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INFORMATION

INLIGTING

VULTURES AS CARRIERS OF ANTHRAX

A research programme headed by Dr. V. de Vos, Veterinary Ecologist of the National Parks Board, has been undertaken to discover the means whereby anthrax in wild animal populations is spread in the Kruger National Park. The research team proved beyond doubt that vultures play a complex but important role in the epizootiology of the disease which constitutes a serious threat to the Park's population of game.

Anthrax is an acute, infectious bacterial disease with worldwide distribution, affecting warm-blooded animals and resulting in fatal septicaemia. It is caused by rod-shaped bacteria *Bacillus anthracis*, which are found in the blood and organs of an infected animal. When exposed to air under favourable conditions the bacilli form spores which retain their vitality in soil, water, hides and vegetation for many years. Spores of *B. anthracis* preserved on filter paper retained their virulence after storage for nearly 70 years.

The decimating effect of anthrax was dramatically demonstrated during the 1959/60, 1962 and 1970 anthrax epizootics. During these outbreaks in the Park about 1 500 animals, representing 22 species, succumbed to the disease. This figure includes 83 roan antelope, a notoriously rare species totalling not more than 350 in the whole of the Republic of South Africa.

The Pafuri area of the Kruger National Park is regarded as being an enzootic anthrax region in that the disease spread sporadically from there to adjoining regions to set up foci of infection which may flare up as epizootics. The rest of the Park therefore, is exposed to the constant and dreaded threat of anthrax. The research programme headed by Dr. de Vos is aimed at preventing the spread of the disease to other areas of the Park.

As vultures have acquired the unfavourable reputation of being one of the chief distributors of the disease, part of the programme was directed to their role in the ecology of anthrax in the Park. This included studies on behavioural activities, backed by experimental bacteriological research.

Vultures visit watering places immediately after gorging themselves on dead animals, in order to bathe and drink. Here they wash off the blood adhering to

their feathers and also sometimes regurgitate ingested material infected with anthrax bacilli into the water or along the edges, thereby forming an ideal means of transmission to other animals. In this manner natural waterholes and drinking troughs become infected by vultures during an outbreak of the disease.

The vulture's role as a potential carrier was further proved under experimental laboratory conditions when vultures were fed with anthrax spores and vegetative forms. Anthrax bacilli were isolated from faecal matter of spore-fed vultures for a period of up to two weeks. No anthrax could, however, be isolated from faeces of vultures fed with the pure vegetative forms of anthrax.

The next step was to assess the distance over which dissemination of the disease may take place. The birds were cannonnetted and ring-marked in collaboration with interested parties from Rhodesia and the Vulture Study Group of the South African Ornithological Society. Preliminary results showed a very wide flying range, especially for the young white-backed vulture, *Gyps africanus*. A bird ringed near Skukuza in the Kruger National Park was sighted at Hluhluwe in Natal a few months later and another ringed at Kariba, Rhodesia, was sighted in Swaziland. By virtue of their scavenging habits and flight distances, vultures are therefore able to spread anthrax over vast areas.

On the other hand, the vulture plays a vital role in the early detection and disposal of carcasses which may constitute a positive aspect of limiting anthrax infection. In cases where impala carcasses were put out, most of the soft material was devoured within one hour after the carcass was opened up, and totally devoured within half a day. In nature sporulation occurs only after a carcass has been opened and exposed to the air for several hours after favourable conditions. The quick and efficient manner of disposal by vultures, therefore, greatly reduces the amount of infective material, if it is kept in mind that the digestive system of the vulture also effectively disposes of the vegetative form.

The study points to the vulture as having a dual role in the ecology of anthrax. While it may spread the disease over large areas, it does at the same time effectively reduce the pathogen crop in nature.