Namibia Giraffe Conservation Programme

QUARTERLY UPDATE

February – April 2018

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 Northwest Namibia Programme, as well as a continuation of our countrywide giraffe assessments. 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

In partnership with University College Cork (UCD, Ireland) and the Namibian University of Science and Technology (NUST), GCF's Northwest 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. 4,500km^2. 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. In terms of population data, we are also thrilled to report that we have recorded five new births since our last report!

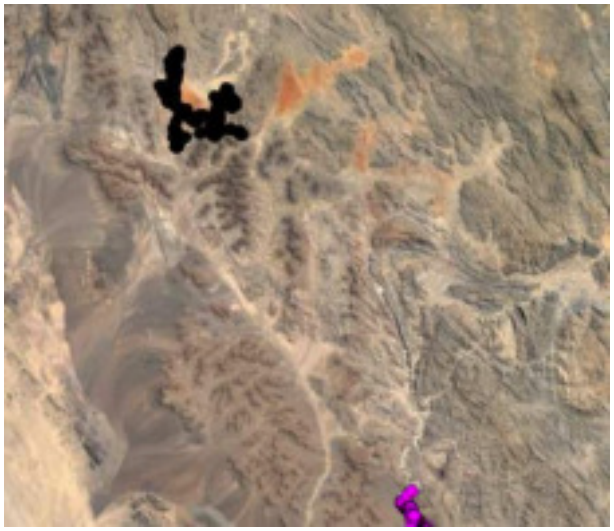
The wealth of data we are collecting is due in no small part to the contributions of those that support the project both here in Namibia and all around the world. One special aspect of our work is being able to offer opportunities to people from all over the globe who are passionate about getting out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

Since February 2016, more than 20 conservation research fieldtrips were undertaken to our long-term programme area in northwestern Namibia. Most recently we were joined by Jordan Longtin (Blank Park Zoo) and were delighted to welcome Joan Stasica (Milwaukee Zoo) back to the desert for the second time. We were also thrilled to have Andreas Fernbrant (Andreas Fernbrant Photography) with us to help document the research process. The photos in this report are some of the many great shots he has provided.

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 to join us on such a trip, please 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 UCD and the Senckenberg Biodiversity and Climate Research Centre we are beginning to see some interesting patterns emerge.

GPS Satellite Data



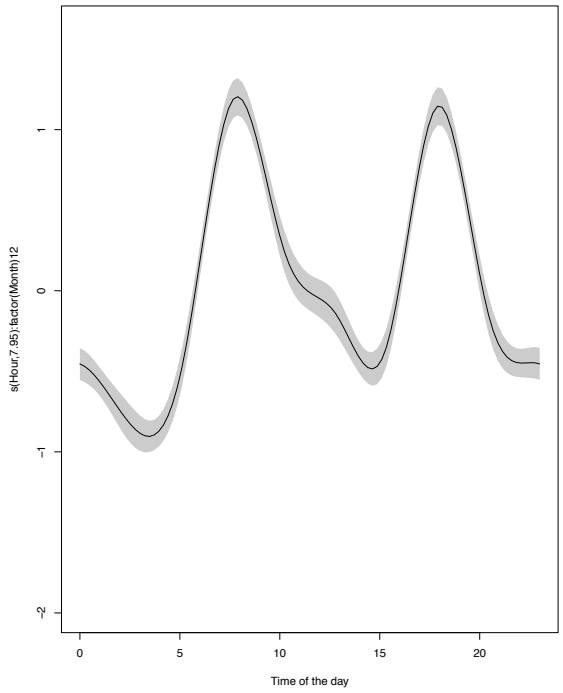
After the first ever collaring of giraffe was undertaken in northwestern Namibia by GCF's Dr Julian Fennessy for his PhD research in 2003, we have started using a new design of giraffe collars in the programme area since 2016. The collar data will help us gain an in-depth understanding of where these giraffe move and also give us an indication why they move there. This is key information for us to better understand what aspects of the giraffe's habitat are crucial to protect. Armed with this information we are in a position to identify the key corridors and habitats that these giraffe use and can inform governments and communities about how best to legislate in favour of their protection.

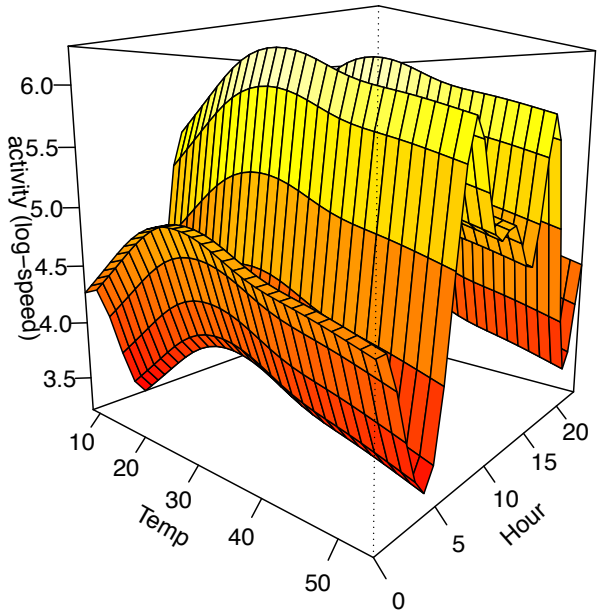
The most basic use of this data is to simply observe where the giraffe go. Already we are finding surprising results as we watch their coloured icons marching across the screen on Google Earth. We are seeing that these giraffe sometime move long distances in a day (sometimes up to 40km through rocky outcrops and gravel plains) but also often spend weeks on end in the same few square kilometres. We are watching male giraffe strike off into the mountains and presuming that they are searching for females. Yet we also see similar behaviours from one of our younger females who has travelled 100km north of her original location over the past few months. In the map the pink dots mark this female giraffe's original location, while the black dots show her movements over the past fortnight.

These observations are extremely interesting and already shed much light on how the giraffe use their environment. What remains to be revealed however is why. For example, the area that the female giraffe traversed (see map) is arid, waterless and supports less vegetation than the area she moved from. Why then did she decide to go there? What has triggered her decision? What are the ecological drivers of their movements? Are these movements seasonal? Do they relate to the age or sex of the giraffe? These are all crucial questions and questions which we can begin to answer by harnessing some statistical tools that allow us to look deeper into the spatial data we collect. We are currently building the statistical models necessary to do this, whilst also collecting a wealth of additional data.

Activity Rhythms

While we are patiently working on gathering enough data to run these models we are also exploring some other questions. One such question is: how do giraffe adapt to the extreme heat of the desert in terms of their browsing strategies? For example, do giraffe choose to expend their energy during the cooler hours of the day, and if so, does their activity peak at different times of the day depending on the season?





Our preliminary results (see figures above) suggest that this is the case, and that giraffe tend to browse during cooler hours and rest during warmer periods. This is interesting as it seems that the giraffe are adapting their movement and activity rhythms according to temperature fluctuations across seasons. We have plenty more work to do to finalise this analysis, but it is an exciting discovery as it shows how well adapted this species is to its desert home. It also has substantial conservation relevance as, if giraffe have strong activity patterns at certain times of the year, then human disturbance of such activity at crucial times could negatively impact the welfare of the population.

Static Tests and Development of GPS Satellite Units

In the last report we mentioned the loss of a number of our new GPS satellite units from male giraffe due to giraffe 'necking' behaviours. Since then we have worked with our partners to design a new reinforced structure for the 'ossi units'. These new reinforced units are now ready to go and we are looking forward to an exciting collaring trip in July to test these new units in the field.

Always on the lookout for ways to monitor and

improve the quality of the data, we have also been busy running tests on the GPS satellite units in the study area. Such tests enable us to see whether aspects such as cloud cover, canopy cover or geology might affect the satellite readings at different times. We had good fun last month collaring our 'fake giraffe' in the desert and leaving it for 24hr shifts in different locations to monitor the data quality!

Country-wide Giraffe Assessment Update

At the same time, our roving research team has been busy surveying giraffe populations in other parts of the country. The team has visited a number of National Parks and private properties to conduct surveys, develop identification files and also educate land owners and managers about giraffe and their conservation. The overall aim is to get a better understanding of giraffe numbers and population dynamics throughout Namibia and ultimately inform giraffe conservation and management both in Namibia and Africa-wide. With scattered good rains over the past few months it has been fascinating to observe various behavioural changes in the giraffe as they adapt to food changes in their environment. Properties with mountains saw most of the giraffe heading there to feast on the trees that thrived after the rains. For each property a survey report is prepared, which includes herd size and composition, age and sex, GPS location etc. Individual photo IDs are also provided in a booklet form to each property owner or manager, which can then be used as a giraffe management tool. In most cases the GCF team also provides additional training to local guides, rangers or property staff in giraffe surveying techniques and report writing.

All data is inputted into GiraffeSpotter, an exciting new software programme that will eventually allow for individual identification of giraffe and tracking of their movements over time. GiraffeSpotter is used by many researchers and property managers but is also a citizen science tool to help with giraffe conservation throughout Africa. GiraffeSpotter uses elaborate facial recognition algorithms to recognise individual giraffe spot patterns. As each giraffe has a unique spot pattern (similar to a human fingerprint) which does not change over its lifetime the programme will eventually allow for 'Joe Public' to upload giraffe photos and add to the information collated for individual giraffe – stay tuned on this exciting online conservation tool.

Looking Ahead

The next few months are set to be action packed as we step up the pace on the data analysis. Our PhD researcher will travel to Ireland to work with the team at UCD. During this time, all going to plan, the first scientific publications based on the data collected over the last two years will begin to take shape. We cannot wait to see the final results and see how these will shape giraffe conservation and management decisions to develop the best possible strategies for our on-going work in conserving this species. In the meantime, we are excited to see how the latest five new additions to our study population fare as they take their first brave forays into their desert world!

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