

Bringing Angolan giraffe back to Angola – is it feasible in Iona National Park, Angola?

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Until recently, giraffes were considered to be one unique species with nine subspecies. However, the Giraffe Conservation Foundation (GCF) together with its partner the Senckenberg Biodiversity and Climate Research Centre, has shown that there are four distinct species: Masai giraffe (*Giraffa tippeskirchi*), northern giraffe (*G. camelopardalis*), reticulated giraffe (*G. reticulata*), and southern giraffe (*G. giraffa*) and numerous subspecies. The southern giraffe is widely distributed throughout Southern Africa and the most common species in Namibia is the Angolan giraffe (subspecies *G. g. angolensis*).

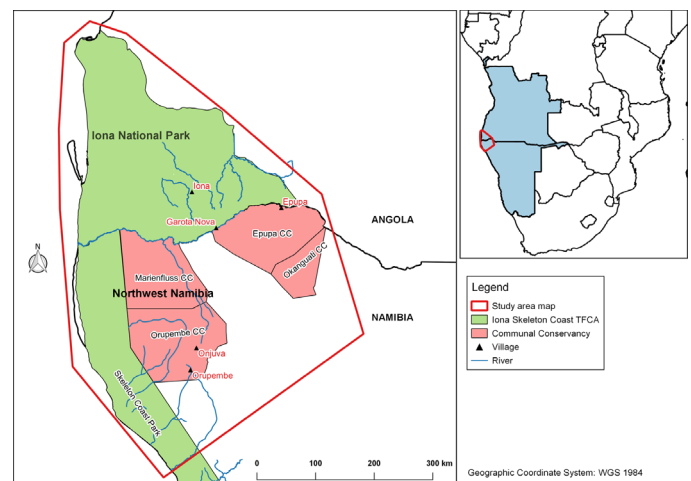
Giraffe numbers have decreased by almost 30% in the last three decades and giraffes have lost almost 90% of their habitat in the last 300 years. Today, GCF estimates Africa's total giraffe population at approximately 117,000 individuals, of which almost 50% occur in southern Africa. The decline in giraffe numbers and distribution is largely attributed to anthropogenic activities—in particular, habitat loss, fragmentation and degradation, illegal hunting, climate change and the civil unrest ravaging some African countries. In 2018, the Angolan giraffe was assessed for the first time by the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species as 'Least Concern'; as a result of the population increasing over the previous 30 years. The current population of Angolan giraffe is estimated at 20,000 individuals, and is still growing.

As the name suggests, the Angolan giraffe historically occurred in south-central Angola, including the southern Huila Provinces where Iona National Park (NP) is located, and in areas west of the Cuito and Cuando-Cubango Rivers. Sadly, these populations were one of the casualties of the 40-year Angolan armed conflict. Now that Angola is enjoying political peace, it might just be time to bring the 'peaceful' giraffe back to its former range.

The protracted armed conflict from the 1960s until the early 2000s caused tremendous suffering for both the people the wildlife of Angola. During this perilous time, national parks were abandoned, affording no protection for wildlife; but when the civil war finally ended, the Angolan government renewed its commitment to

conservation. As its southern neighbour, Namibia has offered support to help restore Angola's beautiful wild landscapes. One of the results of this joint commitment was the establishment and critical scientific conservation management and monitoring information support for the Skeleton Coast Iona Transfrontier Conservation Area (SCIONA TFCA), with European Union funding (Figure 1).

The SCIONA TFCA is characterised by low rainfall ranging from 50 mm precipitation in the west to 300 mm in the semi-arid east. Annual temperature varies between 20-30°C, although nights can plummet to below freezing and increase to >50°C in the height of summer. The area is mostly populated by Ovahimba people on both sides of the border.



[Figure 1: Overview of the Skeleton Coast Iona Transfrontier Conservation Area which includes Iona National Park, Angola and northwest Namibia]

The GCF estimates that there are more than 14,500 giraffes occurring across Namibia in public, private and communal land; and 450 in far northwest Namibia (formerly known as Kaokoland), where a similar habitat to Iona NP exists. Consequently, Namibia provides ideal source populations for potential wildlife re-introductions to Angola, including giraffe which are thriving in Namibia and could be invaluable for true transboundary conservation.

However, there are some very important questions that need to be assessed before considering such an effort. Would giraffe survive? Is the habitat suitable? Would the local human population within and on the periphery

of Iona NP threaten their chance of survival? As part of the SCIONA project and in collaboration with GCF, I sought to answer these questions by undertaking a feasibility assessment for re-introducing the Angolan giraffe to Iona NP.

Understanding whether giraffe will survive in Iona NP might seem obvious, considering that the area is likely part of their former natural range. However, research on re-introductions suggests that historical occurrence, or a superficial look at the introduction site, is not enough to ensure success. Feasibility studies provide essential information on the current state of the habitat and other social, economic, and ecological factors. A feasibility study is especially important when a long time has elapsed since the extinction of the local species, as there is a chance that the habitat is no longer suitable, or in the case of Iona NP, that people are now living there and may not be interested in protecting wildlife.

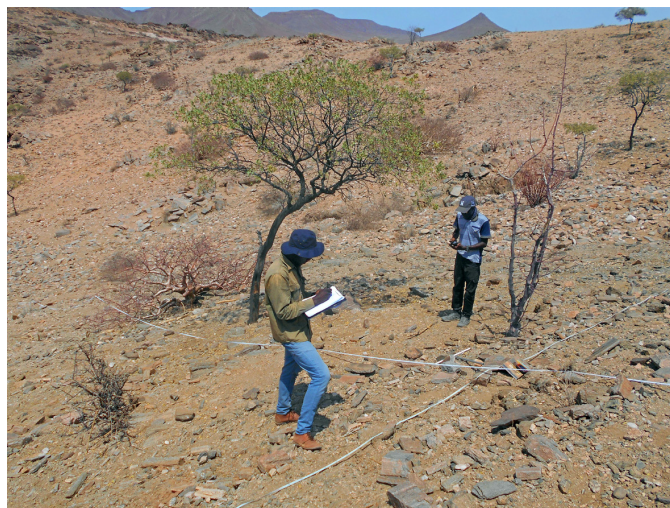
Step towards habitat suitability assessment

To assess if Iona NP still offers viable giraffe habitat and whether it can support them long-term, I used northwest Namibia's current giraffe habitat as a model to identify the extent of similar habitat in Iona NP. In particular, I assessed giraffe spatial ecology in northwest Namibia to predict how introduced giraffes would potentially use the habitat available in Iona NP. For this purpose, we fitted GPS satellite units scheduled to take hourly positions of seven giraffes in July 2019 (Figure 2).



[Figure 2: Fitting a GPS satellite unit requires immobilising the giraffe, in this case a female, in northwest Namibia. The GCF team has many years of experience with immobilising and tracking giraffe.]

In addition to analysing how giraffe use their habitat over time, I sampled the density and diversity of giraffe's preferred forage species in northwest Namibia and compared this with similar vegetation surveys conducted in key areas of Iona NP (Figure 3).



[Figure 3: Vegetation surveys were undertaken in Iona NP to identify the preferred giraffe forage species and compare with those in northwest Namibia which giraffe use.]

Importantly, I also conducted a questionnaire survey with the local community living in Iona NP to assess their willingness to co-exist with giraffe, their attitudes towards a possible re-introduction and the risk of local giraffe poaching.



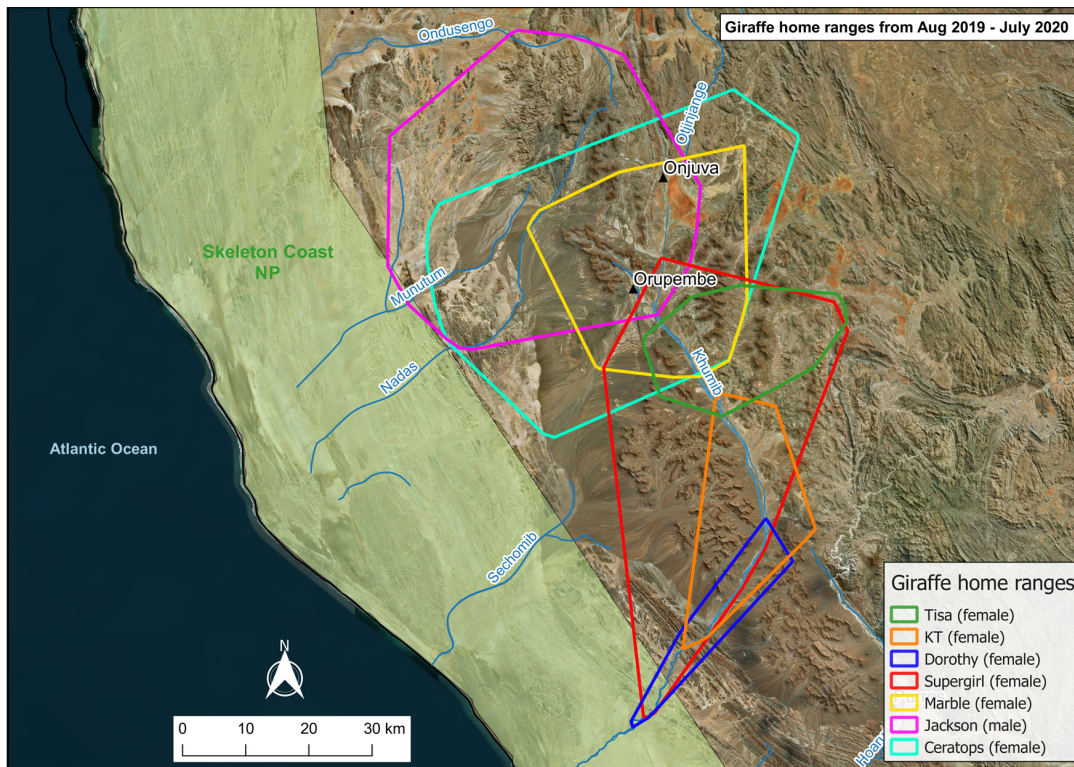
[Figure 4: Community interviews were conducted with local people living in Iona NP to learn about their attitude towards a potential giraffe re-introduction.]

So...should giraffe be brought to Iona NP?

It appears that Angolan giraffe in northwest Namibia have some of the largest home ranges of any giraffe in the wild. Sparse vegetation and resulting low forage density, result in giraffe roaming widely to fulfil their nutrient and reproductive requirements. Before its GPS unit failed after only 6 months, one tagged male giraffe (Jackson) walked up to 256.5 km per month and occupied a home range of 2,072.4 km². A female (Ceratops) travelled even further, covering 273.1 km per month but within a smaller home range (1,559.8 km²). Interestingly, her movement patterns appeared to avoid areas of human disturbances in the area around Onjuva and Orupembe villages, a relatively densely populated area in northwest Namibia (Figure 5).

Giraffe ID	95% MCP	50% MCP	95% KDE	50% KDE	N° fixes	Study period
Jackson (male)	1,906.8	864.7	2,072.4	437.0	3296	184
Marble (female)	941.5	240.8	722.0	106.7	8225	396
Supergirl (female)	1,633.4	966.1	1,756.2	422.9	8439	396
Dorothy (female)	196.2	20.3	307.9	41.6	8416	396
KT (female)	479.1	141	561.5	140.4	3608	396
Tisa (female)	456.7	182.6	419.2	87.9	8801	244
Ceratops (female)	2,057.4	546.7	1,559.8	323.7	8792	396
Average	1,095.9	423.2	1,057.0	222.9	7,082.4	344

Table 1: Home ranges (km²), number of fixes (e.g., number of GPS locations taken) and study period (days) of seven GPS satellite-tagged giraffes in northwest Namibia over a one-year period from August 2019 - July 2020.



[Figure 5: Map of home ranges of seven GPS satellite tagged giraffe in northwest Namibia over a one-year period from August 2019 - July 2020)]

Giraffes in northwest Namibia rely predominantly on the riparian woodland along the dry riverbeds that cut through this mountainous landscape. They occasionally wander far away from the rivers, most likely to supplement their diets on other seasonal forage. One female (Tisa) demonstrated fascinating localised movement patterns throughout the year. During the hot-dry season (August - November) she predominantly ranged in the small tributaries outside the upper Khumib River, and then moved a little further east throughout the hot-wet season (November - January). However, during the cold-dry season (May - July), she headed west and returned to the main Khumib River, where she was first tagged, to forage on the mostly evergreen trees during this critical time of the year. It appears that most of the tagged giraffes returned to the main rivers to obtain critical forage during the dry season as food is limited elsewhere. This highlights an important resource to assess for future giraffe re-introduction to Iona NP.

areas in Iona NP to compare forage density and diversity. The results were promising: productivity, cover and diversity of preferred giraffe forage species identified in northwest Namibia were higher in Iona NP (Figure 6). Iona NP's plains, lower mountain slopes and dry riverbeds host even more forage for giraffe and potentially could support higher densities.



[Figure 6: Preferred giraffe forage species occur in the plains and riparian environments throughout Iona NP.]

Once I had a better understanding of giraffe movements in northwest Namibia, it was appropriate to visit similar

I was happy and excited that the ecological assessments showed that it was feasible for giraffe to be re-introduced to Iona NP, but would the human dimension component be the same? Fortunately, the surveys with the local communities living in the park and along its periphery showed that they would be highly receptive to giraffe being re-introduced and their tourism potential. As giraffe compete minimally with livestock for forage and are not water-dependent, those living in northwest Namibia can obtain all their moisture needs from the leaves they eat, and human-wildlife conflict is an unlikely issue. Although the people interviewed were optimistic that the giraffe would not be poached, it was reported that some other species are being poached, due to a lack of anti-poaching efforts and/or need for protein following the impacts of drought

on their livestock. Poaching giraffe for meat is therefore a potential risk, especially around the periphery of the park. It will therefore be recommended to monitor any re-introduced giraffe closely, especially until their numbers recover and the park's anti-poaching capacity increases. Importantly, as for northwest Namibia, monitoring efforts should involve local people to increase their stake in the giraffe's survival.

My findings demonstrate that it would be feasible to re-introduce Angolan giraffe to Iona NP based on suitable habitat, abundance and diversity of preferred giraffe forage plants and a positive attitude of local people towards giraffes. The poaching risk could be reduced through close monitoring of the giraffe and maintaining local support for giraffe presence. With this in mind, I recommend that conservation planners and managers take the next steps towards bringing the Angolan giraffe back to Angola where it belongs.

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