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WILDLIFE RABIES IN ZAMBIA

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Abstract: Wildlife species made up 26 (2.0%) of 1,304 positive rabies cases received between 1969 and 1976. The jackal (*Canis adustus*) was the predominate wildlife species involved (69%) and played a role in the epidemiology of bovine rabies in remote farm areas. Rabies appears to be absent from the intact wildlife communities in Zambia, especially the National Parks; this is considered in the light of the epidemiology of the disease in wildlife.

INTRODUCTION

Rabies is an accepted part of the day-to-day life in the rural areas in Zambia. A 'mad' animal entering a village is such a common occurrence that villagers deal with it quickly and effectively by clubbing the animal to death. Most tribes have been familiar with rabies for many generations and tribal names and traditional medicines have evolved.

Some tribes endeavour to treat bitten dogs with anything from 'bleeding' to treatment with herbs and roots. Although beliefs concerning the origin of rabies vary from area to area, incriminating hot weather, poisonous insects, witchcraft, etc., generally the disease is recognized as being transmitted by the bite of an infected animal.

A local treatment for man, rubbing the ash from the burned hair of the rabid animal into the bite wound, is thought successful when the wound heals, resulting in a lax attitude to the entire rabies problem. As a result, villagers often do not present themselves for vaccination. If the individual subsequently dies some months later, death is attributed to witchcraft.

The prevalence of rabies in Zambia has been previously reviewed.^{4,5} The situation in wildlife, however, has not been elucidated although it has been linked with outbreaks by local veterinary officials.¹⁰ The purpose of this paper is to

review the prevalence of rabies in wildlife in Zambia for the period 1928 to 1976.

MATERIALS AND METHODS

Figures were obtained from the records of the Department of Veterinary and Tsetse Control Services, Zambia from 1928 to 1976.² Records for the period 1928 to 1968 are not sufficiently detailed to facilitate analysis, therefore, only total positive cases and species involved are given. Complete records were available for the period 1969 to 1976. Diagnostic methods are detailed elsewhere.⁴ The positive wildlife cases for this period have been mapped along with the prevalence of rabies in general, and bovine in particular, for comparative studies (Figs. 1 and 2).

RESULTS

Rabies in wildlife in Zambia does not appear to be significant when compared with the prevalence in domestic animals, 82.5% of which occurred in dogs during the last decade. The ratio of specimens to positive cases in domestic animals is 2.5:1 while in wildlife it is only 5.5:1.⁸ However, when considering only the jackals (*Canis adustus*) this figure becomes 1.3:1.

The first case of rabies in wildlife was recorded in 1932 in a jackal. During the

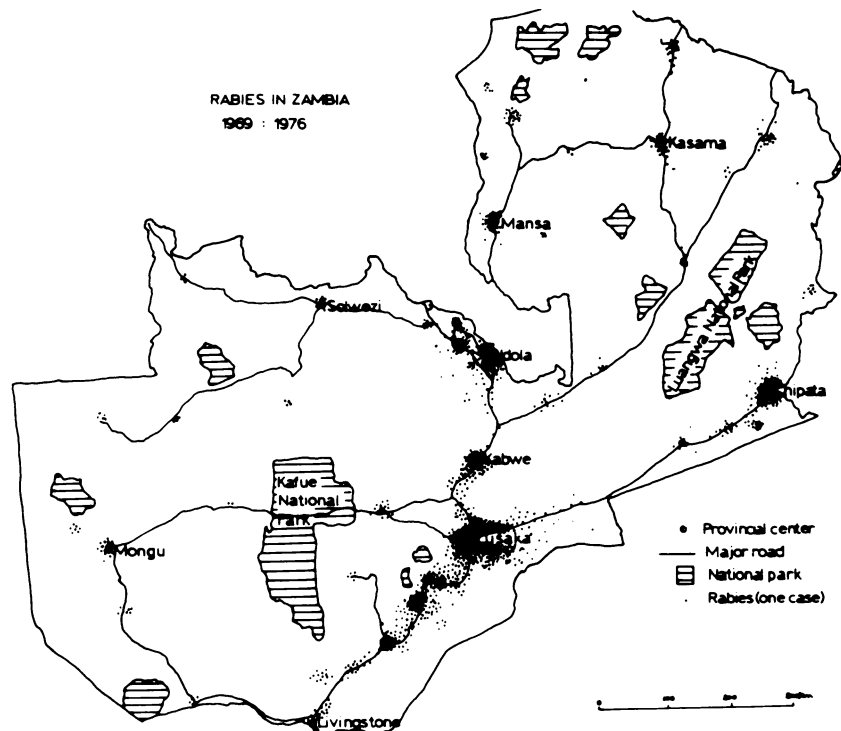


FIGURE 1.

period 1932 to 1968, 63 of 67 positive wildlife specimens were jackals. Other positive cases were found in a honey badger (*Mellivora capensis*), a monkey (species unknown) and a mongoose (species unknown). During the period 1969 to 1976, 103 specimens were examined for rabies: Jackal (*Canis adustus*), Bush Baby (*Galago crassicaudatus*), Hyaena (*Crocuta crocuta*), Grey Duiker (*Sylvicapra grimmiei*), Bat (unidentified), Wild Cat (*Felis lybica*), Civet Cat (*Viverra civetta*), Mongoose (*Herpestes sanguineus*), Vervet Monkey (*Cercopithecus aethiops*), Baboon (*Papio spp.*), Honey Badger (*Mellivora capensis*), Aardvark (*Orycteropus afer*), Genet (*Genetta spp.*), Shrew (*Crocidura spp.*). Details of the positive species are recorded in Table 1.

A vervet monkey and a bush baby found positive during this period were household pets, and are not considered wildlife for the purpose of this paper.

Rabies, in general, is concentrated in the urban areas. There are approximately 40 positive cases in dogs for every one in wildlife. Wildlife rabies occurs predominately in those areas where the larger carnivora have been eliminated due to an expanding human population and agriculture. Geographical distribution shows a striking overlap of wildlife rabies with bovine rabies in the Southern Province (Fig. 2). There has been no recorded case of rabies from within the intact National Parks.

The number of wildlife specimens received was too small to allow for a correlation study with seasonal variance.

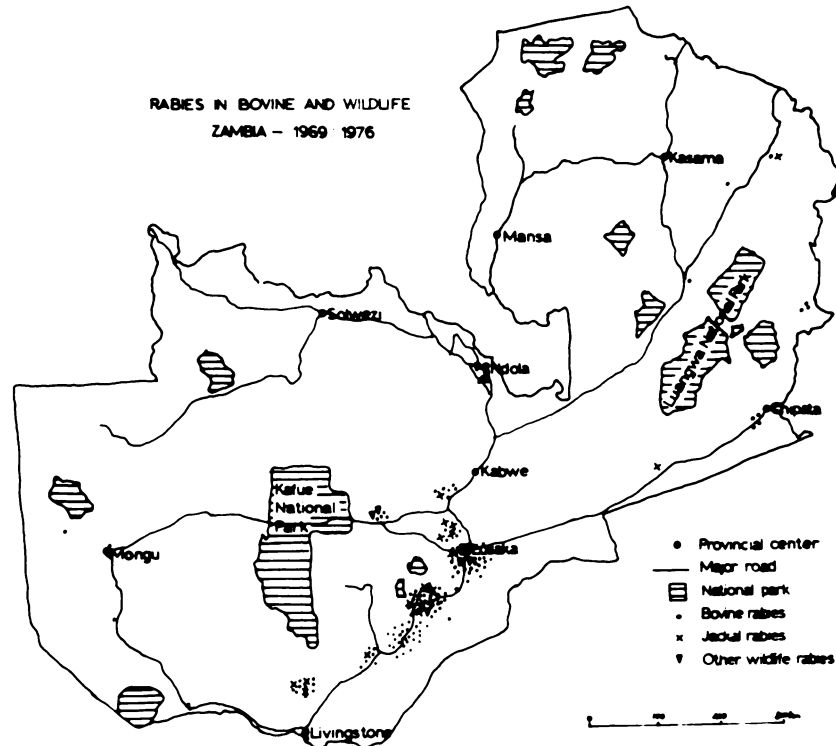


FIGURE 2.

DISCUSSION

The pattern of life in the villages is still largely linked to tribal hierarchy, traditional beliefs and the animals of the bush. The importance of outside administration, such as Veterinary and Medical services, are only now slowly being accepted. As a result, relatively few specimens for rabies diagnosis originate from the rural areas. Of the 3245 specimens received for rabies diagnosis between 1969 and 1976 only 26.5% (562) were received from the rural areas where 68% of the population live. The figures available probably show only the tip of the iceberg. An unknown number of specimens would be lost to natural predation and traditional village control.

Jackals appear to be the predominant wildlife species affected as is the case in

other countries in southern Africa.^{1,3,7,9,11} This may be due to the fact that they are one of the few wild carnivora which can survive in an inhabited area. Stray dogs and jackals scavenge the same refuge areas on the periphery of the population centres thus allowing for cross-infection. Stray dogs account for 40% of the canine rabies in Zambia.⁴

Other wild species which survive in peri-urban environments are the aardvark and the bush baby. Positive cases do occur in these species from time to time, but the authors do not consider them significant in the transmission of rabies in Zambia.

Larger game animals such as bush pig, kudu, bush-buck, reedbuck, oribi and grey duiker still occur in farmlands in the Southern Province. Presumably these

TABLE 1. Wildlife rabies in Zambia, 1969-1976.

Species	Number of Specimens	Number Positive	Percent Positive
Jackal (<i>Canis adustus</i>)	23	18	78.3%
Hyaena (<i>Crocuta crocuta</i>)	2	1	50.0%
Honey Badger (<i>Mellivora capensis</i>)	2	2	100.0%
Aardvark (<i>Orycteropus afer</i>)	2	2	100.0%
Mongoose (<i>Herpestes sanguineus</i>)	2	1	50.0%
Genet (<i>Genetta spp.</i>)	1	1	100.0%
Others	71	0	—

animals also would contract rabies occasionally but as soon as they lose their shyness, they likely would be killed by villagers for meat. These cases would not come to the attention of the veterinary authorities as the villagers would fear prosecution for poaching.

Close to the Kafue National Park (Mumbwa and Kalomo) hyaena and honey badger were confirmed rabid in connection with bovine rabies. This has been documented in the Southern Province.¹⁰ The outbreaks of bovine rabies coincide both geographically and seasonally with outbreaks in jackals. In areas such as Kalomo and Mumbwa, where cattle graze on the fringe of a wildlife population, the jackal is a more likely contact than the dog. From Fig. 2 it is apparent that bovine rabies and wildlife rabies overlap. This cannot be attributed simply to the game concentration in and around the National Parks, or to cattle density. Western and Eastern Provinces have relatively little cattle rabies despite their high cattle populations and significant number of canine rabies.

From Fig. 1 it appears that the Kafue National Park and the Luangwa National Park not only have no rabies cases, but also act as a barrier to the spread of the disease. In eastern Zambia, the prevalence of rabies follows the Great North and the Great East roads and there does not appear to be any spread between the two via the Luangwa National Park. Rabies also appears to

follow the road system in central and western Zambia. There does not appear to be any east-west spread through the Kafue National Park itself. This cannot be attributed to the river system in the park as large rivers bisect the densest rabies areas in central Zambia.

It is striking that rabies has never been recorded in any of the National Parks. This fact cannot be attributed to the lack of surveillance as qualified biologists are stationed permanently inside the parks. These parks contain a balanced proportion of large and small predators which results in predation on the smaller carnivora at the first sign of weakness. This is supported by an observation from a farmer near Blue Lagoon National Park where an obviously rabid jackal attacked a tractor. Before the farmer could shoot the jackal, a serval cat (*Felis serval*) killed the jackal and carried it away. It must be assumed that this is a normal end to any sick animal in an intact biotope. The larger cats probably play a major role in such a biological system, particularly the leopard (*Panthera pardus*) which preys to a considerable extent on dogs and jackals.⁶

CONCLUSION

Rabies in wildlife in Zambia is not serious at present. However, with increasing breakdown of the biological equilibrium, the jackal could be left as the largest predator, much like the fox in Europe, with no biological controls on it.¹² In this event, the jackal could play a

much more active role in the epidemiology of rabies. Strict enforcement of the standard veterinary procedures for rabies control in dogs would probably lead to a marked reduction in the domestic animals. Meanwhile rabies could die out naturally in the wild populations, given a balanced biotope and no reintroduction from the domestic sector.

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