AFRICA'S GIRAFFE

Giraffa camelopardalis

A CONSERVATION GUIDE





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MIKE HETTWER

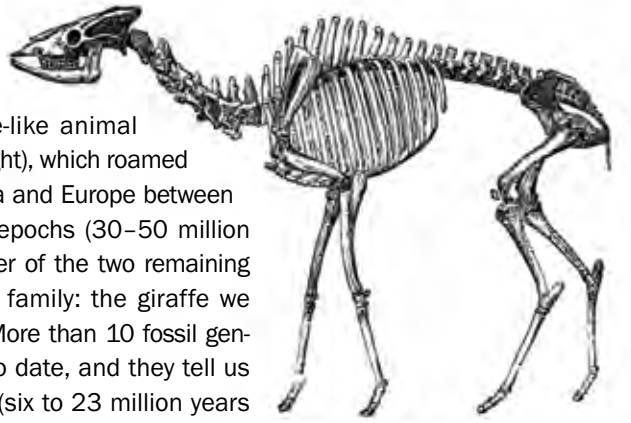
INTRODUCTION

This guide has been developed to provide essential background information about Africa's giraffe. It highlights the management challenges faced by all stakeholders across the continent, from local communities to governments and their agencies, the non-governmental conservation community and the private sector, if this quintessential African species is to have a future in the wild. Written by the Giraffe Conservation Foundation (GCF) and produced with the invaluable support of Black Eagle Media, the publisher of *Africa Geographic* magazine, it comes at a time when giraffe numbers have fallen by more than 40 per cent in the past decade and a half and when, although the species' formal conservation status is Least Concern, two subspecies have recently been classified as Endangered on the IUCN's Red List. As such, they are of high conservation priority.

Surprisingly, the giraffe has remained largely ignored and under-researched in the wild. This situation is slowly being addressed, but with giraffe populations in decline across the continent (except in Namibia and Niger), the need for a concerted conservation effort has never been more urgent. National strategies coordinated into a continent-wide management framework would form the basis of such an effort.

Evolution

A three-metre-tall antelope-like animal known as *Helladotherium* (right), which roamed the plains and forests of Asia and Europe between the Eocene and Oligocene epochs (30–50 million years ago), was the forefather of the two remaining members of the Giraffidae family: the giraffe we know today and the okapi. More than 10 fossil genera have been discovered to date, and they tell us that by the Miocene epoch (six to 23 million years ago) early deer-like giraffids were yet to develop the long neck that characterises today's giraffe.



WIKIMEDIA COMMONS

OPPOSITE At life size and in incredible detail, these giraffe images carved into rock are believed to date back some 9 000 years, when the Sahara was wet and green.

Giraffe & humans

Rock carvings from the Sahara Desert in northern Niger, estimated to be 9 000 years old, represent the earliest, and arguably the most impressive, recorded human association with giraffe. This exotic, long-necked creature has captured the human imagination ever since, as demonstrated in art form across the African continent, be it by the Egyptians, the Nubians or, in the south, by the Bushmen. Further afield, the giraffe features in Chinese art of the Ming dynasty and delighted Caesar's Rome as long ago as 46 BC.

In the 21st century, it has been named the national animal of Tanzania, and in Botswana it is considered to be 'royal' and may not be hunted. Its distinctive, iconic image is used across the world to advertise anything from mobile phones to insurance, motor bikes and whisky. So having captivated humans through the ages, why has the giraffe been allowed to slip under the conservation radar? Why is it largely under-researched and facing significant population declines in much of its remaining home range? And why does it essentially have no voice? These are some of the questions that urgently require answers.

DID YOU KNOW?

A giraffe star constellation has been identified in northern hemisphere skies since 1612.



GIRAFFE FACTS



Height (average adult)	♂ 5.3 m (17 ft 4 in) ♀ 4.3 m (14 ft 2 in)
Weight (average adult)	♂ 1 200 kg (2 600 lb) ♀ 830 kg (1 800 lb)
Largest	♂ recorded at 6 m (19+ ft); heaviest recorded at 1 900 kg (4 200 lb).
Foot size	30 cm diameter; hoof ♂ 15 cm, ♀ 10 cm.
Defence	Forelegs and hind legs can deliver a lethal kick.
Speed	50 kph for sustained periods; calves less than 3 m high can easily outrun adults.
Means of feeding	Browsing, with a prehensile tongue (50 cm long) and upper lip.
Diet	Tree leaves, fruits, pods and shoots.
Senses	Colour vision, acute sense of smell, good hearing.
Sleep	4.5 hours, mainly at night; either standing or lying down.
Longevity	+/- 25 years
Social behaviour	Ranges from solitary (often older males) to large, loose and mixed herds. Known as fission-fusion society, whereby individuals or smaller groups readily merge with or split from the herd; differs from one population to another.

Sex ratio	Very close to 1:1.
Age at sexual maturity	♀ 3–4 years; in oestrus 1 day every 2 weeks. ♂ restricted by competition from larger bulls.
Breeding lifetime	Throughout life; ♀ recorded mating within weeks of giving birth.
Gestation	+/- 15 months (453–464 days)
Offspring	Single calf, rarely twins; known to stay with mother until 22 months old, but often independent much sooner, depending on the gender.



FRANCOIS DEACON

TAXONOMY & SUBSPECIES

The giraffe *Giraffa camelopardalis* is an even-toed ungulate, as are cattle, camels, sheep, goats and hippos – but not horses. As the world's tallest animal and largest ruminant (an animal that partly digests its food and then regurgitates it to chew as 'cud'), it belongs to:

Class: Mammalia (mammals)
Order: Artiodactyla (even-toed ungulates)
Family: Giraffidae
Genus: *Giraffa*

But is there just one giraffe species or are there several? Although it is widely accepted that there are nine subspecies of *G. camelopardalis*, there is increasing evidence to suggest that some of these subspecies may not in fact be different from others and in some cases may be species in their own right. Thus there may be fewer or more than nine. Further research is being carried out by GCF and its partners to unravel this mystery and help define the future taxonomy of giraffe.



FRANCOIS DEACON

G. c. angolensis

Despite generally being called the Angolan (or sometimes smoky) giraffe, this subspecies is thought to be extinct in Angola. Its range is believed to include Namibia, south-western Zambia, northern Botswana and probably western Zimbabwe, but ongoing genetic research will determine whether this supposed distribution is completely accurate. New genetic evidence will also help to assess the true size of the population, but at present this is estimated at fewer than 20 000 in the wild.

International Species Information System (ISIS) records indicate that only about 20 individuals are kept in zoos worldwide.



ANDY TUTCHINGS





The Angolan giraffe is relatively light in colour and has large, uneven and notched spots that cover the whole leg.



G. c. antiquorum

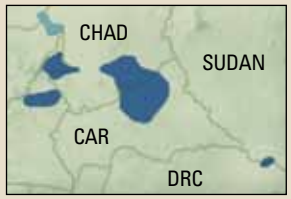
The Kordofan giraffe's range includes some of Africa's more hostile areas: southern Chad, Central African Republic, northern Cameroon and northern Democratic Republic of Congo. It is estimated that fewer than 3 000 individuals survive in these war-ravaged countries. Most of these populations were formerly assumed to be *G. c. peralta*, but recent research has proved this to be incorrect. Similarly, giraffe in zoos across Europe that were thought to be *G. c. peralta* have been reclassified as *G. c. antiquorum* following genetic studies in 2007.

ISIS records show that approximately 65 Kordofan giraffe are in zoos worldwide.



M. SCHOE





The Kordofan giraffe's spots are pale and irregular and cover the upper leg.



G. c. camelopardalis

The Nubian giraffe is the nominate subspecies, meaning its Latin subspecific name is the same as that of the entire species because it was the first specimen recorded. The estimated number of Nubian giraffe is below 650, of which fewer than 200 are believed to occur in western Ethiopia and 450 or less may be in South Sudan. Exact information about this precariously small and fragmented population is extremely difficult to ascertain; large herds have been reported in South Sudan, but it has been impossible to determine whether they were *G. c. camelopardalis*, the relatively numerous *G. c. antiquorum*, the dwindling *G. c. reticulata* or even the Endangered *G. c. rothschildi*.

The Al Ain Zoo in the United Arab Emirates has 11 giraffe that may be Nubian. Genetic research is being carried out and it is essential to collect samples from the wild to establish the identity of these individuals, as well as to get a better understanding of the subspecies' numbers and distribution, which may affect its future IUCN Red List status.

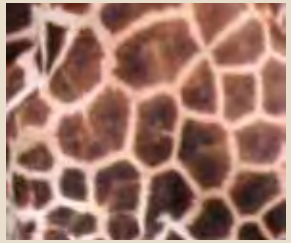


MIKE D. KOCK





The distinctive coat of the Nubian giraffe has large, normally four-sided, chestnut-brown blotches on a slightly off-white background. It has no markings below the hocks.



G. c. giraffa

The South African (or Cape) giraffe ranges from west to east across northern South Africa, southern Botswana and southern Zimbabwe, and there are efforts under way to reintroduce it into Mozambique.

Previous reintroductions of this subspecies and the Angolan giraffe into northern South Africa, southern Botswana and southern Zimbabwe are likely to have resulted in hybrid populations in those areas. There have also been extralimital introductions of the South African giraffe into Zambia, Angola and Senegal.

There are fewer than 12 000 South African giraffe left in the wild and, according to ISIS, only about 45 in zoos around the world.



FRANCOIS DEACON





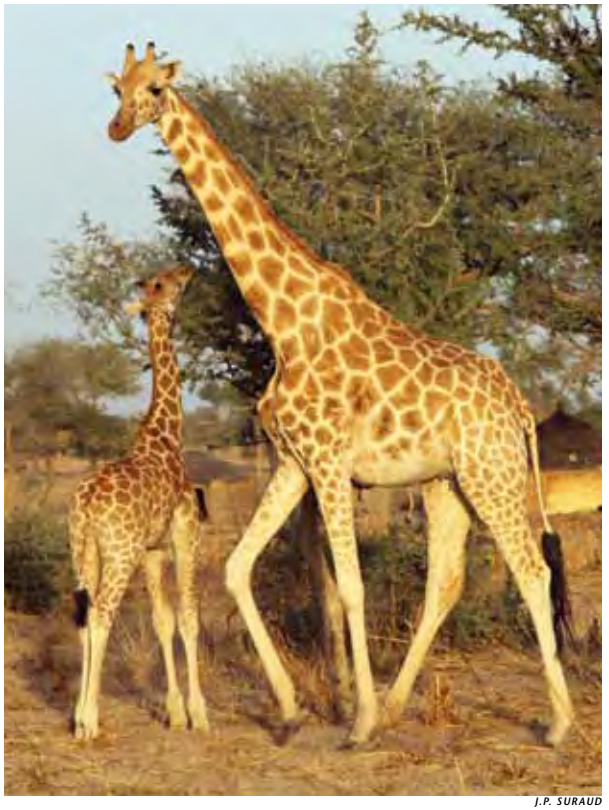
The South African giraffe's pattern extends all the way down the legs and is made up of star-shaped blotches on a background that is more tan-coloured than cream or white.



G. c. peralta

At the beginning of the 20th century the West African giraffe was widely distributed from Nigeria to Senegal, but by the late 1990s only 50 individuals remained in the whole of West Africa. These few survivors are now formally protected by the Niger government and their number has risen to approximately 300, which exist in an isolated pocket east of the capital, Niamey. No other large wild mammals still occur in this region.

In 2008 the West African giraffe was classified as Endangered and of high conservation importance on the IUCN Red List. According to ISIS, none are kept in captivity.



J.P. SURAUD





The West African giraffe is noticeably light in appearance, with rectangular tan blotches separated by thick, cream-coloured lines.



G. c. reticulata

Although sometimes also called the netted or Somali giraffe, this subspecies is better known as the reticulated giraffe. It is now found predominantly in north-eastern Kenya, but there are also populations in southern Somalia and possibly southern Ethiopia. It has been estimated that about 4 700 individuals remain in the wild (down from an approximate 28 000 as recently as 1998). The subspecies' numbers (and ranges) in Somalia and Ethiopia have yet to be quantified, but are assumed to be low.

According to figures provided by ISIS, the reticulated giraffe is one of the more common subspecies in captivity, with about 450 kept in zoos around the world.



HARALD LENZ





It is easy to see why this subspecies is called the reticulated giraffe, with its brown-orange patches clearly defined by a network of thick and striking white lines.



G. c. rothschildi

Rothschild's giraffe, also known as the Baringo or Ugandan giraffe, ranges through Uganda and west–central and central Kenya. Reports of it occurring (or having occurred) in South Sudan have not been confirmed due to the difficulty of access into that region. Interestingly, the majority of Rothschild's giraffe in Kenya are outside their natural range, in contrast to those in Uganda. Fewer than 1 100 individuals remain in the wild and in 2010 the subspecies was classified as Endangered and of high conservation importance on the IUCN Red List. Efforts in 2011 to reintroduce a small number of these giraffe into their native range on an island in Lake Baringo, Kenya, have proved successful.

ISIS reports that more than 450 Rothschild's giraffe are in captivity. If these individuals are confirmed to be pure-bred, this would mean that roughly one-third of the surviving population lives in zoos.



JULIAN FENNESSY





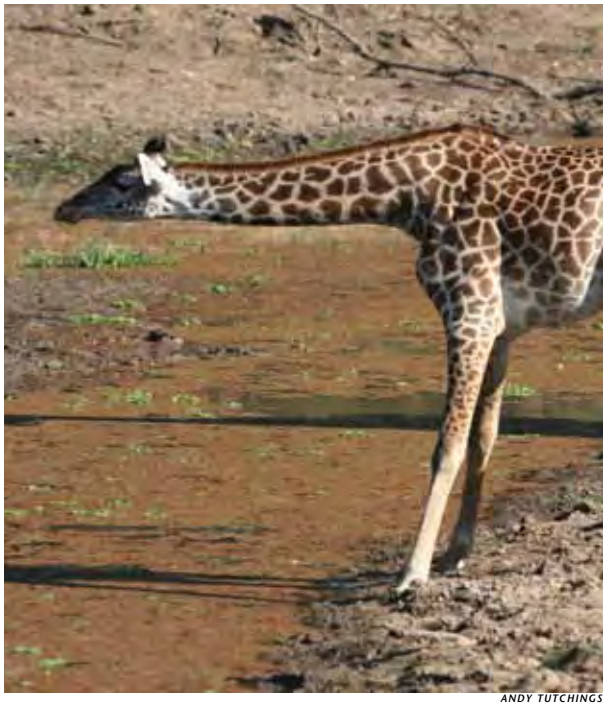
Rothschild's giraffe has large, dark, rectangular blotches set irregularly against a cream background. The lower legs are noticeably white and not patterned.



G. c. thornicrofti

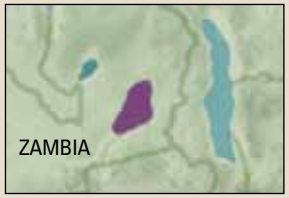
Thornicroft's giraffe (occasionally also known as the Rhodesian giraffe) survives as an entirely isolated population in a small area of north-eastern Zambia. Occurring only in the South Luangwa Valley, it is geographically separated from any other giraffe population by at least 400 kilometres in any direction. However, the most recent genetic research indicates that the subspecies is not as distinct as previously assumed, and its taxonomy needs to be reviewed further before it is either 'lumped' with *G. c. tippelskirchi* or 'split' on ecological grounds. Estimates suggest that fewer than 1 000 individuals remain, although the population appears to be both stable and genetically viable.

According to ISIS, none are kept in captivity.



ANDY TUTCHINGS





Thornicroft's giraffe has a pattern of large, dark, ragged leaf-shaped blotches on a cream background that continues down the length of its legs.



G. c. tippelskirchi

The Masai, or Kilimanjaro, giraffe ranges across central and southern Kenya and south through Tanzania, and extralimital populations have been translocated into Rwanda. This is the most populous of the subspecies, numbering an estimated 37 000 in the wild. However, recent reports of poaching would suggest that its population may be decreasing.

ISIS records indicate roughly 100 individuals in zoos.



MEGAN STRAUSS

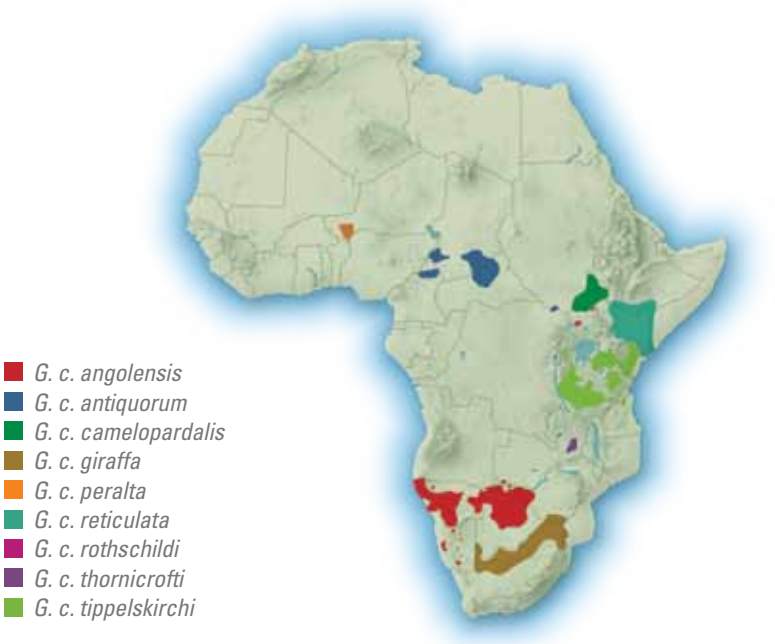




The Masai giraffe is often noticeably darker than other subspecies. Its blotches are large, dark brown and distinctively vine leaf-shaped with jagged edges, and are separated by irregular, creamy brown lines.



DISTRIBUTION & HABITAT



The various subspecies of giraffe currently occur in 20 countries in a wide arc across sub-Saharan Africa, from Niger to Central and East Africa and down to southern Africa. They are predominantly browsers and their long legs and neck ensure that they are custom-built for utilising a food source out of the reach of any other animals except elephant. Perhaps surprisingly in view of this highly specialised adaptation, they are extremely versatile and can even flourish in regions with negligible tree cover, where they trim the tops of bushes and small trees. Nevertheless, the quintessential image of a giraffe shows it reaching to browse on one of Africa's large acacia trees, notably the camelthorn or the umbrella thorn.

Giraffe will drink, sometimes daily, where water is readily available, reaching down to its surface by splaying the forelegs and bending the knees. Despite the animals' body mass, however, water is not necessarily a prerequisite of suitable habitat and in arid environments they can absorb sufficient moisture from the condensation (and coastal fog) that collects on leaves on cool nights. Evidence shows that many giraffe do not drink regularly – and sometimes not at all.

SIGNIFICANCE OF GIRAFFE

Economic

The giraffe's primary economic significance lies in its evolutionary uniqueness and the symbolic value associated with this. Its silhouette is both unmistakable and evocative, and is used around the world to advertise and sell a wide range of goods. It has even been used as a logo for the Olympic Games and football's FIFA World Cup.

It is, however, the tangible economic benefits generated by tourism that interest and motivate most stakeholders. Few travel operators or safari brochures fail to include the giraffe when they market Africa as an exciting travel destination, and the species is a must-see on every safari-goer's wish list.

Unlike some other large herbivores, notably the elephant and buffalo, and the highly lucrative predators, the giraffe is not in demand as a trophy. Revenue from legal hunting is thus limited.

Ecological

The giraffe, like the elephant and rhino, is an agent of change in habitats and landscapes. It opens up areas and promotes the growth of new forage for itself and other browsers. Moderate browsing by giraffe has been shown to stimulate the production of shoots in certain acacia species.

DID YOU KNOW?

The Romans believed that the giraffe was part camel and part leopard (hence the scientific name *Giraffa camelopardalis*). Its lack of ferocity apparently disappointed the crowds in colosseums.

The animals provide an additional service to acacias when they consume trees' seeds and subsequently disperse them in their droppings in open areas where plants can thrive. Moreover, the seeds' potential to germinate is enhanced once they have passed through the giraffe's digestive tract.

It is thought that giraffe also play an important role in pollination. Research in Kenya has highlighted that some acacia species declined in areas protected from giraffe and other mega-herbivores, and the knock-on effect on other browser species was considerable.

Giraffe are host to various ticks – and the oxpeckers that feed on these parasites. There is thus a mutually beneficial relationship between giraffe and oxpeckers, or any other obligate species in the latter's absence.

CONSERVATION

Status & statistics

In 1998 the IUCN estimated the total number of giraffe in Africa to exceed 140 000. By 2012, according to assessments coordinated by GCF, this had dropped to fewer than 80 000 individuals; indeed, in some areas traditionally regarded as prime giraffe real estate, numbers had dropped by some 65 per cent.

Limited research has been undertaken on giraffe across Africa. As a species, the giraffe is listed as Least Concern on the IUCN Red List. However, since two of the subspecies have recently been listed as Endangered and of high conservation priority, the need for an accurate evaluation, driven by solid baseline data, throughout the continent has never been more important.

GCF researchers have begun the long-overdue process of establishing the first continent-wide, giraffe-range-state country profiles. These profiles collate all historical and currently available census and anecdotal data on giraffe numbers and distribution, as well as threats to the specific region's or nation's giraffe. The most up-to-date population figures are as follows:

G. c. tippelskirchi	<37 000	*G. c. rothschildi*	<1 100
G. c. angolensis	<20 000	*G. c. thornicrofti*	<1 000
G. c. giraffa	<12 000	*G. c. camelopardalis*	<650
G. c. reticulata	<4 700	*G. c. peralta*	<300
G. c. antiquorum	<3 000		

IUCN

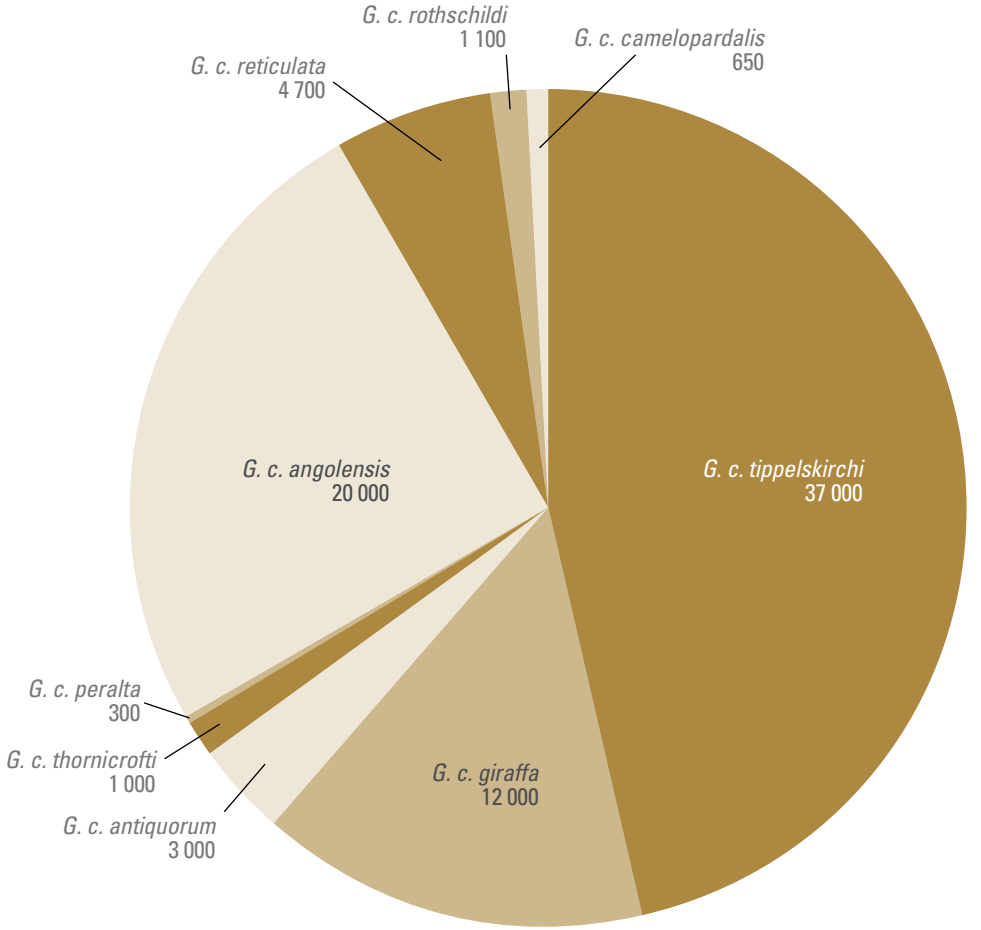
Giraffe *Giraffa camelopardalis* **Least Concern**
West African giraffe *G. c. peralta* **Endangered**
Rothschild's giraffe *G. c. rothschildi* **Endangered**

DID YOU KNOW?

Giraffe 'horns' aren't horns at all, but comprise ossified cartilage that fuses to the skull in later life. They are believed to aid thermoregulation.

CITES

There is negligible recognised international trade in giraffe, so the species is not listed. GCF is committed to clarifying and monitoring this information and reviewing the CITES listing as appropriate.



Stakeholders

In the 20 African countries in which they occur, giraffe are found in a range of different land-management regimes, from state-owned national parks to private and communal lands. For many of the individuals and organisations that lease or invest in these lands, often as participants in the wildlife industry, the presence or absence of giraffe is important and they thus become involved, either directly or indirectly, in the conservation of the species. Given the breadth of giraffe distribution, the task of establishing and coordinating a continent-wide strategy that encompasses all these stakeholders, each with differing priorities, brings with it a special set of challenges.

Although giraffe conservation involves the continent as a whole, it should first be tackled country by country and subspecies by subspecies.



TEENA PAYNE

Threats to the survival of giraffe

Poaching, disease, the fragmentation, degradation and loss of habitat, the growth and expansion of the human population, and war and civil unrest have all impacted on giraffe numbers and distribution across Africa – and continue to do so. Many threats arise from direct, indirect or perceived competition for resources from humans and their livestock.

Giraffe habitat is degraded or destroyed by pastoralism, the clearing of land for agriculture and the uncontrolled harvesting of timber and fuel wood, to name just a few causes. Damage to crops creates conflict between humans and giraffe, while close contact with domestic livestock can result in the transmission of diseases. Giraffe outside protected areas are sometimes even involved in road accidents.

Human encroachment into giraffe habitat results in the fragmentation of that habitat and the isolation of giraffe populations. This in turn limits gene flow and the exchange of genetic diversity. Increased levels of inbreeding may have restrictive implications on the evolutionary potential of the species.

ABOVE Indiscriminate poaching with wire snares is resulting in an increasing number of fatalities and devastating injuries for giraffe.

OPPOSITE In February 2011, eight Rothschild's giraffe were transported across Kenya's Lake Baringo to the Ruko Conservancy in a bid to re-establish a population there.

There is also a risk of compromising genetic purity when individuals of one subspecies are translocated into an area occupied by another subspecies. Should they breed, the genetic uniqueness of each of those subspecies would be lost.

Limiting factors

The giraffe has a distinct advantage in that it seldom competes with wild or, importantly, domestic animals for food. Nor does it pose a threat to humans, although conflict does sometimes occur, as indicated. Nevertheless, there are a number of factors that restrict conservation initiatives.

Scientific Long-term studies, reliable historical and current data and even specialist researchers are all lacking, and this remains one of the most limiting factors when it comes to understanding the conservation ecology of the giraffe, not to mention its taxonomy and physiology. Current research projects being conducted in Africa are invariably the first-ever targeted giraffe projects in a specific country or on a particular subspecies.

More baseline knowledge is required across the board, but exciting advances are being made. Ongoing genetic research on giraffe populations across the continent not only promises to unravel the mystery surrounding the giraffe's taxonomy, but is



ZOE MULLER





MIKE D. KOCK (2)

already providing invaluable information that is being fed into an all-Africa management and conservation strategy document.

The giraffe's physiology brings its own problems. Translocation projects are significant logistical undertakings, and researchers and conservationists have to go to great lengths in their efforts to secure giraffe populations.

Radio and satellite tracking devices have become an important aid to understanding the extent of wildlife home ranges and animals' daily and seasonal movements, be they across international borders or between and within human settlements. The information these devices provide is invaluable when making long-term plans for species and environmental management. Such technology has been and is still being used on giraffe, producing fascinating and extremely useful results. Nevertheless, tracking giraffe by this means remains in its infancy and requires far greater investment in both time and resources – and by its very nature is something of a challenge!

Ecological Giraffe populations are kept in check partly by natural mortality through predation, although this varies from one population to another across the continent.

ABOVE Attaching a satellite tracking collar to a tall and very strong giraffe is in itself a challenging undertaking.

OPPOSITE Chance encounter. This herd of what is believed to be the extremely rare and seldom-seen Nubian giraffe was observed during a 2009 aerial survey in western Ethiopia's Gambella region. Very little is known about this subspecies.

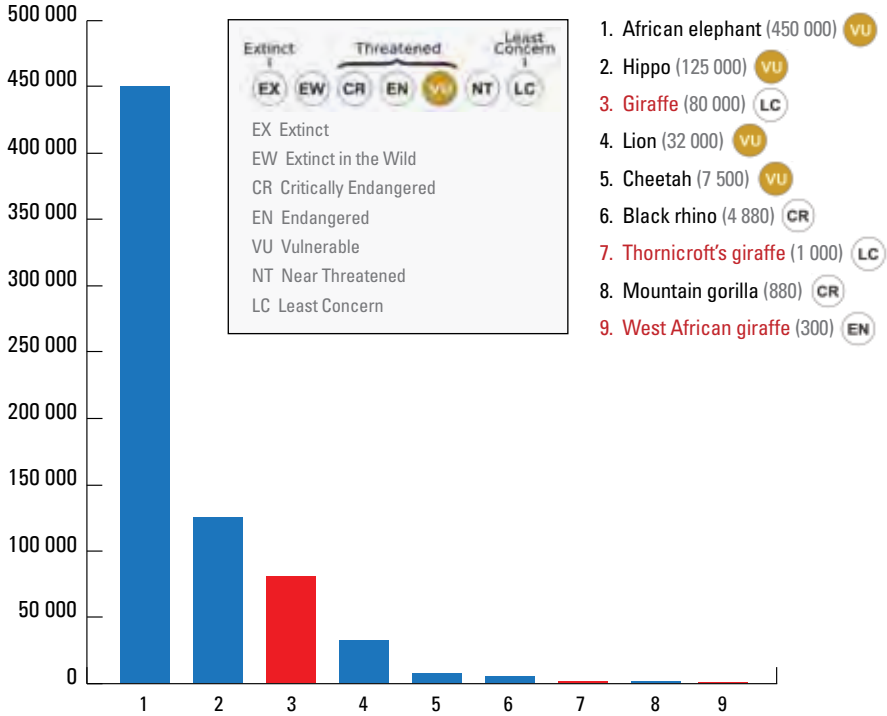
DID YOU KNOW?

The name 'giraffe' is believed to come from the Arab word *zarafa*, meaning 'fast walker'.

Lions prey even on adult bulls, although they are more likely to hunt subadults and calves, which are also vulnerable to spotted hyena, leopard, crocodile and cheetah, as well as humans. Population growth is also limited by malnutrition, resulting from poor food quality and quantity in the dry season, and by diseases such as anthrax and rinderpest.

Social The giraffe competes with more charismatic species when it comes to recognising the need for its conservation – and for funding. It is estimated that the current giraffe population is at most one-fifth the size of that of the African elephant, whose classification on the IUCN Red List is Vulnerable, in contrast to the giraffe's, which is Least Concern. This discrepancy in ranking understandably leads many people to believe that the giraffe does not face a conservation crisis – but the 40 per cent population decline over the past decade and a half demonstrates that it does.

The extent of poaching and how it drives changes in giraffe population dynamics are still poorly understood. It's a subject that needs to be addressed, but already reports are being collected from various parts of Africa.



1. African elephant (450 000) VU
2. Hippo (125 000) VU
3. Giraffe (80 000) LC
4. Lion (32 000) VU
5. Cheetah (7 500) VU
6. Black rhino (4 880) CR
7. Thornicroft's giraffe (1 000) LC
8. Mountain gorilla (880) CR
9. West African giraffe (300) EN



BILLY DODSON

Although one of the most commonly seen subspecies in captivity, reticulated giraffe populations in the wild have plummeted and work is under way to address its IUCN Red List classification.

THE FUTURE

Working in collaboration with African governments, NGOs, universities, researchers and the IUCN SSC Giraffe and Okapi Specialist Group (see page 28), GCF is compiling data on the current status of all the giraffe populations and subspecies in Africa. The information collected will be used to develop an integrated giraffe database. After analysing the data and producing GIS range maps, we will be in a position to publish the Giraffe Conservation Status Report, the first of its kind.

As well as enabling us to specifically target future conservation-based research, the report will serve as an invaluable framework for a Continent-wide Conservation Management Strategy document. This in turn will provide essential information for working with individual governments to produce National Conservation Strategies.

Although it may be regarded as something of a Pyrrhic victory, we are looking to get other giraffe subspecies into the Endangered (or other 'threatened') category of the IUCN Red List in the near future, alongside *G. c. peralta* and *G. c. rothschildi*.



FRANCOIS DEACON

FURTHER READING

The paucity of scientific and popular books about giraffes is an indication of how poorly the species has been studied and, indeed, how it has been overlooked for so long. The books that have been published, however, make excellent reading.

Scientific

- Dagg, Ann Innis. 2013. *Giraffe: Behaviour, biology and conservation*. Cambridge University Press, UK.
- Dagg, Ann Innis, and J. Bristol Foster. 1982. *The Giraffe: Its biology, behavior and ecology*. Krieger Publishing Company, Malabar FL, USA.
- Krumbiegel, I. 1971. *Die Giraffe*. A. Ziemsen Verlag, Wittenberg, Germany. (Only available in German.)
- Spinage, C.A. 1968. *The Book of the Giraffe*. Collins, London, UK.
- Williams, E. 2011. *Giraffe*. Reaktion Books, London, UK.

Popular

- Peterson, Dale, and Karl Ammann. 2013. *Giraffe Reflections*. University of California Press, USA.
- Sherr, L. 1997. *Tall Blondes: A book about giraffes*. Andrews McMeel Publishing, Kansas City, USA.

A digital version of this booklet can be downloaded from *www.giraffeconservation.org*

OPPOSITE Is this the dawn of a new era for giraffe conservation? We certainly hope so, though there remains much to do.

GIRAFFE CONSERVATION FOUNDATION

The Giraffe Conservation Foundation (GCF) is dedicated to securing a future for all giraffe populations in the wild. Founded in 2009, the organisation was the first and remains the only non-profit NGO in the world that concentrates solely on the conservation of this most quintessential of Africa's mega-herbivores and its habitat.

As the key focal organisation for the conservation and management of giraffe in Africa, GCF uses its ever-expanding network to maintain a close working relationship with the GOSG (see below), government bodies, academic institutions, local communities and other NGOs. It provides a platform and forum for giraffe-related research, conservation and management discussions, and helps to increase awareness about the plight of the giraffe by a number of means, including outreach programmes. Importantly, GCF supports dedicated and innovative research to better understand giraffe ecology, speciation, conservation and management.
www.giraffeconservation.org

The Giraffe and Okapi Specialist Group

The International Union for Conservation of Nature's (IUCN) Species Survival Commission's newest specialist group is the Giraffe and Okapi Specialist Group (GOSG). With populations of all giraffids experiencing significant declines in recent years, the establishment of the GOSG in 2013 will help to attract and strengthen international support for the giraffe and the okapi, and will provide an official forum for the implementation of essential conservation strategies. GOSG will receive host institution support from GCF (giraffe) and the Zoological Society of London (okapi).

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