

## Aardwolf *Proteles cristata*



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Namibian conservation status	Least Concern
Global IUCN status	Least Concern since 1996
Namibian range	760,500 km <sup>2</sup>
Global Range	~6,665,900 km <sup>2</sup> in two distinct populations: <ul style="list-style-type: none"><li>▶ ~3,505,400 km<sup>2</sup> in southern Africa</li><li>▶ ~3,160,500 km<sup>2</sup> in eastern Africa</li></ul>
Population estimate	Uncertain, as no density information is available for Namibia
Population trend	Likely stable but requires more data
Habitat	Open plains with short grass and open semi-desert environments, preference for overgrazed areas
Threats	<ul style="list-style-type: none"><li>▶ Indirect poisoning aimed at locust outbreaks</li><li>▶ Direct human persecution when hunting for black-backed jackal and caracal or due to suspected lamb predation, and from gin traps</li><li>▶ Incorrect information about their predatory abilities, and confusion with other predatory species</li><li>▶ Severe drought</li><li>▶ Road mortality</li><li>▶ Habitat loss and fragmentation</li></ul>

### IDENTIFYING FEATURES

The aardwolf is the smallest member of the Hyaenidae family. Aardwolves have a slender build with a sloping back, a characteristic of hyaenas. The head is small with rather pointy ears, and the coat is buff to reddish brown with vertical black stripes on the body, becoming horizontal on the upper limbs. They also have a bushy tail and a long mane that can be erected in a threat display.

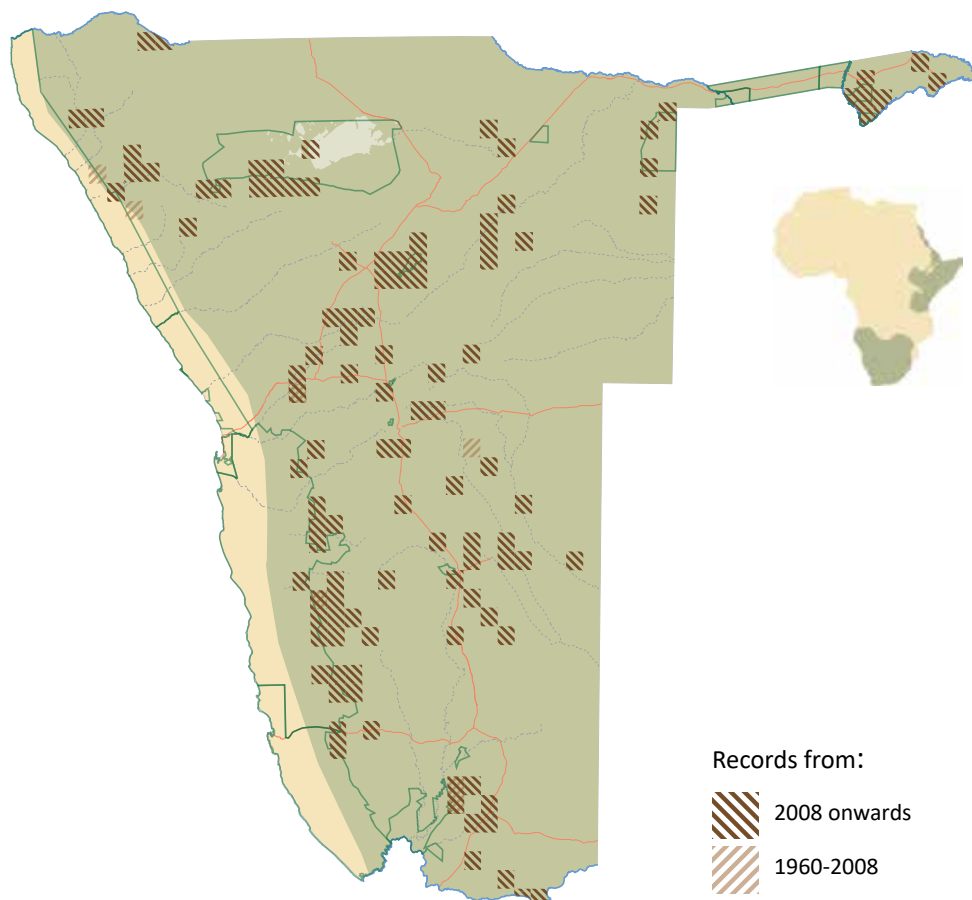
### DISTRIBUTION

Aardwolves occur in two different subpopulations separated by 1,500 km: one in east and north-eastern Africa and one in southern Africa (Green 2015). Here, they are widespread in Zimbabwe except for the north-eastern regions, throughout South Africa except for the forests along the south coast, throughout Botswana and most of Namibia, and they extend into southern Angola and south-eastern Zambia.

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

Inset: African distribution of aardwolf according to IUCN (Green 2015).

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



They are widely distributed in Namibia except for the driest strip of the Namib Desert along the coast (Skinner & Smithers 1990). The current distribution of the aardwolf in this country is similar to its historic range. It was described by Shortridge (1934) as scarce along the Orange River and in the north-eastern regions, and absent from the Namib coastal belt, but widely distributed throughout the rest of the country. Their presence in the Zambezi and Okavango Regions, recently confirmed by sightings and camera trap records, confirm their occurrence there at probably low densities.

### POPULATION ESTIMATE AND TREND

The aardwolf population is estimated to be stable across its range, but nowhere are these animals very common (Green 2015). The majority of the population occurs on farmland outside of conservation areas (Richardson 1998), but they can be displaced because of human disturbance (Kauffman *et al.* 2007). However, due to their shy, quiet and nocturnal nature, they are probably more common than usually believed (Holekamp & Kolowski 2009). A questionnaire survey conducted by the Department of Nature Conservation in 1982 showed that 41% of participating farmers reported the presence of aardwolf on their farms, with conflict reported on 2.3% of these, resulting in 372

aardwolves killed over the period of one year (Joubert *et al.* 1982), most possibly because they are perceived to kill sheep and goats or being confused with jackals.

Aardwolf density is dependent on the abundance of its major food source, nasute termites (*Trinervitermes spp.*; Nel & Bothma 1983). In areas with a high abundance of termites and no persecution, aardwolf can reach densities of 1 adult/km<sup>2</sup> (Anderson 2013). A camera trap study conducted in Kenya showed similar density estimates of 1.2 animals/km<sup>2</sup> (O'Brian & Kinnaird 2011).

The aardwolf's population size across southern African is currently unknown. In the 1998 IUCN assessment, most countries listed the aardwolf as data deficient, with the Namibian population regarded as stable (Hofer & Mills 1998a). Griffin (2003) listed the aardwolf as insufficiently known (possibly vulnerable) yet still no accurate survey data are available. The population appears stable, but future research into the aardwolf's distribution and population size is necessary.

### ECOLOGY

Aardwolves occur in open grassland, dwarf shrub savanna, open savanna woodlands, and open semi-arid environments

with a mean annual rainfall of 100–800 mm (Nel & Bothma 1983, Skinner & Smithers 1990, de Vries *et al.* 2016). They seem to prefer open and dry country with short grass, especially overgrazed areas (Estes 1991).

Aardwolves are one of the most specialised carnivores, feeding almost exclusively on nasute termites of the genus *Trinervitermes* (Bothma & Nel 1980, de Vries *et al.* 2016). As an adaptation to their diet, their cheek teeth are very small and reduced to pegs, but the canines have been retained (Estes 1991, Holekamp & Kolowski 2009). Furthermore, their hairless muzzle prevents the terpene defence secretions of the nasute termite soldiers from sticking, so that it can be tolerated (Kruuk & Sands 1972).

Breeding pairs occupy a well-defined territory throughout the year. Territory sizes range from 1–6 km<sup>2</sup> (Sliwa 1996) and depend on termite density (Kruuk & Sands 1972, Richardson 1985). Minimum territory requirements are 3,000 termitaria with 55,000 termites per mound on average, and boundaries are aggressively defended (Richardson 1985) mainly through the deposition of pasted scent marks (Sliwa & Richardson 1998). Territoriality has been questioned in the Namib-Naukluft National Park, where individuals from different territories have been observed foraging together (Bothma & Nel 1980). However, data were collected during a period of food shortage, when food was widely distributed and did not seem to be defensible. Territory maintenance is done through defecation in latrines (Kruuk & Sands 1972, Bothma & Nel 1980, Richardson 1985) and pasting (Richardson 1987). Pastes in the Namib are dark brown in colour, which

differs from the orange colour elsewhere (Nel & Bothma 1983). Apart from pastes that are used to intimidate intruders (Sliwa 1996), minute pastes that advertise areas that were visited while feeding have been observed only in the Namib (Nel & Bothma 1983).

Aardwolves are predominately nocturnal, although some diurnal activity may be observed in southern Africa during the cold winter months (Bothma *et al.* 1984, Richardson 1987). During the day, they usually rest in underground burrows to escape the heat and be protected from large predators. Their activity pattern reflects the activity of their prey. Nasute termites are nocturnal and when they become less active in the cold of winter, aardwolves become active earlier to supplement their diet with harvester termites (*Hodotermes spp.*; Richardson 1987, Anderson 1994). Diet also can become more varied in lean years or during the wet season (Kruuk & Sands 1972, Bothma *et al.* 1984). While foraging, aardwolves travel up to 1.7 km/h covering distances of up to 12 km per night (Richardson 1985). Prey is primarily located by sound, but olfactory detection may also play a role in some environments. In the Namib for instance, frequent downwind turns and movements have been recorded (Bothma & Nel 1980). Aardwolves forage solitarily (Bothma *et al.* 1984, Richardson 1998) except when young forage with their mother before dispersing. They usually stop foraging on termite patches, even when thousands of termites are still above ground, when the far less palatable soldiers outnumber the workers (Estes 1991). Because *Trinervitermes* are avoided by other termite-eaters, aardwolves suffer very little competition. Aardwolves are



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largely independent of water (except during prolonged dry spells), satisfying their moisture requirements from termites (Skinner & Smithers 1990, Anderson 2013).

Most of the cubs are born during the rainy season, when termites and other insects are abundant. After a gestation period of about 90 days, aardwolves raise their young, usually from 1 to 4 cubs in underground burrows where they stay for the 4–6 weeks of their lives (Estes 1991). They will then forage outside in the company of an adult when they are 12–16 weeks old. Cubs reach their adult size at about 9 months and disperse from their natal territory when the next litter is born and can venture quite far away (Estes 1991).

De Vries *et al.* (2011) recorded sun spiders and scorpions in the aardwolf's diet and small rodents, carrion, eggs and birds were found in two aardwolf stomachs (Bothma & Nel 1980). Recently a single aardwolf was observed killing two geese at Mankwe Wildlife Reserve in South Africa (Yarnell & MacTavish 2013). These incidents are however very rare given the large amount of studies failing to detect other prey remains, and the species can still be regarded as an obligate insectivore (Cooper & Skinner 1979, Richardson 1987, de Vries *et al.* 2011).



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## THREATS

According to the most recent IUCN assessment, there are no major threats to the aardwolf (Green 2015). However, as the majority of the aardwolf's population occurs outside of protected areas, conflicts do occur, although not all are intentional. Aardwolves are sometimes killed for food (Hofer & Mills 1998a, Richardson 1998, I Wiesel pers. comm.). Some body parts are even considered a delicacy. They are also sometimes persecuted due to incorrect information and the mistaken belief that they prey on livestock, chicken and eggs (Richardson 1998). They fall victim to collateral killing under jackal and caracal control programmes (e.g. gin traps, Skinner & Smithers 1990) or they are confused with other predator species (e.g. brown hyaena) and therefore persecuted. They are very occasionally hunted as trophies.

The primary threat, however, is possibly indirect poisoning aimed at locust outbreaks with poisoning events sometimes resulting in the death of half of the adults and all of the pups in a localised area (Richardson 1998, Anderson 2013). Richardson (1998) describes one such event where it took the population four years to recover and the remaining population became highly inbred due to lack of immigration of subadult animals.

Aardwolves can cover large distances, so that habitat fragments can be connected (Sliwa 1996). However, urbanisation and the conversion of open rangeland to crops (Holekamp & Kolowski 2009), involving the destruction of termitaria through poison and ploughs, could threaten aardwolf survival through habitat loss (Skinner & Smithers 1990), although this is not a common situation in Namibia where climate and soils make crop-growing marginal except in a few localised areas. Road kills contribute to mortality, as aardwolves tend to not move out of the way of approaching lights (Skinner & Smithers 1990, Périquet *et al.* 2018), but the extent of this problem in Namibia is unknown.

The main natural threats causing aardwolf mortalities are cub predation by black-backed jackals and severe droughts (Richardson 1998, Green 2015). In the current context of climate change, where droughts are likely to be more frequent and severe, aardwolf populations may be impacted (de Vries *et al.* 2016).

## CONSERVATION STATUS

The aardwolf is listed as Least Concern in Namibia. It had previously been listed as insufficiently known (Griffin 2003), which is still the case, but the overall impression from scattered observations and records from farmers, camera traps and *ad hoc* sightings suggest that it is widely distributed at stable population sizes. The species' international conservation status has been Least Concern (Lower Risk/Least Concern) since 1996 (IUCN: Green 2015).



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## ACTIONS

Aardwolf ecology is still widely misunderstood and myths about their predatory habits persist. There are a variety of actions that should be implemented in Namibia.

## Management

- ▶ Maintain open grassland ecosystems by grazing.
- ▶ Develop user-friendly materials to help farmers identify the correct problem animal species in predation events.
- ▶ Adjust Event Book reporting and conservancy reports to include aardwolf.
- ▶ Stop or minimise the use of pesticides for locust control.
- ▶ For farmers: Maintain termite density by not using poisons and not damaging termite mounds.
- ▶ Ban the use of gin traps and poisons for predator control.

## Awareness

- ▶ Provide good information on aardwolf feeding ecology

and their diet. Highlight the fact that they are not predators of livestock.

- ▶ Disseminate information through AgriForum and other publications aimed at farmers, as well as the production of short video clips.
- ▶ Promote farmer-to-farmer communications to spread accurate ecological information.

Promote citizen science participation in online reporting platforms (e.g. EIS), especially directed towards private camera trap owners and farmers (e.g. via NAU) and explain the importance of such data in 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, middens, pastes).

## Research

- ▶ Undertake a country-wide survey of aardwolf presence and density, to generate reliable and factual data for a more accurate assessment of their conservation status.
- ▶ Standardise carnivore monitoring programmes so that information is captured from camera traps, questionnaires, citizen science projects and sign surveys.

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