

CURRENT WORK ON RAPTOR DISEASES IN KENYA, EAST AFRICA*

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Introduction

Kenya, like the other East African countries, is rich in birds of prey and its indigenous species are supplemented by migratory species from Europe and Asia. Some research has been carried out into the ecology of these birds, notably by Brown (see for example, Brown 1970) but a vast amount of work remains to be done.

Despite their large numbers in the wild, few birds of prey are maintained in captivity in Kenya. There are small numbers in private hands, kept mainly as pets or for exhibition, but no large zoological collections. As far as falconry is concerned, this is unknown amongst the indigenous Kenyan population although there is archaeological evidence (an old hawk bell excavated at Gedi) that Arabs visiting the East African Coast centuries ago might have brought their hawks with them: it appears however that the sport never spread. Amongst the expatriate population of Kenya there are, perhaps, six falconers but of these only two are, at the time of writing, flying a bird.

The author has been engaged on a study of raptor diseases since 1965 and when he came to Kenya in 1969 this work was continued. As far as is known, there had been no previous research on diseases of East African birds of prey and it was therefore an ideal opportunity to contribute some veterinary knowledge to the expanding data on these species. Such work seemed justified for the following reasons: (a) there is increasing concern over the future of East Africa's wildlife and while the larger mammals receive considerable attention, there has been little research on the avian fauna, including raptors; (b) although captive birds of prey are of little significance in Kenya *per se*, work on them and their wild counterparts could well help provide information of importance to those flying or breeding raptors in Europe or America. The relative abundance of raptors in Kenya makes it easier to obtain specimens for such research.

In this paper the author outlines his work over the past three years on raptor disease and emphasizes how important a role the veterinary surgeon can play, in

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conjunction with scientists or other disciplines, in furthering our understanding of the biology of these birds.

Projects

The following work has been, or is, in progress:

- (1) Routine clinical and *post-mortem* examination of raptors.
- (2) Work on a small collection of captive raptors, with special attention to normal hematological values and vaccination procedures.
- (3) Investigation into new anesthetic techniques, particularly with regard to the taking of biopsies for pesticide analysis.
- (4) Joint research with other, non-veterinary, colleagues working on raptor biology.

Each of these aspects will be considered in turn.

(1) **Clinical and post-mortem work.** Material has been received mainly from the public but also from National Parks and the Game Department; it has included both wild and captive birds. Even road casualties are accepted and such specimens have frequently yielded valuable tissues for histological section or interesting endo- or ecto-parasites.

Lists of clinical and *post-mortem* cases have been submitted annually to the Chairman of the Raptor Research Pathology Committee but a summary of the situation from 1970 to date is as follows:

Number of clinical cases examined—42.

Number of *post-mortem* examinations carried out—37.

Several interesting diagnoses have been made, amongst them a dual infection of an African Fish Eagle (*Haliaeetus vocifer*) with an *Aspergillus* sp. and acid-fast organisms (Kaliner and Cooper 1973), bumblefoot in a Tawny Eagle (*Aquila rapax*) and a large number of cases of traumatic injury. A certain amount of surgical and medical treatment has been possible. At the time of writing, an investigation is in progress into a severe epizootic of sinusitis in a private bird collection which has already killed seven birds of prey of two different species.

(2) **Work with a private raptor collection.** Although some considerable success has been achieved in the treatment of sick raptors, a percentage are, inevitably, unable to be released or returned to their owners and have to be retained in captivity with the author.

Although this collection has never exceeded a total of 20 birds, a number of species are usually represented and this has permitted a degree of experimental work that would not be possible at the author's home in Britain. The following work has, in particular, been carried out.

(a) *Hematological studies.* There is very little information on the hematology of raptors despite evidence from the poultry field (Bierer *et al.* 1968) that such data could be of value in the diagnosis of disease. With this in mind a small survey is in progress and although to date only PCV (hematocrit), red blood cell counts and hemoglobin estimations are carried out, further tests will be attempt-

ed in the future. An initial report on this work has appeared in *Raptor Research* (Cooper 1972). Preliminary results suggest that more use could be made of hematology in the examination of sick raptors, especially to aid the prognosis in cases which are anemic or dehydrated.

(b) *Vaccine trials*. The author has vaccinated his captive birds with inactivated Newcastle disease vaccine and a live (attenuated) fowlpox vaccine. In the case of the former, serological studies (hemagglutination inhibition tests) have been carried out in order to assess the response, if any, to the vaccine. Preliminary results suggest that raptors do not respond so well serologically to the vaccine as do domestic poultry and that the antibody titre attained quickly drops. In the case of the pox vaccine (given by the wing stab route) no serological studies have been attempted but the vaccine is certainly not associated with any adverse side effects in raptors, even if up to 25 times the recommended dose is administered. This work continues and it is hoped that the results will prove useful to those who maintain birds of prey in captivity.

(c) *Harrier Hawk work*. A particular study has been carried out on a captive pair of African Harrier Hawks (*Polyboroides typus*) including studies on their feeding behavior and moult. Of special interest is the ability of this species to overextend the tibiotarsal joint and x-ray and other studies of this are in progress. These birds are anesthetized monthly and full data recorded. Now that they are mature it is hoped that they might breed in captivity though their very nervous nature makes this unlikely.

(3) **Anesthetic techniques**. When the author first came to Kenya he had already carried out preliminary trials in England on the new avian anesthetic, metomidate ("Hypnodil": Janssen Pharmaceutica). Further work in Kenya emphasized the value of this drug, by the intramuscular route, in work on birds of prey. A preliminary paper on its use has been published (Cooper 1970) as has a second which draws attention to the smaller dosage needed in vultures (Houston and Cooper 1973).

In 1971 the author was approached to cooperate with the Baharini Wildlife Sanctuary (Nakuru, Kenya) in work on pesticide residues in Kenyan birds of prey. Such a study had not previously been attempted and seemed an extremely worthwhile venture especially in view of the large quantities of chlorinated hydrocarbon insecticide used in Kenya for tick and tsetse fly control. The study was carried out in conjunction with L. Frank, with later assistance from R. Jackson. The author's role was primarily concerned with suitable techniques for obtaining samples from live raptors. Initially fat samples were taken from the tail region but for the majority of the specimens pectoral muscle biopsies were performed, as described by Seidensticker (1970). Metomidate was found to be unsuitable for such work for a number of reasons (not least of all the delayed recovery and excessive salivation that occurred) and as a result investigations were carried out into the use of the new short acting steroid anesthetic CT1341 ("Saffan": Glaxo Laboratories Ltd.). This drug proved to be extremely valuable, by the intravenous route, for the taking of pectoral muscle biopsies and a paper

on this work has been published (Cooper and Frank 1973). It would be pertinent to mention that the anesthetic has now been used on over 50 occasions in both captive and freshly caught birds of prey and there has been only one mortality, a captive Lizard Buzzard (*Kaupifalco monogrammicus*).

(4) **Joint Research.** A small number of non-veterinarians work on wild raptors in Kenya and close contact has been maintained with them wherever possible. Particular projects have been as follows:

(a) Cooperation with D. C. Houston (formerly of the Serengeti Research Project) in his work on vultures. The author's role here included investigation into the use of metomidate in vultures and examination of parasites and *post-mortem* material. An interesting discovery was the presence of lesions associated with botfly (*Gasterophilus pecorum*) larvae in the crops of a number of vultures and this has been reported elsewhere (Cooper and Houston 1972). Work is at present in progress on the digestive tract of the Whiteback Griffon Vulture (*Gyps africanus*) and the possible role of vultures in the spread of disease.

(b) Work with C. Smeenk (formerly of the Tsavo Research Project) on the birds of prey of Tsavo East National Park. The author's contribution here has been small but some *post-mortem* examinations have been performed, blood samples taken from a number of species and hematological and parasitological investigations carried out.

(c) Joint work with L. Frank and R. Jackson on pesticide residues in raptors (see above). Material from this survey is being analyzed in the United States.

(d) Work on a captive pair of Harrier Hawks (*Polyboroides typus*) (see earlier notes). L. H. Brown has shown particular interest in this study and offers valuable assistance and advice.

Conclusions

It has not been possible, in a paper of this length, to give more than a very brief outline of the author's current work on raptor diseases in Kenya. Nevertheless, it is hoped that the information given will prove of interest to others working in this field and may, perhaps, stimulate an exchange of information. It should be stressed again that much remains to be learned of the biology of the East African raptors (the nest and eggs of some species are still unknown) and the veterinarian has a role to play in such work. In many countries the birds of prey are known to be valuable indicators of changes in the ecosystem and it is reasonable to assume that this may also be the case in East Africa. Studies on the causes of mortality of East African raptors are long overdue and it is in this field that the veterinarian can fill a valuable niche. A word of caution should perhaps be sounded here. The author's study of raptors is largely an extra-curricular one, though he has the backing of a veterinary laboratory and a number of interested colleagues. Although raptor material is available in abundance in Kenya, opportunities for full-time study of birds of prey here are limited. As with all developing countries, Kenya's priorities are to improve the standard of living of her people; as a result the veterinarian is very likely to find himself involved in domestic animal disease with his raptor interests only a sideline. In a

recent paper Roth (1972) outlines the need for more work on wildlife disease in Africa and although he too concentrates on mammals, the points he makes are equally applicable to avian work. Roth only touches briefly on the reticence shown by some African governments to wildlife research and it would be prudent to mention this here. Such reticence stems partly from the shortage of funds which are available in developing countries and partly from ignorance of the importance of wildlife research, but can also be attributed to a certain reluctance to learn too much about wildlife disease for fear of the possible consequences to the domestic livestock industry. An example here is the monitoring of wildlife for chlorinated hydrocarbon insecticide residues, a field of research which may be avoided or delayed if there is fear that the results may adversely affect such economically important ventures as food exports. Notwithstanding these points, it is hoped that, as Kenya and other African countries develop and wildlife studies become more acceptable, work on raptors will assume an increasingly important role.

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References

- Bierer, B. W., J. B. Thomas, D. E. Roebuck, H. S. Powell and T. H. Eleazer. 1963. Hematocrit and sedimentation rate values as an aid in poultry disease diagnosis. *J. Am. Vet. Med. Ass.* 143:1096-1098.
- Brown, L. H. 1970. *African Birds of Prey*. London: Collins.
- Cooper, J. E. 1970. Use of the hypnotic agent "Methoxymol" in birds of prey. *Vet. Rec.* 87:751-752.
- Cooper, J. E. 1972. Some haematological data for birds of prey. *Raptor Res.* 6(4):133-136.
- Cooper, J. E. and D. C. Houston. 1972. Lesions in the crop of vultures associated with botfly larvae. *Trans. Roy. Soc. Trop. Med. Hyg.* 66:515-517.
- Cooper, J. E. and L. G. Frank. 1973. The use of the steroid anaesthetic CT1341 in birds. *Vet. Rec.* 92:474-479 (reprinted in part in *Raptor Res.* 8(1/2): 21-29, 1974).
- Houston, D. C. and J. E. Cooper. 1973. Use of the drug metomidate to facilitate the handling of vultures. *International Zoo Yearbook* 13:269-270.
- Kaliner, G. and J. E. Cooper. 1973. Dual infection of an African Fish Eagle with acid-fast bacilli and an *Aspergillus* sp. *J. Wildl. Dis.* 9:51-55.
- Roth, H. H. 1972. Needs priorities and development of wildlife disease research in relation to agricultural development in Africa. *J. Wildl. Dis.* 8:369-374.
- Seidensticker, J. C. 1970. A biopsy technique to obtain tissue for pesticide residue analysis from falconiform birds. *Bull. Environ. Contam. and Tox.* 5: 443-446.