
ARTICLES

An aerial survey of raptors along the Ghaap Plateau escarpment, Northern Cape Province, South Africa

Mark D. Anderson^{1*} & Peter Hohne²

¹Department of Tourism, Environment & Conservation, Private Bag
X6102, Kimberley 8300, South Africa

²HOH Surveys, 5 Rendelsham Road, Belgravia, Kimberley 8301, South
Africa

Corresponding author: manderson@half.ncape.gov.za

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Introduction and Methods

During the past 15 years extensive raptor research, monitoring and conservation work has been conducted in the Northern Cape (Anderson 2000, 2004, Anderson & Kruger 2004). This work has included the Kalahari Raptor Project in the southern Kalahari (conducted by Abrie Maritz), the Platberg-Karoo Raptor Project (conducted initially by Francois Taljaard, latterly by Ronelle Visagie) and the various projects conducted by the Northern Cape Department of Tourism, Environment & Conservation (see Anderson 2000). Despite the relatively extensive work that has been conducted on raptors in the Northern Cape, a cliff-nesting raptor survey along the Ghaap Plateau escarpment has never been done.

During this study we conducted an aerial survey to determine the distribution and density of raptor and Black Stork *Ciconia nigra* nests along the Ghaap Plateau escarpment. The information obtained during the survey would be useful as it would provide (a) the first information on the distribution and density of raptors and storks breeding along the Ghaap Plateau escarpment, (b) information to use during conservation

planning exercises and (c) information that can be used to advise recommendations on development applications in the area (there is already some limestone mining along the escarpment).

The survey was conducted on 23 July 2006 in a Robinson 44 Raven II helicopter, with the area surveyed being the portion of the escarpment from Taung to just south of Douglas (the sun was therefore shining against the escarpment, making observations easy). The total length surveyed was 205.5 km, 73.4% of the length of the escarpment. The total flying time was 4.9 h, with two stops to refuel. The presence of all raptors and Black Storks were noted. Nests were carefully assessed to determine whether they were active (incubating adult, egg or nestling, or fresh lining); this often necessitated circling and returning to re-examine the nest site.

This prominent escarpment, averaging c. 100 m in relief and 1150 to 1200 m in elevation, extends some 280 km from 27.7°S near Vryburg to 29.7°S near Douglas, trending from northeast to southwest (Butzer 1974). The cliffed escarpment (40-70°) and the generally flat plateau (less than 0.5°) are formed of gently warped, Precambrian dolomites of the Transvaal System (Butzer 1974). The scarp rim is angular, the footslope more often smooth concave, averaging 25° as it descends onto a rock-cut plain descending to the valley margins of the Vaal and Harts rivers (Butzer 1974). Drainage lines have incised short, V-shaped gorges along the edge of the escarpment. In some of these gorges, water flowing over the surface of the tufa is still today adding to the tufa mass. The escarpment is well developed south of Ulco, where relief attains 90-120m (Butzer 1974). Vegetation along the escarpment cliffs is sparse, but open woodlands are present in the gorges. Common species include Namaqua Fig *Ficus chordata*, White Stinkwood *Celtis africana* and False Olive *Buddleja saligna*.

The Ghaap Plateau escarpment topographical feature is unique in the Northern Cape and, besides small cliffs on isolated dolerite kopjes and inselbergs in the Karoo (to the south) and very limited cliffs on the

Asbestos Mountains and Langberg Mountains (to the west), this provides the only extensive breeding habitat for cliff-nesting raptors in the eastern Northern Cape.

Results and Discussion

Twenty-eight individuals of four raptor species (Verreaux's Eagle *Aquila verreauxii*, Booted Eagle *Hieraaetus pennatus*, Lanner Falcon *Falco biarmicus* and Rock Kestrel *Falco rupicolus*) and one Black Stork were observed (Table 1, Figure 1). Five Verreaux's Eagle nests were seen, three active nests (with incubating adults) and two with fresh lining. No other raptor nests were observed, but it is probable that some Lanner Falcon and Rock Kestrel nests were overlooked. All the Rock Kestrel observations were of birds that we flushed off the cliff face. Lanner Falcons tend to slip off their nesting ledge (usually an old crow nest) and dive away below the helicopter, so they can be missed. Otherwise they sit tight and can then also be missed (W.R. Tarboton pers. comm.). The Verreaux's Eagle nests are distinguished by their large size. It is possible that some Black Stork nests were missed, as these are not easy to locate. They are usually situated low on the cliff (5-10 m from the base) often under an overhang or in a cleft. Their nests however, if active, are made visible by a big white ring of whitewash on the rocks above the nest (Tarboton 2001, Anderson 2005). The Booted Eagle flew out of a gorge and it is possible that it was flushed from its nest. If so, this would represent only the second nest site located north of the Orange River in Northern Cape (Anderson *et al.* 1995).

The number of raptors and storks observed is almost certainly an underestimate of the number actually present, especially for the smaller species. It is quite unlikely, but not impossible, that we missed Verreaux's Eagle nests. The escarpment varies from an almost indiscernible edge to fairly steep cliffs, and there were fewer stretches of suitable cliff-nesting raptor habitat than we expected.

Only five Verreaux's Eagle nests were located (Figure 2), with the inter-nest distances thus being 41.1 km, a significantly lower density than that

determined at other localities (Table 1). Two of the nests were in gorges and one was in a pothole. The low density of Verreux's Eagles, in comparison to nearby areas such as the Nuweveld Mountains in the Karoo (Davies 1994), may be because the limestone cliffs do not crack and crumble like the Nuweveld's ironstone which provides lots of suitable crevices for the eagle's principle food source, the Rock Dassie *Procapia capensis*.

We conclude that: (a) there is a low density of large, cliff-nesting raptors along the Ghaap Plateau escarpment, (b) large areas are unsuitable for nesting (but the gorges may be important, not only for Verreux's Eagles, but perhaps also Booted Eagles and other species) and (c) ground surveys should be conducted (especially in the gorges and along the lengths of steep cliffs) to verify the results of the aerial survey and to locate additional nests.

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Table 1. The number of raptors observed during a helicopter survey along the Ghaap Plateau escarpment.

Species	No. of observations	No. of individuals observed
Verreaux's Eagle	7	7
Booted Eagle	1	1
Lanner Falcon	1	1
Rock Kestrel	15	19
Black Stork	1	1
Total	25	29

Table 2. The inter-nest distances (km) for Verreaux’s Eagles in South Africa and Namibia.

Locality	Inter-nest distances (km)	Source
Nuweveld Mountains, South Africa	2.7-4.3	Boshoff & Palmer (1988), Davies (1994)
Drakensberg, South Africa	5.8-8.6	Brown (1988)
Soutpansberg, South Africa	6.8	Tarboton & Allan (1984)
Magaliesberg, South Africa	9.5	Tarboton & Allan (1984)
Waterberg, Namibia	9.8	Brown & Cooper (1987)
Waterberg, South Africa	13.3	Tarboton & Allan (1984)
Ghaap Plateau escarpment, South Africa	41.1	This study



Verreaux’s Eagle by Penny R. Meakin from *The Atlas of Southern African Birds*, 1997, Harrison, J.A. *et al.* (eds) published by BirdLife South Africa, Johannesburg.

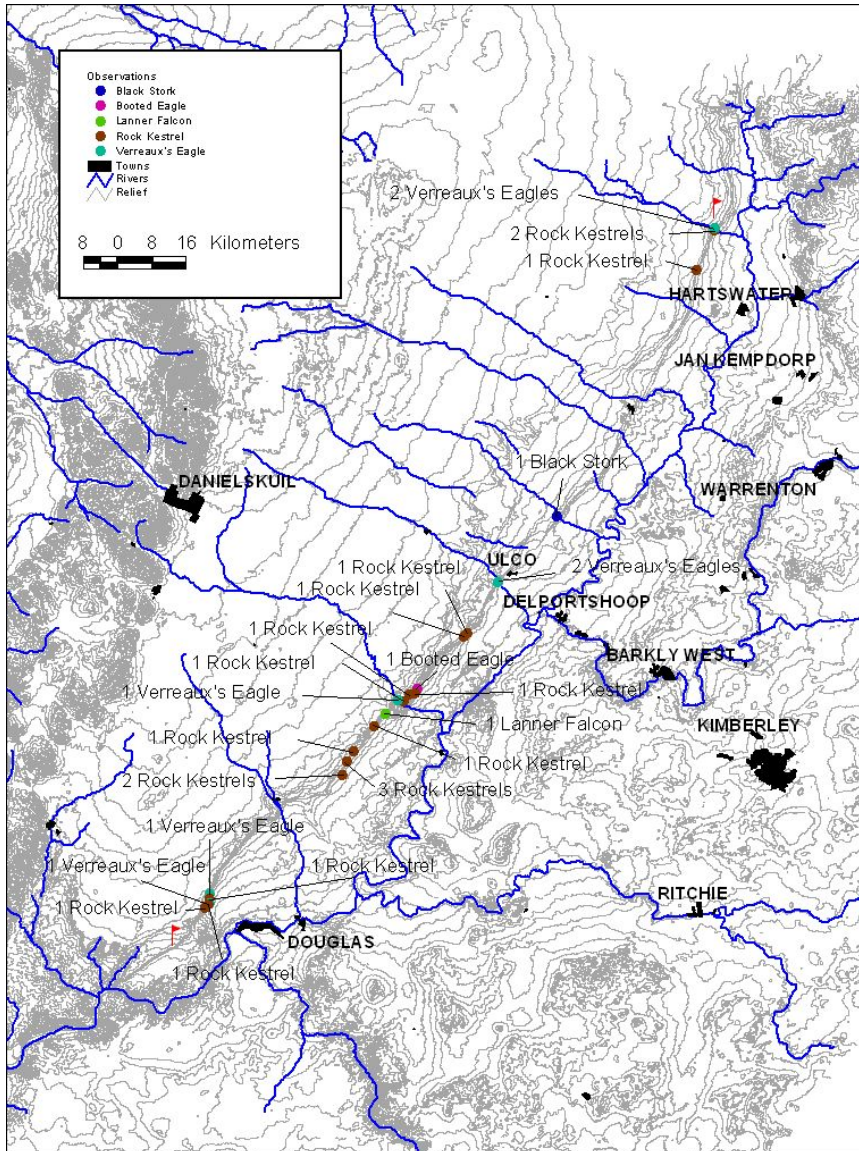


Figure 1: The locality of raptors and Black Stork observed during an aerial survey along the Ghaap Plateau escarpment. The flags indicate the start and end points of the survey.

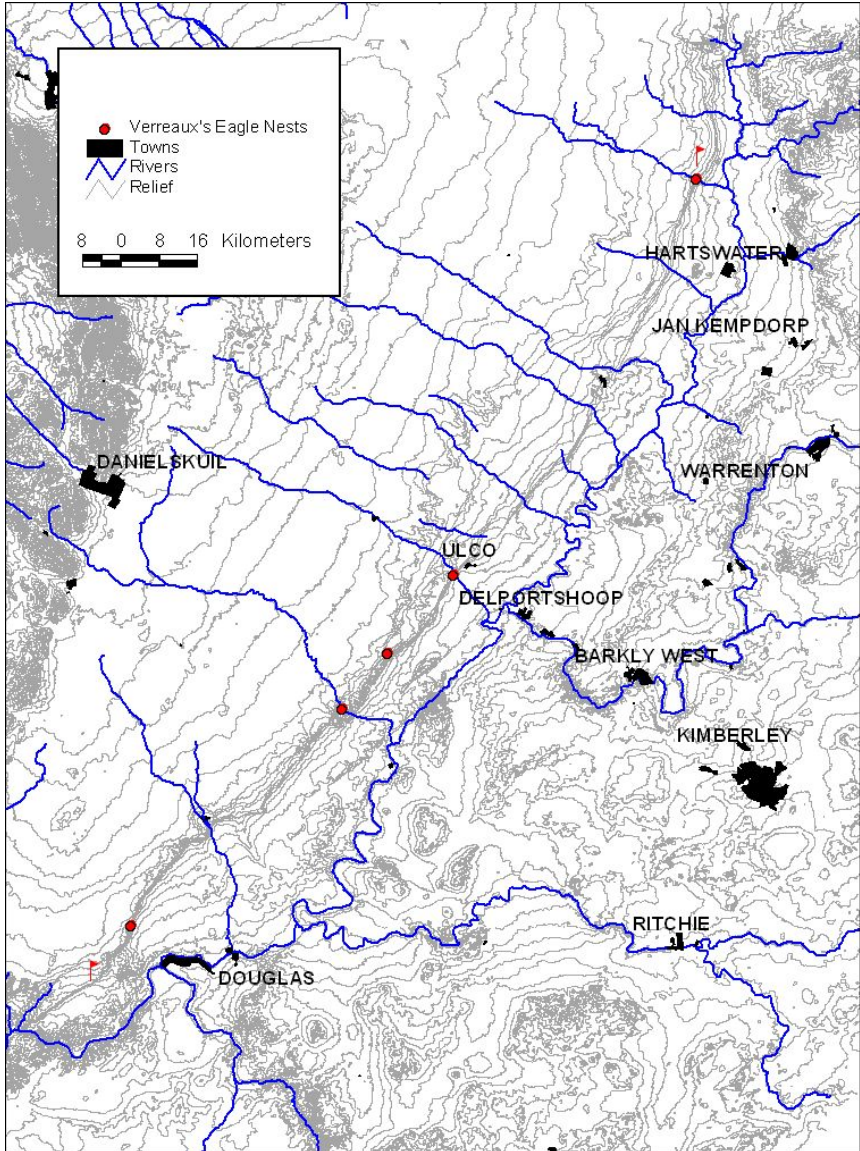


Figure 2: The locality of five Verreaux's Eagle nests seen during an aerial survey along the Ghaap Plateau escarpment. The flags indicate the start and end points of the survey.