

Country Profile

The Kingdom of Eswatini



Giraffe Conservation Status Report

June 2022

General statistics

Size of country: 17,364 km²

Size of protected areas / percentage protected area coverage: 4%

Species and subspecies

In 2016 the International Union for the Conservation of Nature (IUCN) completed the first detailed assessment of the conservation status of giraffe, revealing that their numbers are in peril. This was further emphasised when the majority of the IUCN recognised subspecies were assessed in 2018 – some as *Critically Endangered*. While this update further confirms the real threat to one of Africa's most charismatic megafauna, it also highlights a rather confusing aspect of giraffe conservation: how many species/subspecies of giraffe are there? The IUCN currently recognises one species (*Giraffa camelopardalis*) and nine subspecies of giraffe (Muller *et al.* 2018) historically based on outdated assessments of their morphological features and geographic ranges. The subspecies are thus divided: Angolan giraffe (*G. c. angolensis*), Kordofan giraffe (*G. c. antiquorum*), Masai giraffe (*G. c. tippelskirchi*), Nubian giraffe (*G. c. camelopardalis*), reticulated giraffe (*G. c. reticulata*), Rothschild's giraffe (*G. c. rothschildi*), South African giraffe (*G. c. giraffa*), Thornicroft's (*G. c. thornicrofti*) and West African giraffe (*G. c. peralta*).

However, over the past decade GCF together with their partner Senckenberg Biodiversity and Climate Research Centre (BiK-F) have performed the first-ever comprehensive DNA sampling and analysis (genomic, nuclear, and mitochondrial) from all major natural populations of giraffe throughout their range in Africa. As a result, an update to the traditional taxonomy now exists. This study revealed that there are four distinct species of giraffe and likely six subspecies (Coimbra *et al.* 2021; Winter *et al.* 2018; Fennessy *et al.* 2016). The four species are Masai giraffe (*G. tippelskirchi*), northern giraffe (*G. camelopardalis*), reticulated giraffe (*G. reticulata*) and southern giraffe (*G. giraffa*). Nubian giraffe (*G. c. camelopardalis*), Kordofan giraffe (*G. c. antiquorum*), West African giraffe (*G. c. peralta*) are the three subspecies of the northern giraffe, while Angolan giraffe (*G. g. angolensis*) and South African giraffe (*G. g. giraffa*) fall under the southern giraffe. Rothschild's giraffe is genetically identical to the Nubian giraffe, and thus subsumed into it. Luangwa (Thornicroft's, *G. t. thornicrofti*) and Masai (*G. t. tippelskirchi*) giraffe are the two subspecies of Masai giraffe. In all GCF's conservation work and publications, based on this research, the updated giraffe taxonomy of the four species is used.

The following species and subspecies of giraffe occur in Eswatini:

Species: Southern giraffe *Giraffa giraffa*

Subspecies: South African giraffe *Giraffa giraffa giraffa*, (formerly *Giraffa camelopardalis giraffa*)

Conservation Status

IUCN Red List (IUCN 2018):

Giraffa camelopardalis (as a species, old taxonomy) – Vulnerable (Muller *et al.* 2018)

Giraffa giraffa (as a species) – Not Assessed

Giraffa giraffa giraffa – Not Assessed, most likely Least Concern

In the Kingdom of Eswatini:

Giraffe in the Kingdom of Eswatini (referred to as Eswatini in this report and formerly known as Swaziland) are classified as royal game under the Second Schedule of the Game (Amendment) Act of 1991, an Act to amend the Game Act of 1953 and to provide for matters incidental thereto (Government of Swaziland 1991; FAO, 2022). A valid permit issued under the provisions of section 16 of the Game Act is required to hunt or attempt to hunt or be in possession of a trophy of any royal game (FAO, 2022).

Issues/threats

Eswatini is a low-income country and a large part of the population depend heavily on functions provided by biodiversity for basic needs and income generation (World Bank 2022; EEA 2020). Biodiversity is envisaged to help the population attain food and security at household and national levels in stimulating economic growth and wealth distribution in the country. For example, legal wild game meat often provides a source of income for many households when available (EEA 2020). However, the biodiversity in the country is under direct threat, largely because of current anthropogenic factors such as land use change, animal resource exploitation and potential effects caused by climate change (EEA 2020; Bailey *et al.* 2019).

Land use change, often resulting in habitat destruction, is a key issue for biodiversity in Eswatini. The main anthropogenic land uses are agriculture (29.3%) and human settlements (13.6%). The largest section of agricultural land is subsistence farming and covers 15.9% of the proportional land cover of Eswatini, followed by forest plantations (8.2%) and sugarcane plantations (5.2%). These land uses typically utilise grassland and savannah habitat and have reduced natural habitat by ~34% and ~7% respectively (EEA 2020; Manyatsi & Singwane 2020). The resulting monoculture plantations have been reported to reduce floral and faunal biodiversity and promote the dominance of generalist species (EEA 2020). Natural forest habitat is also reported to be affected by subsistence farming in communities as tree cover has been reduced to <30%, particularly affecting large trees (height >5m; Dlamini 2016). This directly affects the browsing availability for large megafauna.

Communities have also had a substantial effect on animal resource exploitation (EEA 2020). Based on survey data, about 20% of communities surrounding Hlane Royal National Park indicated that they are willing to engage in the poaching of priority species such as rhino (Mamba 2020). Although formal hunting permits are administered annually by Big Game Parks, illegal hunting is prevalent across Eswatini with antelope species being the main target (EEA 2020). There is further concern that recent efforts by human rights activists to curtail Eswatini's zero tolerance approach to illegal hunting is encouraging criminal activity in protected areas (Saving Rhinos 2011; M. Reilly pers. comm.). The initiative to protect suspects who have broken the law, as well as sponsored civil litigation against game reserves, may encourage the increase of illegal hunting (Saving Rhinos 2011). Although illegal hunting is liable to prosecution in the country, there are some voices who are citing law enforcement actions as human rights abuses, thus discouraging the commitment of private sector and National Parks staff to implement effective anti-poaching measures (M. Reilly pers. comm.)



On a broader scale, climate change is a major threat to biodiversity in Eswatini. It is predicted to cause reduced precipitation, sporadic rainfall patterns, increased temperatures, and increased drought frequencies (Sarkodie et al. 2020; Bailey et al. 2019; IPCC 2014). These changes could have a significant effect on habitat biodiversity in the country. The grassland biome is most at risk of significant change with current grassland areas predicted to be reduced substantially to patches at high altitude areas such as the western mountain peaks. Additionally, other potential ecological changes may include the shift of sourveld bushveld to lowveld bushveld as woodiness increases, the westward spread of savannah climate, and a drastic increase of Lebombo bushveld (EEA 2020; Matondo 2012). Wildlife which relies on these habitats would subsequently be affected and would need to adapt to the shifts in ecological systems to survive the gradual variation caused by climate change.

Estimate population abundance and trends

Historic

Although most large herbivores in Eswatini were hunted to extinction by the early 20th century (Reilly 1985), uncertainty remains regarding the historical presence of giraffe in the country (East 1999; Monadjem 1998; Goodman & Tomkinson 1987). Goodman & Tomkinson (1987) suggested that giraffe probably did not occur in Eswatini in recent historical times. However, East (1999) indicated that giraffe may have formerly occurred in northern Eswatini, north of the Komati River. Others have reported that giraffe likely historically occurred in the lowveld savannah region in the eastern parts of the country (M. Reilly pers. comm.). Regardless, any indigenous populations that might have existed have however gone extinct (East 1999).

The impact of rinderpest on giraffe populations in Eswatini is unknown, but it is believed to have played a significant role in giraffe's early extinction in the country. Anecdotal information suggests that giraffe may have gone extinct in Eswatini during the rinderpest outbreak of late 1890s (Phoofolo 1993; Goodman & Tomkinson 1987; Doveton 1937; M. Reilly pers. comm.). Eswatini remained without giraffe until 1965, when one male and one female South African giraffe (*G. g. giraffa*) were introduced to Mlilwane Wildlife Sanctuary from the Hoedspruit area in the South African lowveld (Reilly 1985; M. Reilly pers. comm.) which led to the first giraffe calf born in Mlilwane in 100 years in 1969 (Reilly, 1985). In the early/ mid 1970s, giraffe were translocated from this small founder population to Hlane Royal National Park. Six Angolan giraffe (*G. g. angolensis*) from Namibia were introduced to Hlane Royal National Park in the 1970s, although reportedly never bred (East 1999). However, Ted Riley (pers. comm.) indicated that the Angolan giraffe from Namibia did interbreed with introduced South African giraffe in Eswatini but was assumed to be minimal as tick-related diseases caused the death of original individuals, as well as their offspring. Although historical taxonomic confusion surrounded the (sub)species occurrence of giraffe in Namibia, it is now clear that they would have been Angolan giraffe (*G. g. angolensis*; Coimbra et al. 2021; Winter et al. 2018; Brown et al. 2007; Fennessy 2004; Brenneman et al. 2003).

Recent

Since the first re-introduction, additional giraffe were introduced mainly from the Limpopo, Mpumalanga and Kwa-Zulu Natal Provinces of South Africa to Hlane Royal National Park, and newly established populations in Mkhaya Game Reserve, as well as to other privately owned properties, including Mhlosinga and Mbuluzi Nature Reserves (East 1999; M. Reilly pers. comm.). As private ownership of game and game ranching in Eswatini evolved, the private sector further introduced giraffe and their numbers and range have increased steadily (M. Reilly pers. comm.). Furthermore, several giraffe populations have been re-established



from in-country translocations (M. Reilly pers. comm.). By 2000, six giraffe populations occurred in protected areas in Eswatini with an estimated 80 individuals (T. Reilly pers. comm.). Of these, approximately ten individuals occurred in Mbuluzi Game Reserve, 13 in Mhlosinga Nature Reserve, 12 in Mkhaya Game Reserve, 25 in Hlane Royal National Park, 12 on Nisela Ranch and one on Mlilwane Wildlife Sanctuary. There were no giraffe living outside of these protected areas (T. Reilly pers. comm.).

In 2012, the numbers had grown to 209 individuals with an estimated 75 individuals in two Big Game Parks protected areas – approximately 30 individuals in Hlane Royal National Park, and 45 individuals in Mkhaya Game Reserve (M. Reilly pers. comm.). On private land, approximately 40 individuals occurred in Mbuluzi Game Reserve, 11 in Mhlosinga Nature Reserve, 25 on Nisela Ranch, 25 at Oberland, 20 at Inyoni Yami Swaziland Irrigation Scheme (IYSIS), three on Panata River Lodge and six on Canterbury Estates (M. Reilly pers. comm.). Three giraffe were translocated from South Africa's Kwa-Zulu Natal Province and introduced to the Royal Jozini Private Estate in 2011, with four individuals observed in 2012 (J. Brown pers. comm.). A recent study on genetic diversity in an isolated population in Mbuluzi (Austin et al. 2018) indicated signs of inbreeding which could lead to reduced survival and population fitness if stressful environmental conditions occur with no influx of new genetics (Wang *et al.* 1999).

Current

The most recent estimates have shown a steady growth in giraffe numbers in Eswatini. This is a result of natural recruitment with few translocations occurring cross-border or between properties, limited due to COVID-19 restrictions (M. Reilly pers. comm.). The protected areas managed by Big Game Parks have an estimated 267 giraffe. An aerial count in Hlane Royal National Park in 2019 estimated 132 individuals, increasing to 160 in 2022. Mkhaya Game Reserve has an estimate of 80 giraffe, and likely going to increase with a planned property expansion, and Kamsholo Bushveld Safaris (previously known as Nisela) estimated 27 giraffe in 2021 (M. Reilly pers. comm.).

Almost all giraffe populations in the country have shown a steady increase, including several new private properties adding giraffe. In 2021, Mbuluzi was estimated to have 45 giraffe, and 55 giraffe on IYSIS – although important to note giraffe habitat on the later property may decrease with plans to increase the sugarcane section of the property (M. Reilly pers. comm.; A. Howland pers. comm.). Several smaller giraffe populations were also reported in 2022: 11 on Mhlosinga, 16 on Royal Jozini, 10 on Canterbury Estates, six on Oberland, five on Dombaya and one on Panata (M. Reilly pers. comm.).

In summary, current giraffe numbers for Eswatini are estimated at 416 individuals on 11 properties. These numbers indicate a significant increase over the last six years. There are currently plans to bolster some of the small populations such as Oberland, Dombaya and Panata by translocating individuals from within the country (M. Reilly pers. comm.).

Future Conservation Management

The following are proposed conservation management options for giraffe in Eswatini:

- Taxonomic assessment of all populations in Eswatini to aid in ongoing biodiversity management, and in turn guide translocation efforts into and within the country.
- Development of National Giraffe Conservation Strategy or Action Plan for Eswatini; and
- Support to dedicated giraffe conservation, habitat protection, anti-poaching, education, and awareness initiatives (government, NGO and academic)



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References

- Austin, J.D., Moore, S., McCleery, R.A., Colton, J., Finberg, T. & Monadjem, A. 2018. Conservation genetics of an isolated giraffe population in Swaziland. *African Journal of Ecology* **56**: 140-145.
- Bailey, K.M., McCleery, R.A., Barnes, G. & McKune, S.L. 2019. Climate-driven adaptation, household capital, and nutritional outcomes among farmers in Eswatini. *International journal of environmental research and public health* **16(21)**: 4063.
- Brenneman, R.A., Louis, E.E. Jr, & Fennessy, J. 2009. Genetic structure of two populations of the Namibian giraffe, *Giraffa camelopardalis angolensis*. *African Journal of Ecology* **47(4)**: 720-728.
- Brown, D.M., Brenneman, R.A., Georgiadis, N.J., Koepfli, K-P., Pollinger, J.P., Milla, B., Louis Jnr, E.E., Grether, G.F., Jacobs, D.K.J & Wayne R.K. 2007. Extensive population genetic structure in the giraffe. *BMC Biology* **2007(5)**: 57.
- Coimbra, R.T., Winter, S., Kumar, V., Koepfli, K.P., Gooley, R.M., Dobrynin, P., Fennessy, J. & Janke, A. 2021. Whole-genome analysis of giraffe supports four distinct species. *Current Biology* **31(13)**: 2929-2938.
- Dlamini, W.M. 2016. Analysis of deforestation patterns and drivers in Swaziland using efficient Bayesian multivariate classifiers. *Modelling Earth Systems and Environment* **2(4)**: 1-14.
- Doveton, D.M. 1937. The human geography of Swaziland. *Transactions (Institute of British Geographers)* **(7/8)**: 11-110.
- European Environment Agency (EEA). 2020. Review and update of the State of the Environment Report – Restoring the Environment for Climate Resilient Economic Recovery. *Eswatini Environment Authority*.
- East, R. 1999. African Antelope Database 1998. IUCN/SSC Antelope Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.
- Fennessy, J. 2004. *Ecology of desert-dwelling giraffe Giraffa camelopardalis angolensis in north-western Namibia*. PhD Thesis. University of Sydney, Australia.
- Fennessy, J. 2008. An overview of *Giraffa camelopardalis* taxonomy, distribution and conservation status, with a Namibian comparative and focus on the Kunene Region. *Journal Namibia Wissenschaftliche Gesellschaft/Namibia Scientific Society* **56(1758)**: 1-16.
- Fennessy, J., Bidon, T., Reuss, F., Kumar, V., Elkan, P., Nilsson, M.A., Vamberger, M., Fritz, U. & Janke, A. 2016. Multi-locus analyses reveal four giraffe species instead of one. *Current Biology* **26(18)**: 2543-2549.
- Food and Agriculture Organisation of the United Nations (FAO). 2022. *FAOLEX database*. <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC078835/>
- Goodman, P.S. & Tomkinson, A.J. 1987. The past and present distribution of giraffe in Zululand and its implications for reserve management. *South African Journal of Wildlife Research* **17**: 28-32.
- Government of the Kingdom of Swaziland. 1991. The Game (Amendment) Act. Kingdom of Swaziland.



IPCC. 2014. Intergovernmental Panel on Climate Change. *Working Group I Contribution to the IPCC Fifth Assessment Report. Climate Change 8.*

Mamba, H.S., Randhir, T.O. & Fuller, T.K. 2020. Community attitudes and perceptions concerning rhinoceros poaching and conservation: A case study in Eswatini. *African Journal of Wildlife Research* **50 (1)**: 1-7.

Manyatsi, A. & Singwane, S. 2019. Land governance in Eswatini. *Paper prepared for presentation at the “2019 Land Governance in Southern Africa Symposium”*. Swaziland.

Matondo, J.I. 2012. Assessing the vulnerability of the sector of water resources in Swaziland due to climate change. In: World Environmental and Water Resources Congress 2012: *Crossing Boundaries* pp. 2036-2051.

Monadjem, A. 1998. Distribution patterns and conservation status of mammals of Swaziland, southern Africa. *Koedoe* **41(2)**: 45-49.

Muller, Z., Bercovitch, F., Brand, R., Brown, D., Brown, M., Bolger, D., Carter, K., Deacon, F., Doherty, J.B., Fennessy, J., Fennessy, S., Hussein, A.A, Lee, D, Marais, A, Strauss, M, Tutchings, A, & Wube, T. 2018. Giraffa camelopardalis (amended version of 2016 assessment). In The IUCN red list of threatened species 2018: e.T9194A136266699. *International Union for Conservation of Nature and Natural Resources*. <https://doi.org/10.2305/iucn.uk.2016-3.rlts.t9194a136266699.en>

Phoofolo, P. 1993. Epidemics and revolutions: the rinderpest epidemic in late nineteenth-century Southern Africa. *Past & Present* **138**: 112-143.

Reilly, T.E. 1985. The Mlilwane story. A history of nature conservation in the Kingdom of Swaziland and fund raising appeal. The Mlilwane Trust, Mbabane, Swaziland.

Sarkodie, S.A., Ackom, E., Bekun, F.V. & Owusu, P.A. 2020. Energy–climate–economy–population nexus: an empirical analysis in Kenya, Senegal, and Eswatini. *Sustainability* **12(15)**: 6202.

Saving Rhinos. 2011. Swaziland warns of rhino poaching threat. SavingRHINOS.org <http://www.rhinoconservation.org/2011/04/07/swaziland-warns-of-rhino-poaching-threat/> (Accessed 25 January 2022).

Wang, J., Hill, W.G., Charlesworth, D. & Charlesworth, B. 1999. Dynamics of inbreeding depression due to deleterious mutations in small populations: mutation parameters and inbreeding rate. *Genetics Research* **74(2)**: 165-178.

Winter, S., Fennessy, J. & Janke, A., 2018. Limited introgression supports division of giraffe into four species. *Ecology and Evolution* **8(20)**: 10156-10165.

World Bank. 2022. The World Bank in Eswatini. <https://www.worldbank.org/en/country/eswatini/overview>

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Hoffman, R., Fennessy, S. & Fennessy, J. 2022. *Country Profile: A rapid assessment of the giraffe conservation status in Eswatini*. Giraffe Conservation Foundation, Windhoek, Namibia.



Map

