

## THE CAPTURE OF FREE-LIVING VULTURES IN THE ETOSHA NATIONAL PARK WITH PHENCYCLIDINE

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### ABSTRACT

Sixty-seven vultures of three different species were drugged and captured successfully by allowing them to feed on zebra (*Equus burchelli antiquorum*) carcasses which had previously been injected with overdoses of phencyclidine hydrochloride and forcing them to regurgitate immediately after capture.

### INTRODUCTION

In order to determine the role played in the epizootology of anthrax by the three species of vulture commonly found in the Etosha National Park during the rainy season, Cape vulture (*Gyps coprotheres*), white-backed vulture (*G. africanus*) and black vulture (*Torgos tracheliotis*), a safe and practical capture method had to be found so that a number of them could be marked. Previous attempts at capturing vultures with special nets hidden in the soil around a carcass were unsuccessful because the birds were suspicious and although they gathered around the perimeter of the camouflaged nets they refused to approach the carcass and eat until all evidence of the nets was removed. Cannon nets, which were successfully used by Houston (pers. comm.) in the Serengeti National Park, were unobtainable in South West Africa and the possibility of using chemical compounds was considered.

A wide variety of anaesthetic agents and tranquillizers have been used to anaesthetise captive, wild and domesticated birds (Marsboom et al. 1965, Mortelmans and Vercruyse 1966, Gandal 1962, 1969, and Clive and Greenwood 1972). Alpha-chloralose was used by Williams (1966) for capturing wild turkeys and by Crider and McDaniel (1966) for the capture of Canada geese (*Branta canadensis*). Crider et al. (1968) used a mixture of diazepam and alpha-chloralose to capture waterfowl and methoxymol was used by Williams (1967) for capturing wild turkeys (*Meleagris gallopavo*). No references could be found in the literature describing the capture of free-living vultures with chemical compounds.

### MATERIALS AND METHODS

Initial trials with tranquillizers were started in the Etosha National Park. Pieces of zebra meat weighing from 200 to 400 g were injected with either 10 mg acetopromazine maleate (Acetylpromazine, Boots), 50 mg chlorpromazine hydrochloride (Largactil, Maybaker) or 10 mg triflupromazine hydrochloride (Siquil, Squibbs), and distributed at random near a fresh zebra carcass. Most of the meat was taken by vultures and marabou storks (*Leptoptilos crumeniferus*), but no obvious ill-effects or signs of sedation were observed. Using the same procedure with 20 mg phencyclidine hydrochloride (Sernylan Parenteral, Parke, Davis and Co.) two vultures were captured and three showed signs of sedation but flew away and could not be caught. The captured vultures were confined in a cage. One died 2 hours after feeding and the second one, which was heavily anaesthetised, regained consciousness after 14 hours. It is not known how much meat was ingested and as there is no antidote for phencyclidine, the effect of overdose could not be counteracted. The trial was repeated using larger pieces of meat injected with 10 mg phencyclidine.

Five vultures were captured of which two died from overdose. The next day three vultures were found dead in the veld. They had apparently consumed several pieces of drugged meat and flew away while the other vultures were being captured. The main disadvantages of this method were that the amount of meat eaten could not be controlled, the optimum dosage rate of phencyclidine for vultures was not known and the more aggressive or dominant vultures consumed a larger portion of meat and subsequently suffered from overdose.

The above results were unsatisfactory because of the high mortality and the small number of vultures captured. The method was modified and vultures were allowed to feed freely on zebra carcasses injected with large amounts of phencyclidine hydrochloride.

On three different occasions adult zebra stallions were immobilized with etorphine hydrochloride (M-99, Reckitts) and triflupromazine hydrochloride using the method described by Ebedes (1971). The zebra weighed approximately 350 - 360 kg. As soon as the zebra were immobilized, 4 000 mg phencyclidine hydrochloride were injected slowly into the jugular vein. This gave an approximate dosage-rate of 11 mg/kg assuming that the drug was evenly distributed throughout the body.

After showing respiratory depression and severe tachycardia the zebra died within 30 minutes of the phencyclidine being injected. The carcasses were transported to a large flat open plain in an enzootic anthrax area (Fig. 1). The skin of the front and hind limbs was flayed to expose the muscles and the carcass was degutted. The capture personnel then retired to about 500 m from the carcass and observed the activities with binoculars.

**Fig. 1.** Large open plain in Etosha National Park used for capturing vultures. Note the zebra carcass after vultures had fed and the light truck used for pursuing vultures.





**Fig. 2.** Vulture being forced to regurgitate. Note protective gloves.



**Fig. 3.** "Windows" cut into wing feathers for identification while flying.

Vultures having fed on the drugged carcass and showing obvious signs of sedation were approached and pursued in open light trucks until they landed and could be captured on the ground. Personnel catching and handling the vultures wore thick elbow-length "welder's" gloves to protect themselves from being bitten and possibly becoming infected with anthrax.

The captured vultures were held upside-down by the legs and forced to regurgitate by massaging the meat out of the crop and oesophagus (Fig. 2). This precaution was taken to prevent overdose by the absorption of excessive amounts of phencyclidine from the meat.

The vultures were marked by cutting sections of the primary and secondary wing feathers to form windows in the wingfeathers so that the birds could be identified while flying (Fig. 3) and the white feathers on the under-surface of the wings, breast and abdomen were spray-painted with different colours.

After they were marked, the most heavily drugged vultures were transported on the back of a truck to a nearby shady enclosure from which they escaped once they had recovered sufficiently from the effects of the phencyclidine. Vultures which were less affected were released immediately.

To prevent other vultures and carnivorous animals from eating the remainder of the drugged meat the carcasses were incinerated.

## RESULTS

The drugged carcasses were usually discovered within 15 min and feeding by the more dominant or aggressive vultures commenced almost immediately. Vultures affected by the drugged meat stopped feeding, showed signs of drowsiness and either stood alone or in small groups a short distance away from the carcass or flew several hundred metres away and rested on the ground. When approached in the trucks they either attempted to run away or took to the air, but were unable to gain height or fly far, and were easily captured.

Some of the vultures regurgitated the ingested meat as soon as they were approached in an attempt to rid themselves of excessive weight so that they could become airborne more rapidly.

It was not possible to ascertain what percentage of partially-drugged vultures flew away and evaded capture.

On three separate occasions 25, 16 and 26 vultures, one marabou stork and one tawny eagle (*Aquila rapax*) were successfully captured. A juvenile white-backed vulture

died shortly after capture. The crop contained 1 kg of meat and the cause of death was ascribed to an overdose of phencyclidine.

One of the black vultures and the tawny eagle were heavily anaesthetised and were kept under observation in a small cage. The black vulture, one of the first to feed on the carcass, had consumed more than 600 g of liver (weighed after forced regurgitation) and was unconscious for 22 hours (Fig. 4). The tawny eagle was immobile for more than 30 hours and was released 48 hours after capture. It was subsequently seen by Nature Conservator J. Joubert (pers. comm.) 55 km west of the capture site.

Although regular daily road patrols in and around the capture areas were carried out, no dead vultures were found. Many of the marked vultures were seen and their movements in the Park could be plotted. The vultures could not be identified individually and the success rate of the capture method is not known.

Several black-backed jackal *Canis mesomelas* and a lioness *Panthera leo* seen feeding on one of the carcasses did not appear to be affected by the drugged meat.

## DISCUSSION

This novel method of capturing free-living vultures has as far as is known not been described previously. The dosage rates were empirical and a clinical evaluation of the effects of phencyclidine was not possible because of

**Fig. 4.** Anaesthetised black vulture shortly after capture.



Several unknown factors which could not be determined at the time without elaborate procedures. The most important are:

- . The concentration of phencyclidine in the different organs and parts of the carcass.
- . The exact amount and type of meat eaten by the vultures.
- . The amount of phencyclidine absorbed from the meat to produce sedation.

In the rat, the highest concentration of phencyclidine is found in the liver, kidney, lungs, spleen and body fat with lesser concentrations in the heart muscle, skeletal muscle and brain (Brochure on Sernylan Parenteral, Parke, Davis and Company, Hounslow, England). If similar high concentrations of the drug are found in vulture carcasses, then vultures eating liver, kidneys, lungs and spleen would receive a larger amount of phencyclidine than vultures eating other parts of the carcass and would therefore become affected more rapidly. More consistent results could possibly be obtained by feeding portions of the organs containing the higher phencyclidine concentrations.

One of the greatest hazards of this method is that the amount of meat ingested is uncontrollable. Hungry and more dominant and aggressive vultures would tend to overeat and mortality from overdosage could be expected in overgorged individuals. It is therefore essential to force the drugged vultures to regurgitate.

A further disadvantage is that partially-drugged vultures could fly away and succumb to the effects of the drug or be captured by predators while in their drugged state.

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#### REFERENCES

- CLIVE, D.R. and R.J. GREENWOOD. 1972. Effect of certain anaesthetic agents on mallard ducks. *J. Am. vet. med. Ass.* 161 (6):624-633.
- CRIDER, E.D. and J.C. MCDANIEL. 1966. Technique for capturing Canada geese with alpha-chloralose. *Proc. Conf. S. East. Ass. Game Fish Commn* 20:226-233.
- CRIDER, E.D., V.D. STOTT and J.C. MCDANIEL. 1968. Diazepam and alpha-chloralose mixtures to capture water fowl. *Proc. a. Conf. SEast. Ass. Game Fish Commn* pp. 1-29.
- EBEDES, H. 1971. The capture of plains zebra *Equus burchelli antiquorum* H. Smith, 1841 with M-99 (Reckitt) and tranquillizers in the Etosha National Park *Madoqua* Ser. 1 No. 3:67-76.
- GANDAL, C.P. 1962. Avian general anaesthesia. *International Zoo Yearbook* 4:141-142.
- GANDAL, C.P. 1969. Avian anaesthesia. *Fedn Proc. Fedn Am. Socs. exp. Biol.* 28:1533-1534.
- MARSBOOM, R., J. MORTELMANS and J. VERCRUYSSSE. 1965. R7315 - A new hypnotic agent in birds. *International Zoo Yearbook* 5:200-201.
- MARSBOOM, R., J. MORTELMANS and J. VERCRUYSSSE. 1965. Methoxymol induced hypnosis in birds. *Bulletin de la Société Royale de Zoologie d'Anvers* 35.
- MORTELMANS, J. and J. VERCRUYSSSE. 1966. Anaesthesie bij vogels. Reprint from "Zoo" van de Kon. Mij voor dierkunde van Antwerpen 31:(4).
- WILLIAMS, L.E. 1966. Capturing wild turkeys with Alpha-Chloralose. *J. Wildl. Mgmt* 30:50-56.
- WILLIAMS, L.E. 1967. Preliminary report on methoxymol to capture turkeys. *Proc. a. Conf. SEast. Ass. Game Fish Commn* 21:189-193.

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