# Avian Veterinary Work in East Africa

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## Summary

Work with birds in East Africa presents the veterinarian with opportunities and challenges. Some of the indigenous species of the region are also kept in captivity in other countries: an understanding of health and diseases of birds in Africa is therefore of general relevance to avian practitioners.

The subject was developed through teaching students, clinical and *post-mortem* investigation, as a result of carrying out welfare and conservation programmes and by performing research.

There are many important infectious diseases of birds in East Africa and some of these are transmissible between wild (free-living) birds, domestic stock and humans. The export bird trade presents particular problems; training and education of local trappers, dealers and veterinarians are required. Domestic and native avifauna are an integral and economically important part of life in East Africa and there is need for a greater understanding by veterinarians overseas of both the birds themselves and those who work with them.

## Introduction

Birds are important in East Africa (Kenya, Tanzania and Uganda). Many wild (free-living) species can be deleterious because they damage crops or transmit diseases to domestic livestock and humans. Other birds, however, are valuable to the economy as they encourage tourists and other visitors. Substantial numbers of avian species are trapped for export overseas; this wild bird trade is of economic importance to the East African countries as a whole and also directly benefits local people, especially in poor or deprived areas. Certain wild birds are also trapped for food, for example, galliforms such as spurfowl (*Francolinus* spp.) and passerines such as weavers (*Ploceus* spp.) - and thereby provide a vital source of protein.[1]

The author has lived and worked in tropical Africa for nearly ten years and continues to teach, examine and co-ordinate research there. In this paper veterinary work with birds in East Africa is outlined and discussed, with particular emphasis on Tanzania.

## Veterinary responsibilities

These can be divided into teaching, clinical and *post-mortem* work, welfare and conservation programmes and research.

Teaching presents many opportunities both to gain and to share information. Each of the three East African countries has its own Veterinary Faculty. In Tanzania, at Sokoine University of Agriculture, a new avian medicine course was established;[2] this was designed to provide

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students with training in work with both domestic and free-living birds. The course included lectures, practical classes, sessions in the Faculty Clinic and field visits. Species primarily covered in the teaching programmes are listed in Table 1. Wild (free-living) birds were extensively discussed, primarily in the context of a) those species of economic importance to the country eg. ostriches (food and other derivatives), and parrots and lovebirds (export trade) and b) those that might present a health threat to domestic birds or humans eg. Indian house crow.

An added impetus to providing students with better training in diagnosis and treatment of birds was the imminent introduction in Tanzania of a self-employed veterinary scheme (privatisation). This is funded by the European Union and aims to supplement the existing state-run system. In neighbouring Kenya there are already many private veterinary clinics and a number of these deal regularly with birds that are kept as pets and for display, as well as the more familiar food-producing domestic species.

At the Veterinary Faculties in Kenya and Uganda lectures were given on various aspects of wildlife, including birds, and at the former, clinical and *post-mortem* avian cases were used as teaching material.

Examination of birds was a routine part of tuition of students and in Tanzania, in particular, provided a much needed and greatly appreciated service to owners. Examinations were carried out in the Faculty's Clinic and Post-Mortem Room and also in the field. While English was the language for teaching students, Swahili was used almost exclusively when dealing with members of the public, especially in village communities. Both domestic and wild birds were examined: the latter were primarily captive specimens including (for example) galliform species being reared for food, parrots that were kept as pets and wild bird casualties.[3] In addition, birds that had been confiscated by the Game Department were sometimes presented for health checks prior to release.

A variety of programmes aimed at enhancing the welfare and conservation of both domestic and wild birds was instigated. Debate over the wild bird trade, largely originating from public concern in Europe and North America, prompted much discussion in Tanzania on how standards of trapping, handling and veterinary care might be improved. Working closely with the relevant government bodies and the Wildlife Conservation Society of Tanzania, guidelines were drawn up and training programmes were established.[4] When teaching veterinary students, the point was made that, if wild birds were to be captured and exported, East African graduates had to be able to play a significant part in promoting health and welfare and in minimising losses. The importance of proper examination and reliable certification was emphasised.

Various research projects were initiated and a number are still in progress. These include:-

Management and diseases of captive ostriches (*Struthio camelus*)[5]
Management and diseases of captive and free-living guineafowl (*Numida meleagris*)[6]
Parasites and diseases of the Indian house crow (*Corvus splendens*)[7]
Blood parasites of wild and domestic birds
The link between wild and domestic birds and human and animal health[8]
The biology and pathogenesis of the sticktight flea (Echidnophaga gallinacea)[9]
Student projects, e.g. on the growth and regression of the bursa of Fabricius

An ongoing study that is of importance to humans as well as to birds, concerns the ecological and epidemiological interactions between wild and domestic avifauna, especially in village environments, and the possible health implications to both immunocompetent and

immunocompromised humans of close proximity to birds. Recent publications have drawn attention to the “deadly combination” of tuberculosis and AIDS and the strong possibility that humans infected with HIV might not only be infected with Mycobacterium bovis and M.avium but also serve as reservoirs for these organisms, and in turn infect domestic stock.[10] This hypothesis, coupled with the known transmissibility of many other avian pathogens to humans, indicates the importance of detailed epidemological studies that involve members of both the medical and veterinary professions.[11]

## Results

It is clear that in East Africa birds play an important part in day-to-day life and in the national economy; however, much remains to be learned about their health, welfare and conservation. There is a particular paucity of information about the biology and diseases of free-living wild birds which could be rectified in part if there were closer links between the veterinary profession and others, such as field biologists and pest control officials. Much valuable diagnostic, teaching and research material - including substantial numbers of live birds, dead birds and samples - is wasted at present.

Even domestic birds, despite their enormous and long-standing economic importance, warrant greater veterinary attention. For example, relatively little has been published about the common diseases in East Africa of guineafowl, ducks and turkeys. As ostriches and other “new” species are brought into captivity, excellent opportunities arise to develop baseline data and to learn more about (for example) normal flora and host:parasite relations. The increasing need to utilise wildlife, including birds, in a sustainable way makes such health studies vital.[12]

In order to give some indication of conditions that are prevalent in East Africa, a summary of infectious and non-infectious diseases diagnosed in the Faculty Clinic in Tanzania over a one year period is given in Table 2. This is adapted in part from Mellau and Cooper.[13]

The epizootilogy of most diseases of East African avifauna is poorly understood. Transmission of pathogens between domestic and wild birds and the possible spread of such organisms to humans justifies far greater study, particularly in view of the high level of immunosuppression in many communities. Studies to date indicate that the relationships between species are likely to be complex, especially in village environments (Fig 1).

In all these endeavours better training of veterinary students, higher standards of disease investigation and the instigation and funding of well formulated research programmes are all urgently needed.

## Conclusions

The three countries that constitute East Africa have a rich avifauna that is important not only to them and to their economy but also to individuals and organisations elsewhere who are concerned about the conservation and welfare of wildlife. There is a need for those living in other parts of the world, including Australasia, to have a deeper understanding of the day-to-day relevance of birds to Africans and the dilemmas that are faced insofar as protection and management measures are concerned. Stronger bonds between East African veterinarians and those working in other countries can be mutually beneficial and should be actively encouraged.

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**Table 1**

**Species primarily covered in teaching programmes in East Africa**

| **Species** | **Significance** |
|---|---|
| Domestic fowl *(Gallus domesticus)* | Important food sources |
| Domestic duck *(Anas platyrhynchos)* | Routine diagnostic work and treatment<br>Student projects both in Clinic and *in situ* |
| Muscovy duck *(Cairina moschata)* | As above |
| Domestic goose *(Anser anser)* | As above |
| Domestic turkey *(Meleagris gallopavo)* | As above |
| Domestic pigeon *(Columba livia)* | As above but also projects on spread of |
| Domestic guineafowl *(Numida meleagris)* | infectious diseases, especially between<br>captive and free-living birds. |
| Ostrich *(Struthio camelus)* | Occurs naturally in the wild: an important species in national parks and elsewhere. Economic and cultural significance. Increasingly being "farmed" (ranched) commercially: many veterinary and welfare implications. |
| African grey parrot *(Psittacus erithacus),* lovebirds *(Agapornis* spp.) and others | Occur in the wild - both naturally and introduced - but often declining in numbers. Kept as pets and in collections. Exported (bird trade). Many veterinary and welfare implications. |
| Passerines (e.g. weavers, Ploceidae) and other wild species | As above but status of many in the wild remain uncertain. Some are highly significant pests of crops. |
| Indian house crow *(Corvus splendens)* | An introduced species in Kenya and Tanzania,spreading in some areas. A scavenger that is believed to transmit diseases. Trapped in large numbers: thus live and dead birds are readily available for study. Used in research projects and also to teach students the principles of working with wild birds. |

| **Species** | **Significance** |
| --- | --- |
| Birds of prey (raptors) (Falconiformes and Strigiformes) | Occur in the wild, possibly declining in some areas. Important environmental sentinels. Some species kept in captivity, others found sick or injured: care of birds in both groups provided an opportunity to teach students and to develop a database of values and samples. |

**Table 2**

**Some infectious and non-infectious diseases diagnosed in birds over one year in Tanzania**

| Disease | Species | Comments |
|---|---|---|
| Newcastle disease | Domestic fowl, domestic pigeon, wild birds | Widespread in many areas |
| Infectious bursal disease | Domestic fowl | Widespread |
| Salmonellosis | Domestic fowl, domestic duck | *Salmonella* isolates also from captive wild birds |
| Colibacillosis | Domestic fowl | - |
| Avian tuberculosis | Domestic fowl | Not diagnosed in wild birds but probably present |
| Candidiosis | Domestic fowl | - |
| Peritonitis | Various (domestic) | - |
| Yolk sac infection | Various (domestic | - |
| Embryonic death | Various (domestic) Ostrich | Many other hatchability problems also investigated and diagnosed |
| Ectoparasites (fleas, lice, mites, ticks) | Various (domestic and wild) | Transfer of many species between wild and domestic birds, especially galliforms |
| Endoparasites | Various (domestic and wild) | As above |
| Coccidiosis | Various (domestic and wild) | Many species involved |
| Trauma | Various (domestic and wild) | The main reason for presentation of wild bird casualties |
| Predation | Various (domestic and wild) | Dogs, cats, mongooses, civets, raptors, reptiles |
| Snake bite | Various (domestic) | Common - cobras and puff adders primarily responsible |
| Heat stress | Various (domestic and wild) | Common, especially when birds confined in metal cages with little air flow |
| Dehydration | Various (domestic and wild) | Often linked with heat stress, when inadequate (or too hot) water |
| Nutritional deficiencies (various) | Various (domestic and wild) | Common in all species. Usually linked with poorly prepared commercial diets (domestic birds) and offering unsuitable food (captive wild birds). Specific problems - Ca/P deficiency and imbalance in captive ostriches |
| Visceral gout | Various (domestic and wild) | Often in dehydrated birds |
| Toxicity | Various (domestic and wild) | A variety of toxic agents implicated - insecticides, lead, sulphur, locally prepared insecticidal preparations |

**Figure 1**

**Some interactions between wild and domestic birds and humans in the East African village environment**