NOTES

African White-backed Vultures nesting on electricity pylons in the Kimberley area, Northern Cape and Free State provinces, South Africa

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The African White-backed Vulture (AWbV) *Gyps africanus* is probably the most abundant and widely distributed vulture in Africa (Mundy *et al.* 1992). The AWbV typically nests in scattered groups on the tops of trees, especially *Acacia* species (Mundy *et al.* 1992, Anderson 2004). In the Kimberley area this vulture breeds on *A. erioloba* trees, and rarely *A. tortilis* trees (Murn *et al.* 2002). This population of vultures, especially those occurring on De Beers' Dronfield Game Farm, has been well studied since the 1960s, first by Forrester (1967), then by Mundy (1982) and latterly by Anderson, Anthony and co-workers (e.g. Anderson 2003, 2005). A microlight aircraft survey was recently conducted in the Kimberley area to locate all active breeding sites on *A. erioloba* trees and the population was estimated to number ca. 240 pairs (Murn *et al.* 2002). The number of breeding pairs to the east of Kimberley, in the Free State Province, is less well known, but population estimates have been provided by Colahan & Esterhuizen (1997). The aim of this paper is to report on a recent aerial survey of pylon-nesting vultures, and to relate the current number of breeding pairs to two earlier surveys.

The first pylon nesting AWbVs were located north-east of Kimberley (in the Free State Province) in 1985 by Ledger & Hobbs (1985). During a helicopter survey they found nine vulture nests on electricity pylons on the Grootkop-Kimberley 132 kV line (between Kimberley and a point due north of Boshof; Ledger & Hobbs (1985). Four nests were inactive, while five contained chicks. This line runs from Kimberley in a north-easterly direction. During a fixed-wing aircraft survey on 22 September 1991, Anderson, Norton and Kruger (unpubl. data) found six active AWbVs nests (of a total of 11 nests) along this 132 kV length of powerline. The line was surveyed as far as the Boshof-Hertzogville gravel road, a total distance of ca. 60 km. Subsequent to this latter survey, AWbVs (1-2 pairs) have nested on the pylons of two 220 kV lines on Dronfield Game Farm, located just north of Kimberley (Anderson 2001).

The Grootkop-Kimberley 132 kV powerline was not surveyed again until 27 August 2006. We flew along this line (from Kimberley to the Boshof-

Hertzogville road) in a Robinson 44 Raven II helicopter and searched for AWbV nests on the top of the electricity pylons. A total of 30 nests were located, of which 19 nests were active (Table 1), a significant increase in the number of nests located since the two previous surveys. A further three active AWbV nests were located on other lines (one on Rietpan farm and two on Dronfield Game Farm). In addition to the two active Martial Eagle nests located on the Grootkop-Kimberley 132 kV powerline (Table 1), an additional nest (with an egg) was located on a pylon on Dronfield Game Farm. During the survey, in addition to the seven AWbV nestlings observed, a total of 93 AWbVs (juveniles, immatures and adults) were seen.

There has therefore been a significant increase in the number of pylon-nesting AWbVs on the Grootkop-Kimberley 132 kV powerline since the mid-1980s (Table 2). The reason for the use of these pylons for nesting purposes is not known, but Ledger & Hobbs (1985) hypothesized that human pressure had driven the AWbVs out of the *A. erioloba* trees onto the steel pylon "trees" which are higher and safer. It is our opinion that disturbance in the area is not that significant and the change in nesting behaviour may therefore just be related to the preference for the higher and supposedly safer nesting structures. In the past there was apparently extensive harvesting of these trees for use in the mines (Matthews 1887, Fock 1972), but the utilization of *A. erioloba* is now prohibited. It is our hypothesis that food may be more of a limiting factor than nest sites in the greater-Kimberley area. For example, on Dronfield Game Farm a total of ca. 350 nesting trees have been utilized during the past 15 years, but only 60-80 pairs of vultures breed annually (Anderson & Anthony unpubl. data). AWbVs are threatened by a variety of anthropogenic mortality factors (Anderson 1994, Anderson & Kruger 1995, Anderson *et al.* 1999) and these probably also impact on the number of vultures. This has resulted in the species being listed as "vulnerable" in the red data book (Anderson 2000a). Despite these mortalities, it is possible that the AWbV population in the Kimberley area may be expanding, mainly due to raptor conservation efforts in the Northern Cape (e.g. Anderson 2000b, 2002, 2004, Anderson & Kruger 2004).

It has been suggested that nestling birds may imprint on the type of structure on which their nest is situated and then as adults seek out similar sites on which to breed (see Allan 1987). If this is so one would "… therefore expect the habit of pylon-nesting to be rate and slow in establishment, but thereafter to be rapid in its expansion through the population, providing breeding success at such sites is not impaired." (Allan 1987). One wonders whether this may be the reason for the increase of pylon-nesting AWbVs

Table 1. The breeding status of 30 African White-backed Vulture and Martial Eagles nests found on pylons along the Grootkop-Kimberley 132 kV powerline on 27 August 2006.

Species	Nest status			
	Inactive	Egg	Incubating	Nestling
AWbV	9	4	8	7
Martial Eagle				2
Total	9	4	8	9

Table 2. Number of African White-backed Vulture nests, both active and inactive, recorded on the Grootkop-Kimberley 132 kV powerline during three surveys (the start and end points of the three surveys was similar: the start of the powerline just east of Kimberley and the Boshof-Hertzogville road).

Survey	Survey date	Number of active nests	Number of inactive nests	Total number of nests
Ledger & Hobbs (1985)	9 October 1985	5	4	9
Anderson et al. (unpubl.)	22 September 1991	6	5	11
This study	27 August 2006	19	9	28

Figure 1. An incubating African White-backed Vulture on its nest on the Grootkop-Kimberley 132 kV powerline.

in the Kimberley area.

It is also important to note that Eskom's procedure prior to 1980 was for maintenance crews to routinely remove any nests found on electricity pylons, in the belief that they constituted a hazard to the reliability of the lines. An Eskom Bird Research Committee was established and by 1985 it became Eskom policy not to remove bird nests (see Mundy et al. 1992: p 377). This policy was reinforced in various documents, including Ledger (1988). The Eskom-Endangered Wildlife Trust Partnership continues to promote this policy (e.g. van Rooyen 1996, 1999) and the change of attitude by Eskom towards nesting birds (including vultures) during recent years may possibly also account for the increase in the number of pylon nesting AWbVs in the Kimberley area.

The advantages of nesting on an electricity pylon include having a rock-steady support, a 360o view of the surroundings, and of course being a safe haven from all terrestrial predators. A negative factor could be the much-debated effect of electromagnetic fields on the breeding success of the birds (see Fernie & Reynolds (2005) for a detailed review).

African White-backed Vultures have also been observed nesting on 88 kV powerlines near Vryburg, North West Province, South Africa (C. van Rooyen pers. comm.) and near Marble Hall in the Limpopo Province, South Africa (Wilson 2006). AWbVs have also been observed nesting on pylons in Tsavo National Park in Kenya (S. Thomsett pers. comm.). As far as we are aware, the only other Old World Vulture that nests on pylons is the Oriental White-backed Vulture *Gyps bengalensis*, with nests being observed in the Thar Desert in India (S. Satheesan pers. comm.).

It is recommended that five-yearly surveys are conducted of the AWbV population in the greater Kimberley area (i.e. of the tree-nesting and pylon-nesting birds). These should be by microlight aircraft or helicopter. It is also suggested that the following is investigated (a) further expansion of the pylon nesting population (range and number of pairs) and (b) comparisons of nesting success between the tree-nesting and pylon nesting populations (mainly to investigate differences in mortality rates, perhaps due to limited predation of eggs and nestlings on the pylons).

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References

Allan, D.G. 1987. Raptors nesting on transmission pylons. African Wildlife 42: 325-327.

Anderson, M.D. 1994. Mass African Whitebacked Vulture poisoning in the northern Cape. Vulture News 29: 31-32.

Anderson, M.D. 2000a. African Whitebacked Vulture Gyps africanus. In: Barnes, K.N. (ed.). The Eskom Red Data Book of Birds of South Africa, Lesotho & Swaziland. pp 75-77. BirdLife South Africa, Johannesburg.

Anderson, M.D. 2000b. Raptor conservation in the Northern Cape Province, South Africa. Ostrich 71(1&2): 25-32.

Anderson, M.D. 2001. Vultures nesting on electricity pylons. African Wildlife 55(5); 10-11.

Anderson, M.D. 2002. Nature's undertakers. The White-backed Vultures of Kimberley. Diamond Fields Advertiser. 21 August 2002: 11-14.

Anderson, M.D. 2004. Bateleurs return to soar and tumble in the Northern Cape sky. African Wildlife 58(3): 12-15.

Anderson, M.D. 2003. Kimberley's vultures. Not just here for De Beers… Africa Birds & Birding 8(1): 22.

Anderson, M.D. 2004. African White-backed Vulture Gyps africanus. In: The Vultures of Southern Africa - Quo Vadis? Proceedings of a workshop on vulture research and conservation in southern Africa. Monadjem, A., Anderson, M.D., Piper, S.E. & Boshoff, A. (eds). pp 15-27. Birds of Prey Working Group, Endangered Wildlife Trust, Johannesburg.

Anderson, M.D. 2005. Dronfield – four decades of vulture research. Endangered Wildlife 54: 50-52.

Anderson, M.D. & Kruger, R. 2004. Raptor conservation in the Northern Cape Province. 3rd Edn. Northern Cape Department of Tourism, Environment & Conservation and Eskom, Kimberley.

Anderson, M.D. & Maritz, A.W.A. 1997. The status and distribution of vultures in the Northern Cape Province, South Africa. In: Vultures in the 21st Century: Proceedings of a workshop on vulture research and conservation in southern Africa. Boshoff, A.F., Anderson, M.D. & Borello, W.D. (eds). pp 37-45. Johannesburg: Vulture Study Group.

Anderson, M.D., Maritz, A.W.A. & Oosthuysen, E. 1999. Raptors drowning in farm reservoirs: impacts on southern African populations. Ostrich 70(2): 139-144.

Anderson, M.D. & Kruger, R. 1995. Powerline electrocution of eighteen African Whitebacked Vultures. Vulture News 32: 16-18.

Colahan, B.D. & Esterhuizen, J.R. 1997. The status and conservation of vultures in the Free State province, South Africa. In: Vultures in the 21st Century: Proceedings of a workshop on vulture research and conservation in southern Africa. Boshoff, A.F., Anderson, M.D. & Borello, W.D. (eds). pp 46-49. Vulture Study Group, Johannesburg.

Fernie, K.J. & Reynolds, S.J. 2005. The effects of electromagnetic fields from power lines on avian reproductive biology and physiology: a review. Journal of Toxicology and Environmental Health, Part B 8: 127-140.

Fock, G.J. 1972. Wild animals in rock engravings. South African Museums Association Bulletin 10: 2-11.

Forrester, A.K. 1967. Some observations made on white-backed vultures (Gyps africanus) while nesting. Bokmakierie 19: 6-8.

Matthews, J.W. 1887. Incwadi Yami, or twenty years of personal experience in South Africa. Rogers & Sherwood, New York.

Murn, C., Anderson, M.D. & Anthony, A. 2002. Aerial survey of African white-backed vulture colonies around Kimberley, Northern Cape and Free State provinces, South Africa. South African Journal of Wildlife Research 32(2): 145-152.

Ledger, J.A. 1988. Eskom Bird Identification Guide. Eskom, Johannesburg.

Ledger, J. & Hobbs, J. 1985. First record of African White-backed Vultures nesting on man-made structures. Bokmakierie 37(4) 99-101.

Mundy, P.J. 1982. The comparative biology of southern African vultures. Vulture Study Group, Johannesburg.

Mundy, P., Butchart, D., Ledger, J. & Piper, S. 1992. The vultures of Africa. Academic Press, London.

Van Rooyen, C.S. 1996. Towards an Integrated Management System for the Management of Wildlife Interactions with Electricity Structures. Abstracts of the 2nd International Conference on Raptors. Raptor Research Foundation/ University of Urbino, USA.

Van Rooyen, C.S. 1999. An overview of the Eskom-EWT Strategic Partnership in South Africa. EPRI Workshop on Avian Interactions with Utility Structures. 203 December 1999, Charleston, South Carolina.

Wilson, M. 2006. African White-backed Vulture nesting on electricity pylon in Limpopo Province, South Africa. Vulture News 55: 23-24.

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