



Namibia Giraffe Conservation Programme

QUARTERLY UPDATE

Aug – Oct 2018



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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. Our work focuses on the ephemeral Hoanib and Hoarusib Rivers and covers an area of approx. 4,500km². The area extends from communal conservancies in the east (which support both wildlife and domestic livestock) into the Skeleton Coast National Park bordered by the Atlantic Ocean to the west.

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 programme here offers a unique and valuable opportunity to better understand this subspecies and, through what we learn, provide conservation and management support for other giraffe populations throughout Africa.



In addition to this long-term conservation research, we recently initiated a country-wide assessment of giraffe. In this exciting new 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.

Ongoing fieldwork

Over the past three months we have continued to gather a wide range of data on the giraffe population, including individual records for each giraffe, observational data on herd composition, genetic biopsy sampling, range and movements, weather, browse, and vegetation including remote sensing of vegetation indices and ground-truthing of vegetation phenology.



The wealth of data we are collecting is due, in no small part, to the contributions of those who support the programme both here in Namibia and all around the world. One special aspect of our work is being able to offer opportunities to people from all over the globe who are passionate about getting out into the field and want to get involved hands on.

Regular conservation research fieldtrips have been undertaken to our long-term programme area in NW Namibia. Most recently we were joined by research assistants from the UK, USA, New Zealand and Namibia. As most of these research trips are undertaken with a single vehicle, we can only offer very



few spaces to join us in the field. However, if you are interested in joining us on such a trip, please do get in touch.

While being in the field is our passion we are also very excited that the data is mounting and together with the research teams at University College Dublin (UCD) and the Senckenberg Biodiversity and Climate Research Centre in Frankfurt (SBIK-F) we are entering an exciting time.

The importance of telemetry data

In our last quarterly report we talked about the process of tagging giraffe with 'ossi-units', a new lightweight GPS tracking unit that is carefully fitted to the ossicone of the giraffe. These 'ossi-units' are the latest design in an on-going process to try and find the best possible technology in order to track the movement of giraffe. Why is it important to remotely track how giraffe move through their environments? Primarily because, if we can track where giraffe move, we can start to disentangle why



they move there. Specifically, we can discover if there are certain areas that are key for breeding, birthing, or browsing and if there are key corridors that the giraffe use to pass from one area to another. Once we have that core information, we can begin to more intimately understand how they interact with their environment across the seasons. This information will then give us the power to predict where these giraffe are likely to move during different times of the year. It will also allow us to better predict how giraffe may react to sudden changes in their environment due to climate change or habitat destruction by other human driven factors. In essence, we need to know where they move throughout their vast desert home so that we know how best to protect the sections of their environment that are key to the conservation of this unique population.



At the moment, together with our partners at UCD we are working on a paper that examines the effectiveness of these new 'ossi-unit' tracking devices. While we know that they are a better solution for the giraffe than previous tracking 'collar' designs (that long neck makes things tricky!), we don't yet know how accurate they are in terms of the precision of their position readings. The new paper will examine just that, combining data from GCF's tests across a number of countries in Africa. We can't wait to get the results and to present this paper to the wider scientific community. We hope that, in addition to being a great step forward in our ability to track giraffe, the new units will represent a technology that can have broader applications and be adapted to other species of conservation concern, where conventional GPS 'collars' are not a good option. Exciting times, so watch this space!

Ongoing Analyses

While the 'ossi-units' as a tool are interesting to study, we are of course also very excited about the questions we can start to answer with the data we receive from tagging giraffe with these units. We are working closely with the Laboratory of Wildlife Ecology and Behaviour at UCD to analyse this data. This lab specializes in the use of telemetry data to answer complex questions about how mammals interact with their environments. The data from the giraffe tagged in north-western Namibia will now be correlated to observational data collected in the same study site over the past three years. Using these data sources, we will be able to look at how various environmental factors shape the way in which giraffe move through and utilize their environment. It may (we hope!) also give us the statistical power to generate a friction or connectivity map that we can then use to predict how giraffe will likely move through other similar environments in north-western Namibia, without having to tag giraffe on the ground in each area. However, our fieldwork will continue to expand into these areas over time too. It is very exciting to have cutting edge statistical tools at our fingertips and we can't wait to start seeing these results emerge.



Social Networks Research

While movement ecology is a primary focus at the moment, we are also working in the background on preparing the data for a large analysis on giraffe social structure. The study of mammalian social structure is central to conservation initiatives. In particular, as translocation are becoming increasingly widespread methods for conserving, managing and reintroducing species, including giraffe. However, such events have been marred in other mammalian species in the past due to a lack of understanding of the herd structure of the mammal. In addition to translocations, knowledge of social structure is crucial in terms of understanding gene flow and disease transmission.

However, despite the conservation importance of this knowledge, our understanding of giraffe social structure remains limited to a handful of studies. Namibia is one of a few countries in Africa where free-roaming giraffe numbers are increasing. As such, desert-dwelling giraffe in Namibia represent a key opportunity to study the social dynamics of a healthy giraffe population. Traditionally, giraffe were believed to have a loose model of social organisation. In particular the scientific consensus was that individuals move freely between herds, choosing to spend time in the company of other giraffe, but without showing preferential associations. However, the results of a number of recent studies have pointed towards a more complex and structured social system in giraffe termed 'fission-fusion'.

The fission-fusion model, also observed in other social mammal societies, proposes that individuals move freely within and between subgroups that are themselves embedded within a larger, more constant social network. The suggestion therefore is that giraffe associations are non-random but rather are preferential and consistent over time. In order to further disentangle the complexity of giraffe social structure, further studies that combine long-term observational data with giraffe pedigrees are necessary. In partnership with SBiK-F and UCD, we are addressing this research need. Over the next two years we hope to work with our partner organisations to analyse the social structure of the giraffe population in north-western Namibia not only through the lens of social associations, but also through the lens of familial relatedness. In order to do this, we are forging ahead with our genetic research.



Genetic Research

Another very exciting aspect of the research we undertake in Namibia, and across Africa, is genetic research. Fortunately we are studying giraffe at a time where the latest advances in genetic research technology allow us to disentangle pressing questions about giraffe herd structure, social networks and speciation. Over the past three months we have collected another batch of biopsy samples from our study site in Namibia and are currently preparing these samples for export to our partners at SBiK-F.



Once there, they will be analysed and the all-important genetic data extracted and turned into a database. That database will then be passed on to the laboratory at UCD where the genetic data will be paired with observational data collected over the past three years. At that point all this data will be fed into a statistical model where it will be combined. Once combined, we can look at the relationships between the genetics of each giraffe and its behaviour- a very exciting thought and a place we can't wait to reach!

News from the field

The past few months have seen seasonal changes in the environment that the desert-adapted giraffe call home. The days are stretching again after the long dry winter months, and with the start of the rainy season, the heat has started to intensify over the last month. The vegetation in the area still looks desperately dry and makes you wonder how wildlife can survive in this environment. Every year we get a new appreciation of how wildlife has adapted both physically and behaviourally in order to sustain life in such a harsh environment.



September and October a wonderful month to be in the field. While the days started to get longer after the dry winter months, the heat was not yet causing us to run for any available shade! During our successful fieldtrip in terms of data collection covering the Hoanib and Hoarusib riverbeds and the surrounding mountains we came across many of our old familiar giraffe, and even a few new ones! We also took an exploratory drive through the Palmwag concession where we were rewarded with awesome scenery.

Some heavy rainfall further up in the Hoanib River catchment area saw the Hoanib flow unexpectedly in November, which caught a number of people off guard. Three vehicles were caught in the flash floods and washed away. Fortunately no-one was hurt, but this was a serious reminder of how unpredictable the environment can be. Interestingly, giraffe in and around the Hoanib River were scarcer than usual, so maybe they foresaw the water coming and headed for the drier mountains!

The November trip also took us to the far North to survey for giraffe – North of the Hoarusib River



where we found quite a few 'new', previously unrecorded giraffe. With herds of up to 30 giraffe it had our team on their toes trying to ensure each giraffe was recorded correctly. No trip is like the other and we can be sure to observe some previously unknown behaviour or physical attribute from the world's tallest mammal. With all the new calves spotted during recent months, it appears that the population of Namibia's



desert-dwelling giraffe is in good stead for the future.

With a mixture of wild camping and community run campsites, each trip comes with its very own unique adventures, whether it be stowaway snakes in the research vehicle, rare sightings of the elusive desert-adapted black rhino, or sometimes it is seeing the little critters such as a Namaqua chameleon or hearing a barking gecko that reminds you of all the different aspects that make up such a unique ecosystem. For more details on our field trips, check out the Field Trip Reports on our website.

Our ongoing partnership with the Natural Selection Hoanib Valley Lodge in the Hoanib River is providing us with valuable data on the giraffe population that guides and their guests collect during their daily activities. The guides' data is helping to build a better understanding of herd composition and movement of the desert-dwelling giraffe in the Hoanib River.



Looking Ahead

The next few months will be a very exciting time for the programme. On the one hand we hope to start finalising results from the various analyses and preparing them for publication in the scientific press. On the other hand we are gearing up for an exciting field season and looking forward to welcoming research assistants from around the world onto our conservation supporters programme.

Stay tuned for more news from Namibia as we look forward to keeping you updated.



