

ETHIOPIAN CIVIL AVIATION AUTHORITY

AERODROME SAFETY AND STANDARD DIRECTORET

Guideline on The Profile of Risky Wildlife /Birds around Airports in Ethiopia

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Guideline on The Profile of Risky Wildlife /Birds around Airports in Ethiopia		

PREAMBLE

WHEREAS, it is desirable to consolidate and modernize the aviation guideline to bring them to international standards.

WHEREAS, it is important to set the guideline as to how the regulatory, administrative, technical and supervisory activities of the Authority shall be performed in the one side and setting the duties, obligations and standards that shall be respected by operators and aviation personnel.

WHEREAS, it is necessary, to provide detailed guideline for the administration of license, certification, investigation and enforcement of aviation laws.

NOW THEREFOR, The Authority under its power given by Article 92/2 of the Civil Aviation Proclamation No. 616/2008 issued the following guideline.

1. SHORT TITLE

This guideline may be cited as “Guideline on The Profile of Risky Wildlife /Birds around Airports in Ethiopia, No. ECAA-AC-AGA013”

2. EFFECTIVE DATE

This guidance should come into force as of march / 2014.

Done at Addis Ababa, March, 2014



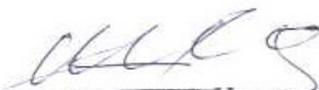

Col. Wesenyeleh Hunegnaw

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Introduction

Throughout history, humans have been intrigued and inspired by the beauty of birds and their ability to fly. Birds first took to the air about 150 million years ago. Humans first began to share their airspace only 100 years ago. Unfortunately, when aircraft and birds attempt to use the same airspace at the same time, collisions occur. Birds are not the only wildlife problem for aircraft.

The first powered flight by the Wright Brothers occurred in December 1903, and the wildlife strike problem began shortly thereafter. On 7 September 1905, the first reported bird strike, as recorded by Oliver Wright in his diary, occurred when his aircraft hit a bird (probably a red-winged blackbird).

In addition to learning to identify the hazardous birds and mammals on the airport, WCP (wildlife control program) should have some understanding of the biology and behaviour of these species. This information will make the job of wildlife hazard management more interesting and be useful in anticipating problems and deploying control measures more effectively.

This document has been prepared by the Ethiopian civil Aviation authority aerodrome safety and standard directorate.

It aims to assist airports to manage risky wildlife around airports and to create better understanding on the morphological and behavioural description of each hazardous species as a result the airport administrator can be able to decide on which wildlife hazard management technique is appropriate to what kind of wildlife species.

A. Profile of Hazardous birds at Airports in Ethiopia

1. Black Kite

Description



The **Black Kite** (*Milvus migrans*) is a medium-sized bird of prey in the family Accipitridae, which also includes many other diurnal raptors. Unlike others of the group, Black Kites are opportunistic hunters and are more likely to scavenge. They spend a lot of time soaring and gliding in thermals in search of food. Their angled wing and distinctive forked tail make them easy to identify.

Black Kites can be distinguished from Red Kites by the slightly smaller size, less forked tail (visible in flight), and generally dark plumage without any rufous. The sexes are alike. The upper plumage is brown but the head and neck tend to be paler. The patch behind the eye appears darker. The outer flight feathers are black and the feathers have dark cross bars and are mottled at the base. The lower parts of the body are pale brown, becoming lighter towards the chin. The body feathers have dark shafts giving it a streaked appearance. The cere and gape are yellow, but the bill is black (unlike in the Yellow-billed Kite). The legs are yellow and the claws are black. They have a distinctive shrill whistle followed by a rapid whinnying call.

Behaviour

Black Kites are most often seen gliding and soaring on thermals as they search for food. The flight is buoyant and the bird glides with ease, changing directions easily. They will swoop down with their legs lowered to snatch small live prey, fish, and household refuse and carrion, they are opportunist hunters and have been known to take birds, bats and rodents. They are attracted to smoke and fires, where they seek escaping prey.

Black Kites often perch on electric wires and are frequent victims of electrocution. Their habit of swooping to pick up dead rodents or other road kill leads to collisions with vehicles. Instances of mass poisoning as a result of feeding on poisoned voles in agricultural fields have been noted.¹ They are also a major nuisance at some airports, where their size makes them a significant bird strike hazard.

- For the management technique of this species please refer appendix 1

2. Hooded Vulture



Description

The **Hooded Vulture** (*Necrosyrtes monachus*) is an Old World vulture in the order Accipitriformes, which also includes eagles, kites, buzzards and hawks. It is the only member of the genus *Necrosyrtes*.

It breeds in a stick nest in trees in much of Africa south of the Sahara, laying one egg. Birds may form loose colonies. The population is mostly resident. This is of the smaller vultures of the Old World. They are 62–72 cm (25–28 in) long, have a wingspan of 155–165 cm (61–65 in) and a body weight of 1.5-2.6 kg (3.3-5.7 lbs).

Behavior

Like other vultures it is a scavenger, feeding mostly from carcasses of dead animals and waste which it finds by soaring over savannah and around human habitation, including waste tips and abattoirs. It often moves in flocks, and is very abundant. In much of its range, there are always several visible soaring in the sky at almost any time during the day.

This vulture is typically unafraid of humans, and frequently gathers around habitation. It is sometimes referred to as the “garbage collector” by locals.

The Hooded Vulture is a typical vulture, with a bald pink head and a grayish “hood”. It has fairly uniform dark brown body plumage. It has broad wings for soaring and short tail feathers. It is a small species compared to most vultures.

If these birds are disturbed when at their nest, they utter a squealing cry of "MAMA MAMA". Formerly classified as Least Concern by the IUCN(international union for conservation of nature), it was found to have been rarer than previously believed and thus its status was up listed to Endangered on the 2011 Red List of Threatened species.

- For the management technique of this species please refer appendix 1

3. Tawny Eagle



Description

The **Tawny Eagle** (*Aquila rapax*) is a large bird of prey. Like all eagles, it belongs to the family Accipitridae. It breeds in most of Africa both north and south of the Sahara Desert . It is a resident breeder which lays 1–3 eggs in a stick nest in a tree, crag or on the ground. Throughout its range it favours open dry habitats, such as desert, semi-desert, steppes, or savannah, plains.

Close-up showing gape extending only to below the middle of the eye

This is a large eagle although it is one of the smaller species in the *Aquila* genus. It is 60–75 cm (24–30 in) in length and has a wingspan of 159–190 cm (63–75 in). Weight can range from 1.6 to 3 kg (3.5 to 6.6 lb). It has tawny upperparts and blackish flight feathers and tail.

The lower back is very pale. This species is smaller and paler than the Steppe Eagle, although it does not share that species' pale throat.

Immature birds are less contrasted than adults, but both show a range of variation in plumage colour.

Behaviour

The Tawny Eagle's diet is largely fresh carrion of all kinds, but it will kill small mammals up to the size of a rabbit, reptiles and birds up to the size of guinea fowl. It will also steal food from other raptors. The call of the Tawny Eagle is a crow-like barking, but it is rather a silent bird except in display.

- For the management technique of this species please refer appendix 1

4. White-backed Vulture



Description

The **White-backed Vulture** (*Gyps africanus*) is an Old World vulture in the family Accipitridae, The White-backed Vulture is a typical vulture, with only down feathers on the head and neck, very broad wings and short tail feathers. It has a white neck ruff. The adult's whitish back contrasts with the otherwise dark plumage. Juveniles are largely dark. This is a medium-sized vulture; its body mass is 4.2 to 7.2 kilograms (9.3–16 lb), it is 78 to 98 cm (31 to 39 in) long and has a 1.96 to 2.25 m (6 to 7 ft) wingspan.

Behavior

Like other vultures it is a scavenger, feeding mostly from carcasses of animals which it finds by soaring over savannah. It also takes scraps from human habitations. It often moves in flocks. It breeds in trees on the savannah of east Africa, laying one egg. The population is mostly resident.

As it is rarer than previously believed, its conservation status was reassessed from Least Concern to Near Threatened in the 2007 IUCN Red List. In 2012 it was further uplisted to Endangered.

- For the management technique of this species please refer appendix 1

5. Egyptian Goose



Description

The **Egyptian Goose** (*Alopochen aegyptiacus*) is a member of the duck, goose, and swan family Anatidae. It is native to Africa south of the Sahara and the Valley. It swims well, and in flight looks heavy, more like a goose than a duck, hence the English name. It is 63–73 cm long.

Behaviour

The voices and vocalizations of the sexes differ, the male having a hoarse, subdued duck-like quack which seldom sounds unless it is aroused. The male Egyptian Goose attracts its mate with an elaborate, noisy courtship display that includes honking, neck stretching and feather displays. The female has a far noisier raucous quack that frequently sounds in aggression and almost incessantly at the slightest disturbance when tending her young.

This is a largely terrestrial species, which will also perch readily on trees and buildings. Egyptian Geese typically eat seeds, leaves, grasses, and plant stems. Occasionally, they will eat locusts, worms, or other small animals.

- For the management technique of this species please refer appendix

6. Cattle Egret



Description

The **Cattle Egret** (*Bubulcus ibis*) is a cosmopolitan species of heron. The Cattle Egret is a stocky heron with a 88–96 cm (35–38 in) wingspan; it is 46–56 cm (18–22 in) long and weighs 270–512 g (9.5–18.1 oz). It has a relatively short thick neck, sturdy bill, and a hunched posture. The positioning of the egret's eyes allows for binocular vision during feeding and physiological studies suggest that the species may be capable of crepuscular or nocturnal activity.

Behaviour

It is a white bird adorned with buff plumes in the breeding season. It nests in colonies, usually near bodies of water and often with other wading birds. The nest is a platform of sticks in trees or shrubs. Cattle Egrets exploit drier and open habitats more than other heron species. Their feeding habitats include seasonally inundated grasslands, pastures, farmlands, wetlands and rice paddies.

They often accompany cattle or other large mammals, catching insect and small vertebrate prey disturbed by these animals. Some populations of the Cattle Egret are migratory and others show post-breeding dispersal. The Cattle Egret nests in colonies, which are often, but not always, found around bodies of water. The colonies are usually found in woodlands near lakes or rivers, in swamps, or on small inland and are sometimes

shared with other wetland birds, such as herons, egrets, ibises and cormorants. The breeding season varies within.

Although the Cattle Egret sometimes feeds in shallow water, unlike most herons it is typically found in fields and dry grassy habitats, reflecting its greater dietary reliance on terrestrial insects rather than aquatic prey.

The Cattle Egret feeds on a wide range of prey, particularly insects, especially grasshoppers, crickets, flies (adults and maggots), and moths, as well as spiders, frogs, and earthworms. In a rare instance they have been observed foraging along the branches of a Banyan tree for ripe figs. The species is usually found with cattle and other large grazing and browsing animals, and catches small creatures disturbed by the mammals. Studies have shown that Cattle Egret foraging success is much higher when foraging near a large animal than when feeding singly. When foraging with cattle, it has been shown to be 3.6 times more successful in capturing prey than when foraging alone. Its performance is similar when it follows farm machinery, but it is forced to move more. In urban situations cattle egrets have also been observed foraging in peculiar situations like railway lines.

- For the management technique of this species please refer appendix

7. Ferruginous Duck



Description

Ochard (*Aythya nyroca*) is a medium-sized diving duck from Eurasia. The species is known colloquially by birders as "Fudge Duck".

Behavior

Their breeding habitat is marshes and lakes with a meter or more water depth. These ducks breed in southern and Eastern Europe and southern and western Asia. They are somewhat migratory, and winter farther south and into North Africa and also in Ethiopia

around Lake Tana. The adult male is a rich chestnut colour with a darker back and a yellow eye. The pure white under tail helps to distinguish this species from the somewhat similar Tufted Duck. The female is similar but duller, and with a dark eye. These are gregarious birds, forming large flocks in winter, often mixed with other diving ducks, such as Tufted Ducks and Pochards.

These birds feed mainly by diving or dabbling. They eat aquatic plants with some molluscs, aquatic insects and small fish. They often feed at night, and will upend (dabble) for food as well as the more characteristic diving. It is one of the species to which the *Agreement on the Conservation of African-Eurasian Migratory Water birds* (AEWA) applies. Hybrids between this species and the Common Pochards are sometimes referred to as "Paget's Pochard".

- For the management technique of this species please refer appendix 1

8. Hamerkop



Description

The **Hamerkop** (*Scopus umbretta*) is a medium-sized wading bird (56 cm long, weighing 470 g). The shape of its head with a curved bill and crest at the back is reminiscent of a hammer, hence its name.

Its plumage is a drab brown with purple iridescence on the back (the subspecies *S. u. minor* is darker). The bill is long, flat, and slightly hooked. The neck and legs are shorter than those of most of the Ciconiiformes. The Hamerkop has partially webbed feet, for unknown reasons. Its middle toe is comb-like (pectinated) like a heron's. Its tail is short and its wings are big, wide,

and round-tipped; it soars well. When it does so, it stretches its neck forward like a stork or ibis, but when it flaps, it coils its neck back something like a heron.

Vocalizations include cackles and a shrill call given in flight. Hamerkops are mostly silent except when in groups.

Behaviour

Most remain sedentary in their territories, which are held by pairs, but some move into suitable habitat during the wet season only. Whenever people create new bodies of water with dams or canals, Hamerkops move in quickly.

The strangest aspect of Hamerkop behavior is the huge nest, sometimes more than 1.5 m across, comprising perhaps 10,000 sticks and strong enough to support a man's weight. The birds decorate the outside with any bright-colored objects they can find. When possible, they build the nest in the fork of a tree, often over water, but if necessary they build on a bank, a cliff, a human-built wall or dam, or on the ground. A pair starts by making a platform of sticks held together with mud, and then builds walls and a domed roof. A mud-plastered entrance 13 to 18 cm wide in the bottom leads through a tunnel up to 60 cm long to a nesting chamber big enough for the parents and young.

These birds are compulsive nest builders, constructing 3 to 5 nests per year whether they are breeding or not. Barn Owls and eagle owls may force them out and take over the nests, but when the owls leave, the Hammer kops may reuse the nests. Snakes, small mammals such as genets, and various birds live in abandoned nests, and weaver birds, mynas, and pigeons may attach their nests to the outside.

Hamerkops feed during the day, often taking a break at noon to roost. They normally feed alone or in pairs. The food is typical of long-legged wading birds, and the most important is amphibians. They also eat fish, shrimp, insects and rodents. They walk in shallow water looking for prey, shuffling one foot at a time on the bottom or suddenly opening their wings to flush prey out of hiding.

- For the management technique of this species please refer appendix 1

9. African Fish Eagle



Description

The **African Fish Eagle** (*Haliaeetus vocifer*) or – to distinguish it from the true fish eagles (*Ichthyophaga*), the **African Sea Eagle** – is a large species of eagle that is found throughout sub-Saharan Africa wherever large bodies of open water occur that have an abundant food supply. This species may resemble the Bald Eagle in appearance; though related, each species occurs on different continents, with the Bald Eagle being resident in North America.

The African Fish Eagle is a large bird, and the female, at 3.2-3.6 kg (7-8 lbs) is larger than the male, at 2-2.5 kg (4.4-5.5 lbs). This is typical of sexual dimorphism in birds of prey. Males usually have a wingspan of about 2 m (6 feet), while females have wingspans of 2.4 m (8 feet). The body length is 63–75 cm (25–30 in). The adult is very distinctive in appearance with a mostly brown body and large, powerful, black wings. The head, breast, and tail of African Fish Eagles are snow white, with the exception of the featherless face, which is yellow. The eyes are dark brown in colour. The hook-shaped beak, ideal for a carnivorous lifestyle, is yellow with a black tip. The plumage of the juvenile is brown in colour, and the eyes are paler compared to the adult. The feet have rough soles and are equipped with powerful talons in order to enable the eagle to grasp slippery aquatic prey. While this species mainly subsists on fish, it is opportunistic and may take a wider variety of prey such as water birds. The call, shriller when uttered by males, is a *weee-ah*, *hyo-hyo* or a *heee-ah*, *heeah-heeah*.

Behavior

This species is still quite common near freshwater lakes, reservoirs, and rivers, although they can sometimes be found near the coast at the mouths of rivers or lagoons. As their name implies, African Fish Eagles are indigenous to sub-Saharan Africa

The African Fish Eagle feeds mainly on fish, which, upon spotting a potential prey item from a perch in a tree, it will swoop down upon and snatch the prey from the water with its large clawed talons. The eagle will then fly back to its perch to eat its catch.

It will also feed on waterfowl such as ducks, small turtles and terrapins, baby crocodiles, Greater Flamingos and Lesser Flamingos, lizards such as Monitors, frogs and carrion. Occasionally, it may even carry off mammalian prey, such as hyraxes and monkeys. It has also been observed feeding on domestic fowl (chickens).

- For the management technique of this species please refer appendix 1

10. Augur Buzzard



The **Augur Buzzard** (*Buteo augur*) is a 55–60 cm long African bird of prey.

Description

The adult Augur Buzzard is strikingly plumaged. It is almost black above with a rufous tail. The primary flight feathers are blackish and the secondaries off-white, both barred with black. Below the chin and around the throat is mainly white, and the rest of the under parts and the under wing coverts are rich rufous. The flight feathers from below are white, tipped with black to form a dark trailing edge to the wing. The juvenile Augur Buzzard is mainly

brown above and rufous brown below and on the tail. It can be confused with wintering Steppe Buzzard, but has broader wings and an unbarred under tail. The adult Augur Buzzard has white under parts and under wings. The female has black on the lower throat. Juveniles are brown above and buff below, the under parts later becoming white. There is a melanistic form of Augur Buzzard, all black, except for grey and black-barred flight feathers and a chestnut tail.

Behavior

Pairs have noisy aerial displays, including outside the breeding season. The large (up to 1 m wide) stick nest is built in a tree or on a crag, and is often reused and enlarged in subsequent seasons. Two creamy or bluish white eggs are laid and incubated by the female only, although food is brought to her on the nest by the male.

The eggs hatch in about 40 days, and after a further 56–60 days they can attempt flight. At 70 days they become independent of the nest, but young birds may then be seen with the adult pair for some time.

The diet of the Augur Buzzard is mainly small ground mammals, but snakes, lizards, small ground birds, insects, and road-kill are also taken. Typically, the raptor drops on its prey from a perch or hover.

- For the management technique of this species please refer appendix 1

11. Black-winged Kite



The **Black-winged Kite** (*Elanus caeruleus*) is a small diurnal bird of prey in the family Accipitridae best known for its habit of hovering over open grasslands in the manner of the much smaller kestrels.

Description

This long-winged raptor is predominantly grey or white with black shoulder patches, wing tips and eye stripe. The long falcon-like wings extend beyond the tail when the bird is perched. In flight, the short and square tail is visible and it is not forked as in the typical kites of the genus *Milvus*. When perched, often on roadside wires, it often adjusts its wings and jerks its tail up and down as if to balance itself. The sexes are alike in plumage. Their large forward-facing eyes and velvety plumage are characters that are shared with owls and the genus itself has been considered as a basal group within the Accipitridae.

Behavior

The preys include grasshoppers, crickets and other large insects, lizards and rodents. Injured birds, small snakes and frogs have also been recorded. The slow hunting flight is like a harrier, but it will hover like a Kestrel. It has on rare occasions been known to hunt prey in flight. Favorite perches are used for hunting and for feeding but large prey may sometimes be handled on the ground.

The Black-winged Kite is a species primarily of open land and semi-deserts in sub-Saharan Africa it include Ethiopia.

- For the management technique of this species please refer appendix 1

12. Egyptian Vulture



The Egyptian Vulture (*Neophron percnopterus*)

Description

The adult's plumage is white, with black flight feathers in the wings. Wild birds usually appear soiled with a rusty or brown shade to the white plumage, derived from mud or iron-

rich soil. Captive specimens without access to soil have clean white plumage. The bill is slender and long, and the tip of the upper mandible is hooked. The nostril is an elongated horizontal slit. The neck feathers are long and form a hackle. The wings are pointed, with the third primary being the longest; the tail is wedge shaped. The legs are pink in adults and grey in juveniles. The claws are long and straight, and the third and fourth toes are slightly webbed at the base. The sexes are indistinguishable in plumage but breeding males have a deeper orange facial skin colour than females. Females average slightly larger and are about 10–15% heavier than males. Young birds are blackish or chocolate brown with black and white patches. The adult plumage is attained only after about five years.

Behavior

The Egyptian Vulture is usually seen singly or in pairs, soaring in thermals along with other scavengers and birds of prey, or perched on the ground or a top a building. On the ground, they walk with a waddling gait. They feed on a range of food, including mammal faeces (including those of humans), insects in dung, carrion, vegetable matter, and sometimes small animals. When it joins other vulture species at a dead animal, it tends to stay on the periphery and waits until the larger species leave. Studies suggest that they feed on ungulate faeces to obtain carotenoid pigments responsible for their bright yellow and orange facial skin. The ability to assimilate carotenoid pigments may serve as a reliable signal of fitness.

Egyptian Vultures are mostly silent but make high-pitched mewling or hissing notes at the nest and screeching noises when squabbling at a carcass. Young birds have been heard making a hissing croak in flight. They also hiss or growl when threatened or angry.

Egyptian Vultures roost communally on large trees, buildings or on cliffs. Roost sites are usually chosen close to a dump site or other suitable foraging area.

- For the management technique of this species please refer appendix 1

13. Black-winged Lapwing

The **Black-winged Lapwing** (or **Greater Black-winged Lapwing**)



Description

A black breast band separates the Lapwing's grey head and neck from the white underside. The wing coverts are brown. It has a variable but prominent white forehead patch.

Behavior

Black-winged Lapwings hunt termites on the ground, which constitutes a large part of their diet. They also take tenebrionid beetles and ants. Feeding territories of smaller than one hectare are defended by small groups of these birds. Newly found territories are most aggressively defended through vocal and visual threat displays or aerial mobbing. Large groups however form non-territorial flocks when ample habitat is found.

The Black-winged Lapwing is an east African species that is found in Ethiopian highlands in the north.). It is a habitat specialist of short grass in well-watered temperate grasslands. They may move about locally to find ideal situations, often at night. In their tightly grouped flying flocks they resemble Plovers.

- For the management technique of this species please refer appendix 1

14. Abdim's Stork



The **Abdim's Stork**, (*Ciconia abdimii*) also known as **White-bellied Stork**, is a black stork with grey legs, red knees and feet, grey bill and white under parts. It has red facial skin in front of eye and blue skin near the bill in breeding season. It is the smallest species of stork (but still a large bird), at 73 cm (29 in) and a weight of just over 1 kg (2.2 lbs). The female lays two to three eggs and is slightly smaller than the male.

Its diet consists mainly of locusts, caterpillars and other large insects, although the birds will also eat small reptiles, amphibians, mice, crabs and eggs.

Widespread and common throughout its large range, the Abdim's Stork is evaluated as Least Concern on the IUCN Red List of Threatened Species.

- For the management technique of this species please refer appendix 1

15. Long-crested Eagle

The **Long-crested Eagle** (*Lophaetus occipitalis*) is a bird of prey. Like all eagles, it is in the family Accipitridae.



Description

A relatively small eagle (about 55 cm), found in Ethiopia. The remarkably long, feathered crest possessed by the aptly named long-crested eagle, is this unmistakable bird of prey's most striking feature. It is a relatively small eagle with dark brown to black plumage, long, white feathered legs, and a well barred tail. With the broad, rounded wings spread in flight, patches of white are conspicuous at the base of the primaries(2). Although larger and heavier than the male, the female usually has a slightly shorter crest and often has dirty white to brown legs. The juvenile is very similar to the adult but tends to have lighter plumage and, like the female, a shorter crest.

Size: Length: 53 - 58 Cm, Male weight: 912 – 1363g, Female weight: 1367 – 1523 g

It inhabits woodlands, exotic plantations, forest edges and mainly lives off rodents and shrews.

- For the management technique of this species please refer appendix 1

16. Speckled Pigeon



Description

The **Speckled Pigeon** (*Columba guinea*), or **(African) Rock Pigeon**, is a pigeon that is a resident breeding bird in much of Africa south of the Sahara. It is a common and widespread species in open habitats over much of its range, although there are sizeable gaps in its distribution.

Behavior

This species builds a large stick nest, human settlement, buildings in a tree and lays two white eggs. Its flight is quick, with regular beats and an occasional sharp flick of the wings that are characteristic of pigeons in general.

This is a large pigeon at 41 cm in length. Its back and wings are rufous, the latter heavily speckled with white spots. The rest of the upper parts and under parts are blue-grey, and the head is grey with red patches around the eye. The neck is brownish, streaked with white, and

the legs are red. The call is a loud *doo-doo-doo*. Sexes are similar, but immature are browner than adults. The Speckled Pigeon is frequently seen around human habitation and cultivation. Most of its food is vegetable, and it gathers in large numbers where grain or groundnuts are available.

- For the management technique of this species please refer appendix 1

17. White-collared Pigeon



Description

The **White-collared Pigeon** (*Columba albitorques*) is a species of bird in the Columbidae family. The species is endemic to the Ethiopian highlands. It occupies countryside surrounding rocky cliffs and gorges. Also common in town centers. 32 centimeters (13 in) long. This large grey-brown pigeon has an obvious white hind collar contrasting with a dark slate head. In flight it shows prominent white wing patches formed by white inner primary coverts.

Behavior

The Speckled Pigeon is frequently seen around human habitation and cultivation. Most of its food is vegetable, and it gathers in large numbers where grain or groundnuts are available.

- For the management technique of this species please refer appendix 1

18. Dusky Turtle Dove



Description

The **Dusky Turtle Dove** (*Streptopelia lugens*) is a species of bird in the Columbidae family. It is found Distribution: A large, heavily built dove with generally dark ashy-grey plumage found locally in east Africa. It is found in a wide variety of habitats; including the pine plantations, open cultivated areas. In well wooded urban areas it can be found.

Description: Length 28-30cm. Adult male: has its head entirely dark ash grey. Display feathers on side of neck & hind neck are black, grading to dark ashy brown on the upper mantle having narrow pale grey edging. The upper breast is dark grey shading to ashy pink on lower breast. Belly & the under tail coverts grey. Under wing coloration is grey. Iris coloration is orange brown or red brown. Scapulars & inner median & lesser wing coverts dark ashy-brown having broad pale grey edgings. Tertiaries & inner wing coverts dark ashy brown having broad chestnut edgings. Flight feathers blackish grey having narrow pale grey edges. Lower back & rump grayish brown with the upper tail coverts & central tail feathers dark brown. Eye Cere or Orbital skin is reddish purple, bill blackish. Legs & feet purplish red.

- For the management technique of this species please refer appendix 1

19. African Palm Swift

Description

The **African Palm Swift** (*Cypsiurus parvus*) is a small swift. It is very similar to the Asian Palm Swift, *Cypsiurus balasiensis*, and was formerly considered to be the same species.

It is a common resident breeder in tropical Africa. The down and feather nest is glued to the underside of a palm leaf with saliva, which is also used to secure the usually two eggs. This is a fast flying bird of open country, which is strongly associated with Oil Palms.

This 16 cm long species is mainly pale brown in colour. It has long swept-back wings that resemble a crescent or a boomerang. The body is slender, and the tail is long and deeply forked, although it is usually held closed. The call is a loud, shrill scream.

Sexes are similar, and young birds differ mainly in their shorter tails. Palm Swifts have very short legs which they use only for clinging to vertical surfaces, since swifts never settle voluntarily on the ground.

These swifts spend most of their lives in the air, living on the insects they catch in their beaks. Palm Swifts often feed near the ground. They drink on the wing.

20. Secretary Bird

The **Secretary bird** or **Secretary Bird** (*Sagittarius serpentarius*) is a very large, mostly terrestrial bird of prey.



Description

The Secretary Bird has distinct black feathers protruding from behind its head

The Secretary bird is instantly recognizable as having an eagle-like body on crane-like legs which increases the bird's height to as much as 1.3 m (4 ft) tall. This bird has an eagle-

like head with a hooked bill, but has rounded wings. Body weight can range from 2.3 to 4.5 kg (5.1 to 9.9 lb) and height is 90–130 cm (35–51 in). Total length from 112 to 152 cm (44 to 60 in) and the wingspan is 191–220 cm (75–87 in).

Behaviour

Secretary birds are endemic to Sub-Saharan Africa and are non-migratory, though they may follow food sources. These birds are also found at a variety of elevations, from the coastal plains to the highlands. Secretary birds prefer open grasslands and savannas rather than forests and dense shrubbery which may impede their cursorial existence. While the birds roost on the local Acacia trees at night, they spend much of the day on the ground, returning to roosting sites just before dark.

Unlike most birds of prey, the Secretary bird is largely terrestrial, hunting its prey on foot. Adults hunt in pairs and sometimes as loose familial flocks, stalking through the habitat with long strides. Prey may consist of insects, mammals ranging in

size from mice to hares and mongoose, crabs, lizards, snakes, tortoises, young birds, bird eggs, and sometimes dead animals killed in grass or bush fires.

Larger herbivores are not generally hunted, although there are some reports of Secretary birds killing young gazelles. The importance of snakes in the diet has been exaggerated in the past, although they can be locally important and venomous species such as adders and cobras are regularly among the types of snake preyed upon.

- For the management technique of this species please refer appendix 1

21. African Sacred Ibis

The African Sacred Ibis (*Threskiornis aethiopicus*) is a species of ibis.



Description

An adult individual is 68 cm long with all-white body plumage apart from dark plumes on the rump. The bald head and neck, thick curved bill and legs are black. The white wings show a black rear border in flight. Sexes are similar, but juveniles have dirty white plumage, a smaller bill and some feathering on the neck.

Behaviour

This bird is usually silent, but occasionally makes some croaking noises, unlike its vocal relative, the Hadeda Ibis.

The bird nests in tree colonies, often with other large wading birds such as herons. It builds a stick nest often in a baobab tree and lays 2-3 eggs.

It feeds on various fish, frogs, small mammals, reptiles and smaller birds as well as insects. It may also probe into the soil with its long bill for invertebrates such as earthworms.

- For the management technique of this species please refer appendix 1

B. Hazardous mammals at airports in Ethiopia

1. Spotted hyena



Description

The **spotted hyena** (*Crocuta crocuta*), also known as the **laughing hyena** is a species of hyena native to Sub-Saharan Africa. It is listed as Least Concern by the IUCN on account of its widespread range and large numbers estimated between 27,000 and 47,000 individuals. The spotted hyena is the largest member of the Hyaenidae, and is further physically distinguished from other species by its vaguely bear-like build, its rounded ears, its less prominent mane, its spotted pelt, its more dual purposed dentition, its fewer nipples and the presence of a pseudo-penis in the female. The spotted hyena is the most social of the Carnivora in that it has the largest group sizes and most complex social behaviors. Its social organization is unlike that of any other Carnivore, bearing closer resemblance to that of cercopithecine primates (baboons and macaques) with respect to group-size, hierarchical structure, and frequency of social interaction among both kin and unrelated group-mates. However, the social system of the spotted hyena is openly competitive rather than cooperative, with access to kills, mating opportunities and the time of dispersal for males depending on the ability to dominate other clan-members. Females provide only for their own cubs rather than assist each other, and males display no paternal care. Spotted hyena society is matriarchal; females are larger than males, and dominate them. The spotted hyena has a strong and well developed neck and forequarters, but relatively underdeveloped hindquarters. The rump is rounded rather than angular, which prevents attackers coming from behind from getting a firm grip on it. The head is wide and flat with a blunt muzzle and broad rhinarium. In contrast to the striped hyena, the ears of the spotted hyena are rounded rather than pointed. Each foot has four digits, which are webbed and armed with short, stout and blunt claws. The paw-pads are broad and very flat, with the whole undersurface of the foot around them being naked. The tail is relatively short, being 300–350 mm (12–14 in) long, and resembles a pompom in appearance. Unusually among hyaenids, and mammals in general, the female spotted hyena is considerably larger than the male. Both sexes have a pair of anal glands which open into the rectum just inside the anal

opening. These glands produce a white, creamy secretion which is pasted onto grass stalks by everting the rectum. The odour of this secretion is very strong, smelling of boiling cheap soap or burning, and can be detected by humans several meters downwind. The spotted hyena has a proportionately large heart, constituting close to 1% of its body weight, thus giving it great endurance in long chases. In contrast, a lion's heart makes up only 0.45–0.57 percent of its body weight.

The skull of the spotted hyena differs from that of the striped hyena by its much greater size and narrower sagittal crest. For its size, the spotted hyena has one of the most powerfully built skulls among the Carnivora. The dentition is more dual purposed than that of other modern hyena species, which are mostly scavengers; the upper and lower third premolars are conical bone-crushers, with a third bone-holding cone jutting from the lower fourth premolar. The spotted hyena also has its carnassials situated behind its bone-crushing premolars, the position of which allows it to crush bone with its premolars without blunting the carnassials. Combined with large jaw muscles and a special vaulting to protect the skull against large forces, these characteristics give the spotted hyena a powerful bite which can exert a pressure of 800 kgf/cm² (11,400 lbf/in²), which is 40% more force than a leopard can generate.

The spotted hyena is the largest extant member of the Hyaenidae. Adults measure 95–165.8 cm (37–65.3 in) in body length, and have a shoulder height of 70–91.5 cm (28–36.0 in).

Fur colour varies greatly and changes with age. Unlike the fur of the striped and brown hyena, that of the spotted hyena consists of spots rather than stripes and is much shorter, lacking the well defined spinal mane of the former two species. The base colour generally is a pale greyish-brown or yellowish-grey on which an irregular pattern of roundish spots is superimposed on the back and hind quarters. The spots, which are of variable distinction, may be reddish, deep brown or almost blackish. The spots vary in size, even on single individuals, but are commonly 20 mm (0.79 in) in diameter. A less distinct spot pattern is present on the legs and belly but not on the throat and chest. A set of five, pale and barely distinct bands replace the spots on the back and sides of the neck. A broad, medial band is present on the back of the neck, and is lengthened into a forward facing crest. The crest is mostly reddish-brown in colour. The crown and upper part of the face is brownish, save for a white band above both eyes, though the front of the eyes, the area around the rhinarium, the lips and the back portion of the chin are all blackish. The limbs are spotted, though the feet vary in colour, from light brown to blackish. The fur is relatively sparse and consists of two hair types; moderately fine under fur (measuring 15–20 mm (0.59–0.79 in)) and long, stout bristle hairs (30–40 mm (1.2–1.6 in)).

Behavior

The spotted hyena is a social animal which lives in large communities called "clans", which can consist of up to 80 individuals. Group-size varies geographically; spotted hyena clans are more compact and unified than wolf packs, but are not as closely knit as those of African wild dogs. Females dominate males, with even the lowest ranking females being dominant over the highest ranking males. It is typical for females to remain with their natal clan, thus large clans usually contain several matrilines, whereas males typically disperse from their natal clan at the age of 2½ years. The clan is a fission-fusion society, in which clan-members do not often remain together, but may forage alone or in small groups. High-ranking hyenas maintain their position through aggression directed against lower-ranking clan-members. Spotted hyena hierarchy is nepotistic; the offspring of dominant females automatically outrank adult females subordinate to their mother.

Compared to other hyenas, the spotted hyena shows a greater relative amount of frontal cortex which is involved in the mediation of social behavior. Studies strongly suggest convergent evolution in spotted hyena and primate intelligence. A study done by evolutionary anthropologists demonstrated that spotted hyenas outperform chimpanzees on cooperative problem-solving tests.

The spotted hyena is the most carnivorous member of the Hyaenidae. It has been subjected to one of the most widespread misconceptions of being a scavenger, when it is in fact a proficient predator. This has been shown since the 1960s. One of the earliest studies to demonstrate their hunting abilities was done by Hans Kruuk, an African wildlife ecologist, and he showed through a 7 year study of hyena populations in Africa that Spotted Hyenas hunt as much as Lions, and with later studies this has been shown to be the average in all areas of Africa. Though it has been time and again scientifically proven incorrect, Spotted Hyenas remain being labeled as scavengers, often even by ecologists and wildlife documentary channels, adding more to the confusion.

The spotted hyena is very efficient at eating its prey; not only is it able to splinter and eat the largest ungulate bones; it is also able to digest them completely. Spotted hyenas can digest all organic components in bones, not just the marrow. Any inorganic material is excreted with the faeces, which consist almost entirely of a white powder with few hairs. They react to alighting vultures more readily than other African carnivores, and are more likely to stay in the vicinity of lion kills or human settlements.

It is said that feasting Hyenas engage in violent fights, and there is such a croaking, shrieking and laughing at such times that a superstitious person might really think all the inhabitants of the infernal regions had been let loose.

The spotted hyena has an extensive vocal range, with sounds ranging from whoops, fast whoops, grunts, groans, lows, giggles, yells, growls, soft grunt-laugh, loud grunt-laugh, whines and soft squeals. The loud "who-oo" call, along with the maniacal laughter, is among the most recognizable sounds of Africa. Typically, very high-pitched calls indicate fear or submission, while loud, lower-pitched calls express aggression. The pitch of the laugh indicates the hyena's age, while variations in the frequency of notes used when hyenas make noises convey information about the animal's social rank.

- For the management technique of this species please refer appendix 1

2. **Red-fronted gazelle**



Description

The **red-fronted gazelle** (*Eudorcas rufifrons*).

The male and female red-fronted gazelles are similar in same size, both having s-curved horns. It has a light red-brown color around its whole body, except for its white undersides and rumps. It has a distinct thin (2-4 cm high) black band that runs from the elbow to the stifle (hind leg). Its face is bordered by a pair of white stripes that run from the eye to the corner of the mouth, which are more distinct than the pale white stripes that run down the face of the Red Gazelle, an animal commonly confused for it. It also has a black tufted tail.

The average body weight of the red-fronted gazelles ranges from 7.8 kg for the young fawns to 29.7 kg for the adults, while, the shoulder height ranges from 38.7 cm for the young to 68.7 cm for the adult. The body length, horn length, head length, body weight, body colour, and tail length were measured from the carcasses of 141 Red-fronted Gazelles.

- For the management technique of this species please refer appendix 1

3. Yellow baboon



Description

The **yellow baboon**, *Papio cynocephalus* is a baboon in the family of old World monkeys. The species epithet literally means "dog-head" in Greek, due to the shape of its muzzle and head. It has a slim body with long arms and legs and a yellowish-brown hair. It resembles the Chacma baboon, but is smaller and its muzzle is not as elongated. The hairless face is black, framed with white sideburns. Males can grow to about 84 cm, females to about 60 cm. It has a long tail which grows to be nearly as long as the body. Their life spans are roughly 20–30 years.

Behavior

The yellow baboon inhabits savannas and light forests in the eastern Africa. It is diurnal, terrestrial, and lives in complex, mixed-gender social groups of eight to 200 individuals per troop. It is omnivorous with a preference for fruits, but it also eats other plant parts, as well as insects. Baboons are highly opportunistic eaters and will eat almost any food they come across.

Yellow baboons use at least 10 different vocalizations to communicate. When traveling as a group, males will lead, females and the young stay safe in the middle, and less-dominant males bring up the rear. A baboon group's hierarchy is such a serious matter, some subspecies have developed interesting behaviors intended to avoid confrontation and retaliation. For example, males have frequently been documented using infants as a kind of "passport" for safe approach toward another male. One male will pick up the infant and hold it up as it nears the other male. This action often calms the approached male and allows the former male to approach safely.

Baboons are important in their natural environment, not only serving as food for larger predators, but also aiding in seed dispersal due to their messy foraging habits. They are also efficient predators of smaller animals and their young, keeping some animals' populations in check.

Baboons have been able to fill a tremendous number of different ecological niches, including places considered adverse to other animals, such as regions taken over by human settlement. Thus, they are one of the most successful African primates and are not listed as threatened or endangered. However, the same behavioral adaptations that make them so successful also cause them to be considered pests by humans in many areas. Raids on farmers' crops and other such intrusions into human settlements have made baboons subject to organized exterminations projects. It is important to remember however, that habitat loss is the driving force behind baboons' migration toward areas of human settlement.

- For the management technique of this species please refer appendix 1

4. Warthog



Description

The **warthog** or **common warthog** (*Phacochoerus africanus*) is a wild member of the pig family (Suidae) found in grassland, savanna, and woodland in sub-Saharan Africa. In the past, it was commonly treated as a subspecies of *P. aethiopicus*, but today that scientific name is restricted to the desert warthog of northern Kenya, Somalia, and eastern Ethiopia.

The common name comes from the four large, wart-like protrusions found on the head of the warthog, which serve as a fat reserve and are used for defense when males fight. Afrikaans-speaking people call the animal *vlakvark*, meaning "pig of the plains".

The warthog is medium-sized species; their head-and-body lengths range from 0.9 to 1.5 m (3.0 to 4.9 ft) and shoulder height is from 63.5 to 85 cm (25.0 to 33 in). Females, at 45 to 75 kg (99 to 165 lb), are typically a bit smaller and lighter in weight than males, at 60 to 150 kg (130 to 330 lb). A warthog is identifiable by the two pairs of tusks protruding from the mouth and curving upwards. The lower pair, which is far shorter than the upper pair, becomes razor sharp by rubbing against the upper pair every time the mouth is opened and closed. The upper canine teeth can grow to 25.5 cm (10.0 in) long, and are of a squashed

circle shape in cross section, almost rectangular, being about 4.5 cm (1.8 in) deep and 2.5 cm (0.98 in) wide. A tusk will curve 90° or more from the root, and will not lie flat on a table, as it curves somewhat backwards as it grows. The tusks are used for digging, for combat with other hogs, and in defense against predators – the lower set can inflict severe wounds.

The head of the warthog is large, with a mane down the spine to the middle of the back. Sparse hair covers the body. Its color is usually black or brown. Tails are long and end with a tuft of hair. Common warthogs do not have subcutaneous fat and the coat is sparse, making them susceptible to extreme environmental temperatures.

Behavior

The warthog is the only pig species that has adapted to grazing and savanna habitats. Its diet is omnivorous, composed of grasses, roots, berries and other fruits, bark, fungi, insects, eggs and carrion. The diet is seasonably variable, depending on availability of different food items. During the wet seasons, warthogs graze on short perennial grasses. During the dry seasons, they subsist on bulbs, rhizomes, and nutritious roots. Warthogs are powerful diggers, using both their snouts and feet. Whilst feeding, they often bend their front feet backwards and move around on the wrists. Calloused pads that protect the wrists during such movement form quite early in the development of the fetus. Although they can dig their own burrows, they commonly occupy abandoned burrows of aardvarks or other animals. The warthog commonly reverses into burrows, with its head facing the opening and ready to burst out if necessary. Warthogs will wallow in mud to cope with high temperatures and huddle together to cope with low temperatures.

Although capable of fighting (males aggressively fight each other during mating season) the warthog's primary defense is to flee by means of fast sprinting. The warthog's main predators are humans, lions, leopards, crocodiles, and hyenas. Cheetahs are also capable of catching warthogs of up to their own weight and raptors such as Verreaux's eagle owls and martial eagles sometimes prey on piglets. However, if a female warthog has any piglets, she will defend them very aggressively. Warthogs can inflict mortal wounds on predators, including formidable lions, with battles sometimes ending with the lions bleeding to death. Warthogs have been observed allowing banded mongooses to groom them to remove ticks.

Warthogs are not territorial, but instead occupy a home range. Warthogs live in groups called sounders. Females live in sounders with their young and with other females. Females tend to stay in their natal groups, while males leave, but stay within the home range. Subadult males associate in bachelor groups, but leave alone when they become adults. Adult males only join sounders with estrous females. Warthogs have two facial glands — the tusk gland and the

sebaceous gland. Warthogs of both sexes begin to mark around six to seven months old. Males tend to mark more than females. They mark sleeping and feeding areas and waterholes. Warthogs use tusk marking for courtship, for antagonistic behaviors, and to establish status.

Warthogs are seasonal breeders. Rutting begins in the late rainy or early dry season and birthing begins near the start of the following rainy season. The mating system is described as "overlap promiscuity"; the males have ranges overlapping several female ranges, and the daily behavior of the female is unpredictable. Boars employ two mating strategies during the rut. With the "staying tactic", a boar will stay and defend certain females or a resource valuable to them. In the "roaming tactic", boars seek out estrous sows and compete for them. Boars will wait for sows to emerge outside their burrows. A dominant boar will displace any other boar that also tries to court his female. When a sow leaves her den, the boar will try to demonstrate his dominance and then follow her before copulation. For the "staying tactic", monogamy, female-defense polygyny, or resource-defense polygyny is promoted, while the "roaming tactic" promotes scramble-competition polygyny.

The typical gestation period is five to six months. When they are about to give birth, sows temporarily leave their families to barrow in a separate hole. The litter is 2-8 piglets, with 2-4 typical. The sow will stay in the hole for several weeks, nursing her piglets. Warthog sows have been observed to nurse foster piglets if they lose their own litter. This behavior, known as all sucking, makes them cooperative breeders. All sucking does not seem to be a case of mistaken identity or milk theft, and may be a sign of kin altruism. Piglets begin grazing at about two to three weeks and are weaned by six months. Warthog young quickly attain mobility and stay close to their mothers for defense.

- For the management technique of this species please refer appendix 1

5. Side-striped jackal



The **side-striped jackal** (*Canis adustus*) unlike its cousin, the smaller black-backed jackal, which dwells in open plains, the side-striped jackal primarily dwells in woodland and scrub areas.

Description

The side-striped jackal is a medium-sized canid, which tends to be slightly larger on average than the black-backed jackal. Body mass ranges from 6.5 to 14 kg (14 to 31 lb), head-and-body length from 69 to 81 cm (27 to 32 in) and tail length from 30 to 41 cm (12 to 16 in). Shoulder height can range from 35 to 50 cm (14 to 20 in). Its pelt is coloured buff-grey. The back is darker grey than the underside, and the tail is black with a white tip. Indistinct white stripes are present on the flanks, running from elbow to hip. The boldness of the markings varies between individuals, with those of adults being better defined than those of juveniles.

Behavior

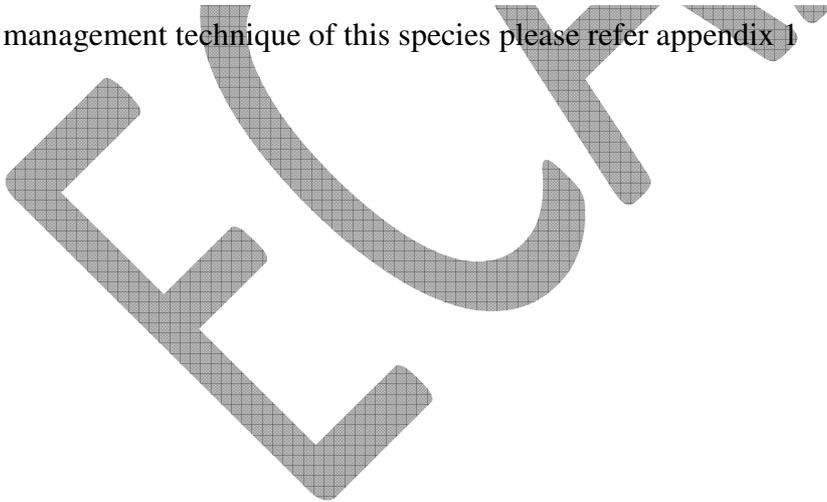
The side-striped jackal's skull is similar to that of the black-backed jackals, but is flatter, with a longer and narrower rostrum. Its sagittal crest and zygomatic arches are also lighter in build. Due to its longer rostrum, its third upper premolar lies almost in line with the others, rather than at an angle. Its dentition is well suited to an omnivorous diet. The long, curved canines have a sharp ridge on the posterior surface, and the outer incisors are canine-like. Its carnassials are smaller than those of the more carnivorous black-backed jackal. Females have four inguinal teats.

The side-striped jackal tends to be less carnivorous than other jackal species, and is a highly adaptable omnivore whose dietary preferences change in accordance to seasonal and local variation. In the wild, it feeds largely on invertebrates during the wet season and small mammals, such as the springhare, in the dry months. It frequently scavenges from campsites and the kills of larger predators. In the wild, fruit is taken exclusively in season, while in ruralised areas, it can account for 30% of their dietary intake.

The side-striped jackal lives both solitarily and in family groups of up to seven individuals. The family unit is dominated by a breeding pair, which remains monogamous for a number of years.

The side-striped jackal has a gestation period of 57 to 70 days, with average litter of three to six young. The young reach sexual maturity at six to eight months of age, and typically begin to leave when 11 months old. The side-striped jackal is among the few mammal species that mate for life, forming monogamous pairs.

- For the management technique of this species please refer appendix 1



C. Hazardous reptile at airport in Ethiopia

1. African spurred tortoise



Description

The **African spurred tortoise** (*Geochelone sulcata*), also called the **Sulcata tortoise**, is a species of tortoise which inhabits the southern edge of the Sahara desert, in northern Africa. It is the third-largest species of tortoise in the world and the largest species of mainland tortoise not found on an island.

behavior

The African spurred tortoise is native to the Sahara Desert and the Sahel, a transitional eco region of semiarid grasslands, savannas, and thorn shrub lands. In these arid regions, the tortoise excavates burrows in the ground to get to areas with higher moisture levels, and spends the hottest part of the day in these burrows. This is known as aestivation. Burrows may average 30 inches in depth; some dig tunnel systems extending 10 feet or more underground.

It is also found in jigjig airport vicinity

G. sulcata is the third-largest species of tortoise in the world after the Galapagos tortoise, and Aldabra giant tortoise, and the largest of the mainland tortoises. Adults are usually 24 to 36 in long (60–90 cm) and can weigh 100-200 lb (45 – 91 kg). They grow from hatchling size (2-3 in) very quickly, reaching 6-10 in (15–25 cm) within the first few years of their lives. The lifespan of an African spurred tortoise is about 50-150 years, though they can live much longer.

Sulcata tortoises are herbivores. Primarily, their diets consist of many types of grasses and plants, high in fiber and very low in protein. The consumption of too much protein can cause their shells to take on a pyramidal appearance. Feeding of fruit should be avoided.

Copulation takes place right after the rainy season, during the months from September through November. Males combat each other for breeding rights with the females and are vocal during copulation.

Sixty days after mating, the female begins to roam looking for suitable nesting sites. For five to fifteen days, four or five nests may be excavated before she selects the perfect location in which the eggs will be laid.

Loose soil is kicked out of the depression, and the female may frequently urinate into the depression. Once it reaches about two feet (60 cm) in diameter and 3-6 in (7-14 cm) deep, a further depression, measuring some eight inches (20 cm) across and in depth, will be dug out towards the back of the original depression. The work of digging the nest may take up to five hours; the speed with which it is dug seems to be dependent upon the relative hardness of the ground. It usually takes place when the ambient air temperature is at least 78°F (27°C). Once the nest is dug, the female begins to lay an egg every three minutes. Clutches may contain 15-30 or more eggs. After the eggs are laid, the female fills in the nest, taking an hour or more to fully cover them all. Incubation should be 86 to 88°F, and will take from 90 to 120 days.

- For the management technique of this species please refer appendix 1

Appendix 1

Wildlife hazard management

1. Active Management

Harassment and dispersal is critical for immediate hazard management. Airport personnel charged with this responsibility should apply various devices and techniques in varied ways. Reliance on only one or two devices quickly results in habituation by birds, significantly reducing their effectiveness, and ultimately having minimal, or no, influence on the strike rate. Dispersal tools may include, but not be limited to,

- 1) distress callers,
- 2) lights,
- 3) pyrotechnics,
- 4) gas canons,
- 5) lasers,
- 6) falconry,
- 7) remote controlled devices,
- 8) dogs,
- 9) stockwhips,
- 10) whistle,
- 11) Vehicles and sirens

Due to rapid habituation to static devices, we do not recommend their use. Personnel must be trained and competent in dispersal tool use (incl. firearms if required), species identification and airport situational awareness. Furthermore, personnel must be trained on how to identify and prioritize hazardous birds, locations, and times. The lethal control of hazardous birds is a useful and important component of management programs. Due to the sensitivity of this activity, it should only be used to remove high or moderate risk species, and only if all other methods of dispersal have been exhausted without the desired effect. In some circumstances, lethal control is useful to reinforce other dispersal techniques. All lethal control activity must adhere to relevant legislation, animal welfare guidelines and codes of practice. Personnel must be trained and competent in firearm use, species identification and airport situational awareness.

Other active management approaches include the trapping and relocation of problematic wildlife, in coordination with local environment authorities, and the removal of eggs and nest from airside areas to discourage site usage and to disrupt local breeding success.

NOTE; for more in detail please refer *guideline for wildlife hazard management at aerodrome* which is given by Ethiopian Civil Aviation Authority.

2. Passive Management

Passive management aims to manipulate local resources and attractants to reduce their appeal. The results of passive management measures are usually more permanent compared to active management. Passive management usually targets grasslands; landscaping, waterways, drainage, buildings and fencing. On-airfield soil depressions accumulate water following rain creating a bird attraction. Depression should be identified and filled. Poorly

designed, or poorly managed, drains can attract birds, including drain infrastructure such as culverts and pipes. New drain design should consider the potential bird attraction, and existing drains can be modified to reduce the attraction (e.g. the replacement of unlined, heavily-vegetated drains with concrete-lined drains). Retention ponds or other large permanent water sources should be modified, eliminated or exclusionary devices, such as netting, installed. Airport infrastructure can provide perching, nesting and roosting opportunity for birds. Areas of attraction should be identified and modified to restrict access or deter use. Adequate perimeter fencing can effectively prohibit access by terrestrial animals. We recommend a subterranean extension of fencing up to 30cm to prevent burrowing animal access. Perimeter fencing should completely enclose the airside area and be inspected regularly for potential breaches.

The removal of airport trees to reduce perching, roosting and sheltering opportunity. Trees can also provide significant foraging opportunity to insectivorous and frugivorous animals, including birds and bats. All existing airport landscaping, including landside areas, should be assessed for bird and other animal usage, and all new landscaping works must consider the potential bird attraction when selecting species, design and layout.

NOTE; for more in detail please refer *guideline for wildlife hazard management at aerodrome* which is given by Ethiopian Civil Aviation Authority.

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