



Namibia Giraffe Conservation Programme

QUARTERLY REPORT
July – September 2020



At our home base in Namibia, the Giraffe Conservation Foundation (GCF) runs a comprehensive programme across the country with a focus on giraffe conservation research and environmental education. While this report focuses on the conservation side, you can read more about the environmental education programme in the regular KEEP Update reports online at <https://giraffeconservation.org/programmes/keep/>.

The past few months have seen some exciting developments in our Namibia Programme. If you follow our updates regularly, you might want to skip forward to the brand-new updates and give the background information a miss, but you might also find some interesting information that you were not aware of.



Background

GCF's Namibia programme focuses on monitoring and supporting the long-term conservation and research of Namibia's desert-dwelling giraffe. These giraffe roam throughout the northern Namib Desert in the country's northwest. In 2019 our study area expanded to cover a total area of approximately 30,000km². Our work primarily focuses on the area south of the ephemeral Ensengo, Nadas and Khumib Rivers in the far north, down to the catchments of the Hoarusib and Hoanib Rivers. The area extends from communal conservancies (Marienfluss, Orupembe, Sanitatas, Okondjombo, Puros and Sesfontein Conservancies) in the east to the Skeleton Coast National Park bordering the Atlantic Ocean to the west.

Namibia is well-known for its successful community based natural resource management approach where local people gain management rights to their designated local land and natural resources including wildlife. Approximately 20% of Namibia's surface areas is managed and protected in such communal conservancies and over 46% of the country is under some form of private, communal or public conservation management. This collaborative conservation approach involving communal and private land as well as national parks has contributed to positive populations trends of most wildlife in the country.

With only a few millimetres of annual rainfall, the programme area is arid to hyper-arid and the wildlife is well adapted to this harsh environment. However, these conditions mean that many species survive at the very edge of their adaptive abilities and as such the ecosystem is fragile and easily disrupted. Grazing for cattle and other livestock, increasing tourism in the region and historical poaching have led to some degradation of the environment and its wildlife. Nevertheless, it remains one of the most beautiful and remote refuges for Africa's remaining mega-fauna.



In this stark landscape of dunes and dry riverbeds, along with elephant, black rhino, lion, cheetah and numerous other species, live the desert-dwelling Angolan giraffe (*Giraffa giraffa angolensis*) – a subspecies of the Southern giraffe (*G. giraffa*). GCF's long-term giraffe conservation monitoring and research programme in this remote part of Namibia offers a unique and valuable opportunity to better understand this giraffe subspecies and, through what we learn, provide conservation and management support for other giraffe populations throughout Africa.

In addition to this long-term conservation programme, GCF also attempts to get a better idea of giraffe numbers throughout the country and we have embarked on a country-wide assessment of giraffe. In this exciting programme, we work closely with government and private land-owners throughout Namibia to better understand the numbers and population dynamics of giraffe in the country. By collaborating with partners, we not only determine giraffe numbers, but also increase education and awareness of giraffe conservation in Namibia and Africa-wide.



News from the field

While 2020 is a challenging year for all of us, for the giraffe of Northwest Namibia, nothing much has changed – they continue to thrive in their harsh arid environment. The year started off with much better rainfall compared to recent years and as a result, grass returned to areas that had experienced severe drought for years. Most ephemeral rivers in the Northwest flowed, several more than once, and the Hoarusib River still had wet patches with open water as late as August. While the landscape has slowly returned to its customary sand-colour and the rivers continue to dry, the rainfall early in the year has given the local communities, their livestock and all wildlife a boost and everyone is hopeful for another good rainy season.

Over the last few months, we have continued to update and clean-up our giraffe database for Northwest Namibia and have looked for interesting information and data to tease out. After each survey, we analyse the number of individual sightings and break them down to total numbers of giraffe by river, sex, and age class. We did not consider recently was the frequency of individual sightings over time. This raised the simple question: when should we consider a giraffe absent from the population? After some



discussions, we decided that if we had not seen an individual giraffe for three years, it was reasonable to consider the giraffe lost to the population, i.e. the animal had either moved out of the area or died.

During this quarter, we spotted 35% of all known giraffe in the Hoanib and Hoarusib River systems, while we observed an impressive 46% of the individually identified giraffe in the Khumib River and the Far-North. So far in 2020, we have seen over 65% of all giraffe in our database, see Figure 1 for more details.

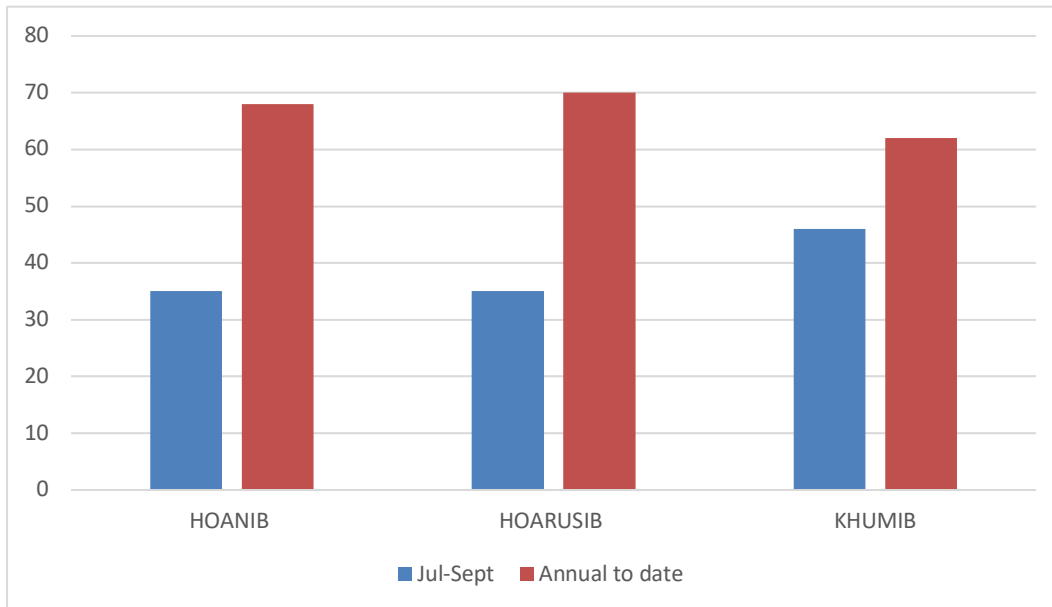


Figure 1: Percentage sightings of giraffe by river during this quarter and in 2020.

After cleaning up our database to remove individuals which are ‘lost’ from the population, known deaths, as well as adding newly identified calves and adults, we have now individually identified a total population of 427 giraffe in Northwest Namibia (see Table 1). This is an increase of almost 8% from September 2019.

Table 1: Numbers of individually identified giraffe in Northwest Namibia in July 2020 and September 2019.

	Male	Female	Unknown	Total
	2020 (2019)	2020 (2019)	2020 (2019)	2020 (2019)
Hoanib River	71 (68)	74 (70)	16 (14)	161 (152)
Hoarusib River	83 (77)	71 (68)	6 (6)	160 (151)
Khumib River & Far North	63 (52)	39 (31)	4 (10)	106 (93)
Total	217 (197)	184 (169)	26 (30)	427 (396)

We regularly see new calves throughout the year. There appears to be an increase in new calves towards the end of the year and into the rainy season. Females with newborn calves have small movement ranges that increase as the calf grows. Females with calves of similar age often form groups and stay together. These calves appear to maintain a close bond for several years, if not longer. We often observe other females participating in the care and babysitting duties in the early months of a calf’s life. Figure 2 shows the movement of two female giraffe with their calves in the Hoarusib River during a 21-day period. As can be seen, Blondie and calf traveled 113.97 km and Tinkerbelle and her calf traveled 114.44 km during this period. With the help of their ossi-unit we can determine that they stayed closely together during this period and none of the other tracked giraffe interacted with this small group during this period.

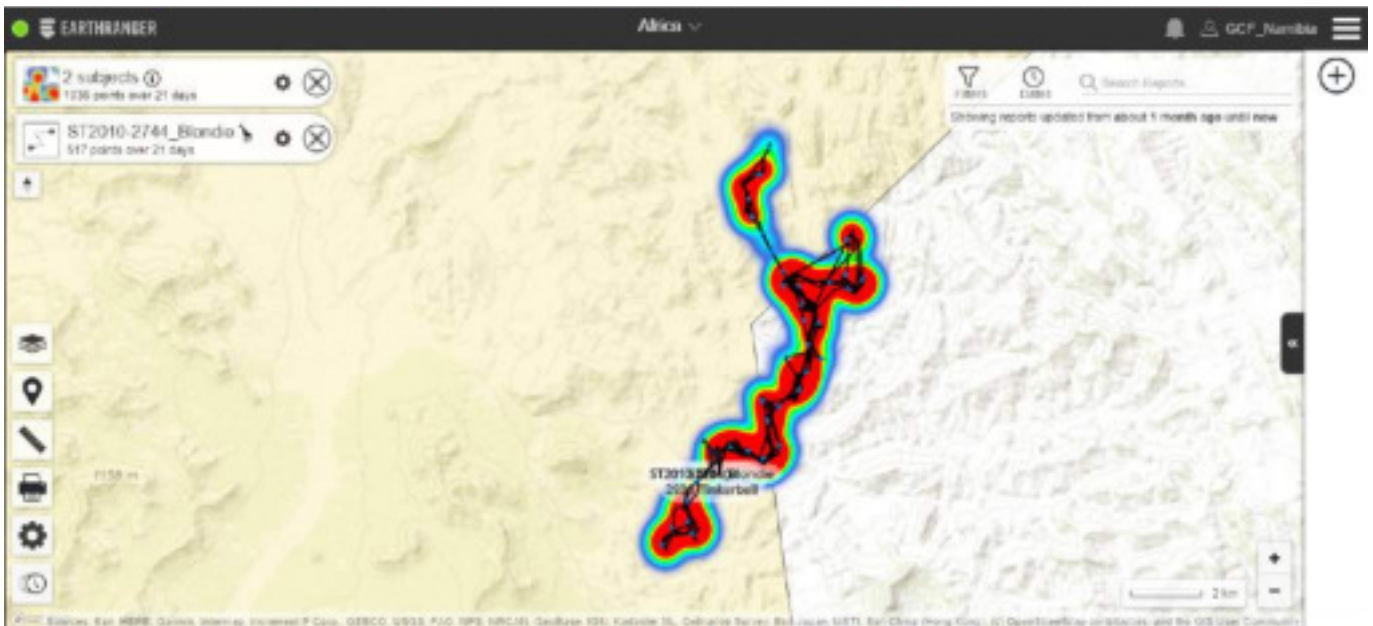


Figure 2: Movement of two female giraffe and their calves in the Hoarusib River during a 21-day period.

Earlier this year, we spotted two other newborn calves and their mothers on the plains near the Hoarusib River. Each successive trip, all four giraffe were observed in the same area – almost always together. Sadly, in August one of the female giraffe died of unknown causes, leaving the young female calf an orphan. At this stage she was over six months old, which means that she was no longer reliant on her mother's milk and able to browse enough to sustain herself. Giraffe typically start sampling leaves at only a few weeks old and wean after 6-12 months. The mother of the male calf appears to have stepped in as the orphaned calf's 'aunt' and we now regularly see the trio together in the same area. With no lion around and few threats to giraffe in this part of the survey area, we would expect the chance of survival for this young orphan to be high.

The general survival rate of wild giraffe calves in their first 12 months is estimated at only 50%, however, in Northwest Namibia we have observed a much higher survival rate of 67%. There appears to be some interesting deviation between river systems, which can anecdotally be explained based on the prevalence of lion in the Hoanib River, where young calves are occasionally lost to predation. In the Hoarusib River, where there is more vegetation and no large predators, the survival rate appears to be much higher, with 75% over the past 3.5 years. Despite the lack of predators, the calves in the Khumib River and Far-North have a survival rate of only 65%. This is possibly due to the smaller sample size and the harsher environment, however, as carcasses are very rarely seen, there is no conclusive evidence as to cause of death.



Figure 3: Female giraffe with two calves: her calf and orphaned calf.



Figure 4: Four desert lion keeping an eye on giraffe and the GCF team in the Mudorib River.

Our team had an interesting giraffe encounter when they witnessed a predator-prey standoff between four lion and two giraffe. While surveying for giraffe along the Mudorib River, a tributary of the Hoanib River in the Palmwag Consession, the team came across two giraffe who were both staring intently at the hillside. At first glance, all we could see were rocks, but on closer inspection we spotted four lion hiding in the rocks: two lionesses and two cubs were traversing the rocky hillside. A staring contest ensued between the two species for at least 30 minutes before anyone moved (see Figure 4 & 5).

The desert lion in Northwest Namibia are known to hunt giraffe, however, two lionesses with their cubs are unlikely to take on such a large prey and take the the risk, particularly with other easier prey species in the area. While neither giraffe were particularly phased by the encounter, they did appear to hide behind the GCF vehicle before eventually heading off to browse elsewhere. A few days later, both giraffe were spotted, none the worse for wear from their encounter.



Figure 5: Windy staring at the lion.

Twiga Tracker

If you follow GCF on social media, you may have seen one of our recent posts illustrating the movements of several of our tagged giraffe in Northwest Namibia. Between February 2019 and March 2020, we tracked 146 different giraffe from all four species in eight different countries, namely, Chad, DRC, Kenya, Namibia, Niger, Tanzania, Uganda and Zimbabwe as part of our Africa-wide Twiga Tracker initiative. These giraffe recorded a total of 631,490 data points, representing over 26,312 days of tracking. The tracked giraffe travelled a combined distance of 188,022 km. One of the Critically Endangered Kordofan giraffe in Chad travelled an amazing 5,280 km in one year! In some locations, such as Namibia, Uganda and northern Kenya, we noted substantial giraffe movement outside formally protected areas, which



highlights the need for integrative landscape-level conservation initiatives that incorporate local communities in planning.

In July as part of our Twiga Tracker initiative and in collaboration with our partners at the Namibia University of Science and Technology (NUST), we deployed seven ossi-units to giraffe in Etosha National Park (NP) and the adjacent Etosha Heights Reserve. An additional 30 tracking units were fitted to 15 kudu and 15 eland respectively during the same operation. The data from all units will feed into an ongoing research project by NUST which compares wildlife movements in different land uses. At the same time, we can analyse giraffe movements in a national park compared to a private game reserve. Etosha Heights Reserve and the western part of Etosha NP are at the eastern-most extent of the Hoanib River catchment and this data will help us investigate the question whether giraffe in this arid system move in relation to the rainfall gradient and whether they pre-empt rain or move after the rain has come.

Accessing Twiga Tracker information and monitoring giraffe movements whilst in the field has recently become much easier for our team. We now have access to the EarthRanger (developed by Vulcan) App which gives us the most recent location data for all Twiga Tracker ossi-units throughout Africa (see Figure 6 for an example). As giraffe can move considerable distances in a short space of time, it is a great help to get access to this up-to-date information easily as long as we have access to cell phone data. Together with the Maps.me App it is much easier for us to find tracked giraffe in the field, and this comes particularly handy when we need to retrieve a lost ossi-unit.



Figure 6: EarthRanger App showing tagged giraffe in Northwest Namibia and Etosha NP.

The EarthRanger App has several interesting features, such as 'track length' and 'heatmap'. These help us to easily determine how much a giraffe has travelled: Figure 7 shows that Coffee Girl travelled a total distance of 170.47 km over a 21-day period up and down the Hoanib River. We can also see that her range overlapped with the range of three other tagged female giraffe. The heatmap feature provides a clear representation of where the giraffe spent more of her time during the day or at night.

The ossi-units that were deployed in Northwest Namibia continue to provide interesting data independently from whether we see the giraffe during our surveys or not. Our ossi-units are solar powered, which works well in Namibia. Some of the ossi-units were deployed over three years ago and continue to function well. However, we are experiencing some losses of units due to hardware failure and we continue to work with the manufacturer to improve the longevity of the units and their attachment methods. If a units fails, our team will go to the last known GPS location to determine the reason for



failure, i.e. whether the giraffe has died or the unit has fallen of. So far we have not found a deceased giraffe and were able to retrieve two of five units. The retrieved units can be returned to the manufacturer for refurbishment. At the moment, there are 17 functioning ossi-units deployed in Northwest Namibia and we are planning to add a few more next year.



Figure 7: Coffee Girl's movements in the Hoanib River during a 21-day period in September 2020.

SCIONA Update

As part of his MSc studies through the Skeleton Coast Iona (SCIONA) project at NUST, Jackson Hamutenya analyses the monthly movements of five tagged giraffe in the Far-North of our monitoring area. This information will help to inform the reintroduction assessment of giraffe the Iona NP in Angola.

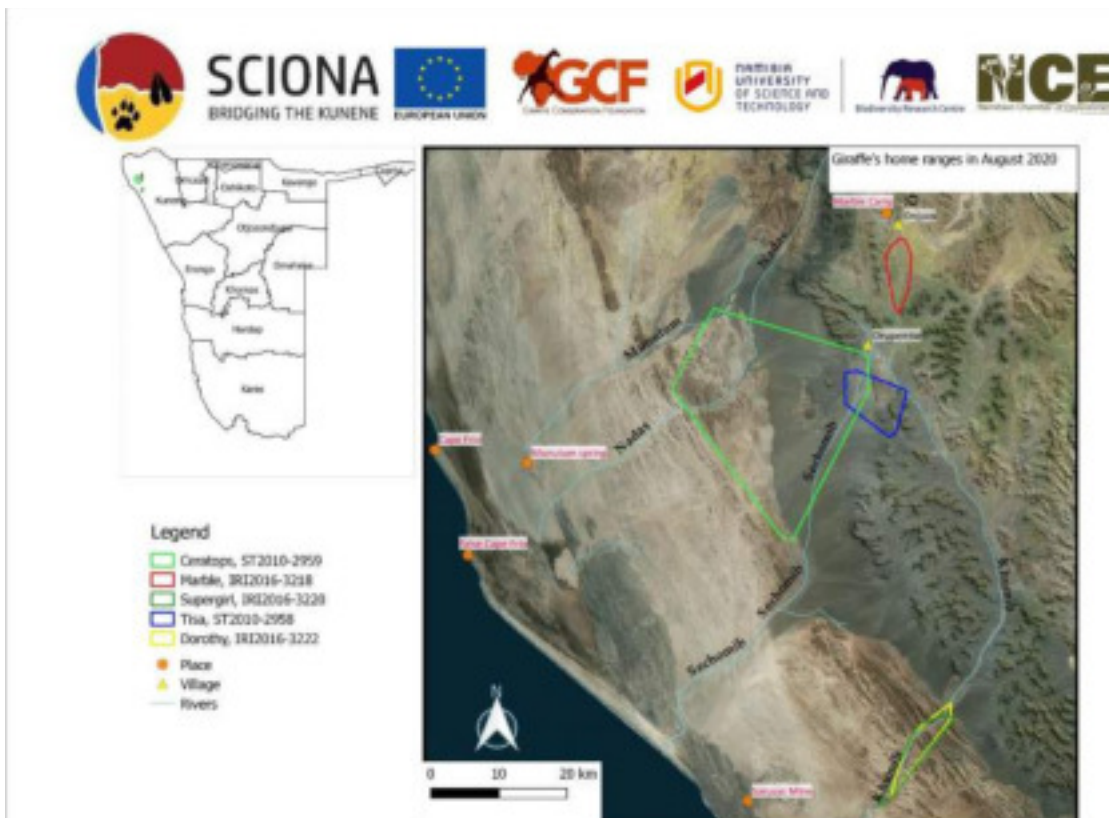


Figure 8: GPS satellite tagged giraffe's home range in the Far-North of Northwest Namibia in August 2020.



These giraffe were tagged in July 2019 and the data analysis is showing some interesting results. Most of these giraffe have moved back into the ephemeral rivers where they were originally tagged (see Figure 8). The riparian environments are the source of life for large mammals (and others) in the area, especially during the dry season. It is likely that as the season gets drier, availability of forage will reduce in areas where they roamed for the past months. As such, they are more attracted to the evergreen plant species growing in the main rivers.

The home ranges for each of these five female giraffe were estimated as well as the home range for the total population. While all five giraffe moved further distances in August 2020 compared to July 2020, the home ranges were generally smaller. However, home ranges varied greatly between individual giraffe. As an example, Ceratops recorded a home range of 573 km², compared to Marble who recorded the smallest home range of only 28 km² in August. This might be explained as Marble has a young calf. The combined home range of these five giraffe in August 2020 was approx. 1,267 km².

Table 2: Distance travelled by five female tagged giraffe in Far-North Northwest Namibia in July and August 2020.

ID/Date	July 2020		August 2020	
	Distance travelled (km)	Home ranges (km ²)	Distance travelled (km)	Home ranges (km ²)
Mable IRI2016-3218 (Female)	171.8	43	167.8	28
Supergirl IRI2016-3220 (Female)	202.7	504	148.0	37
Dorothy IRI2016-3222 (Female)	120.6	36	154.0	30
Tisa ST2010-2958 (Female)	163.6	184	175.7	56
Ceratops ST2010-2959 (Female)	215	759	290.2	573

Namibia-wide Giraffe Taxonomic Assessment

While work and life for many has slowed down dramatically over the last eight months due to COVID-19, we here in Namibia have been busier than ever. Due to travel restrictions and uncertainty about quarantine requirements, we had to cancel all trips for Conservation Supporters for the rest of 2020 with a view to resuming these trips in early. Despite this, the team has continued their regular surveys in Northwest Namibia and added some extra field time to explore more of the region in search of giraffe.

In addition to these regular surveys, our team have started a comprehensive DNA sampling project of giraffe throughout Namibia to confirm their taxonomy and to gain a better understanding of population size and range in the country.

Over the last 15 years, GCF has collected genetic samples from giraffe throughout Africa for a continent-wide taxonomic assessment. To date, over 1,000 individual samples have been collected from giraffe across their range in Africa. All samples are analysed by our partners at the Senckenberg BiK-F in Germany and the research has clearly shown that there are four different species of giraffe, and not only one as previously assumed. This work has helped to better understand the distribution of the four species and guides conservation management decisions for giraffe in all of Africa and highlights where we should focus urgent conservation actions.

While we have samples from giraffe in various parts of Namibia, no in-depth country-wide assessment was undertaken so far. Based on a relatively small sample set, we have assumed that most giraffe in Namibia are Angolan giraffe, a subspecies of the southern giraffe. However, we have already determined that the giraffe in Bwabwata NP are South African giraffe, the other subspecies of southern giraffe. This population has naturally moved across borders between Angola, Botswana and Namibia but is restricted by the Kavango and Kwando Rivers. Our extensive DNA collection will clarify giraffe taxonomy in Namibia and unravel potential hybridisation.



Figure 9: Giraffe in southern Namibia.

As a first step in this comprehensive DNA survey, we need to identify all farms, reserves and national parks that hold giraffe for sampling. Then comes the hard part of co-ordinating visits in different areas of the country. With a fantastic support crew back in the office, our sampling team has managed to collect over 200 DNA samples from many different parts of the country, from the Kalahari and Namib Deserts in the South to the Erongo Mountains in the central west, the central Khomas Region, and countless other places in between (see Figure 9 & 10 for giraffe in different landscapes in Namibia).



Figure 10: Relaxed giraffe after DNA sampling. Giraffe sniffing DNA sample



We would like to use this opportunity to extend a huge thank you to all the property owners who have allowed us to sample their giraffe. Without their support and hospitality this project would not be possible. Our GCF team will continue to collect samples throughout this year and into 2021 and plan to send a small sample subset for preliminary analysis to Germany early next year.

We at GCF are committed to securing a future for all giraffe populations in Africa – together we can make a difference. We still have many activities planned for 2020 and one thing we have learned from this year is perspective: keep what is important in front of you and don't forget to look at problems from a different angle.

Stay well, stand tall, and keep sticking your neck out for giraffe.



Thank you for your support!

