Heterohyrax brucei – Yellow-spotted Rock Hyrax


Paulette Bloomer

Regional Red List status (2016)	**Least Concern***
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2015)	Least Concern
TOPS listing (NEMBA)	None
CITES listing	None
Endemic	Edge of range

*Watch-list Data

Yellow-spotted Rock Hyraxes overlap with Rock Hyraxes (*Procavia capensis*) in their distribution and habitat, but are distinguished by lighter-coloured markings above the eyes and along the sides of the face (Skinner & Chimimba 2005). Further molecular research is necessary as *H. b. granti* may represent a full species endemic to the assessment region.

Taxonomy

Heterohyrax brucei (Gray 1868)

ANIMALIA - CHORDATA - MAMMALIA - HYRACOIDEA - PROCAVIIDAE - *Heterohyrax* - *brucei*

Synonyms: *Heterohyrax antineae* (Heim de Balsac & Begouen 1932), *Hyrax brucei* (Gray 1868)

Common names: Yellow-spotted Rock Hyrax, Bush Hyrax, Hoggar Hyrax (English), Geelkoldassie, Geelkosdas (Afrikaans), Imbila (Ndebele), Tshwanyê (Setswana)

Taxonomic status: Species complex

Taxonomic notes: Two subspecies have been described in southern Africa (Meester et al. 1986): *H. b. ruddi*, with a range that extends from western Mozambique to eastern Botswana and *H. b. granti*, in the Limpopo Province of South Africa, which may be endemic to South Africa (Wroughton 1910). It is the only species that belongs to the genus *Heterohyrax* but taxonomy is currently considered uncertain, and distinct differences may exist between the two subspecies. Overall, 25 subspecies have been described, and while the validity of many is in doubt, some may represent distinct species (Barry & Shoshani 2000; Barry & Hoeck 2013). There is an endemic subspecies, *H. b. granti*, which is suspected to be a separate species that will in future be in need of independent assessment. Furthermore, molecular research (based on mitochondrial DNA and nuclear DNA sequences) reveals two distinct genetic lineages (P. Bloomer unpubl. data): one restricted to the Limpopo valley and the other from the Soutpansberg south and east to the Mpumalanga escarpment. Confirming the taxonomy is crucial as the status of some of the range-restricted forms may be threatened.

Assessment Rationale

Listed as Least Concern in view of its wide distribution within the assessment region, its occurrence in a number of protected areas (including Kruger National Park and Mapungubwe National Park), and because there are no major threats expected to cause population decline. Additionally, its distribution is connected with other range states through largely intact habitat. Its preferred habitat (rocky outcrops) is unlikely to be extensively transformed. Pending taxonomic resolution, this species (currently listed as the subspecies *H. b. granti*) may require reassessment if it is shown to be endemic to South Africa.

Regional population effects: There are habitat linkages with Botswana, Mozambique and Zimbabwe, and thus dispersal is probable (Barry & Shoshani 2000), and this species occurs in both the Greater Limpopo Transfrontier Park and Greater Mapungubwe Transfrontier Park. They are suspected to have adequate dispersal abilities (Hoeck 1982; Skinner & Chimimba 2005), and thus rescue effects are possible.

Distribution

Yellow-spotted Rock Hyraxes are endemic to the continent and extensively distributed across southern and East Africa (Skinner & Chimimba 2005; Barry & Hoeck 2013). Their range extends from the Limpopo Province of South Africa northwards to Sudan, Ethiopia and Somalia (Barry & Hoeck 2013). Historical gene flow may have occurred between Mapungubwe and Matopos (Zimbabwe) (P. Bloomer unpubl. data), which may represent the range of *H. b. ruddi*. Northern Namibia needs to be investigated in terms of species identity, where individuals may belong to either *Procavia* or *Heterohyrax*. Limpopo and Mpumalanga provinces mark the southern edge of its distribution. Across this range, they are limited to rocky habitats (Skinner & Chimimba 2005).

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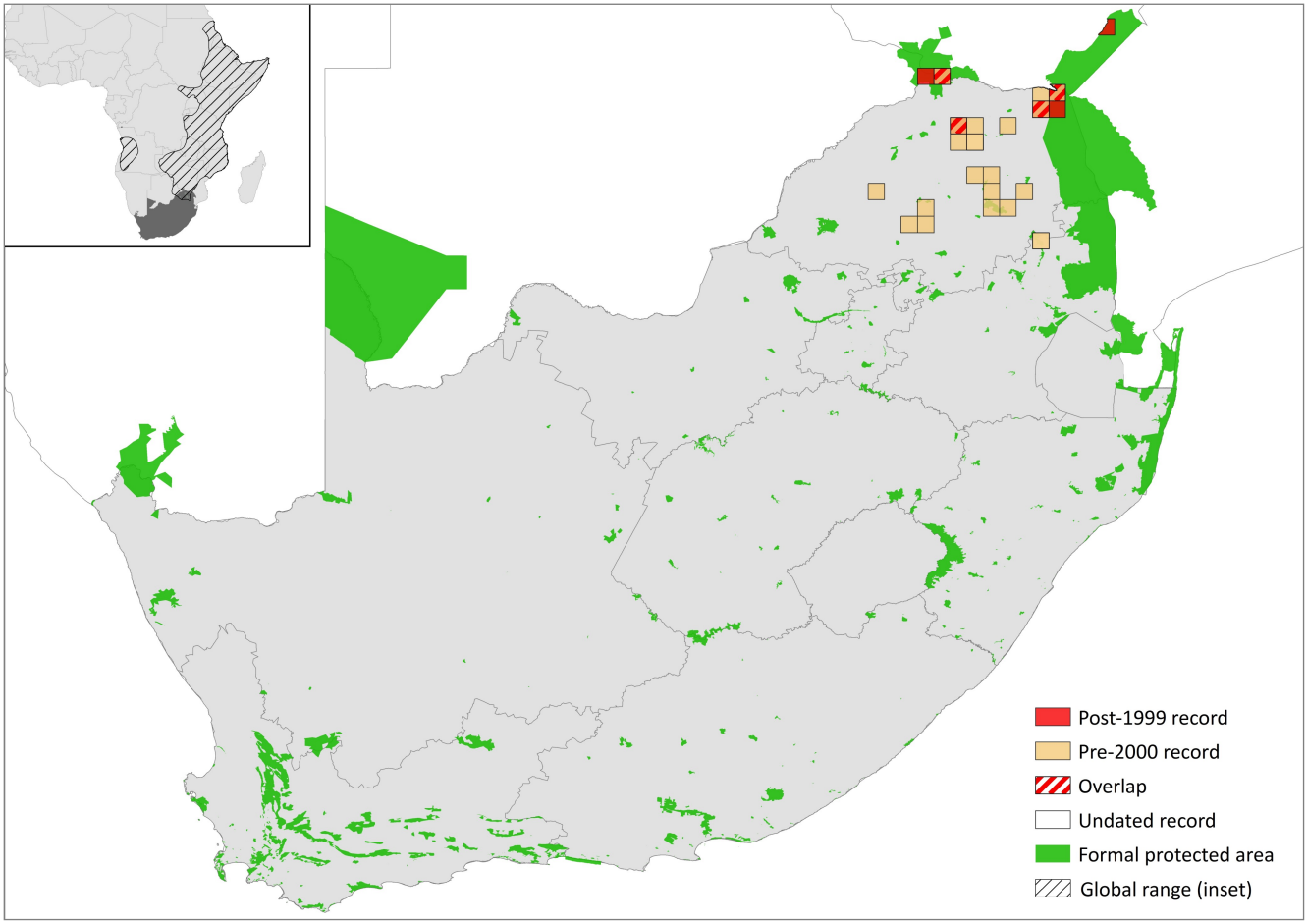

Figure 1. Distribution records for Yellow-spotted Rock Hyrax (*Heterohyrax brucei*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Extant	Native
Lesotho	Absent	-
Mozambique	Extant	Native
Namibia	Presence uncertain	Native
South Africa	Extant	Native
Swaziland	Absent	-
Zimbabwe	Extant	Native

Population

They are widespread and common throughout East Africa, with population densities declining and distributions becoming more localized towards southern Africa (Barry & Hoeck 2013). Densities in the Matobo National Park in Zimbabwe ranged from 0.5–1.1 individual / ha from 1992–1996 (Barry & Mundy 1998). Similar densities are expected within South African protected areas. Rainfall and, to a lesser extent, predation appear to be the primary factors affecting population abundance (Barry & Mundy 1998). Population fluctuations have been shown to be annual (largely corresponding to rainfall) but not cyclical (Barry et al. 2015). Fossil remains indicate there were once hyraxes the sizes of oxen, which may explain its gestation period of seven or eight months, unusually long for an animal of its size.

Current population trend: Unknown

Continuing decline in mature individuals: No

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown. While Friedmann and Daly (2004) listed two subpopulations (Limpopo valley for *H. b. ruddi* and the Soutpansberg–Mpumalanga escarpment for *H. b. granti*), further molecular work is needed to determine population structure.

Severely fragmented: No. Habitat largely connected and dispersal capacity adequate.

Habitats and Ecology

The Yellow-spotted Rock Hyrax is predominantly diurnal, highly gregarious and exhibits behavioural thermoregulation (Bartholomew & Rainy 1971). Similar to, and often in association with *Procavia capensis*, the Yellow-spotted Rock Hyrax occupies rocky habitats, including outcrops, cliffs and piles of boulders (Barry & Shoshani 2000; Barry & Hoeck 2013). However, in contrast to *P. capensis*, outlying or isolated rocky outcrops are less likely to be occupied by this species (Smithers & Wilson 1979; Skinner & Chimimba 2005). Yellow-spotted Rock Hyraxes and Rock Hyraxes often coexist within the same crevices, and are seen basking together on rocky outcrops (Skinner & Chimimba 2005), but no interbreeding occurs between the species since both their mating behaviours and the anatomy of their sex organs differ. This heterospecific behaviour is considered beneficial for the avoidance of predators by increasing

Table 2. Use and trade summary for the Yellow-spotted Rock Hyrax (*Heterohyrax brucei*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	Yes	Bushmeat use.	Unknown	Stable
Commercial use	Yes	Local trade in skins.	Unknown	Stable
Harvest from wild population	Yes	-	All	Unknown
Harvest from ranched population	No	-	-	-
Harvest from captive population	None known	-	-	-

group size, and consequently improving vigilance, particularly when offspring are present (Barry & Mundy 2002). Births are often associated with peaks in rainfall. They are predominantly browsers, but are known to infrequently supplement their diets with grasses (Hoeck 1975). The bulk of their diets consist of leaves, stems, flowers, fruit and bark. They are cautious feeders, stopping on each mouthful to scan the surroundings and make short foraging trips close to their family base. Barry and Hoeck (2013) and Barry and Shoshani (2000) provide comprehensive reviews of its ecology and characteristics. The very prominent distinguishing features are the white eyebrows, grey colour and the yellow hairs surrounding the dorsal spot, although the latter is variable across their broader distribution. They also have a rounded head and blunt nose that is pointed and rodent-like, which helps in identifying this species.

Ecosystem and cultural services: It is a primary prey species for a range of predators, including the Verreaux's Eagle (*Aquila verreauxii*), Martial Eagle (*Polemaetus bellicosus*) and other raptors, as well as terrestrial species such as Leopard (*Panthera pardus*), Black Mamba (*Dendroaspis polylepis*) and African Rock Python (*Python sebae*) (Turner & Watson 1965; Hoeck 1982). Adult hyrax species comprise more than 84% of the prey biomass for a diverse range of predators in Matobo National Park, Zimbabwe (Barry & Mundy 1998).

An association with *H. brucei* has been found to benefit the survival success of young *P. capensis*, as *H. brucei* often browse in trees and consequently act as sentinels, warning both species of impending danger (Barry & Mundy 2002).

Use and Trade

Similar to *P. capensis*, it is hunted for meat and skins opportunistically. Their skins are used for blankets (karosses) in South Africa (Barry & Hoeck 2013). However, this is not considered to negatively influence population stability.

Threats

There are no significant threats to this species. However, the expansion of human populations adjacent to protected areas (*sensu* Wittemyer et al. 2008) may lead to local decline due to hunting for meat and skins. Similarly, mining activities in the Limpopo valley may threaten local subpopulations through direct habitat encroachment or indirect disturbance. Previous observations have found that Rock Hyrax populations have been influenced by drought conditions by reducing fecundity (Barry & Mundy 1998). Yellow-spotted Rock Hyraxes respond behaviourally to heat stress, by seeking shelter in caves and crevices (Turner & Watson 1965) and, when necessary, are able to meet water requirements from browse material alone (Skinner & Chimimba 2005). However, increased aridity and prolonged drought conditions (through climate change) threatens to limit the availability of forage resources (Bartholomew & Rainy 1971). Additionally, the spread of disease is rapid among gregarious hyrax species and *H. brucei* is characterised as susceptible to viral pneumonia and tuberculosis (Sale 1969). For example, in the Serengeti an outbreak of mange eliminated an entire colony (Hoeck 1982).

Table 3. Threats to the Yellow-spotted Rock Hyrax (*Heterohyrax brucei*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the scientific literature	Data quality	Scale of study	Current trend
1	*5.1.1 Hunting & Collecting Terrestrial Animals*: local declines caused by bushmeat hunting.	-	Anecdotal	-	Possibly increasing with ongoing settlement expansion.
2	*1.1 Housing & Urban Areas*: habitat loss through human settlement expansion.	GeoTerraImage 2015	Indirect (remote sensing)	Regional	Continuing
3	*11.2 Droughts*: increased aridity from climate change and thus decrease in habitat suitability.	-	Anecdotal	-	Increasing with climate change.
4	*8.2 Problematic Native Species/Diseases*: sarcoptic mange may lead to local extinctions.	Hoeck 1982	Empirical	Local	Unknown

Table 4. Conservation interventions for the Yellow-spotted Rock Hyrax (*Heterohyrax brucei*) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

Rank	Intervention description	Evidence in the scientific literature	Data quality	Scale of evidence	Demonstrated impact	Current conservation projects
1	*1.1 Site/Area Protection*: formal protected area expansion to create further corridors between habitat patches.	-	Anecdotal	-	-	Multiple organisations
2	*1.2 Resource & Habitat Protection*: biodiversity stewardship programmes to connect rocky habitats.	-	Anecdotal	-	-	Multiple organisations

The subspecies *H. b. ruddi* is not considered to be under any great threat throughout the region, and it is likely that populations are interlinked between those in Botswana and Zimbabwe (Barry & Shoshani 2000). In contrast, *H. b. granti*, which is endemic to South Africa, may be more threatened by such activities.

Current habitat trend: Stable. They occupy rocky outcrops that are largely inaccessible and not under threat of extensive transformation and the savannah is not threatened within the assessment region (Driver et al. 2012). However, ongoing rural and urban settlement expansion may be causing local habitat loss and increasing the risk of bushmeat harvesting. In Limpopo Province, between 2000 and 2013, rural and urban settlements expanded by 8.8% and 14.9% respectively (GeoTerraImage 2015).

Conservation

Yellow-spotted Rock Hyraxes occur locally in a number of protected areas, including Kruger National Park and Mapungubwe National Park, and their associated transfrontier areas. At present, no specific conservation interventions have been identified. However, the expansion of protected areas and the implementation of biodiversity stewardship policies to safeguard primary habitats could significantly benefit Yellow-spotted Rock Hyraxes, and in particular the subspecies *H. b. granti*.

Recommendations for land managers and practitioners: This species may benefit from the establishment of buffer zones around primary habitats.

Research priorities: A taxonomic and genetic study would be valuable to resolve the taxonomy of the potential species complex. Additionally, survey studies are necessary to investigate the population density and range distribution of this species. Particular attention should be paid to *H. b. granti* as this subspecies is endemic to South Africa. Methods to estimate the area of occupancy of this species would also improve the accuracy of this assessment.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Avoid feeding or keeping as pets.

Data Sources and Quality

Table 5. Information and interpretation qualifiers for the Yellow-spotted Rock Hyrax (*Heterohyrax brucei*) assessment

Data sources	Indirect information (expert knowledge)
Data quality (max)	Suspected
Data quality (min)	Suspected
Uncertainty resolution	Consensus
Risk tolerance	Evidentiary

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*