Monthly report of GPS satellite tagged Angolan giraffe (*Giraffa giraffa angolensis*) in northwest Namibia

February 2020

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In July 2019, Giraffe Conservation Foundation (GCF) and the Skeleton Coast Iona (SCIONA) project fitted seven Angolan giraffe (*Giraffa giraffa angolensis*) across northwest Namibia with solar-powered GPS satellite transmitters (ossi-units). The ossi-units were designed by Savannah Tracking Kenya with support from GCF and are attached to a giraffe ossicone. One young bull and six cows were tagged. Immobilisation of giraffe and fitting of the ossi-units were conducted by a Namibian registered veterinarian under the careful ethical consideration of GCF who have fitted more than 200 units/collars across Africa. Each unit transmits hourly location and temperature data by satellite. The data is then analysed to assess giraffe's habitat use and spatial ecology in the arid to hyper-arid Kunene Region.

This report provides information on preliminary data from 1-29 February 2020 and a brief comparison with last months findings. Since one ossi-unit fell off last month – KT "iri2016-3223" a female giraffe, only six ossi-units now transmit data. KT's unit was recovered after dropping off - see KT and her damaged unit in fig. 1 and 2. Of the six units now transmitting, five of them successfully transmitted data without any gaps in days, while one that belongs to a young bull, Jackson iri2016-3141 failed to transmitte data on 21 and 26 February (see table 1). All data analysis were conducted in QGIS 2.18.28 using the coordinate referencing system WGS84.

As depicted in fig. 2, habitat use appears to be similar to the previous month (January 2020) including an eastward movement pattern (fig. 2). Only the young bull (Jackson iri2016-3141) had a movement pattern westward as it moved to and between the Munutum and Nadas Rivers. Two of the giraffe continue to roam close to Onjuva and other two southeast of Onjuva, all in the Orupembe Conservancy (fig. 2). A young female (Dorothy IRI2016-3222) who gave birth last year remains in the Khumib River, though at some stage trekked eastward. The young male (Jackson IRI2016-3141) was the first to travel a long distance of ~260.65 km from Onjuva village to Munutum and than to Ondusengo River. A female (Supergirl iri2016-3220) also trekked ~229.07 km during the month from southeast Onjuva down to the Khumib River (fig. 2). The least travelled giraffe was a female (Tisa st2010-2958) who traveled ~77.8 km around Onjuva. For all giraffe distance travelled see table 1.

Figure 1: KT "iri2016-3223" after she lost her ossi-unit in January 2020. The right picture show a swollen left ossicone where the ossi-unit was attached. The down right picture is the ossi-unit after it fell on the ground.

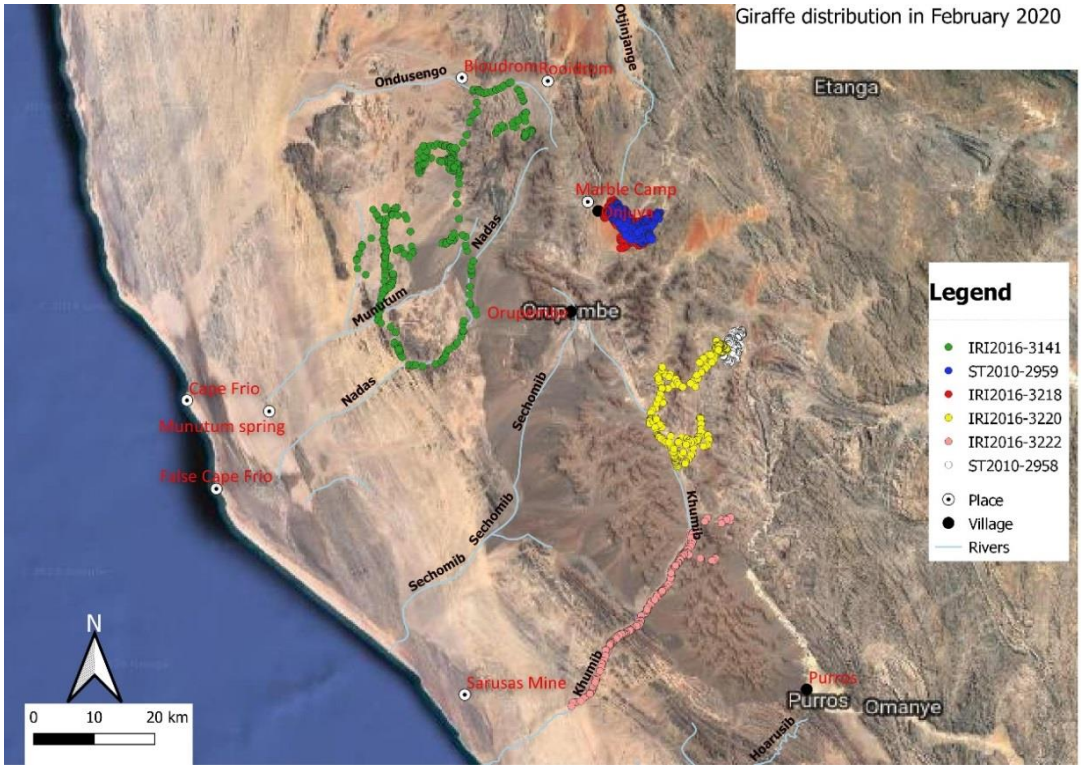

Figure 2: GPS satellite tagged giraffe distribution in northwest Namibia during February 2020

The Home Range (HR) preliminary results were estimated using the Animove plugin in QGIS. We estimated giraffe's HR at 50% and 95% Minimum Convex Polygon (MCP) from the data. The 50% MCP provides standard deviation core HR, while 95% provide the average HR. The giraffe young bull (Jackson IRI2016-3141) 95% MCP in February was estimated at 885.6km^2 followed by the female (Supergirl IRI2016-3220) at ~185.8km^2. HR overlaps were observed between two tagged giraffe presently around Onjuva village and another two southeast of Onjuva (fig. 3). These giraffe had similar HR overlaps in January 2020 (fig 4). All giraffe combined have an average core home range of 498.8 km^2 calculated at 50%, and 3,898.7km^2 at 95% MCP (fig. 5) – this is reasonable in such a large and arid environemnt with patchy vegetation. In general, the February 2020 HR's were smaller compared to the previous month. From preliminary analysis, it appears that during the wet season some giraffe prefer habitat in and around Onjuva.

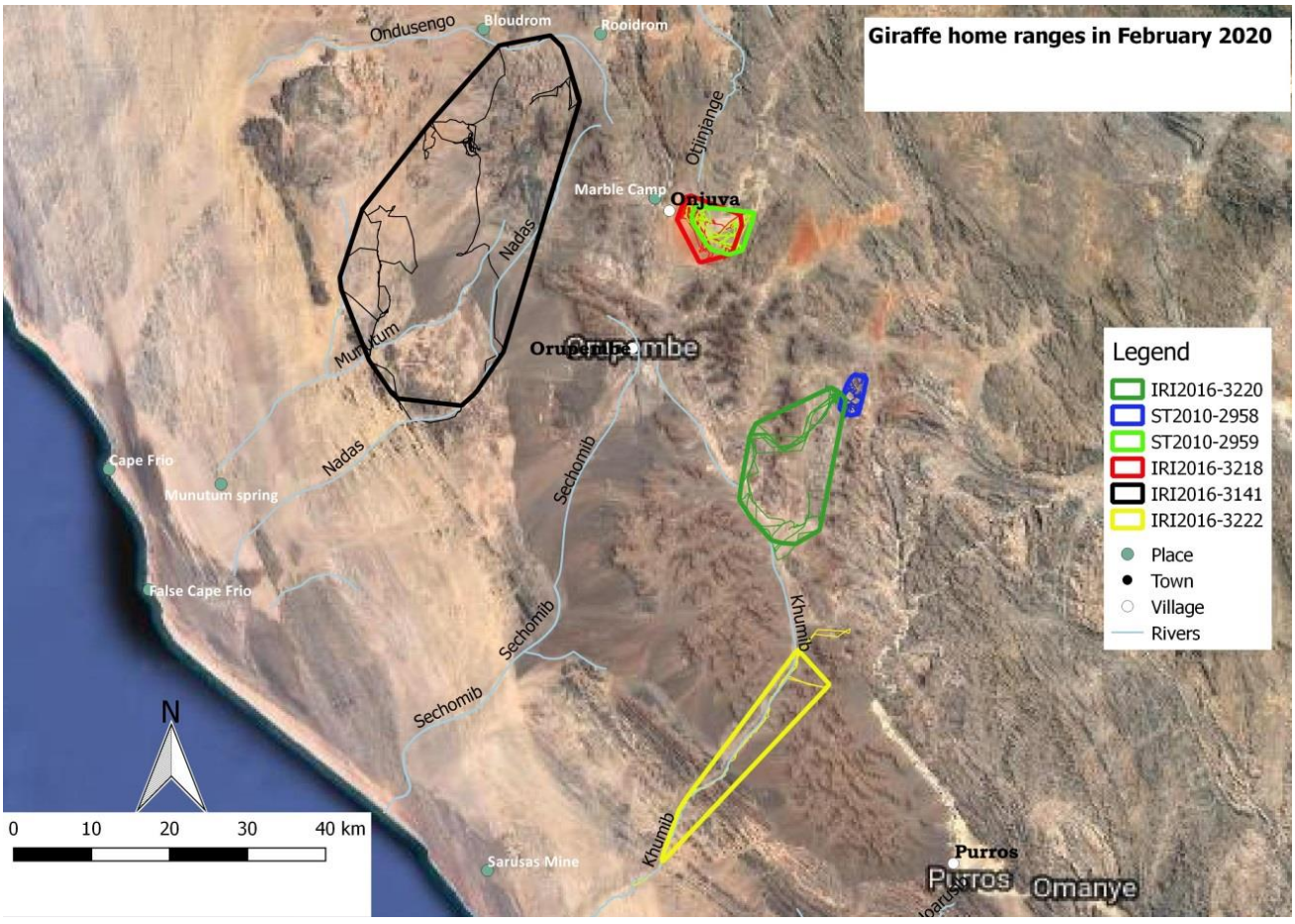

Figure 3: GPS satellite tagged giraffe´s individual Home Range using 95% MCP in northwest Namibia during February 2020

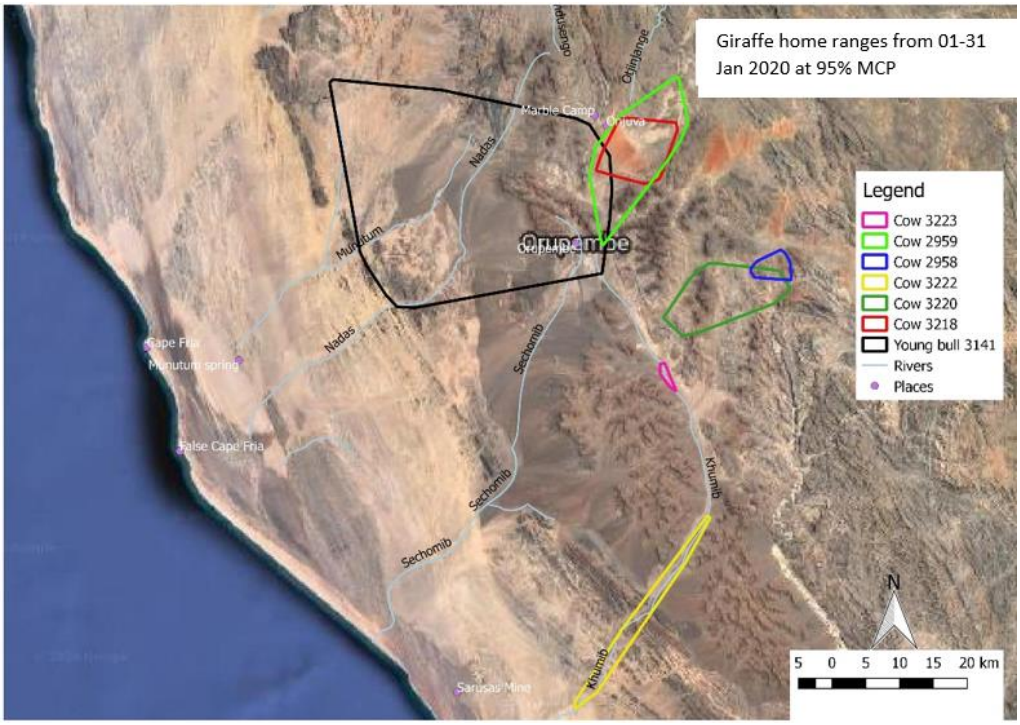

Figure 4: GPS satellite tagged giraffe´s individual Home Range using 95% MCP in northwest Namibia during January 2020

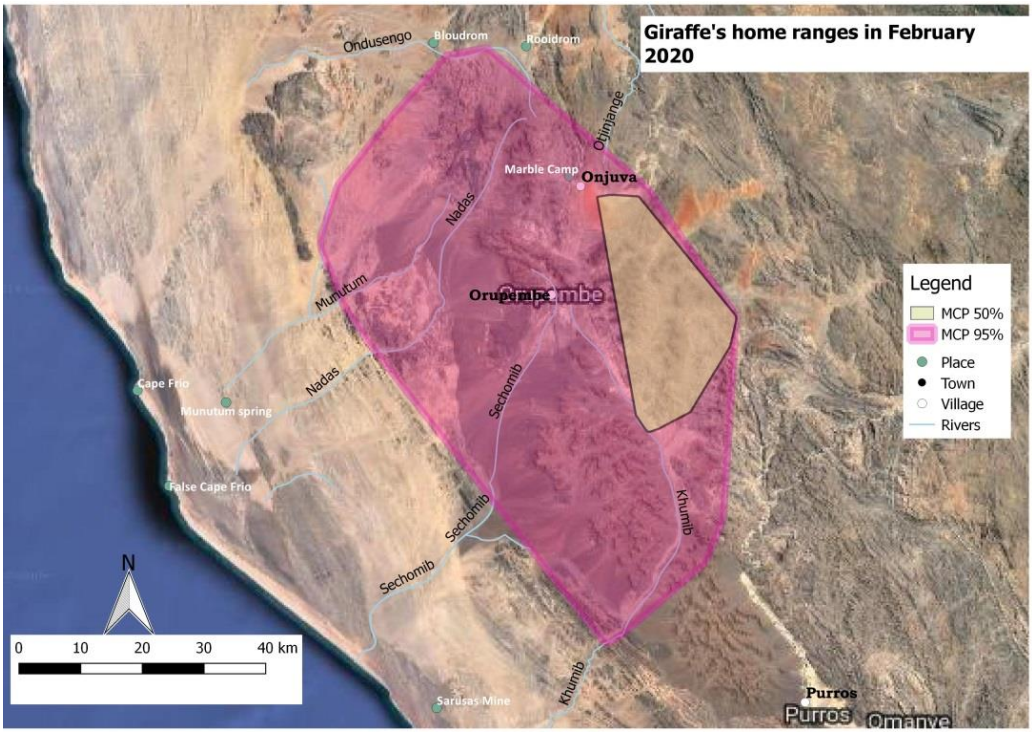

Figure 5: All GPS satellite tagged giraffe´s combined Home Range using 50% and 95% MCP in northwest Namibia during February 2020

Table 1: Data transmission of GPS satellite tagged giraffe in northwest Namibia during February 2020

ID/Date	1	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Jackson iri2016-3141 (Male)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√		√	√	√
Mable iri2016-3218 (Female)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Supergirl iri2016-3220 (Female)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Dorothy iri2016-3222 (Female)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Tisa st2010-2958 (Female)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Ceratops st2010-2959 (Female)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Table 2: Distance travelled by each GPS satellite tagged giraffe in February 2020

ID/Date	Distance travelled in February (km)
Jackson iri2016-3141 (Male)	260.65
Mable iri2016-3218 (Female)	154.8
Supergirl iri2016-3220 (Female)	229.1
Dorothy iri2016-3222 (Female)	200.4
Tisa st2010-2958 (Female)	77.7
Ceratops st2010-2959 (Female)	148.8

Acknowledgements

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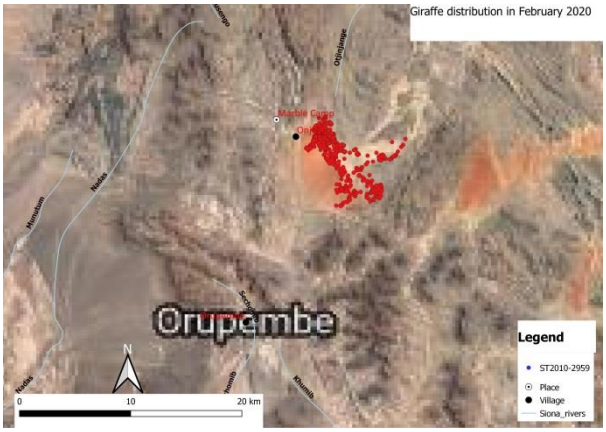
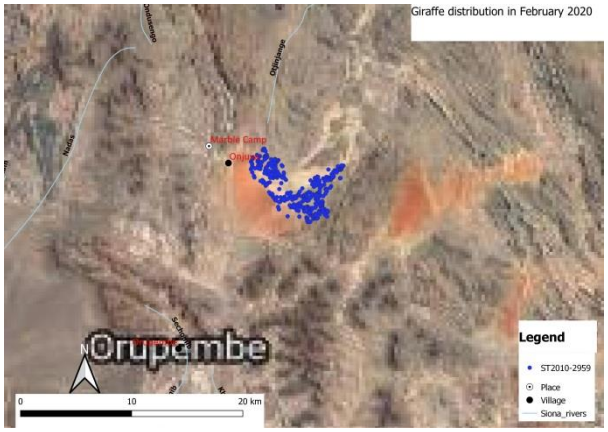
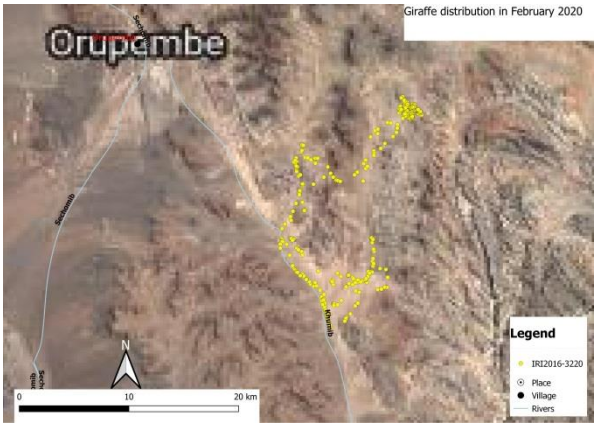
Appendix


Giraffe distribution in February 2020
Orupembe
Legend
ST2010-2959
Place
Village
Siona_rivers
0
10
20 km


Giraffe distribution in February 2020
Orupembe
Legend
ST2010-2959
Place
Village
Siona_rivers
0
10
20 km


Giraffe distribution in February 2020
Orupembe
Legend
IRI2016-3141
Place
Village
Rivers
0
10
20 km


Giraffe distribution in February 2020
Orupembe
Legend
ST2010-2958
Place
Village
Rivers
0
10
20 km


Giraffe distribution in February 2020
Orupembe
Legend
IRI2016-3220
Place
Village
Rivers
0
10
20 km


Giraffe distribution in February 2020
Purros
Legend
IRI2016-3222
Place
Village
Rivers
0
10
20 km