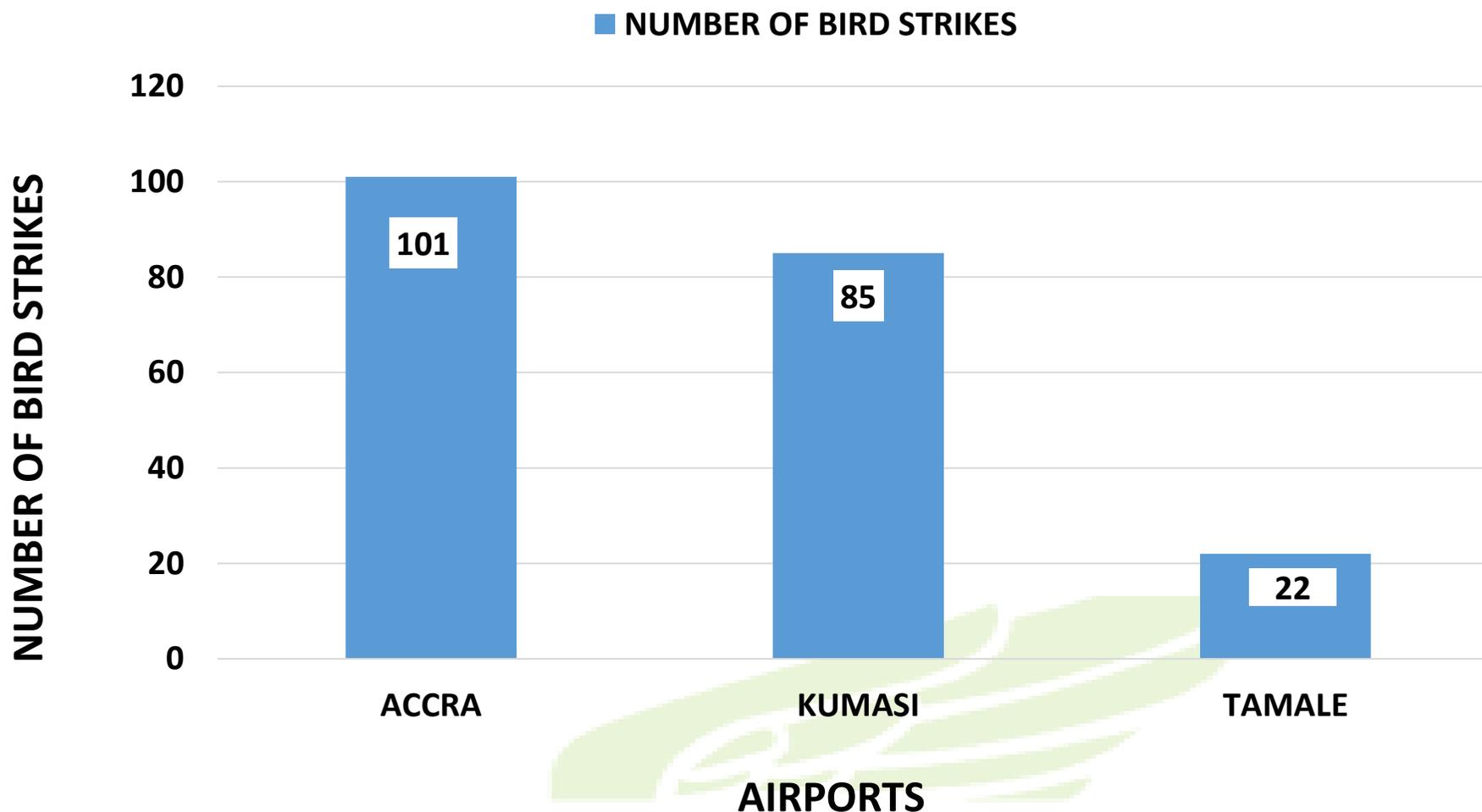
INTRODUCTION

- Wildlife hazard is a safety risk faced by the Ghana Airport Company Limited (GACL)
- A number of bird strikes have occurred at GACL operated airports
- Neither death/casualties nor legal suits yet, however, damages to aircraft and time loss have been suffered on few occasions



SUMMARY OF BIRD STRIKE STATISTICS IN GHANA

2016 - 2020



A total of 208 bird strikes at the three airports for the period considered

SUMMARY OF BIRD STRIKE STATISTICS IN GHANA

2016 - 2020

Out of the over 200 bird species identified at the airport the Yellow-billed Kite, the Black Kite and the African Wattled Lapwing feature more in bird strike incidents:



Yellow-billed Kite



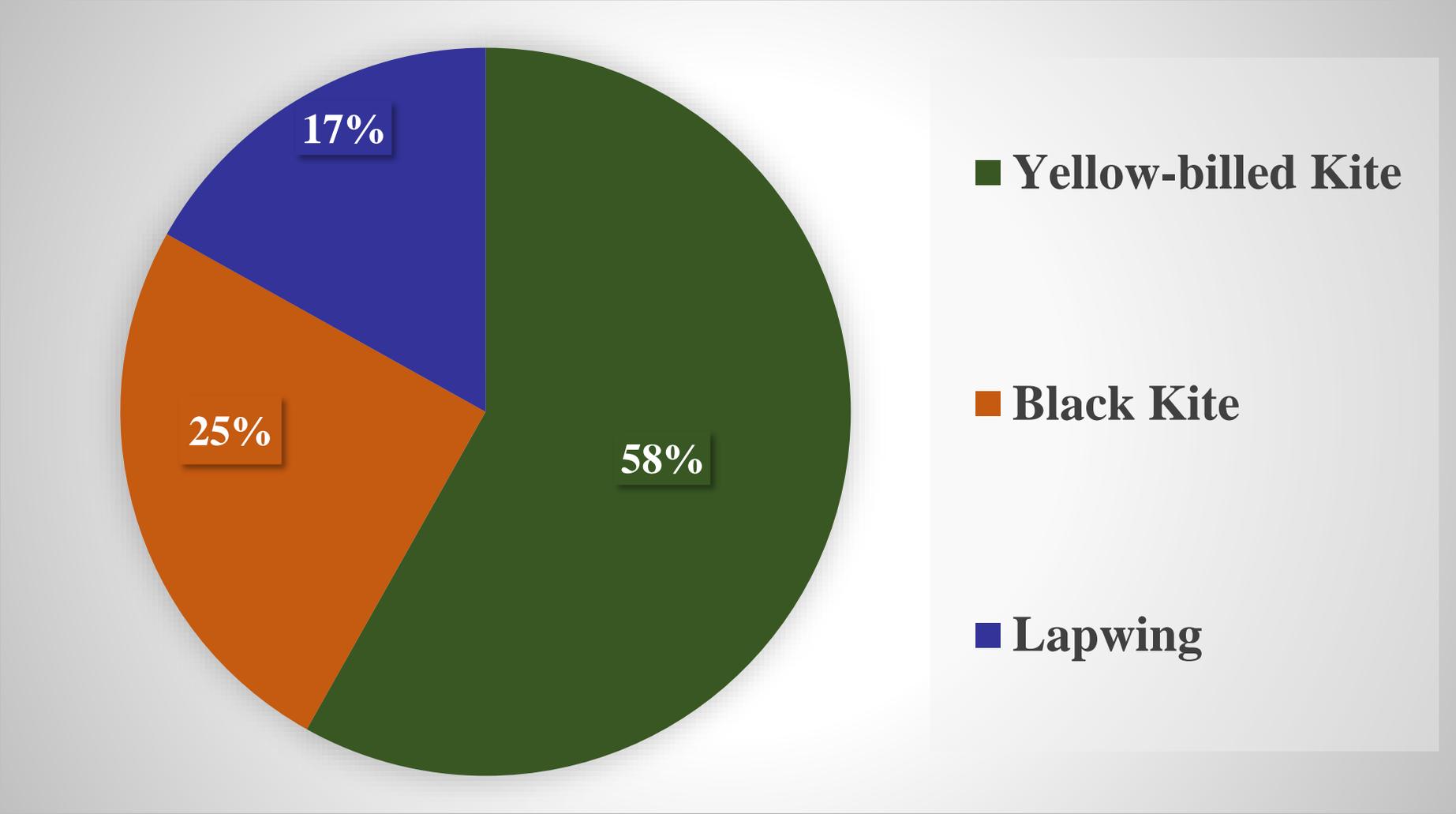
Black Kite



African Wattled Lapwing

SUMMARY OF BIRD STRIKE STATISTICS IN GHANA-

2016 - 2020



WILDLIFE HAZARD MANAGEMENT PLAN AND PROGRAMME

- The GACL has a robust Wildlife Hazards Management Plan (WHMP) in place
- Separate WHMP for each airport
- Wildlife Hazard Management is an integral part of the Safety Management System (SMS) at airports in Ghana



HAZARD IDENTIFICATION

- *Ornithological Survey findings:*

1. Over 200 bird species identified at the airport including raptors, diurnal, nocturnal, migrants and resident species
2. yellow-billed Kite, black kite, pied crow, cattle egret and African Wattled Lapwing were dominant at the maneuvering areas
3. Non-avifauna species such as fruit bat colonies, reptiles, amphibians, stray dogs and cats, rabbit, rats etc.



HAZARD IDENTIFICATION

ON AIRPORT	OFF AIRPORT
Termite mounds	Landfill sites
Insects	Farmlands
Un-grassed areas	Marsh Lands
Derelict structures	Abattoirs
Poor housekeeping	Malls
High masts and Floodlights	Horse stables/Polo Parks/Cattle Ranch
Construction activities	Abandoned structures
Weeding activities	Any other anthropogenic activities
Aerodrome lights	

On airport hazards

Refuse/Waste



On airport hazards



Weeding



Nest at un-grassed areas



On airport hazards

Construction



OFF-AIRPORT HAZARDS – Crop Farms



Crop Farming within
the 13km radius

Crop Farming within the
13km radius



OFF-AIRPORT HAZARDS – Wildlife habitat and refuge



Bat Habitat

Management of Bats



RISK ASSESSMENT

- Based on:
 - Strike history
 - Wildlife number
 - Behaviour
 - Characteristics
 - Dispersal/culling records
 - Daily log book records
- For every species available at the airports



RISK ASSESSMENT

Risk Category of Wildlife per strike history

Table 4: Safety Risk Assessment Matrix

			Severity of Strikes				
			Catastrophic	Critical	Moderate	Minor	Negligible
Probability of Strikes			A/C Crash & Severe	A/C Crash & Light Casualty	A/C Severe Damage & No Crash	A/C light Damage	near miss
Definition	Meaning	Value	A	B	C	D	E
Frequent	5/10,000 movements	5	5A(Unacceptable)	5B(Unacceptable)	5C(Unacceptable)	5D(High)	5E(Moderate)
likely	4/10,000 movements	4	4A(Unacceptable)	4B(Unacceptable)	4C(Unacceptable)	4D(Moderate)	4E(Moderate)
Occasional	3/10,000 movements	3	3A(Unacceptable)	3B(High)	3C(High)	3D(Moderate)	3E(low)
Seldom	2/10,000 movements	2	2A(Unacceptable)	2B(High)	2C(Moderate)	2D(Low)	2E(Very Low)
Improbable	1/10,000 movements	1	1A(Unacceptable)	1B(High)	1C(Low)	1D(Very Low)	1E(Very Low)

RISK ASSESSMENT

Risk Category of Wildlife per strike history- Kotoka International Airport

Probability of Strike			Severity of Strike				
			Catastrophic A/C Crash & Severe	Critical A/C Crash & Light Casualty	Moderate A/C Severe Damage & No Crash	Minor A/C light Damage	Negligible Near miss
Definition	Measure	Value	A	B	C	D	E
Frequent	5/10000 movements	5					
Likely	4/10000 movements	4					
Occasional	3/10000 movements	3					
Seldom	2/10000 movements	2				Yellow-billed Kite	
Improbable	1/10000 movements	1					African Wattled Lapwing Pied Crow Barn Owl Hooded Vulture Northern Red Bishop Bat Dog

IMPLEMENTATION



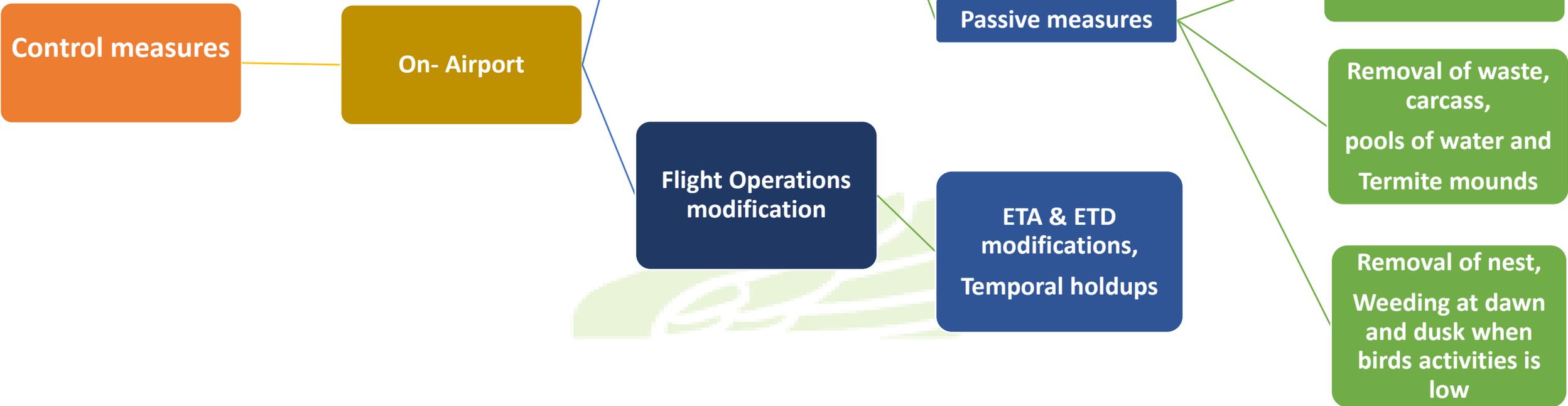
Management Action

Rank	Species	Description	Habitat	Strike history	Management actions
<p>SELDOM</p> <p>Immediate action required to reduce the current risk</p>	 <p>YELLOW-BILLED KITE</p>	<p>The Afrotropic counterpart of the black kite, of which it is most often considered a subspecies. However, recent DNA studies suggest that the yellow-billed kite differs significantly from black kites and should be considered as a separate, allopatric species. As suggested by its name, the yellow-billed kite is easily recognized by its entirely yellow bill.</p>	<p>Found in almost all habitats and extremely opportunistic in its feeding habits. The diet includes small vertebrates, insects (including winged termites), carrion, offal, and dead or dying fish. They may pirate prey</p>	<p>Last 6 years - 41</p> <p>Damaging Strikes- 0</p> <p>2013 - 2018</p>	<p>Long Term – Management of groundinsects and other food sources, better understanding of why these birds are attracted to the Airfield</p> <p>Short Term – Changes to grass heights, harassment</p>

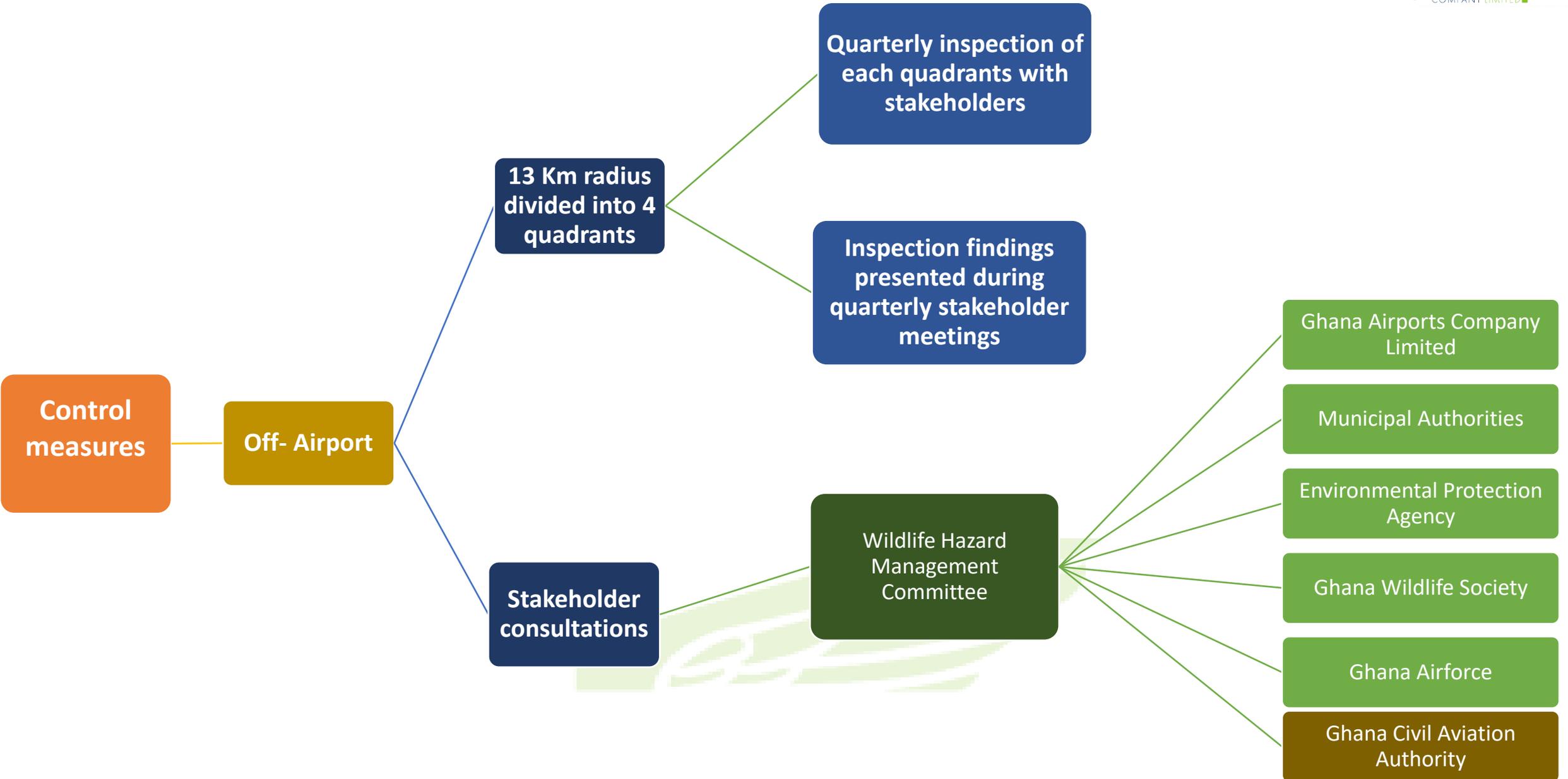
Management Action

<p>IMPROBABLE Review current management practices & options for additional action required</p>	 <p>FRUIT BAT</p>	<p>Bats are mammals with the capability of true flight. They have extremely elongated fingers and a wing membrane stretched between, this gives the bat's wing the resemblance of the human hand. Almost 1,000 bat species can be found worldwide. Fruit bats are located along the southern corridor of the Kotoka International Airport (DGAA/ACC).</p>	<p>Megabats or fruit bats mostly roost in trees and shrubs. They eat fruits or lick nectar from flowers At DGAA/ACC, they are concentrated on the southern corridor outside of the Airport perimeter from the 37 Military Hosiptal through Cantonments.</p>	<p>Last 6 years - 7 Damaging Strikes -0 2013 - 2018</p>	<p>Long Term – W Airlines to avoid at key risk Periods Short Term – Monitoring of fruit bat movements in the vicinity of the airport. Currently engaged with Specialist in identifying best options for relocating the bats.</p>
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On-Airport Control Measures



Off-airport Control Measures



Off Airport- The 13 Km Radius



RECORD KEEPING AND PERFORMANCE



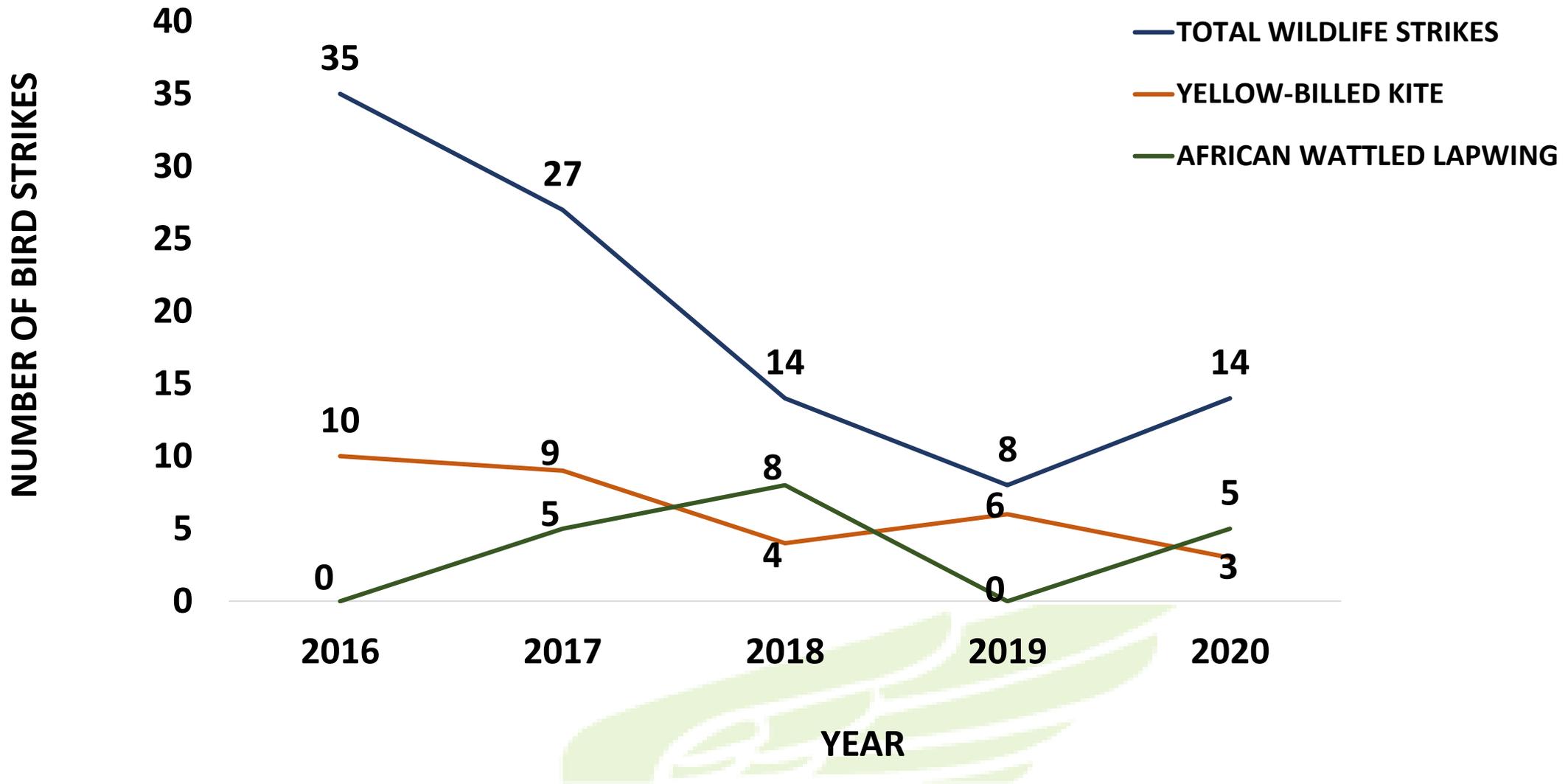
Safety Indicators

SAFETY INDICATORS FOR KOTOKA INTERNATIONAL AIRPORT - 2021

SAFETY INDICATORS FOR KOTOKA INTERNATIONAL AIRPORT - 2021															
MOVEMENT AREA INCIDENTS				BIRD/WILDLIFE INCIDENTS								FOD REPORTS AND AWARENESS			
	Runway Incursions	Runway Excursion	Taxiway/ apron incursions /Excursion	Bird strike (reported)	Bird Strike (reported by pilots)	Bird Carcass found	Bat Strike (reported)	Bat Strike (reported by pilots)	Bat Carcass found	Other Wildlife Hazard (reported)	Other Wildlife Carcass found	FOD inspections on the aprons together	Airside Daily Inspections	FOD reports	
4	Jan	1	0	0	2	3	0	0	1	2	0	1	141	0	
5	Feb	0	0	0	3	3	0	0	11	0	0	0	148	0	
6	Mar	0	0	0	2	5	0	0	4	0	1	0	164	0	
7	Apr	0	0	0	2	3	0	1	4	0	0	0	166	1	
8	May	0	0	1	0	1	0	0	0	0	0	0	165	0	
9	Jun	0	0	0	2	12	0	0	2	0	0	0	148	0	
10	Jul	0	0	1	0	5	0	0	2	0	0	0	151	0	
11	Aug	0	0	0	1	0	0	0	0	0	0	0	146	0	
12	Sept	1	0	0	1	0	0	0	3	0	0	1	138	1	
13	Oct	0	0	0	1	0	0	0	3	0	0	0	141	0	
14	Nov	0	0	0	0	0	0	0	4	0	1	0	168	0	
15	Dec	0	0	0	3	0	0	0	5	0	0	0	188	0	
16	Total	2	0	2	0	17			39	2	2	2	1864	2	
17	Frequency	0.05	0.00	0.05	0.00	0.44			01	0.05	0.05	0.50	5.11	0.05	
18	Target Frequency	0.044/1000 ATM	0.01/1,000 ATM	0.092/1000 ATM	0.242/1,000 ATM	0.242/1,000 ATM	0.242/1,000 ATM		0.436/1,000 ATM	0.436/1,000 ATM	1/quarter	4/day	0.15/1000 ATM		
19															

hp:
 1. Date: 7th December 2021
 Time: 0903 hours
 Aircraft Operator: Air Ghana
 Registration: 9GAGL/B737
 Species: Lanner Falcon
 Abundance: 1 carcass
 Reported by: Pilot to ATC to Inspectorate/Wildlife team
 Location: TDZ of RWY 21
 2. Date: 11th December 2021

BIRD STRIKE TRENDS AT KIA- 2016 - 2020



Wildlife Strike incidents at KIA highlighting the total trend and trend for the top two species- 2016 - 2020

BIRD STRIKE TRENDS AT KUMASI AIRPORT- 2016 - 2020

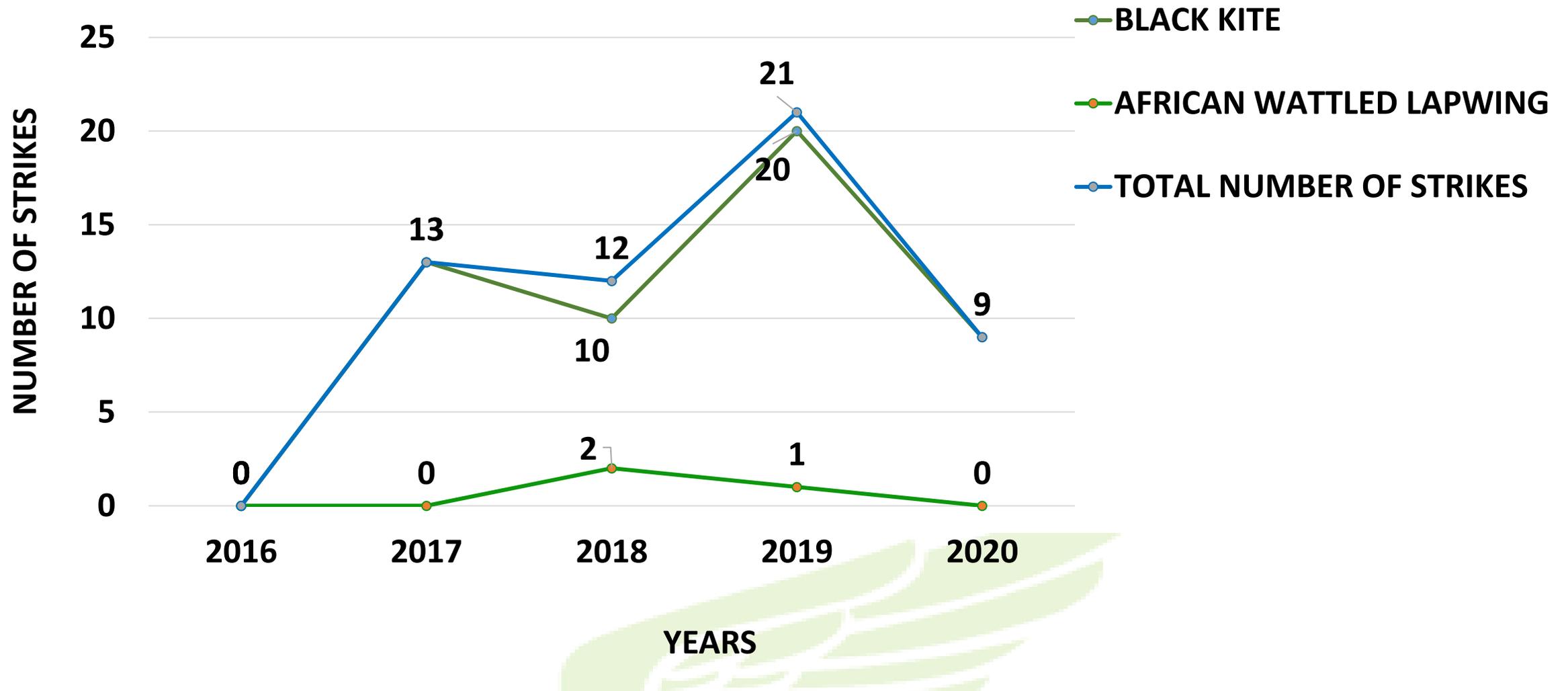
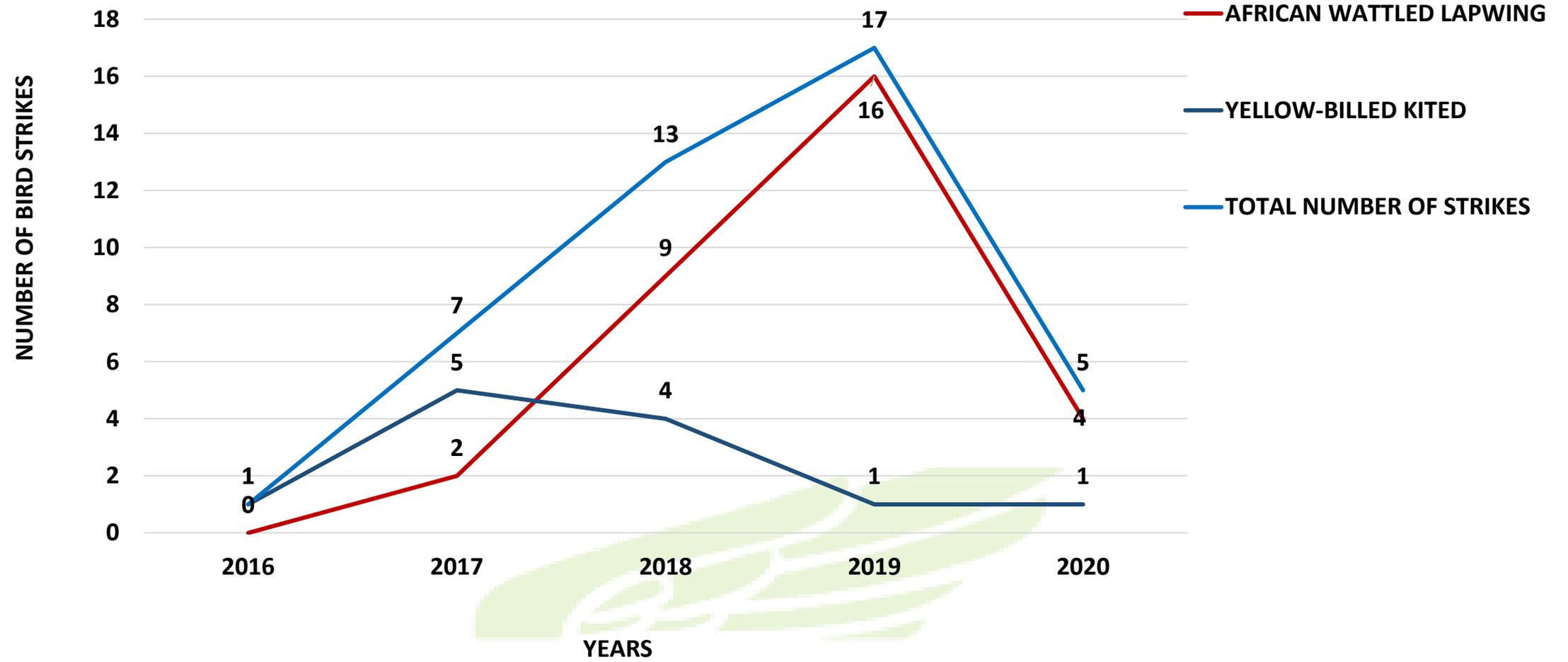


Figure 3: Wildlife Strike Incidents at KMS, highlighting the total trend and trend for the top two species 2016 - 2020

BIRD STRIKE TRENDS AT TAMALE AIRPORT- 2016 - 2020



Wildlife Strike incidents at Tamale, highlighting the total trend and trend for the top two species - 2016 - 2020

THE CHALLENGE

Incompatible Land Use –
13 Km Radius

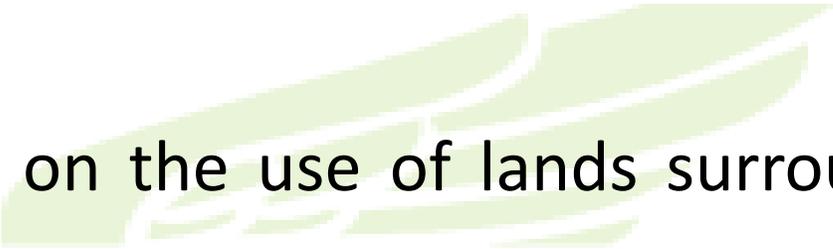


INCOMPATIBLE LAND USE

- Agriculture (livestock and crops and fish)
- Human Centered Activities around Airports- example shopping malls
- Natural Habitats for bats



ADDRESSING INCOMPATIBLE LAND USE ISSUES

- Regular consultative meetings held between stakeholders prior to land use approval.
 - Land use permits is obtained from the following state agencies:
 - Lands Commission
 - Environmental Protection Agency
 - Municipal Authorities
 - Ghana Civil Aviation Authority
 - Enforcement of regulations on the use of lands surrounding airports by the state agencies.
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Thank You

QUESTIONS
COMMENTS
SUGGESTIONS
RECOMMENDATIONS

