



# ELECTRIC EAGLES OF THE KAROO

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PHOTOGRAPHS BY KOOS DE GOEDE

**B**ounded by the windswept West Coast, the soaring mountains of the southern Cape and the eastern escarpment, and the northern wastes of the Kalahari, the Karoo is the central feature of South Africa's rich mosaic of natural habitats.

Superficially, the Karoo's austere landscape remains little altered by man. Settlements are tens or hundreds of kilometres apart and the matrix of tracks and fences that defines land ownership is all but invisible. However, a more critical look at the integrity of the area's ecosystems shows the accumulated effects of generations of chronic abuse. Wild game populations have long since been hunted out, replaced by domestic stock maintained at densities high enough to cause widespread overgrazing of the natural vegetation. Simultaneously, ranchers have largely eradicated predatory and scavenging species considered a threat to their livestock.

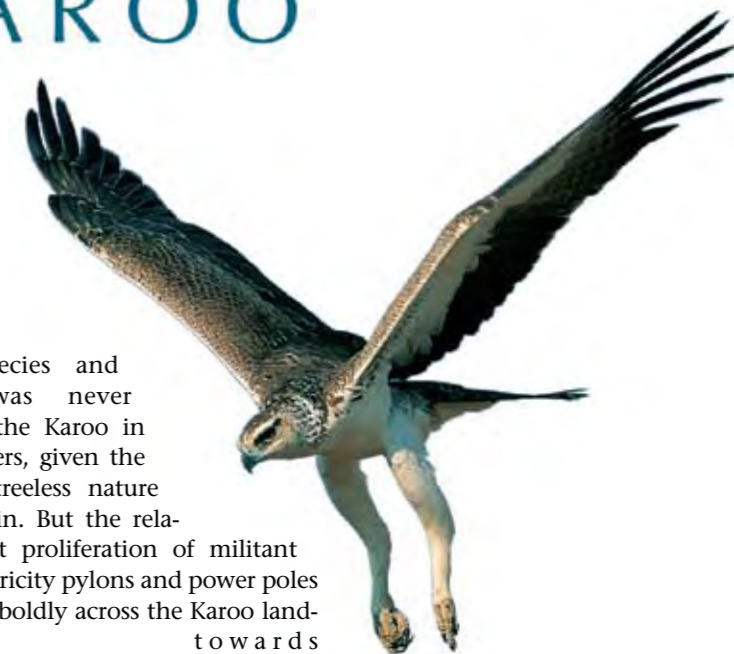
Despite the ongoing efforts by many landowners to exterminate them, and the effects of increasing habitat degradation, some of the more elusive of the Karoo predators still prevail. One such surviving species is the Martial Eagle *Polemaetus bellicosus*. This impressive bird persists in the Karoo, a tribute to its own tenacity, the goodwill of a few enlightened farmers and, strangely enough, the progressive growth of South Africa's electricity supply network into the country's more remote regions.

The Martial Eagle is primarily a tree-

nesting species and perhaps was never present in the Karoo in large numbers, given the essentially treeless nature of the terrain. But the relatively recent proliferation of militant lines of electricity pylons and power poles striking out boldly across the Karoo landscape towards distant horizons has almost certainly improved opportunities for nest-building, and thus made this arid region a more attractive area for eagles in search of suitable real estate.

A species particularly threatened by human persecution and habitat loss, the Martial Eagle is listed as 'Vulnerable' in the *South African Red Data Book of Birds*. Perhaps 25 per cent of the national population of less than 600 pairs is restricted to the huge conservation areas of the Kruger National Park and the Kgalagadi Transfrontier Park. Concern for the welfare of Martials living outside of formally protected areas prompted the initiation of a long-term project to monitor territory occupancy and breeding success at nests in the southern Karoo. This work was first conducted by Dr André Boshoff (then of Cape Nature Conservation) from 1981 to 1991, and from 1995 to the present it has been continued by Koos de Goede of the Raptor Conservation Group.

Perhaps predictably, findings to date suggest that the future of the Martial Eagle in the Karoo is far from secure. ▽



**Above** Juvenile Martial Eagle.  
PHOTOGRAPH: RICHARD DU TOIT

**Opposite** A typically large and conspicuous Martial Eagle nest on an electricity pylon in the open, treeless plains of the central Karoo.



**Above** Approximate range of the Martial Eagle (inset), and the location of the core study area in the southern and central Karoo (on the pylon lines between Touws River and Beaufort West), with other monitored sites on the south-west coast and in the Calvinia district (north-east of Vredendal) also indicated. Future plans for the study include expanding the survey area to encompass the entire Great Karoo.

**Below** A juvenile Martial Eagle perched on a wooden electricity pylon or power pole, feeding on a steenbok. This particular structure is bird-friendly, since the dangerous, current-carrying hardware is safely suspended below the eagle's preferred perch.

#### ON A WING AND A PRAYER

Most of the recent survey work in the Karoo has focused on the pylon lines running from Touws River in the south-west to just north-east of Beaufort West, encompassing an area of approximately 22 000 square kilometres and including 600–700 kilometres of electricity transmission or distribution lines. In order to cover such a large area adequately, two aerial surveys have been flown each season, followed by more intensive ground-survey expeditions.

Low-level flying along pylon lines is not without its dangers, and a number of knuckle-whitening incidents have done nothing to preserve the youthful good looks of eagle biologists and pilots alike. One near-collision with an eagle circling low over its nest had the occupants of the aircraft, including the pilot, cowering behind the plane's instrument panel in keen anticipation of the eagle's imminent entrance to the cockpit through the windscreen. It is testimony to the skill (and good luck) of the pilots involved that these flights have remained casualty-free.



An adult Martial Eagle perched in the waist of a giant transmission pylon, just before delivering prey to its nest.

There are about 20 occupied Martial Eagle territories in the core area of the study, with active nests spaced an average of about 14 kilometres apart – a figure comparable with density estimates for both the Kruger and Kgalagadi populations. A number of other Karoo Martial sites are checked whenever possible, including some nests on pylons in the Loeriesfontein/Calvinia district and a few tree-nests scattered throughout the general area, bringing the total number of monitored territories to about 50. Extrapolating from this figure, it seems likely that the entire Karoo could support as many as 150–200 breeding pairs of Martials – about 30 per cent of the national population.

#### PROBLEM EAGLES AND EAGLES' PROBLEMS

The belief that small-stock losses may be attributed to the predatory habits of large eagles and vultures is one that remains widely held by Karoo farmers, in spite of a lack of substantive evidence and in the face of a wealth of information to the contrary. The result is a persistent culture of raptor persecution that, coupled with the irresponsible use of poisons or traps intended to kill other stock predators such as the black-backed jackal and caracal, has contributed significantly to the widespread depletion of large raptor populations. Because Martials forage over such large areas, they are more likely to range over land belonging to raptor-unfriendly farmers, and this makes them particularly vulnerable to persecution. Scavenging eagles such as the Tawny *Aquila rapax* and Bateleur *Terathopius ecaudatus*, which are prone to feeding on poisoned baits, have also been hard hit.

Are the farmers' actions against eagles justified? Almost certainly not; in a recent survey of causes of death in newborn lambs in South Africa (based on carcass examinations), eagles were responsible for less than one per cent of mortalities. While it is undeniable that problem individuals may occur and consume more than their fair share of young sheep or ▷



goats, this is more the exception than the rule. In general, through their effect on the numbers and behaviour of their natural prey, eagles are probably more beneficial than detrimental to small-stock farmers. For example, in a remarkably thorough study of Black Eagle *Aquila verreauxii* predator/prey dynamics in the Karoo, Rob Davies calculated that by restricting the activities of rock hyrax (or dassies) to protected rocky outcrops, an eagle pair lowered the hyraxes' capacity to compete with stock animals for grazing, reducing the incurred financial costs to the farmer by up to 150 times.

Efforts to meet with landowners in the vicinity of Martial Eagle nests and to discuss the issue of stock losses with them have been an essential supplement to the eagle monitoring and survey work conducted by De Goede in the Karoo. Through a process of education and encouragement, even some of the more hardened eagle killers have become eagle-tolerant farmers, with a better appreciation of the role that predators play in the natural balance of Karoo life. These 're-born conservationists' now proudly hang Total-sponsored signboards on their farm gates, proclaiming the presence of a Martial nest on their property.

*A Martial Eagle nest in the top, central section of a distribution pylon, with a partially dismembered steenbok carcass draped over the metal-work. Hares and small antelope are staple foods of this species in the Karoo.*



Unfortunately, for every happy story there is a sad one. Adult eagles continue to disappear from the population under suspicious circumstances, and structures built to best expose baited gin traps to attract the attention of eagles have been found at the base of nest pylons. While it is difficult to prove, it seems certain that eagles are still ruthlessly persecuted in many parts of the Karoo.

The combination of eagles and electricity pylons also has its own intrinsic problems. On the lower voltage distribution and reticulation lines carried by smaller pylon structures, eagles, vultures and other large birds can bridge the gaps between the steel hardware and live components (usually when their wings are spread during take-off or landing). Many birds are electrocuted in this way and may also cause expensive interruptions of the electricity supply in the process. Even on the high-voltage transmission lines carried by the largest pylons and on which the components are situated metres apart, perching Martial Eagles can cause electrical flash-overs with their streams of excrement. Such 'bird streamer outages' cost Eskom, the national electricity supplier, in the region of R60 000 per incident, and many millions of rands each year.



So while the pylon networks provide eagles with much-needed hunting, roosting and nesting sites, they are also hazardous structures and a significant cause of eagle mortality. Overhead lines are notoriously dangerous for large, flying birds that regularly collide with them. In all, electrocutions on lower voltage lines and collisions with all overhead lines account for about three to five eagle deaths in the study area each year.

#### THE STATE OF THE NATION

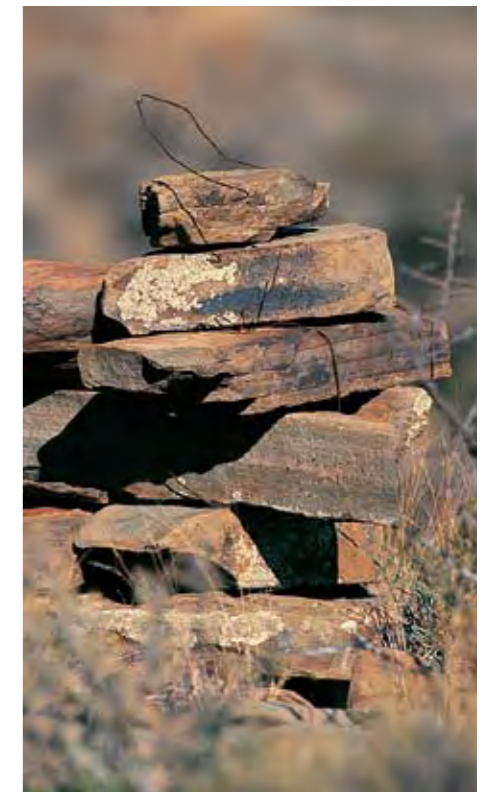
The most recent data on the status of Karoo Martial Eagles suggests that the number of breeding pairs in the population has decreased since the 1980s. The most obvious reason for the lack of breeding at some previously active territories is that one or both of the resident adults has been shot or trapped, and there is plenty of circumstantial evidence to support these theories.

Alternatively, general aspects of land management may affect eagle populations in a less tangible, but no less important way. Stocking rates and grazing regimes are crucial determinants of veld quality. Mismanagement at this fundamental level of the ecosystem impacts on the general health of the local environment. Some eagle sites may be unoccupied or inactive because much of the ranchland contained within these territories is overgrazed. In some areas this or other forms of land degradation may have occurred to the extent that there is insufficient prey available to sustain breeding pairs of eagles. This connection between land management practices and

eagle populations has not been adequately established or explained, although the principle is supported by research undertaken in Zimbabwe that has shown that there are more eagles in areas with more fertile soil (which support higher prey densities). So it seems possible that the incipient and widespread effects of poor land management are ultimately responsible for long-term decreases in eagle populations outside of pristine game reserves. These effects are simply exacerbated by direct and indirect persecution, which raise eagle mortality rates to unnatural highs.

Some future objectives of the Electric Eagle project are to extend the survey area to include the entire pylon network of the Karoo, to individually mark enough adult birds in the population so as to estimate the rate of mortality (as a possible indicator of the intensity of persecution), and to further investigate the relationship between land management practices and the success of eagle pairs. At present, the project hangs precariously in the balance, pending contributions from new sponsors.

Clearly, if large eagles are sufficiently sensitive to ecosystem integrity, then establishing and maintaining a stable, healthy and productive population of Martial Eagles in the Karoo could motivate for wholesale changes in the attitudes of landowners throughout the region. In this way the eagles could function as flagship species for a much broader conservation initiative, spearheading a drive to restore and rehabilitate the country's heartland. □



**Above left** Eco-friendly farmers are essential for the Martial's continued survival in the Karoo. Farmers who protect nesting eagles are encouraged and credited for their efforts wherever possible.

**Above** Unfortunately, persecution of Karoo eagles is still widespread, and rock 'altars' are frequently found in the vicinity of Martial nests. These are used to expose baited gin traps to unsuspecting eagles.

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