



**Africa-wide Giraffe Conservation Strategic Framework:
Road Map**

August 2016

Background

The first three conferences dedicated to the ‘wild’ giraffe, *Giraffe Indaba I, II and III*, were co-hosted by Giraffe Conservation Foundation (GCF) and the IUCN Giraffe & Okapi Specialist Group (GOSG) in Namibia (2011), Kenya (2013), and South Africa (2015), respectively. The concept of developing an Africa-wide Giraffe Conservation Strategic Framework evolved out of the discussions at *Giraffe Indaba I*, and subsequent discussions with giraffe conservation partners across the globe.

This Strategic Framework was developed as a ‘road map’ to guide giraffe conservation activities across Africa, and where appropriate, to inform the creation of new country or (sub)species plans and/or an Africa-wide Giraffe Conservation Strategy. This Strategic Framework summarises shared experience and collective thoughts, the perceived gaps in current giraffe conservation and management, both geographically and in terms of current knowledge in giraffe status, distribution, taxonomy, ecology and other aspects of giraffe science and management. Lastly, this Strategic Framework outlines conservation priority areas and suggested activities to address these. These suggested activities could be used as a guiding ‘Road Map’ for giraffe conservation by the IUCN SSC GOSG, GCF, conservation partners, zoo community, private sector and most importantly, the governments and people of Africa, who live with and collectively manage giraffe in the wild.

Vision

A Strategic Framework for giraffe conservation and management in Africa guiding (sub)species and national strategies or action plans, and their subsequent implementation.

Current Status of Giraffe – an Overview

Taxonomic Status

A number of taxonomic classifications for giraffe have been proposed over the last half a century (Ciofolo & Pendu 2014, Groves & Grubb 2011, Grubb 2005, East 1999, Kingdon 1997, Dagg & Foster 1982, Ansell 1972). However, there remains uncertainty surrounding the geographic and taxonomic limits of the (sub)species described. Furthermore, recent genetic research suggests that several (sub)species may even represent distinct species (Brown et al. 2007; Hassanin et al. 2007). Most recently, comprehensive DNA sampling from all major populations has been undertaken across the current giraffe range and analysis reveals that there are four distinct species of giraffe and five subspecies (Fennessy et al. 2016). It was additionally observed that, Thornicroft’s giraffe is genetically indistinguishable from Masai giraffe, Rothschild’s giraffe is genetically identical to Nubian giraffe, and Angolan giraffe are similar to South African giraffe (Fennessy et al. 2016; Bock et al. 2014; Fennessy et al. 2013).

- Masai giraffe *Giraffa tippelskirchi* (includes former Thornicroft’s giraffe).
- northern giraffe *Giraffa camelopardalis* with subspecies Kordofan giraffe *G. c. antiquorum*; Nubian giraffe *G. c. camelopardalis* (includes former Rothschild’s giraffe); and West African giraffe *G. c. peralta*.
- reticulated giraffe *Giraffa reticulata*.
- southern giraffe *Giraffa giraffa* with subspecies Angolan giraffe *G. g. angolensis*; and South African giraffe *G. g. giraffe*.

Conservation Status

Currently listed as Least Concern on the IUCN Red List, giraffe (*Giraffa* spp.) were reportedly widespread across Africa, with a population estimate of more than one million individuals a century ago. In the mid 1980s, giraffe numbers were estimated at approximately 153,000 individuals (East 1999; Fennessy & Brown 2010; GCF 2016). Current estimates on giraffe in the wild indicate ~100,000 individuals, and importantly the IUCN SSC GOSG is currently finalising the first-ever detailed conservation assessment of giraffe numbers, range and threats scheduled to be released in late 2016. Based on the overall decline of giraffe in the last three decades, especially of some (sub)species, it is likely the taxon will warrant listing in a higher category of threat on the IUCN Red List than its current status. Future assessments of the (sub)species will be undertaken in time and the majority will also likely warrant listing in a high category of threat on the IUCN Red List.

Although a few (sub)species and populations remain stable or are increasing, in particular southern giraffe with both subspecies Angolan and South African giraffe, others are clearly in a more precarious situation. The population in Niger was estimated at 49 individuals in the mid-1990s (Ciofolo et al. 2000), and has since increased to more than 400 individuals in 2015 (Niger Ministry of Environment pers. comm.). In 1998, East (1999) estimated that a little more than 500 Nubian (including Rothschild's) giraffe remained, with the populations in (South) Sudan unknown. In the early 1970s, the population in the Murchison Falls Conservation Area (MFCA), consisting of Murchison Falls National Park (MFNP) and the adjacent wildlife reserves of Bugungu and Karuma, in the north-western parts of Uganda, was estimated at 150-200 individuals (Rwetsiba 2006; NEMA 2009; Rwetsiba et al. 2012). Several aerial sample counts of wildlife in the MFCA were conducted in the 1990s and the population had decreased to an estimated 78 giraffe in 1991 (Olivier 1991). The current Nubian giraffe population in MFNP has and continues to increase since civil unrest in this part of Uganda ceased, and MFNP is now home to the largest (and growing) remaining natural population, estimated at over 1,250 individuals (M. Brown unpublished data). Unfortunately, the Kordofan, Masai and reticulated giraffe numbers are not as promising with large declines recorded over the last three decades, and their conservation status requires urgent updating. Ongoing efforts to better estimate the continent's giraffe populations will allow a more accurate assessment of all (sub)species' conservation status, which are currently limited by lack of resources and capacity, as well as a general lack of understanding of the plight of giraffe.

IUCN Red List - Species

- 2016 – TBA (late 2016 – likely higher threatened category)
- 2010 – Least Concern
- 1996 – Lower Risk/conservation dependent

IUCN Red List – (sub)species (others not assessed)

- 2016/17 – TBA (likely many (sub)species in higher threatened categories)
- 2010 – Endangered (*G. c. rothschildi*)¹
- 2008 – Endangered (*G. c. peralta*)

CITES

- Not listed

Source: Fennessy & Brown 2008; Fennessy & Brenneman 2010

¹ subsumed in *G. c. camelopardalis*

Current Range

Giraffe formerly occurred widely in arid and dry-savanna zones of sub-Saharan Africa wherever there were trees. Today, the geographic extent of giraffe has contracted markedly with the expansion of human populations and the conversion of land use.

The West African giraffe formerly ranged from Senegal to Lake Chad, but the only surviving population within this entire area now lives in a small part of south-western Niger. Throughout Central Africa, Kordofan giraffe remain patchily distributed with an estimated 2,000 individuals spread across northern Cameroon, southern Chad, Central African Republic, north-eastern Democratic Republic of Congo and south-western South Sudan. In East and North-East Africa, reticulated giraffe still occur in relatively large but significantly decimated numbers throughout northern Kenya, and in low numbers in southern and south-western Ethiopia, and there are no clear estimates for south-eastern Somalia. Nubian giraffe occur in western Ethiopia and south-eastern South Sudan, whilst northern Uganda is the major stronghold (formerly Rothschild's giraffe), and smaller introduced, reintroductions and augmented populations scattered across national parks and conservancies in Kenya and Uganda. Masai giraffe remain relatively widely distributed throughout southern Kenya and Tanzania, and smaller but stable numbers in eastern Zambia (formerly Thornicroft's giraffe), however, their numbers have halved in recent decades. A small introduced population occurs in Rwanda.

Throughout southern Africa, giraffe are relatively plentiful and currently account for greater than 50% of the total wild population of giraffe in Africa. One driving force behind this has been their re-introduction to many parts of the species former range from which they were eliminated or introduced to areas outside of their assumed natural range for conservation, tourism or business purposes. Angolan and South African giraffe are currently 'common' both inside and outside of protected areas in Namibia, Botswana, Zimbabwe and South Africa. In Angola, Angolan giraffe were locally extinct but have been re-introduced from Namibia while other natural and extra-limital introductions of South African giraffe have also occurred. Small South African giraffe populations naturally occur in south-western Zambia whilst introductions have occurred onto public and private land throughout southern and central Zambia, as well as Botswana, Senegal, South Africa, Swaziland and Zimbabwe. In Mozambique, a few South African giraffe still occur in areas bordering Kruger National Park and (re-)introductions have been undertaken into a small number parks and reserves.

Native Range

- Angola, Botswana, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Mozambique, Namibia, Niger, Somalia, South Africa, South Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

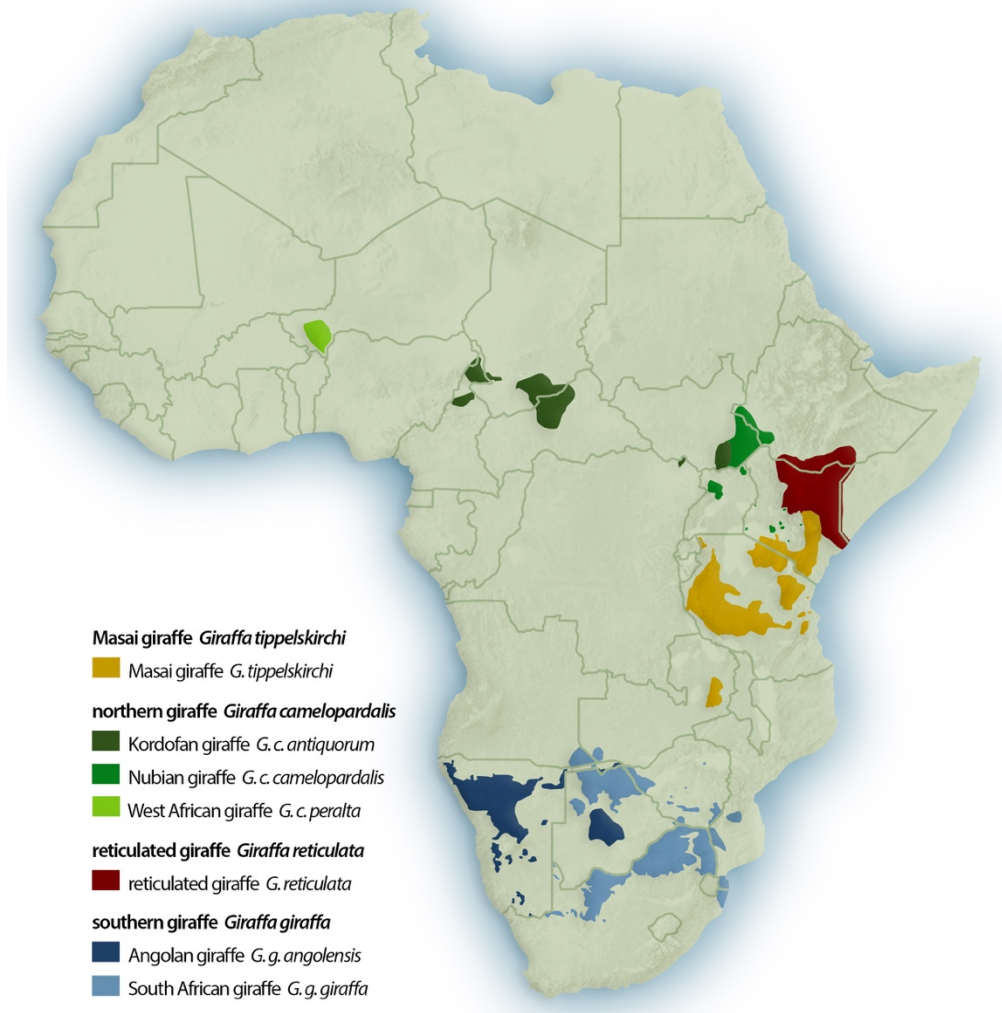
Extra-limital introduction

- Angola, Botswana, Kenya, Rwanda, Senegal, South Africa, Swaziland, Zambia and Zimbabwe.

Regionally Extinct

- Burkina Faso, Eritrea, Guinea, Malawi, Mali, Mauritania, Nigeria and Senegal.

Africa-wide Giraffe Range Map



Source: GCF 2016

Guiding Principles

Given the complexity of the threats facing Africa's giraffe and the diverse suite of conservation measures required to protect and manage them, it is essential to outline the following "Guiding Principles for this Africa-wide Giraffe Conservation Strategic Framework". As a 'Road Map', the document intends to:

- Develop and prioritise mechanisms by which all giraffe populations in Africa would be offered the recognition, protection and support needed to ensure their future survival;
- Recognise the serious and increasing levels of threat currently facing giraffe, including habitat loss and fragmentation, climate change, illegal killing for meat and other products, illegal domestic and potential international trade, lack of conservation knowledge and attention, and lack of institutional and enforcement capacity;
- Implement measures to prevent any further localised extinction of giraffe in any part of their range;

- Identify and address the needs of those individuals mandated with protecting giraffe, and of those co-existing and interacting with giraffe;
- Demonstrate value to conservation partners and supporters through a commitment to transparency, accountability, coordination, and common purpose by African giraffe range States, NGOs and other stakeholders; and,
- Identify for the local, regional and international donor community mechanisms for channelling support to giraffe conservation programmes through a process which has been developed, owned, approved and managed in the future by the African giraffe range States and in collaboration with key partners.

Conservation and Management Strategies

Objective 1: Improve knowledge of giraffe and their habitats

1.1 Result: *The abundance and distribution of giraffe are known and monitored*

1.2 Rationale

Our knowledge of the abundance and distribution of giraffe and their (sub)species in Africa is limited and incomplete. Without enhanced knowledge on giraffe abundance and distribution, it will be impossible to develop a coherent strategy or action plan, let alone implement effective measures for successful giraffe conservation and management.

1.3 Activities

- Consolidate data from previously conducted studies and surveys for integration into the Africa-wide Giraffe Database (GiD).
- Define, adapt and/or establish survey protocols and tools across the giraffe range; existing protocols used should be continued and/or adapted as appropriate for comparative analysis.
- Conduct targeted giraffe surveys across their range – it will be particularly important to coordinate the censuses of (sub)species and transboundary populations, and to maximise the opportunity to include giraffe into other large mammal surveys for economies of scale.
- Assess, trial and/or support capture-mark-recapture methods to assist with quantifying giraffe abundance and distribution across their range.
- Encourage research on the historical abundance, distribution and evolution of giraffe through focused bio-geography studies incorporating geology, soils and climate change.
- Gather and integrate traditional knowledge, including attitudes towards, interaction with and usage of giraffe by local communities across the continent to better understand local historical and current giraffe range, seasonal use and threats.
- Further develop the GiD as the key database of abundance and distribution data of giraffe collected from across the continent (private, public and communal land; natural, re-introduced and extra-limital introductions), and with the analytical capacity to process the data.
- Finalise and regularly update GCF's national giraffe Country Profiles for each giraffe range State.
- Collate, support and publish the first-ever comprehensive conservation status of giraffe – Africa-wide Giraffe Conservation Status.

- Support sharing of data and inclusion in, and appropriate assessment of, giraffe numbers and range for future detailed assessments of giraffe on the IUCN Red List.
- Build on existing capacities and resources among and across giraffe conservation partners.

2.1 Result: *Giraffe population dynamics are known and monitored*

2.2 Rationale

Our knowledge of the population dynamics of giraffe is insufficient to understand their ecology across their range. There is an urgent need to investigate the ecological basis of giraffe population dynamics, threats and the impact giraffe have on their habitats. The latter is particularly relevant in some small protected or communal areas where giraffe are being 'compressed' into restricted ranges, and may provide key insights into ecosystem function including pollination and seed dispersal.

2.3 Activities

- Identify conservation research activities and priorities, including but not limited to:
 - Establish contemporary, and if possible, historical baselines of population dynamics and ecological relationships in restricted range areas including source and sink dynamics, effects on environment (vegetation, herbivory, ecosystem function).
 - Evaluate ecological roles of bottom-up and top-down regulation of population dynamics.
 - Evaluate the effects food limitation on giraffe demography.
 - Evaluate the effects of poaching and predation on giraffe demography.
- Establish and encourage comparative (sub)species research opportunities for range-wide population studies to compare behaviour and ecology (short- to long-term), with a special emphasis on comparing natural populations, restricted range populations and introduced or extra-limital populations.
- Determine geographical and (sub)specific variation in the social organisation of giraffe and their implications for management across their range.
- Assess if any (sub)species and geographical variation of a seasonal or asynchronous reproduction.
- Understand giraffe dispersal and corridor linkages and opportunities, including how they relate to land use.
- Assess and document drivers of population decline throughout giraffe range in Africa.
- Evaluate genetic structure among populations and genetic diversity both among and within populations.
- Examine potential effects of population bottleneck events and inbreeding depression on population dynamics.
- Define concepts such as 'herd' in the context of giraffe population dynamics studies and comparability across their range.

3.1 Result: *Giraffe movements are known*

3.2 Rationale

Giraffe can roam over large areas, but under specific circumstances they can also decide to remain in small restricted and core areas. Factors that determine giraffe range are complex and little is known or understood regarding intraspecific variation in ranging patterns. A range of social and dietary factors are important alongside the degree of human activity, and its impact. The use of technology such as GPS, GSM and satellite tracking allows us to broaden our knowledge of giraffe movements and habitat use considerably, especially when combined with field observations.

3.3 Activities

- Carry out studies of different giraffe (sub)species and populations ranging patterns, both within their natural range and of (re-)introduced populations. An effort should also be made to understand transboundary giraffe movements of particular importance and comparability within and between sites and populations.
- Further develop and trial appropriate GPS, GSM and satellite tracking tools to assist a better understanding of giraffe ecology, their conservation and management.
- Track giraffe using geo-located photo identification of giraffe, including through citizen science opportunities.

4.1 Result: *Giraffe habitat use is better understood*

4.2 Rationale

Historical data suggests that giraffe persist predominantly in Acacia woodlands and the current range of giraffe (sub)species is distributed across 21 countries in sub-Saharan Africa. Invariably, there are differences in the vegetation types, climate, management policies and other abiotic factors across the (sub)species' range. Research efforts focusing on these issues would further increase our understanding of giraffe ecology.

4.3 Activities

- Develop a predicted habitat suitability map for giraffe throughout Sub-Saharan Africa to guide future (re-)introductions and the allocation of conservation resources.
- Assess habitat use, preferences and core areas of giraffe (sub)species within targeted populations and across their range.
- Assess seasonal habitat use of giraffe (sub)species within populations and across their range.
- Carry out vegetation and habitat assessment mapping and monitoring of current and potential giraffe ranges to guide current management and future translocation opportunities.
- Evaluate the roles of habitat structure, community composition and browse nutrition on habitat selection.
- Examine the potential roles of competition and predation on habitat preference.

5.1 Result: *Giraffe taxonomy is re-evaluated and better understood*

5.2 Rationale

Until recently, it was widely accepted that there is one species of giraffe and nine subspecies. However, recent evidence has indicated that there are four species and five subspecies of giraffe. Several methods of classifying giraffe have been proposed but developments in genetic analyses and molecular biology techniques are being employed to resolve the question of giraffe taxonomy.

5.3 Activities

- Identify and complete genetic sampling of any additional or under samples key giraffe populations across Africa.
- Improve existing genetic samples from sampled populations where necessary.
- Carry out additional genetic sampling of key museum populations internationally, as appropriate.
- Facilitate ongoing development and sharing of giraffe specific genetic markers for various aspects of ecological research including, but not restricted to:

- Taxonomy.
- Paternity.
- Social analysis.
- Comparative demography.
- Explore the viability of and/or improvement in new DNA extraction and analysis tools.
- Carry out further taxonomic assessments of giraffe using best available genetic analysis, morphology, phylogeography and other appropriate tools that arise.
- Monitor genetic diversity, hybridisation and inbreeding of targeted populations, in particular of small and restricted populations.

6.1 Result: *Translocations of giraffe are based on best practice with all the relevant background information available*

6.2 Rationale

Even though giraffe have been successfully (re-)introduced into numerous locations within their former range or introduced into new landscapes for conservation purposes or other reasons, there remains a need to undertake regular monitoring as well as to collate the information on the translocation histories in order to inform the best practice and management policies in order to secure the future of giraffe across their natural range. Such information will be useful in developing an extensive database and best practices to increase the number of viable giraffe populations.

6.3 Activities

- Develop a database of giraffe (sub)species translocation history across their range (within and between countries).
- Establish taxon and/or (sub)specific re-introduction guidelines for giraffe in line with the IUCN Translocation Guidelines including, but not limited to:
 - Identify of appropriate individual giraffes for translocation.
 - Establishing pre- and post-monitoring protocols.
 - Evaluating stress related impacts.
 - Transboundary translocations.
 - Documenting lessons learned and best practices from translocation experiences.
- Advise and provide technical support and assistance to governments, NGOs, private sector and other stakeholders on best practice for giraffe translocations and post-translocation monitoring.
- Recommend, support and document pre- and post-monitoring of re-introductions and translocations to better understand the actions of giraffe translocations for their conservation and management.

7.1 Result: *Giraffe physiology, foraging ecology, diet and diseases are better understood*

7.2 Rationale

Morphological variations between (sub)species and geography suggests that biotic and abiotic factors across the range of giraffe might also vary. However, very few studies have explored these factors because of the limited long-term monitoring surveys of giraffe populations. Increasing and improving studies on the aforementioned factors would increase our understanding of giraffe ecology across their range.

7.3 Activities

- Encourage ongoing research and dissemination on giraffe physiology and morphological variances.
- Encourage greater research on giraffe rumination biology including, but not limited to:
 - Investigating rumination rates.
 - Stomach content triggers.
 - Understanding the prevalence and potential role of osteo/geophagy.
 - Evaluating environmental and dietary influences on rumen microbiota.
- Encourage research on giraffe forage use and quality, including, but not limited to:
 - Understanding the role of browse nutrition in diet selection.
 - Evaluating nutritional deficiencies in the context of population dynamics.
 - Examining the role of plant secondary metabolites in diet selection.
 - Evaluating nutritional needs.
 - Understanding geographic variation of giraffe forage ecology.
 - Understanding the effects of seasonal variation of nutritional profiles of common browse species on giraffe habitat selection and space use.
- Synthesise published diet and forage studies into a comprehensive review paper(s).
- Establish comparative (sub)species research opportunities for range-wide population studies to compare forage and diet.
- Develop a database of and encourage research into giraffe epidemiology, diseases and their transmission across their range.
- Undertake an assessment of the abundance and distribution of giraffe skin disease(s) across their range, and importantly detailed epidemiology of known populations.
- Assess the need for giraffe water dependency and use across their range.

8.1 Result: *Giraffe communication observed and understood*

8.2 Rationale:

Studies have shown that giraffe have a fission-fusion social structure, but there is still very limited understanding of giraffe communication. Communication is an integral component of maintaining social networks and there is a need to better understand this mechanism, especially in wild giraffe populations. Importantly, studies on communication can provide additional information on giraffe ecology and social associations.

8.3 Activities

- Assess communication capabilities of giraffe including, but not limited to:
 - Sound – in particular Infrasonic.
 - Visual.
 - Olfactory.

9.1 Result: *New research tools and technologies are trialled and tested*

9.2 Rationale

In recent years, safer and more efficient technologies have been developed to perform non-invasive surveys on wildlife. Non-invasive techniques can be used in an array of studies and thus greatly enhance the knowledge and understanding of population dynamics of giraffe (sub)species.

9.3 Activities

- Encourage the research into understanding heritability of pelage patterns within populations.
- Explore the viability of and/or improvement in new DNA extraction and analysis tools.
- Assess the use of hormonal analysis to better understand giraffe reproductive and stress physiology.
- Assess efficacy and best practices for community-based, community involved and/or citizen science based giraffe conservation and research.
- Collate, assess, trial and report on the value of various population survey and monitoring methods including, but not limited to:
 - aerial counts and monitoring (full, sample and infrared, UAV).
 - road counts (strip, transect).
 - DNA.
 - Camera traps.
 - Questionnaires.
 - Water points.
 - Tourist photos: photo-ID citizen scientist e.g. GiraffeSpotter.
- Refine the user-interface, database and function of photo identification tools.
- Develop appropriate GPS, GSM and satellite tracking tools for giraffe.

Objective 2: Understand human dimensions and giraffe conservation, including reducing human-giraffe conflict, their illegal killing and domestic trade in giraffe products

1.1 Result: *Improved understanding of the human dimensions of giraffe conservation*

1.2 Rationale

The human dimension in conservation and management is increasingly recognised by stakeholders as an important component to understand and integrate into daily decision-making. The nature of human dimensions and human dimension conservation has changed from a traditional emphasis to economic and social issues. To aid giraffe conservation, increased public understanding, awareness and involvement is key. As human dimensions of giraffe conservation remains relatively unknown, stakeholders and managers can benefit. As giraffe often elicits strong public emotions, management becomes as much a socio-political issue as a biological one.

1.3 Activities

- Develop and implement baseline attitudinal, perception and knowledge surveys to assess the importance, understanding and value of giraffe across their range.
- Assess the historical and current cultural significance of giraffe to people across their range.
- Engage more social science research in giraffe conservation to assess current needs and requirements to assist in further conservation and management of giraffe across Africa.

2.1 Result: *Illegal trade and killing of giraffe assessed, and actions taken to reduce these and human-giraffe conflict*

2.2 Rationale

Human activities have led to drastic declines in giraffe numbers over the past three decades. Instances of illegal killing (poaching) and snaring of giraffe have been recorded across the giraffe range, yet there are limited studies that quantify the effect of these and other anthropogenic activities. More research is required to guide and inform targeted giraffe conservation and management.

2.3 Activities

- Assess and monitor the level of illegal exploitation, harvesting and trade of giraffe across their range.
- Develop and report on illegal hunting (poaching) incidents and surveys of giraffe.
- Assess the impact of habitat loss and destruction impacts on their abundance and distribution.
- Assess the impacts of giraffe on agriculture across their range.
- Document and understand the myths behind illegal hunting (poaching) of giraffe for medicinal use.
- Document and better understand human perceptions towards giraffe including use of products, reasons for poaching, tourist attraction, people/captive giraffe interaction and attitudes, human/giraffe interactions and conflict (avoidance).
- Review human-giraffe conflict and co-existent management issues within and across their range.
- Assess any other threats which will impact giraffe conservation and management.
- Develop a database of giraffe hunting policies and legislation in Africa, as well as numbers hunted and across what countries.
- Undertake a trade assessment of giraffe products in line with CITES methodology.

Objective 3: Garner support for education, awareness, conservation and management of giraffe from the wider community

1.1 Result: *The general public is aware, has a sound understanding of and is supportive of the importance of conserving giraffe.*

1.2 Rationale

Educating and engaging the general public in giraffe conservation and management principles is critical for the long-term success of giraffe conservation in the wild. Often, information available to the wider public about giraffe is limited and at times inaccurate. Ongoing awareness-raising campaigns aimed at all parts of society need to be developed and implemented (e.g. World Giraffe Day – 21 June). Such campaigns must be both broad and targeted, as appropriate, from dissemination of information regarding giraffe abundance and distribution, conservation, threats and impacts, economic importance, etc., and how best the general public can help.

1.3 Activities

- Work with all sectors (government, NGOs, institutions, etc.), from community to international, to launch and deliver accurate awareness-raising campaigns. As an example, internationally zoos and aquaria have more than 100 million visitors per annum and are best placed for awareness-raising and support.
- Establish information and awareness-raising campaigns using a range of media, including presentations, and social, print and television/radio media.

- Encourage media interest in giraffe conservation and management to produce relevant features on giraffe the mainstream, including documentaries, popular press, etc. and not limited to English speaking countries.
- Mobilise dedicated funds, logistics and equipment for giraffe conservation and management, such as, but not limited to zoo-wild partnerships and social media.
- Develop targeted education and awareness materials for various audiences, not limited to but including zoos, schools, general public and media.
- Establish and make accessible a (sub)species photographic and media library to aid in giraffe conservation and awareness – ‘Giraffe Resource Centre’.
- Continue the development and dissemination of the *Giraffid* newsletter, a newsletter of the IUCN SSC GOSG and supported by partners.
- Develop funding collaborations with zoos and zoo consortiums to support giraffe conservation and management in the wild.
- Assess and identify new funding mechanisms to support giraffe conservation and management including, but not limited to:
 - Adoption of wild giraffe.
 - Sponsorship of giraffe collars.
 - Green hunting.
 - Commission marketing.
 - Corporate sponsorship.
 - Targeted events and activities.
 - Giraffe ambassador programme – both VIP and scientific/conservationist community.
- Establish a ‘living’ portfolio of media contacts (in as many countries as possible) to share news items and press releases for additional international attention.
- Develop conservation volunteer giraffe supporter programmes to support conservation and management across their range.
- Mobilise and nurture giraffe ‘Ambassadors’ for each taxon.
- Organise and convene meetings targeting giraffe conservation and management to identify and deliberate on priority issues, and share up to date information for giraffe conservation and management.
- Develop an appropriate Communication and Marketing Strategy to facilitate the implementation of any future giraffe conservation strategies/plans.
- Make accessible relevant information on legislation associated with giraffe to the wider public for increased transparency.

Objective 4: Facilitate the collation and distribution of giraffe literature to the wider community

1.1 Result: *Increased accessibility of giraffe literature to the scientific and wider community*

1.2 Rationale

As giraffe populations are understudied, scientific and grey literature remain sparse with limited accessibility by the wider community, leading to reduced research, conservation and management efforts/concern. A centralised database of giraffe literature and data would be valuable to help inform priorities for research, management policies, produce educational materials and raise awareness on issues

relevant to giraffe conservation, ensuring that accurate and up-to-date information is available to the wider community.

1.3 Activities

- Establish a dedicated (and living) database of giraffe scientific and grey literature, the 'Giraffe Resource Centre'.
- Advise and/or update relevant giraffe websites at regular intervals with relevant and accurate information including but not limited to updated (sub)species numbers, taxonomy and projects.
- Collect and authenticate individual giraffe stories and relate them to specific (sub)species campaigns.
- Assess and share education materials and appropriate awareness across Africa, including e.g. economic benefits of conservation versus illegal hunting (poaching).
- Develop and distribute educational materials on giraffe and presentations in local languages to schools and communities across Africa.
- Inform and educate public, private and civil society conservation officials on value of giraffe.
- Inform and educate tour guides through development of targeted giraffe course and/or material, as appropriate.
- Develop 'Giraffe' as a brand: zoos have important role and seek support with fundraising and awareness raising about conservation status; including cultivating interest with school children, and the general public.
- Develop, identify and sell materials to support giraffe conservation activities in the wild.
- Assess the viability of bringing wild giraffe conservation projects directly to zoo visitors by integrating webcams, live chats with field teams, blogs, into zoo giraffe exhibits and websites.

Objective 5: Support the development of national or (sub)species strategies/action plans across the giraffe range

1.1 Result: *Development of new giraffe (sub)species and national giraffe strategies and action plans*

1.2 Rationale

In order to stop the decline of giraffe (sub)species across their range, strategies and action plans are needed to identify giraffe conservation, management and research priorities, stakeholders, and develop broader as well as specific initiatives to support their long-term sustainability. As an example, research should focus on the conservation needs of (sub)species in different countries to maximise their success.

1.3 Activities

- Develop and introduce processes to help governments implement and assess effectiveness of national and/or (sub)species strategies or action plans i.e. encourage governments to develop strategies and action plans as well as provide technical and financial support for the implementation of these plans.
- Establish a network of regional representatives/coordinators for each giraffe (sub)species to liaise with governments, NGOs, local stakeholders etc., and in doing so develop and maintain key working relationships with all relevant collaborators and partners.
- Undertake a trade assessment for giraffe to assess any potential CITES listing.

- Initiate a continent-wide illegal hunting (poaching) assessment of giraffe and its current and potential future impacts on their conservation status and ecological role.

Objective 6: Build and support development of human capacity in giraffe conservation and management across Africa

1.1 Result: *Competent and engaged conservationists across the African continent*

1.2 Rationale

Developing a cadre of African and international giraffe conservation students, researchers, managers and conservationists to guide long-term giraffe conservation is critical for the (sub)species survival. Support in the education and skills development of young Africans should be prioritised while at the same time encouraging international conservationists and stakeholders to engage, share skills and provide capacity development opportunities.

1.3 Activities

- Offer targeted programmes and opportunities for young African conservationists in giraffe conservation and management.
- Enable access for young African conservationists to education, work and internship programmes, while also providing opportunities to international conservationists.
- Support building in-country capacity around giraffe conservation and management, as well as supporting/incubating early-career giraffe conservationists and managers.

Conclusion

Giraffe numbers have declined significantly over the past three decades and as such their conservation would benefit greatly from a more coordinated and guided approach. There is a clear need for more local, regional and international stakeholder support and collaboration, from governments to communities, to play an increasing role in the development, implementation and coordination of giraffe conservation in Africa. However, this need should be seen in light of currently limited resources and activities, hence prioritisation is key. The long-term aim is an increased number of giraffe conservation activities with increased support and international awareness to secure a sustainable future for all giraffe populations across Africa in their natural habitat

The role the giraffe conservation stakeholders is key in developing, financing and facilitating giraffe conservation and research projects, providing technical support, and collaboration internationally and across African giraffe range States. The implementation of this Framework Strategy should be guided by the conservation and management needs of each respective (sub)species and their range countries. This Framework Strategy should be seen as a first step to provide a 'Road Map' that guides stakeholders in their giraffe conservation efforts and supports collaboration in a complimentary and effective fashion, to fill knowledge gaps, to be efficient to minimise overlap and repetition to best help conserve giraffe before it is too late.

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Bibliography

Ansell, W. F. H. 1972. *The mammals of Africa: an identification manual*. Meester J, Setzer HW, editors. 15. Washington DC: Smithsonian Institution Press.

Bock, F., Fennessy, J., Bidon, T., Tutchings, A., Marais, A., Deacon, F. & Janke, A. 2014. Mitochondrial sequences reveal a clear separation between Angolan and South African giraffe along a cryptic rift valley. *BMC Evolutionary Biology* **14**: 219 – 231.

Brown, D. M., Brenneman, R., Koepfli, K., Pollinger, J. P., Milá B., Georgiadis, N. J., Louis Jr, E. E., Grether, G. F., Jacobs, D. K. & Wayne, R. K. 2007. Extensive population genetic structure in the giraffe. *BMC Biology* **5**: 57 – 70.

Ciofalo, I., Le Pendu, Y. & Gosser, A. 2000. The giraffes of Niger, the last West African giraffes. *Revue d'écologie*, **55**: 117 – 128.

Ciofalo, I. & Le Pendu, Y. 2014. *Giraffa camelopardalis*. In: J. S. Kingdon and M. Hoffmann (eds), *The Mammals of Africa*, Academic Press, Amsterdam, The Netherlands.

Dagg A. I. & Foster, J. B. 1982. *The Giraffe: Its Biology, Behaviour and Ecology*, 2nd Edition. Van Nostrand Reinhold, New York.

East, R. 1999. *African Antelope Database 1998*. IUCN/SSC Antelope Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

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*. Accepted July 2016.

Fennessy, J., Bock, F., Tutchings, A., Brenneman, R. & Janke, A. 2013. Mitochondrial DNA analyses show that Zambia's Southern Luangwa Valley giraffe (*Giraffa Camelopardalis thornicrofti*) are genetically isolated. *African Journal of Ecology* **51**: 635 – 640.

Fennessy, J. & Brenneman, R. 2010. *Giraffa camelopardalis ssp. rothschildi*. The IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on **11 July 2015**.

Fennessy, J. & Brown, D. 2008. *Giraffa camelopardalis ssp. peralta*. The IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on **11 July 2015**

- Fennessy, J. & Brown, D. 2010. *Giraffa camelopardalis*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <www.iucnredlist.org>. Downloaded on **11 July 2015**.
- Giraffe Conservation Foundation. 2016. *Africa's Giraffe (Giraffa camelopardalis): A conservation guide*. Black Eagle Media. Western Cape, South Africa.
- Groves, C. & Grubb, P. 2011. *Ungulate Taxonomy*. The Johns Hopkins University Press. Baltimore, USA.
- Grubb, P. 2005. *Order Artiodactyla*. Pp. 637 – 722. In Wilson D. E. and Reeder D. M. (eds) *Mammal Species of the World*, 3rd Edition. The Johns Hopkins University Press, Baltimore, USA.
- Hassanin, A., Ropiquet, A., Gourmand, A., Chardonnet, B. & Rigoulet, J. 2007. Mitochondrial DNA variability in *Giraffa camelopardalis*: consequences for taxonomy, phylogeography and conservation of giraffes in West and Central Africa. *Comptes Rendus Biologies* **330 (3)**: 265 – 274.
- Kingdon, J. 1997. *The Kingdon Field Guide to African Mammals*. Academic Press, New York.
- Rwetsiba, A. 2006. *Aerial sample counts of medium – large mammals in Lake Mburo Conservation Area, Uganda*. Monitoring and Research Unit, Uganda Wildlife Authority, Kampala, Uganda.
- Rwetsiba, A., Wanyama, F., Kisame, F. & Owoyesigire, G. 2012. *Aerial survey of medium – large mammals in Murchison Falls Conservation Area*. Draft Report. Ecological Monitoring and Research Unit, Uganda Wildlife Authority, Kampala, Uganda.
- NEMA. 2009. *Uganda: Atlas of our changing environment*. National Environment Management Authority, Uganda.
- Olivier, R. C. D. 1991. *Aerial total counts of elephants in Uganda National Parks, March-April 1991*. Unpublished Report to Uganda Wildlife Authority, Kampala, Uganda.