

Caracal *Caracal caracal*



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Namibian conservation status	Least Concern
Global IUCN status	Least Concern since 1996
Namibian range	~769,000 km ²
Global range	~17.2 million km ² (IUCN 2014)
Population estimate	Widespread over its range and fairly common, although elusive
Population trend	Stable. Possibly increasing on some farms where black-backed jackal numbers have declined
Habitat	Dry savanna, dry woodlands, <i>Acacia</i> scrub, arid hilly and mountainous areas up to 2,500 m altitude
Threats	Caracals are heavily persecuted on game and small-stock farms as livestock killers. This results in a lack of experienced adult females which could pose a threat to their long-term survival. In addition, it can increase conflict due to the influx of young individuals- which defend smaller territories than mature animals- and thus a higher carnivore density

IDENTIFYING FEATURES

The caracal is the heaviest of Africa's small cats, ranging from 6–20 kg. The long black-tufted ears, rufous coat with spotted whitish underparts and relatively short tail, are distinctive. It has dark facial markings on the cheeks and over the eyes, and the backs of the ears are black.

DISTRIBUTION

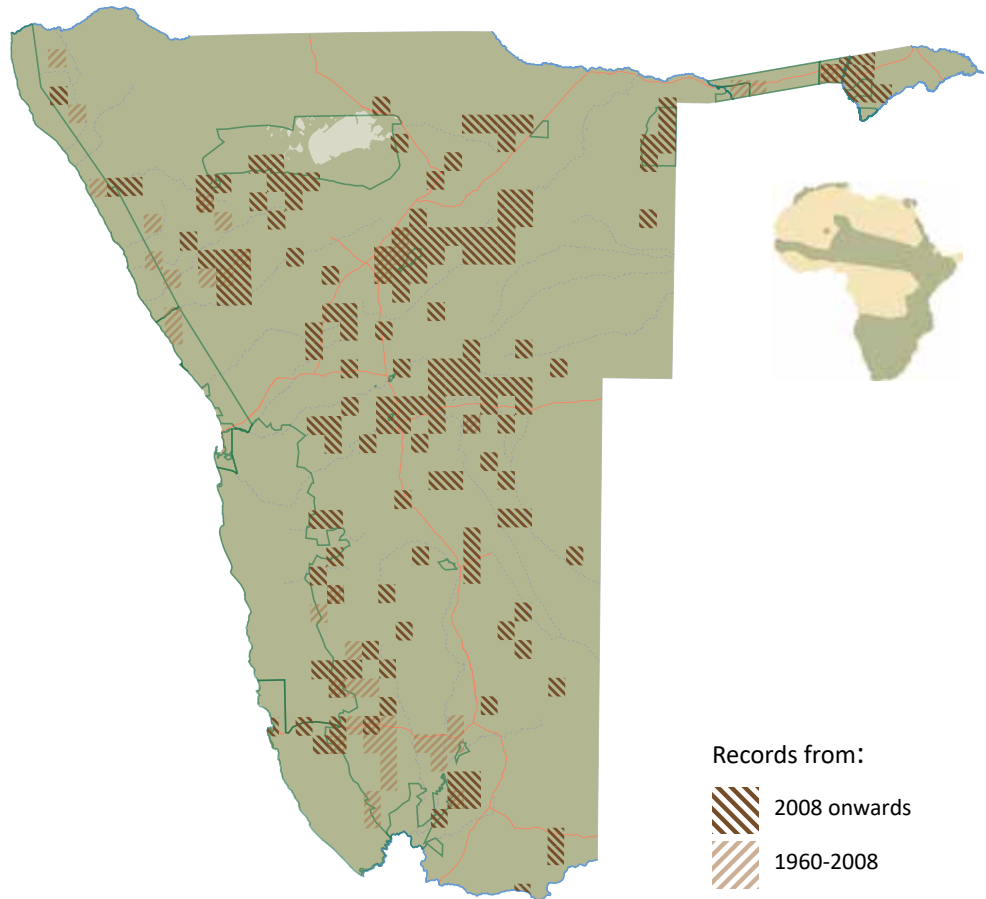
Caracals occur throughout the savannas of Africa and into the Middle East all the way to India and the Karakum Desert in Russia (Estes 1991). In Africa they occur over most of the continent with the exception of the central Sahara and the equatorial forest belt (Avgan *et al.* 2016).

In Namibia, their distribution does not seem to have

Distribution records of caracal, and present estimated area of distribution in Namibia.

Inset: African distribution of caracal according to IUCN (Avgan *et al.* 2016).

The Namibian distribution in the main map is more up to date and does not necessarily agree with the distribution shown in the inset.



changed much since the first written recordings by Shortridge (1934). Although Shortridge did not ascertain their occurrence on the coast, he recorded them as occurring throughout Namibia. The IUCN distribution map (Avgan *et al.* 2016) does not show their presence on the Namib coast, but caracals have been reliably recorded at various places on the southern and northern coast.

POPULATION ESTIMATE AND TREND

Throughout their range, the territory size (and thus also density) of caracals varies tremendously, from 5.5 km² for females in South Africa (Moolman 1986) to 1,116 km² for a male in Saudi Arabia (Van Heezik & Seddon 1998). In Namibia the one published study on north-central farmlands (Marker & Dickman 2005b) was done only on males and showed an average range size of 312.6 km² (range 79.3–439.8 km²). In 1975, Joubert & Mostert estimated the total number of caracals in Namibia at 16,481 based on a farmers survey, but that was a rather crude estimate and did not include any confidence intervals. Given the large territories of caracals found by Marker & Dickman (2005b), with the same caracal likely to be seen and counted on multiple farms, the 1975 figure was probably an overestimation. Nevertheless, caracal numbers are considered to be stable in Namibia and might even have increased in those areas

where black-backed jackal numbers have been reduced (Neils 2018, Pringle & Pringle 1979). Population figures of caracal, and other carnivores with which it interacts, need to be properly substantiated to place more confidence on the above statements (see Actions below).

ECOLOGY

Caracals have a broad range of habitats and are found in dry woodlands, *Acacia* scrub, savanna, and arid hilly and mountain areas up to 2,500 m altitude. They are often associated with edge habitats where forests and grasslands meet, and although they may use open grasslands at night, they require access to rocks and bushes for daytime rest spots (Ray *et al.* 2005b). In better-watered areas where grasses are dominant throughout the year, the caracal can be replaced by the serval (Estes 1991).

Like many felid species, caracals are solitary and territorial. The males have territories 3–4 times larger than those of females, and one male's territory can overlap the territories of several females (Estes 1991). Both males and females mark and defend their territories against others of the same sex (Estes 1991). Caracals are primarily nocturnal (Estes 1991). They are polyoestrus and may have kittens at any time of the year, although there is an extended birth peak

during the summer (Sunquist & Sunquist 2009). The average number of kittens per litter is 2.2 (Estes 1991).

Caracals have a wide dietary range and can kill prey more than twice their own size. They generally subsist on prey that weighs less than 5 kg, such as hares, hyraxes, rodents and birds (Palmer & Fairall 1988, Drouilly *et al.* 2018b). However, they will take prey well over 15 kg, and have been recorded preying on adult impala, springbok, a sitting ostrich, and even young kudu, when such opportunities present themselves, including livestock (Drouilly *et al.* 2018b, Estes 1991, Grobler 1981). Large animals are killed using a throat bite, while smaller prey is typically killed by a bite to the nape of the neck.

Black-backed jackal and caracal may kill each other's young (Melville *et al.* 2004, Pringle & Pringle 1979) and there are suggestions that they might suppress each other's numbers in overlapping areas (Tambling *et al.* 2018); however the level to which these two species influence each other in overlapping areas is still relatively unknown (Tambling *et al.* 2018). It is possible that there is some level of habitat niche partitioning, with caracals preferring thicker bush and mountainous areas, and black-backed jackals preferring more open and flat plains, but more research is needed on the interactions between the two species (Drouilly *et al.* 2018a, Drouilly *et al.* 2018b). Caracals will readily hunt other small carnivores such as the African wildcat, Cape fox and bat-eared fox, black-backed jackal, mongooses, suricate, genets, otters and polecat (Melville & Bothma 2006).

THREATS

Like black-backed jackals, caracals are commonly considered a problem species for small-livestock predation and are heavily persecuted in areas where small-stock is farmed. Ray *et al.* (2005b) reported that 2,800 caracals were killed in 1981 in Namibia. The effect on the population of such a level of offtake is not known, but it is possible that compensatory breeding and large dispersal distances make up for it to some extent. Neils (2018) found that most female individuals in southern Namibia only reproduce once before being killed and the resulting lack of experienced adult females could pose a threat to their long-term survival.

It is also possible that the effect of disruption of their social structure causes more livestock depredation following the removal of mature, settled caracals, and this probably contributes to a further increase in conflict (Conradie & Piesse 2013, Natrass *et al.* 2020). This unexpected outcome is thought to occur as follows: when a mature adult is removed, his/her place is most often taken by a number of younger, newly established territorial individuals. Since they typically have less confidence to defend a large territory, their home ranges are smaller and therefore the density of carnivores is relatively higher (Neils 2018).

So killing predators can create a source-sink system, in which sink populations often have higher densities than the source population (Pulliam 1988). It is not that the young inexperienced caracals kill more livestock, but that the higher density of them results in higher livestock depredation (Conradie & Piesse 2013, Natrass *et al.* 2020).

Meso-predator release, the term that describes the positive effect on populations of medium-sized predators when larger apex predators decline, probably also contributes to an increase in caracal numbers in some areas.

CONSERVATION STATUS

The caracal is listed as Least Concern on the global IUCN Red List and has been so since its first assessment in 1996 (Avgan *et al.* 2016). In South Africa it is also categorised as Least Concern (Avenant *et al.* 2016). The species is included in the CITES Appendix II for Africa (Avgan *et al.* 2016). Until recently, caracals were classified as "vermin" in Namibia and farmers were encouraged to eradicate all caracals on farmlands (Neils 2018). It is still permissible to kill caracals on farmland without a permit, as they are considered a threat to farmers' livelihoods.

ACTIONS

Livestock management techniques that reduce conflict between farmers and predators should be encouraged. This, and maintaining the natural prey of caracals, would allow caracal territorial structures to recover on farmlands, which is critical for the long-term stability of the species and a healthy ecosystem. The establishment of conservancies is one of the more effective ways to increase prey diversity on farmlands (McGranahan 2008). Reintroduction of or recolonisation by larger predators might also be important to stabilise numbers (Weise *et al.* 2015a). Farmers need to be made aware of the ecology of carnivore species and the results that improper carnivore management can have. Specific recommended actions are:

Management

Training for farmers and wildlife managers to identify the correct problem animal species involved in predation events.

The various methods available to prevent or minimise livestock depredation, and their relative cost-effectiveness, need to be more strongly studied and promoted, such as in Kerley *et al.* (2018), and the information needs to be made more readily available to farmers. Also, the practicalities of these methods and their outcomes should be evaluated as part of an adaptive management approach.



Awareness

- ▶ Small-stock farmers should be encouraged to maintain natural prey populations (including springbok) on their land as a buffer to reduce predation on small-stock. The focus should be on stock management and protection, instead of predator control. The establishment of conservancies should be encouraged and promoted to this end.
- ▶ The ecological role of caracals, and their benefits to land owners, needs to be further investigated and communicated to farmers and wildlife managers. There should be a focus on reducing counterproductive predator management, including the indiscriminate culling mentioned above.
- ▶ Guard dogs can virtually eliminate small-stock losses to caracals, and local breeds (or cross-breeds) of dogs suited to rural village life can be trained and used (Marker *et al.* 2005). Similarly, kraaling of livestock at night in predator-proof kraals (enclosures) may also reduce livestock losses significantly (Weise *et al.* 2018). Kraals need to be well maintained, since caracals can cause very high losses if they get into a kraal or corner a livestock flock against a fence.
- ▶ The draft Protected Areas and Wildlife Management Bill aims to change the notion that “problem species” exist. It recognises that there are problem individuals, but that no species should be labelled or managed as a problem. This concept should be built on and communicated to farmers and wildlife managers.

Participation in citizen science programmes should be encouraged, especially amongst private camera trap owners and farmers (e.g. via NAU). The information that can be gathered from these sources is important in both the national and global context. It is important to record all types of data, e.g. sightings, photos, human-carnivore-conflict, mortalities, carnivore signs (dens, marking posts). Ideally, information should be gathered in a coordinated manner, such as on the Environmental Information Service to better inform management and decision making.

Research

There is a need for more research to determine caracal density and home range sizes in different biomes and vegetation types, and in different land-uses.

Monitoring of caracal distribution should be carried out, using camera traps and complemented by questionnaires, citizen science participation and sign surveys. With persecution, they become incredibly secretive and, being largely water-independent, they are less often picked up on camera traps at waterholes. These two factors might give the impression that caracals are less abundant than they really are. Camera traps on game tracks / vehicle tracks may thus be a better indication of their abundance.

An ongoing estimate of the level of conflict involving caracals is needed from farmers, both to determine the numbers of caracals killed every year and the numbers of livestock losses attributed to caracals.

Interactions between the different carnivore species (especially between caracals and jackals) need to be studied. There is potential for this information on the boundaries between species to be used as a method to protect livestock from predation.

The effectiveness and ecological impact of various conflict management techniques on caracal should be studied in more detail.

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