Observations on the movements of adult Cape Vultures in central Namibia

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Introduction

Since early in 2004, five adult, male Cape Vultures *Gyps coprotheres* have been fitted with satellite transmitters that relay signals to satellites operated by the Argos system. Positional fixes from the satellites are usually accurate to within about 20 metres, and are recorded each hour during daylight hours. Estimates of the altitude and flight speed of the bird are provided with each set of co-ordinates. Here we present some findings based on data collected between January 2004 and August 2005. Transmitters on two birds stopped functioning in 2004, while the transmitters on the other three adults have continued to transmit useful data to date. Transmitters were also fitted to a young African White-backed Vulture *G. africanus* and a young Cape Vulture, but information from these birds will be reported elsewhere.

Information give here attempts to answer the following questions: where do the birds roost and nest, what areas are covered by the birds, at what speeds do they fly, from what heights do they forage and do foraging heights vary during the day, when does foraging usually start and stop, and over what land uses do the vultures forage? The data presented here are based on over 7,300 individual locations received for the five birds. For purposes of analyzing flight speeds and foraging behaviour, we selected all records when flight speeds were 10 km/hr or greater.

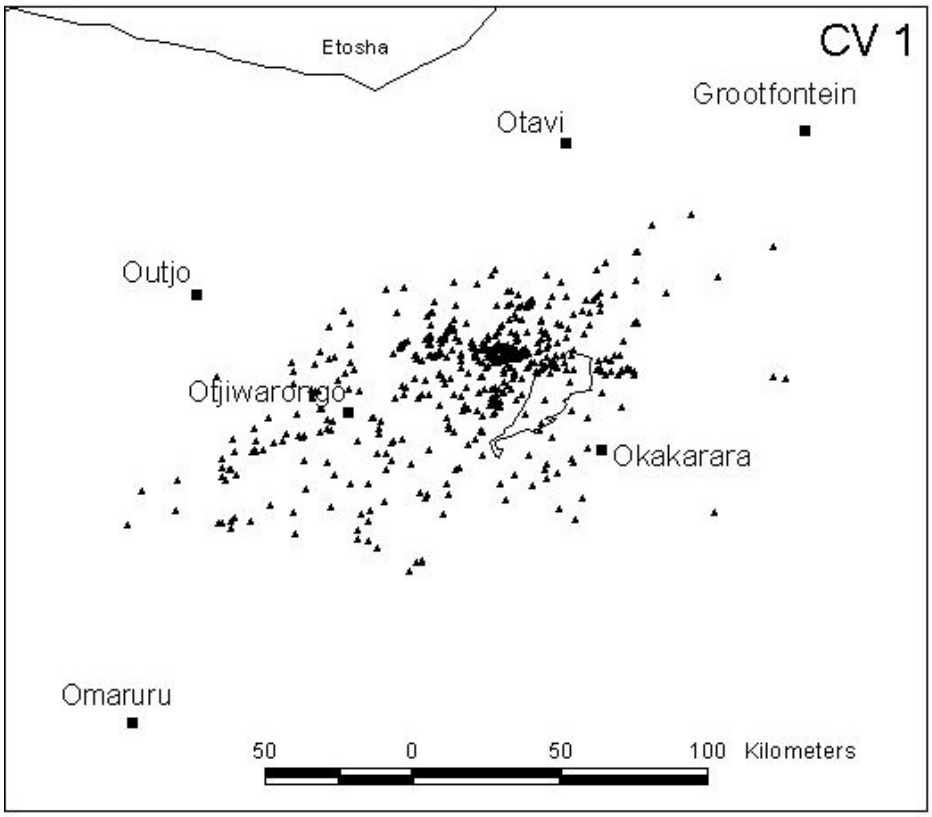
Table 1. Periods of observation, number of locations received for each adult Cape Vulture as at the beginning of August 2005, and the nature of their roost and nest sites.

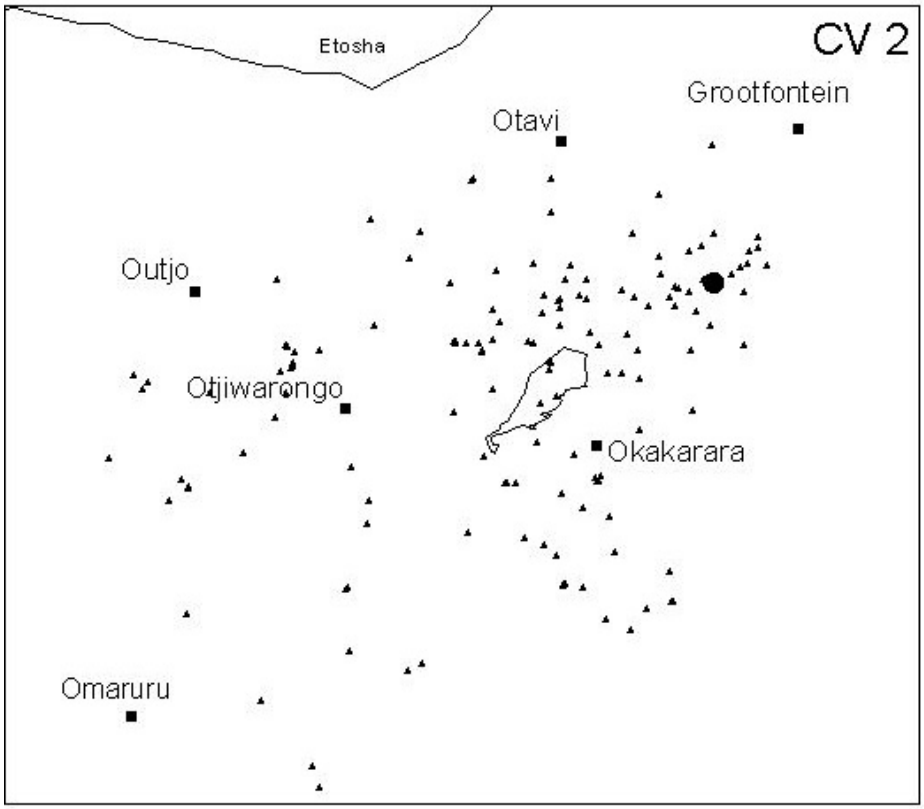
Bird	Date observations begin	Date observations ended	Number locations received	Home range (square kilometres)	Main roost sites	Nest site
CV1	17 January 2004	31 October 2004	2224	14,400	Trees	Tree
CV2	20 March 2004	17 May 2004	654	24,500	Trees	Tree
CV3	28 November 2004	Still functioning	1178	11,800	Cliffs	?
CV4	28 November 2004	Still functioning	2163	16,100	Trees	Tree
CV5	15 January 2005	Still functioning	1143	17,800	Trees and cliffs	Tree

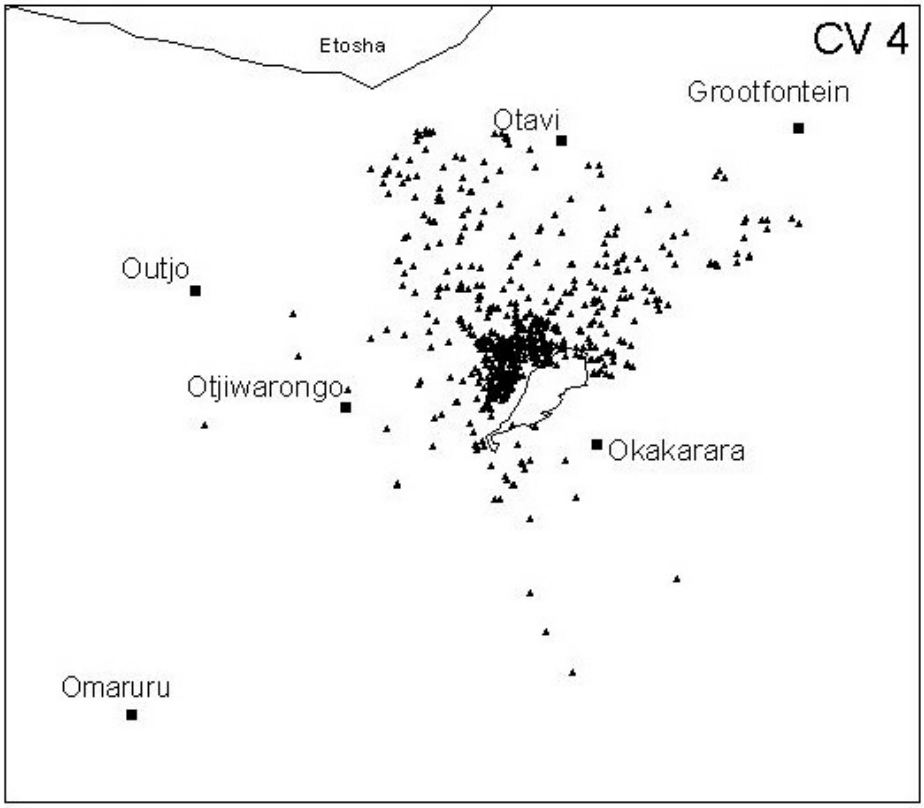
Results and discussion

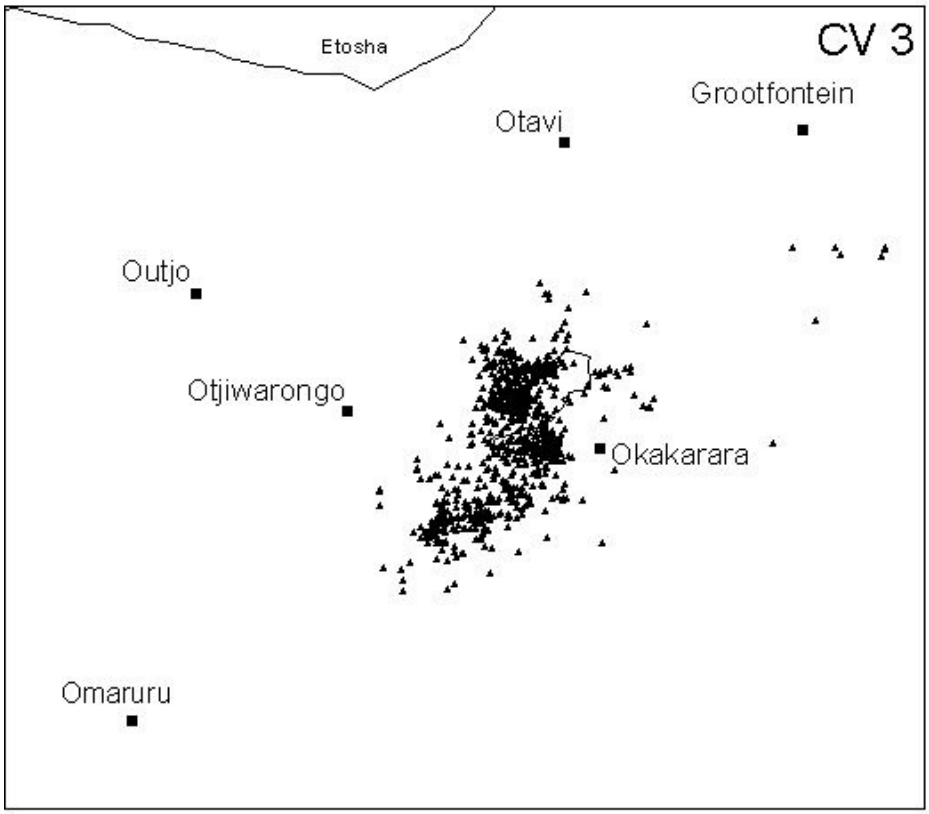
Figure 1 shows the home ranges of the five birds. With the exception of CV2, which was monitored over only two months, all the birds concentrated their movements and foraging to the west of the Waterberg Plateau Park, although CV3 also spent much time to the south of the Park. The home ranges varied between 11,800 and 24,500 square kilometres

(Table 1). These are all substantial areas (for comparison, Etosha National Park covers some 22,900 square kilometres).






CV 4
Etosha
Grootfontein
Otavi
Outjo
Otjiwarongo
Okakarara
Omaruru


CV 3
Etosha
Grootfontein
Otavi
Outjo
Otjiwarongo
Okakarara
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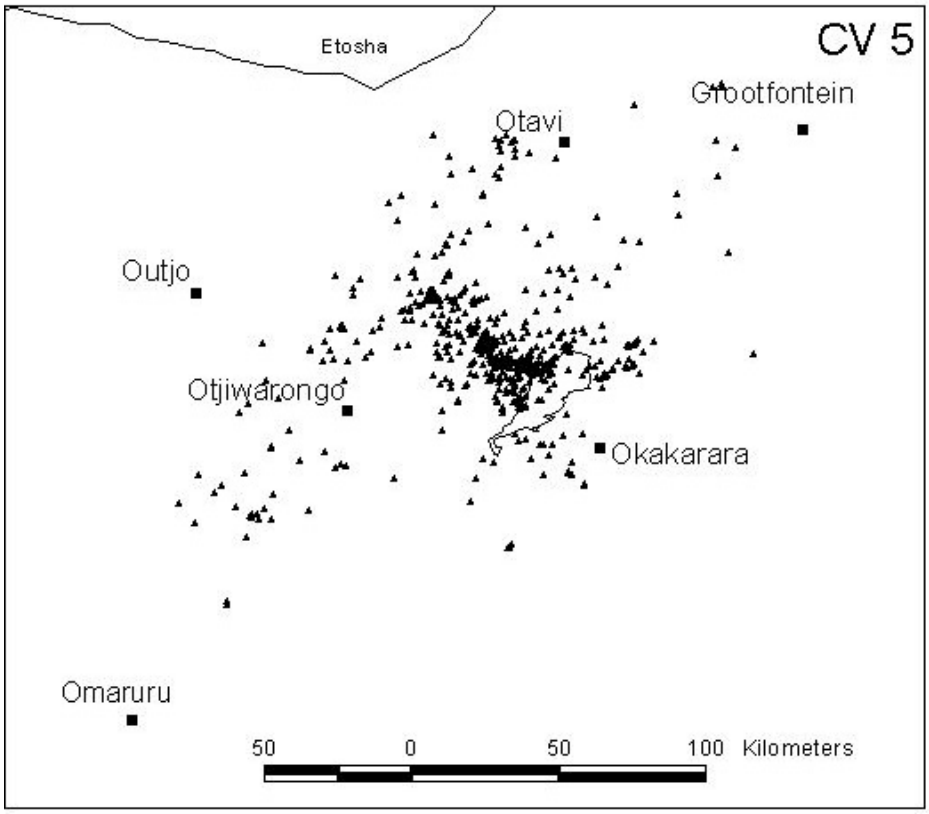

Figure 1. Places at which the five adult Cape Vulture were recorded in 2004 and 2005.

The most surprising result of the study was the discovery of frequent roosting and nesting in trees at sites relatively close to the traditional cliff roosts and nests on the Waterberg (Table 1). Three of the nests in trees were within 13 km of the western cliffs of the Waterberg Plateau Park, while a fourth was about 25 km from the nearest cliffs. Only one of the adults (CV4) roosted regularly on the western cliffs, but at three separate sites, while CV5 roosted regularly on both these cliffs and in trees. One adult (CV1) was perhaps paired to a White-backed Vulture, although genetic evidence of hydridisation has yet to be established.

The average flight speeds of the five males ranged between 55 and 62 kilometres/hour, the highest recorded speeds being over 127 kilometres/hour for three of the birds. Flight speeds did not vary significantly during the day. All records received from the transmitters are given with GMT time, which is approximately 2 hours before local time. Of a total of 2,322 records of the birds flying at speeds of 10 km/hour or greater, only 31 were recorded before 08h00 GMT or 10h00 local time. Similarly, only 20 records of birds flying at these speeds were recorded after 18h00, suggesting that most foraging occurs between 10h00 and 18h00 local time.

Flying heights were estimated by subtracting the recorded altitude of each flying bird from a set of elevation data for the country (Figure 2). The resulting estimates suggest that Cape Vultures generally forage between 250 and 350 metres above the ground. Although heights up to 1,000 metres above ground were recorded, only 20% of all altitude records were above 500 metres. The lower average flying heights between 10h00 and 1300 may be due to thermals being weaker during the earlier part of the day.

Alternatively, these estimates may be lower because they include more records of birds starting their daily foraging trips and therefore flying at lower altitudes.

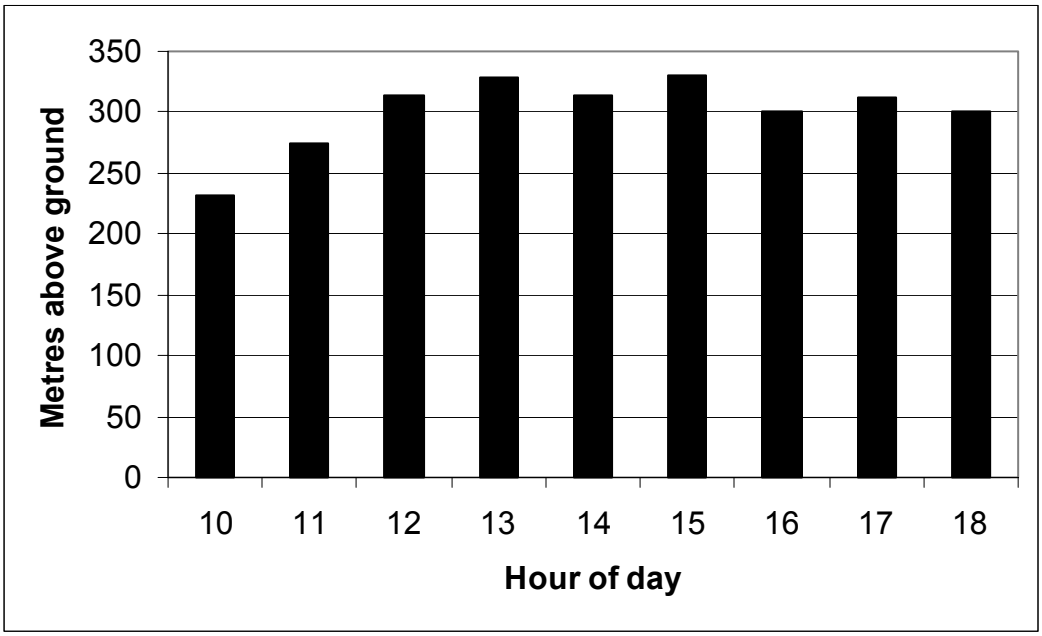

Figure 2. Average flying heights above ground of the five adult Cape Vultures.

The Cape Vultures spent much more time foraging and roosting on freehold farms than in other land uses (Figure 3). None of the birds spent any time in Etosha National Park, and there was little foraging over the Waterberg Plateau Park or the communal farming areas of what was previously called Hereroland.

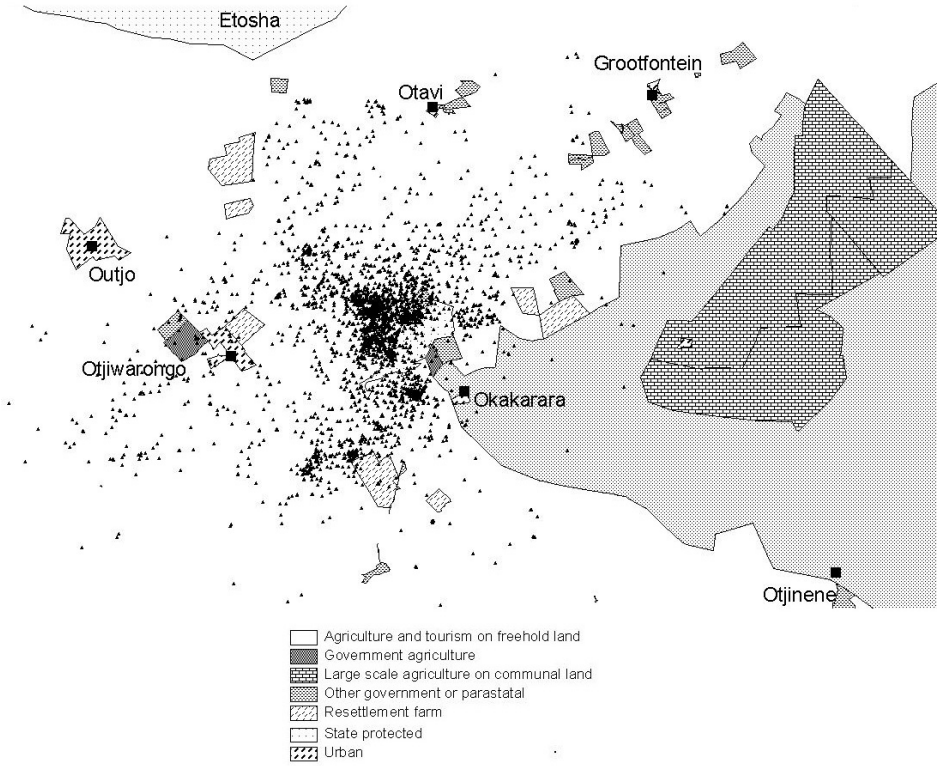

Figure 3. Places at which the five adults were recorded in relation to land uses. Each small black dot represents a record of a vulture.

In conclusion, a substantial volume of information has been collected from these five birds. The data have also demonstrated the existence of a tree-nesting population of Cape Vultures in Namibia. It can be argued that each reported locality is at least equivalent to a resighting, recapture or recovery of a ringed bird, and these five birds have provided over 7,300 such reports. This is a much greater return on effort than that achieved from all the ringing and colour-marking of vultures over many decades in the whole of southern Africa. Although satellite transmitters are expensive, we urge that more effort be made to track and study other birds using this technique.