

Some findings from tracking Cape Vultures in Namibia

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Introduction

The Rare & Endangered Species Trust (REST) secured funds in 2004 to embark on a study of Cape Vultures *Gyps coprotheres* using so-called PTT (platform transmitting terminal) transmitters that relay the birds' locations via Argos satellites. So far, ten vultures have been fitted with PTTs, four of which have operated for over two years. Each PTT weighs 70 grams and is powered by tiny solar panels. The PTTs use GPS (global positioning system) recorders to log locations that are usually accurate to about 15 metres. Most of the transmitters record locations each hour from early morning to early evening, thus giving up to 14 locations each day. In addition, the PTTs transmit estimates of altitude and flight speed. All the birds were caught at the REST vulture feeding site or restaurant, 50 kilometres north-east of Otjiwarongo.

Of the ten birds fitted with PTTs five were wild-caught adult males and two were young birds: a wild-caught immature female and a possible hybrid juvenile that may have fledged from a nest apparently occupied by an adult male (named CV1) and a White-backed Vulture *Gyps africanus*. The remaining three transmitters were fitted to captive adults: one was found dead a few days after release, while the other two were tracked for several months while they dispersed over large areas of the country.

By mid-May when this article was written, an impressive volume of data had been logged, amounting to about 48,700 separate locations, altitudes and speeds when the birds were in flight. Most of the locations were from the four birds tracked for over two years: CV3 and CV4 for almost 30 months, CV5 for 28 months and CV6 for 27 months.

Home ranges and movements

The five adult males all concentrated their movements within broad home ranges, each covering between 10,000 and 30,000 square kilometres (Figure 1); for comparison, the area of Etosha National Park is 22,900 square kilometres. Although their ranges overlapped a good deal, each bird tended to favour different zones. Thus, CV3 seldom moved far from the Waterberg and had the smallest range, whereas CV5 was often in areas to the west and CV4 favoured areas to the north-east of Waterberg.

Figure 1 shows that all the adults spent the majority of their time on freehold farms. None of the birds has ever ventured into the nearby Etosha National Park, and closer examination of places where the birds fed showed that very few carcasses were ever found in the Waterberg Plateau Park. Except for the regular roosting by CV4 in trees 25 kilometres north-east of Okararara, the birds also spent little of their time in communal land to the east of Waterberg; which is the former Hereroland. We speculate that this is because few wild large mammals occur in these areas, probably because wildlife is of little value to farmers there and because of the paucity of large mammals on the Kalahari Sand habitats that dominate the soils east of Waterberg.

The importance of wildlife as food for the vultures is indicated by the work of Pippa Schults, a student from the University of Cape Town. She used the PTT data to find places where the vultures had fed on farms near REST. Of the 24 carcasses located, 13 were kudu, followed by 4 cattle, 2 eland, 2 oryx and 1 horse. Several of the kudus had snared themselves on fences. Her work is reported in Schultz, P. 2007. *Does bush encroachment impact foraging success of the critically endangered Namibian population of the Cape Vulture Gyps coprotheres?* Thesis for MSc in Conservation Biology, University of Cape Town.

The young vultures and the released captives moved much more widely than the adults (Figure 2). The most spectacular movements have been by CV6, which was also tracked over a much longer period than any other young or captive birds. While many of this immature female's movements appeared to be nomadic, it is noteworthy that CV6 repeatedly returned to several, perhaps favoured foraging areas. These are in:

- western Omusati, roughly south of Ruacana, where it spent several weeks at a stretch in each of March, May, July and December 2005-January 2006,
- northern Botswana and Caprivi, mainly around the Panhandle of the Okavango Delta and in the Linyanti area in July-September 2005 and again in August-September 2006)
- south-eastern Namibia on three separate occasions: October-November 2005, April-July 2006, and December 2006-January 2007, and
- south-eastern Botswana in September-November 2006 and from March until at least May 2007.

Other favoured foraging areas have been to the west and east of Okaukuejo around the Etosha Pan and to the east of Windhoek. Interestingly, while in south-eastern Namibia CV6 only once crossed (and for only an hour) into the nearby Kgalagadi National and Transfrontier Park, suggesting that much more food is available on the Namibian farmlands. Enquiries among farmers in south-eastern Namibia suggest that their farms offer a good supply of sheep carcasses to vultures.

Nesting

All ornithological references unanimously report that Cape Vultures breed on cliffs. Thus, perhaps the most surprising finding from the tracked birds is of them nesting in trees, at least four, and perhaps six times. The four more definite records were from CV4 and 5, which nested in widely separate places in 2005 and 2006. Several brief observations of birds appearing like White-backed Vultures on the same nests suggested that they were hybrid breeding attempts, but unequivocal evidence of this remains lacking. The strongest indication of hybrid breeding came from the juvenile fitted with a PTT. While being examined in the hand after it was caught at REST, several observers noted that the juvenile was most like a White-backed Vulture but also had features suggestive of a Cape Vulture. Later support for this wild idea came from PTT co-ordinates that showed this young bird to have frequently roosted over several weeks in the very tree nest attended by CV1. Another adult observed on this nest looked like a White-backed Vulture.

If these breeding attempts in trees were indeed with White-backed Vultures, it may have been a shortage of female Cape Vultures that led males to consort with females of this much

more abundant species. This explanation is suggested by the fact that only one adult female has been seen repeatedly at the REST restaurant in recent years. More study of possible hybridisation and tree nesting would be of great value, both to explain what is happening to this remnant population of Namibian Cape Vultures and to suggest what might happen to other small populations of vultures elsewhere in the world. Of course, we have no clues about the fertility or viability of hybrids.

None of the birds has been found to nest at the old Cape Vulture breeding colony on the western cliffs of the Waterberg massif. However, CV5 is now (in May 2007) spending a great deal of time there, giving us suspicious hope that he may now breed there. The only other bird to frequent and roost on these cliffs was CV3. He did not breed there, or anywhere else in 2005 or 2006, and has yet to show signs of settling at a nest in 2007. Despite all this, some other Cape Vultures may have bred at the cliffs in recent years, a possibility suggested by the observations of Christa Diekmann and by regular sightings of at least one young juvenile at the REST restaurant after the end of the breeding season.



One of the tree nests used by CV5. This is on the farm Okaputa Sudwest, north of Otjiwarongo.

Foraging

The locations, altitudes and flight speeds recorded each hour provide some information on foraging behaviour. Typically, the birds remain at or close to their over-night roosts until about 09h00 or 10h00 before taking off to soar in search of food. The time then spent foraging varies greatly. Some days are fully spent in flight, the vultures only descending to roost at about 15h00 or 16h00. On other days, the vultures fly for less than an hour before their locations, altitudes and flight speeds indicate that they are on the ground, presumably at

a carcass. It is these locations that Pippa Schultz tracked down to see what carcasses the vultures had found.

Flying speeds normally vary between 50 and 70 km/hour. The highest speed recorded was 127 km/hour, a figure reached 11 times, suggesting that this is about as fast as a Cape Vulture ever goes. The majority of faster flights of over 90 km/hr appear to be clocked when the vultures are not foraging, for example when flying back to a nest or roost, or moving from one part of the country to another. It is also during these long-distance flights that the birds often fly really high, reaching altitudes of 700 to 1,000 metres above ground. While foraging, however, their heights typically range between 200 and 500 metres above ground. One factor that does relate to altitude is vegetation cover, the birds soaring at greater heights over areas with less cover. For example, average foraging heights (433 metres) in the much more arid and open habitats of south-eastern Namibia are about 100 metres higher than over the much denser cover around Otjiwarongo, Waterberg, Otavi and Grootfontein. Moreover, there is a clear linear relationship between average flying height and plant production (see page 102 in Mendelsohn, J.M., Jarvis, A.M., Roberts, C.S. & Robertson, T. 2002. *Atlas of Namibia*. David Philip, Cape Town.).

What might explain this trend? Perhaps thermals are stronger, lifting the birds more rapidly in more open country. The density of large mammals (and their carcasses) is probably lower in more arid, open zones, and the birds may improve their chances of finding food by searching over wider expanses from higher up. A third, perhaps better possibility is that vultures need to search more intensively or carefully where bush cover is thicker, and thus soar at lower levels to spot carcasses that are partially hidden by vegetation. Pretty solid evidence that carcasses are harder to find in dense cover comes from a neat experiment by Pippa Schultz. She placed food in areas of varying cover and found that the vultures located food quicker in low density bush than in high density cover. The probability of food being found also declined as bush density increased, to the extent that food was never found where there were more than 2,600 trees/hectare.

These observations lead us to the conclusion that bush encroachment, one of the most serious environmental problems in Namibia, probably reduces the availability of food to vultures. What impact this has on vulture populations is hard to say. Since Namibia's few adults seem concentrated in the area shown in Figure 1, it is unfortunate that much of this part of the country also suffers from severe encroachment. As a result, the value of supplementary food provided by local vulture restaurants may be especially high value in compensating for the effects of food being hard to find.

Acknowledgements

Many people and organisations have contributed to this project, and we particularly grateful for funding for the PTTs provided by Nedbank Namibia, Namibia Nature Foundation, Wilderness Safaris, Steve Martin's Natural Encounters, Ned and Diana Twining, and Jack Hanna.

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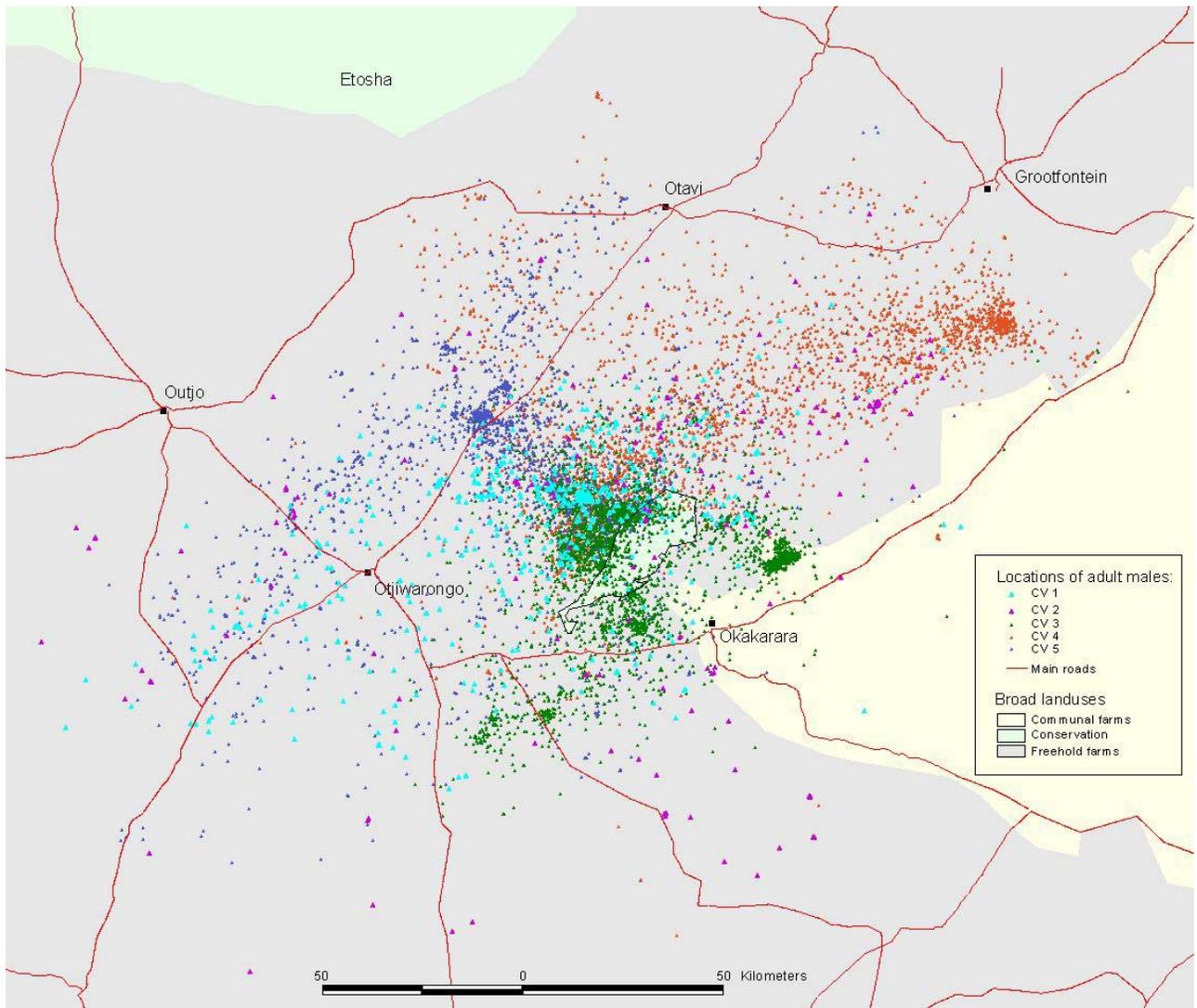


Figure 1 The dots on the map are locations where the five adult males Cape Vultures were recorded. The concentrations of dots are around favoured roost or nest sites.

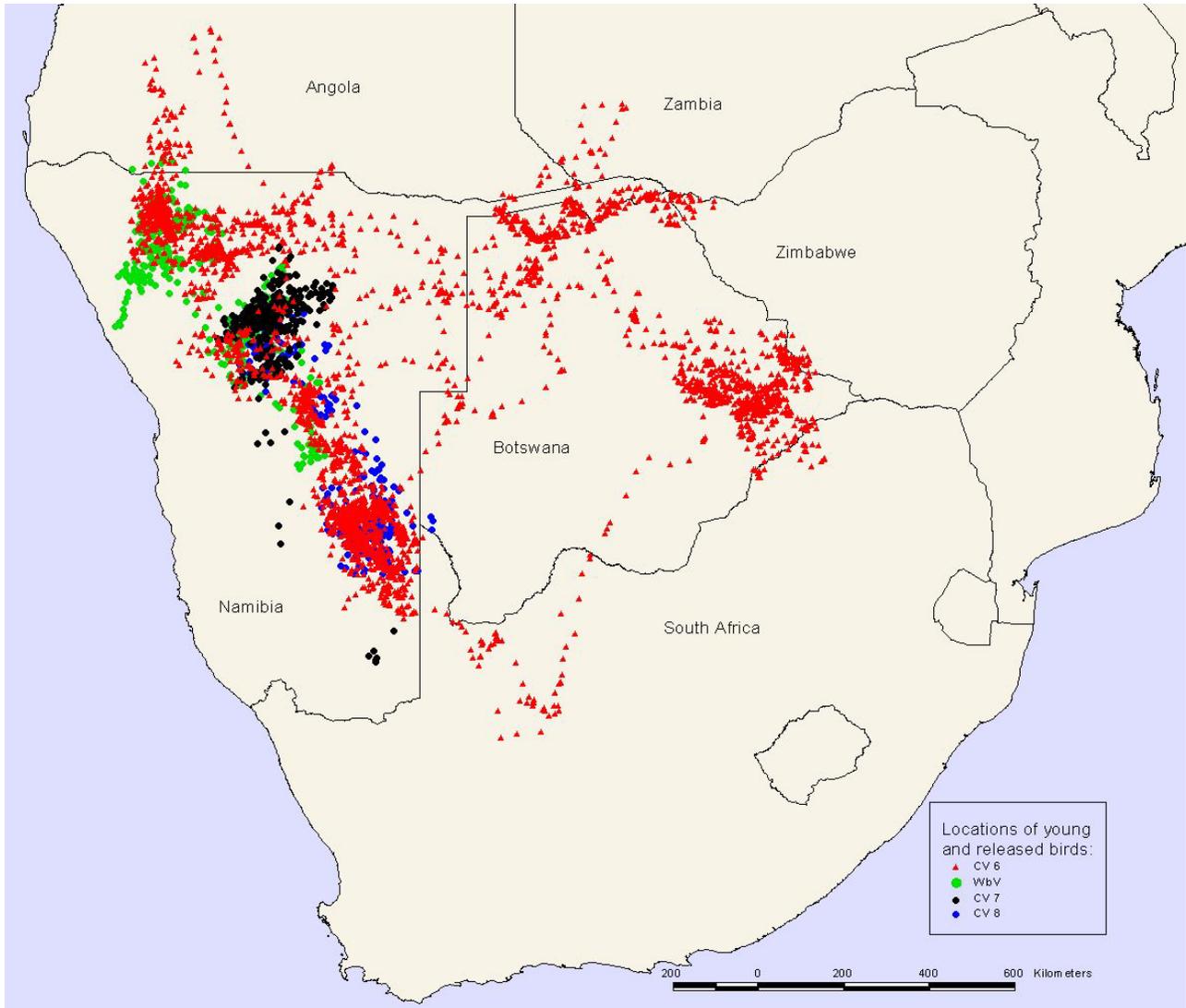


Figure 2: Locations at which two wild young vultures (CV6 and the possible hybrid WBV) and two released captive birds (CV7 and 8) were recorded.