

Annual Movement of 8 GPS Collared Elephants In North-western Namibia

September 2002 - September 2003

By: Dr. Keith Leggett
Elephant Researcher
Namibian Elephant and Giraffe Trust
P.O. Box 527
Outjo
Namibia

Telephone: #-264-67-313701
Fax: #-264-67-313597
E-mail: kcal@iwav.na

Summary

In September 2002, 8 elephants were GPS collared in northwestern Namibia. This report details the first 12 months movement of these collared elephants. Four elephants were GPS collared in the eastern section of the research area and four in the western section. Of the original 8 GPS collars fitted only 6 were functional by the end of the 12 months, one collar failing after 8 months and the other after 9 months. The largest home range observed (determined by maximum convex polygon) was 8650 km² and the smallest was 500 km². The home ranges of these elephants are amongst the largest of elephants in Africa. Most of these elephant's home ranges are outside of protected areas and in the communal and commercial farming lands.

October 2003

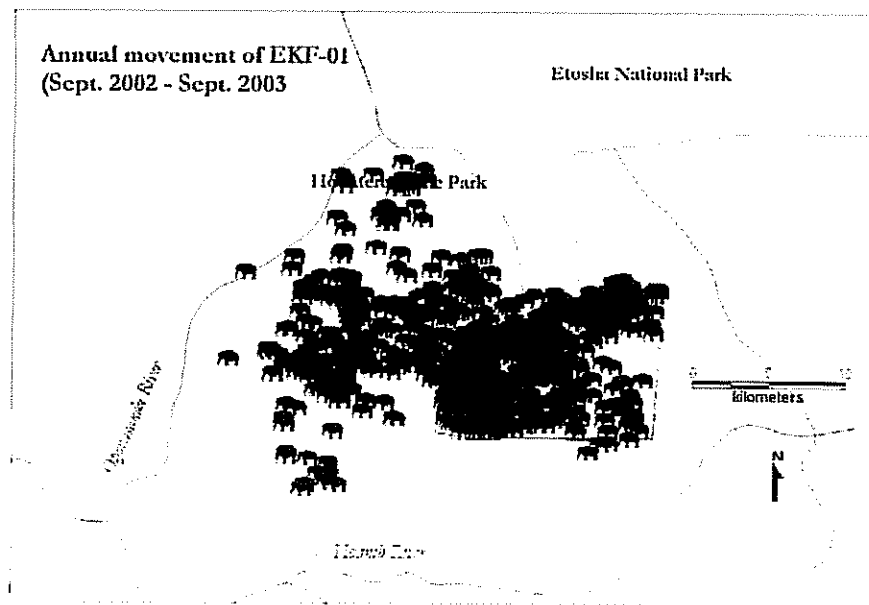
Movement and spatial patterns

Calculations of home ranges were performed on Mapinfo GIS programme and should be viewed as preliminary data only. A more detailed analysis of home ranges will be undertaken in the future.

There are three recognisable seasons in the northwest, which are functional and broadly defined (Viljoen 1988); wet season (January – April), cold-dry season (May – August), and hot-dry season (September – December). However, in practice these seasons are variable, e.g. the 1999/2000 wet season commencing in October 1999.

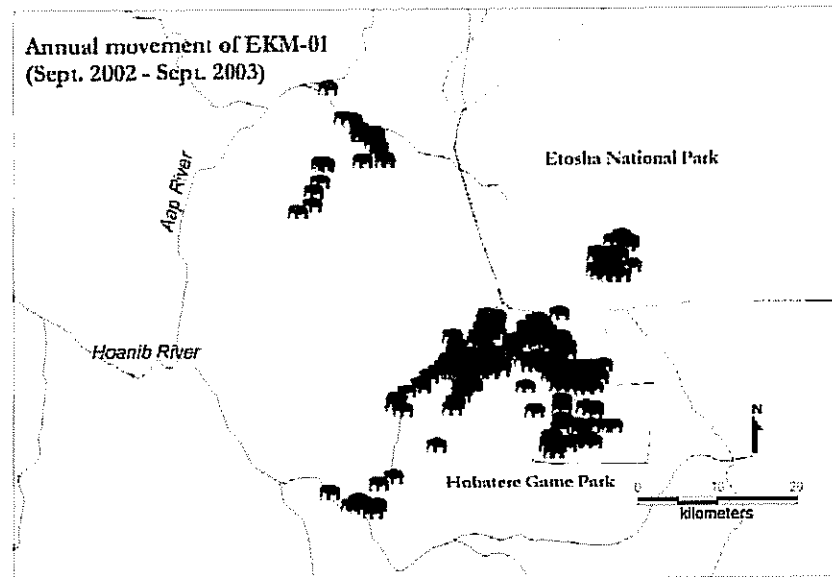
Eastern Kunene Elephants

EKF-01



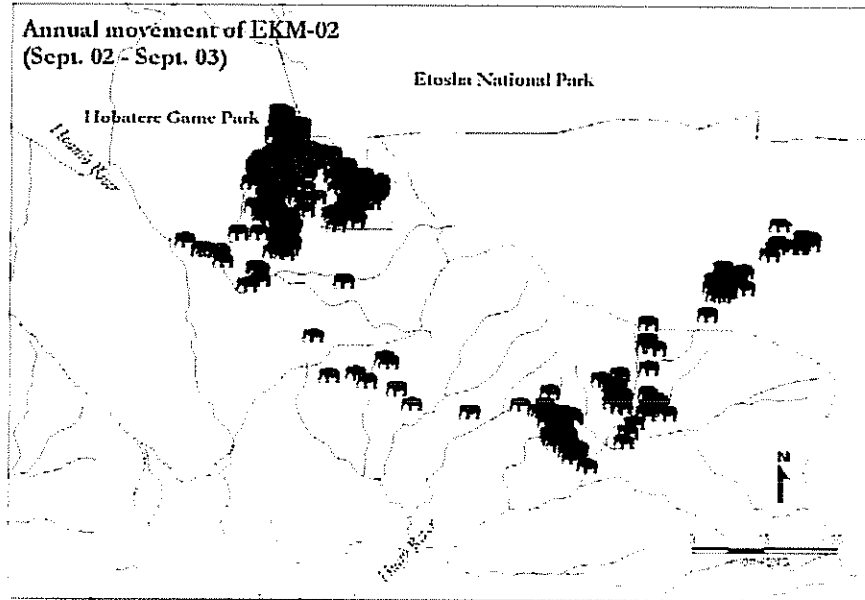
During the hot dry season 2002, EKF-01 moved mostly within the southern section of Hobatere and into Kaross (Etosha National Park). The family unit to which she belongs followed EKM-03 into Kaross but unlike EKM-03, she stayed. Returning to Hobatere after 60mm rain had fallen (20-22nd November 2002). EKF-01 and her family unit spent most of the wet season 2003 within the southern section of Hobatere and Kaross. Her cold dry season 2003 was spent mostly in Hobatere occasionally venturing into the Otjivasandu River area. Her daily movements have been small (3-5km) and her 12-month home range was approx. 477km².

EKM-01



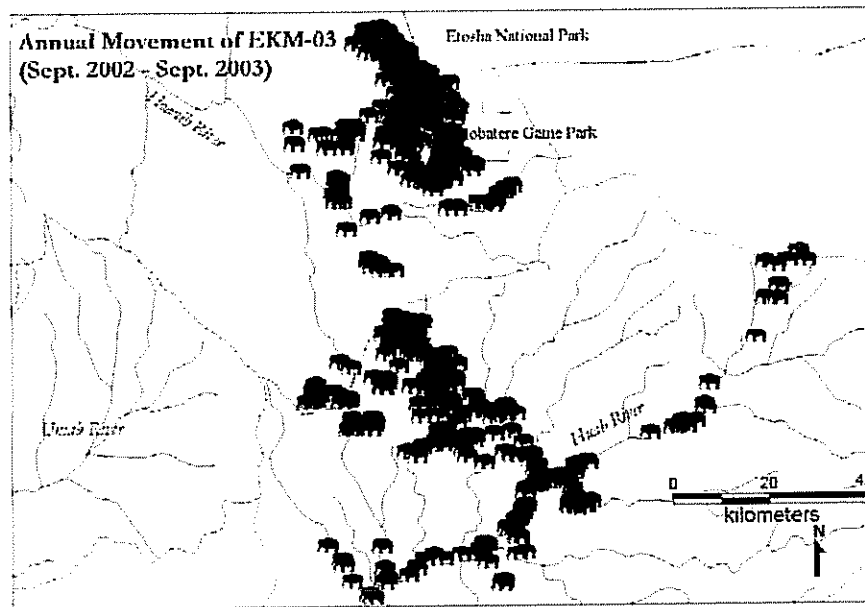
During the hot dry season 2002, EKM-01 ranged from north of Hobatere to the junction of the Otjivasandu and Hoanib Rivers approximately 20km to the southwest. In response to rains in November 2002, EKM-01 moved to the eastern section of Hobatere along the border with Etosha National Park where he has remained. EKM-01 spent most of the early wet season 2003, in eastern and northern section of Hobatere Game Park (Hobatere) and in Kaross within Etosha National Park (ENP). Then later in the wet season re-entered ENP. EKM-01 collar failed on the 24th April 2003 and since this time no data has been available. However, prior to the failure of the collar, he had moved from Etosha National Park to the north of Hobatere in the communal lands. His daily movements have been between 3-5km and his home range (until the collar failed) was 1564km².

EKM-02



EKM-02 stayed mainly within the confines of Hobatere for the hot dry season 2002, with a brief excursion through the western fence of Hobatere. However, at the start of the wet season 2003, EKM-02 undertook an extraordinary movement, on 6th February 2003, EKM-02 moved south to the Huab River area near Kamanjab, crossing commercial and communal farmland. He remained south of Kamanjab on the commercial farming areas for all of February. In early March, he moved northeast toward ENP stopping about 20 km south of the park border. He then turned around and retraced his steps back to Hobatere arriving on the 29th March 2003. This represented a straight-line round trip movement of 280km. EKM-02 spent the cold dry season 2003 mostly within the boundary of Hobatere Game Park with only a brief excursion to the west into the Otjivasandu River. His average daily movements were between 3-30km and 12-month home range was 5567km².

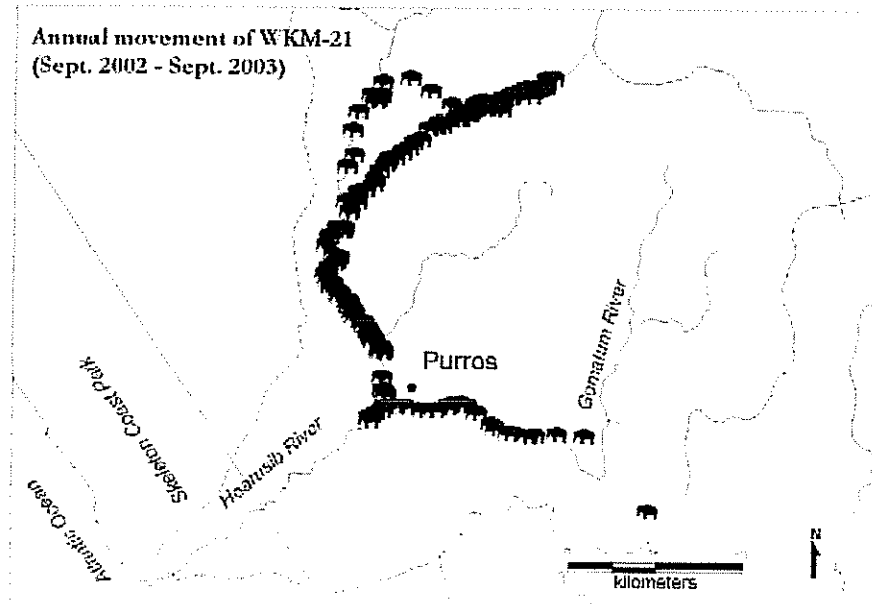
EKM-03



EKM-03 moved both north and south of the Hobatere Game Park boundary fence during the hot dry season 2002. In the north, he has moved approximately 10km to Otjikoware, while in the south he has moved 5-10km into the freehold farming area. In addition, he moved briefly into Kaross, Etosha National Park, staying only 2 days before returning to Hobatere. In response to early rains (November 2002) in the Grootberg Mountains, southwest of Hobatere, EKM-03 moved 60km in two days from the northern boundary of Hobatere into the Grootberg Mountains. The Grootberg Mountains contain large numbers of commiphoria spp., after rains these plants sprout leaves quickly and are a nutritious source of food for the elephants. In addition, the rains fill the seasonal rock pools providing the elephants with enough water to sustain themselves for short periods. EKM-03 remained in the mountains into the early wet season 2003 before returning to Hobatere via a short stay in the Hoanib River arriving in mid-February. EKM-03 remained in Hobatere for most of March, before moving south into the Hoanib River on the 28th March 2003 where he has remained. EKM-03 spent early April within the confines of Hobatere Game Park, however the rains of mid-April triggered another movement from him and he returned to the feeding ground in the top of the Grootberg Mountains. He only stayed briefly in the mountains and returned to Hobatere via the Hoanib River. This is the second movement of this elephant into the Grootberg Mountains this year. Each movement has been prompted by heavy rainfall in the area. During the cold dry season 2003, EKM-03, again returned to the Grootberg Mountains, but this time he did not return to Hobatere but continued south, arriving in the Huab River in June 2003. He initially turned to the west and ranged downstream for most of July, then moved east again following the Huab River past Kamanjab and meeting the main tar road to Outjo on the 28th September 2002. He has spent the start of the hot dry season 2003 in the Kamanjab region. EKM-03 largest daily movement was 22.3km and his 12-month home range was approximately 8100km².

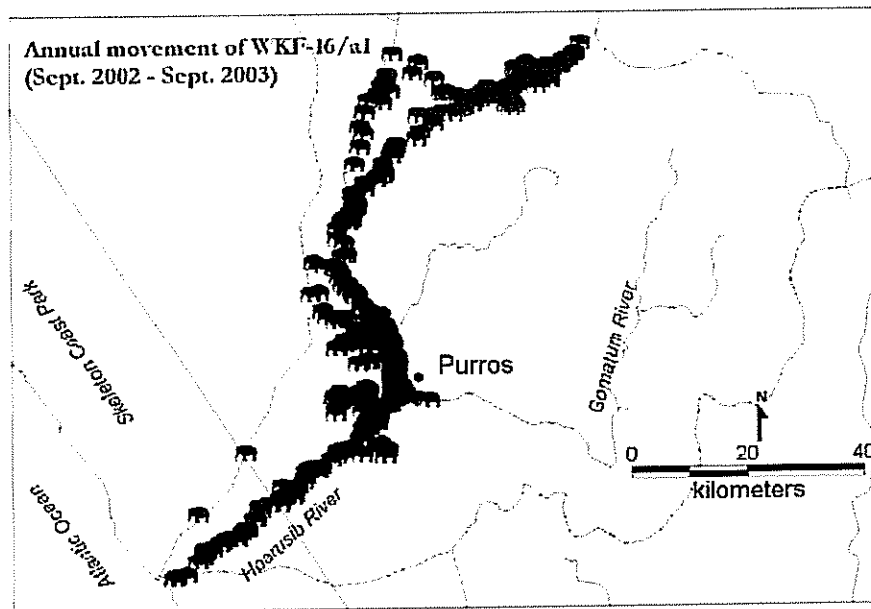
Western Kunene Elephants

WKM-21



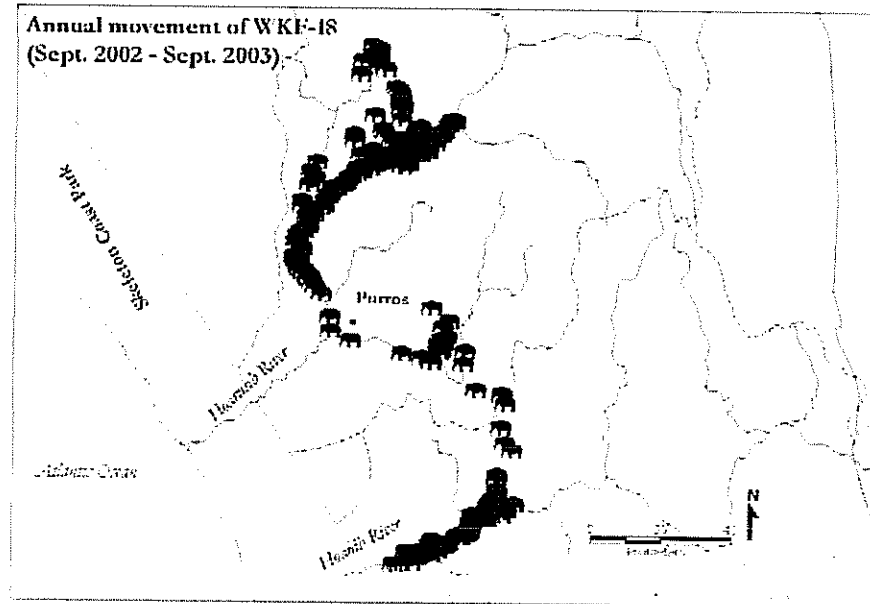
WKM-21 spent the early part of the hot dry season 2002 in the Gomatum River moving along the Gomatum to the junction of the Hoarusib and then returning along the Gomatum Rivers where he stayed for several days. He then moved upstream to approximately 20km from Purros where he spent the majority October and November. After the first flooding of the Hoarusib River (3rd December 2002), WKM-21 moved further upstream along the Hoarusib River toward Opuwo. The wet season 2003 saw him moving twice between the upper reaches of Hoarusib and the lower end of the Gomatum Rivers. Each of these moves WKM-21 covers over 150km in total distance. This period saw the greatest daily movement of 12.1km. WKM-21 spent all of April and until the 19th May 2003 (cold dry season 2003) in the upper reaches of the Hoarusib River. His collar failed on this date and since this time data has been unavailable. His average daily movement was 7.2km and his home range (until the failure of the collar) was approx. 2881km².

WKM-16/a1



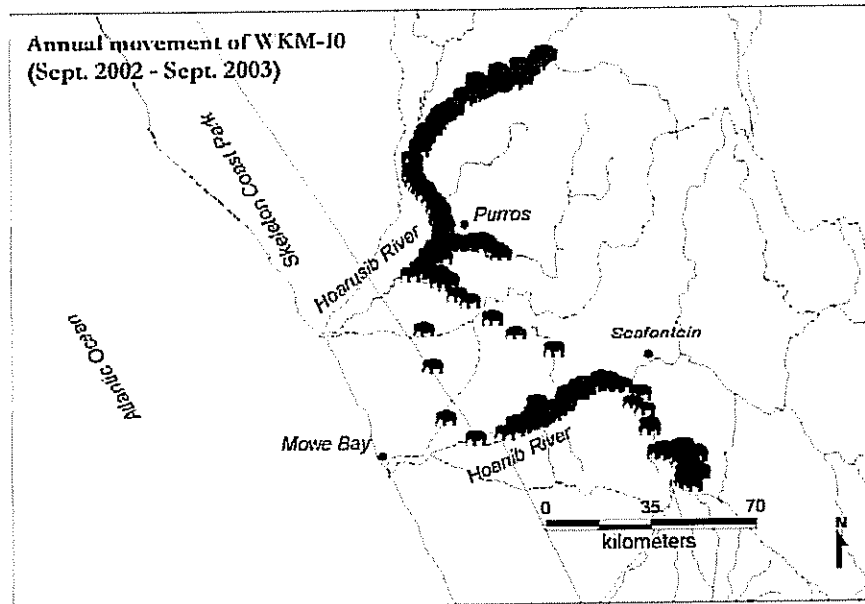
The hot dry season 2002 saw WKF-16/a1 and his family unit stay in the Hoarusib River and move along the river between 20km upstream and 30km downstream from Purros. The herd movement has ranged from the hills to the north of the Hoarusib River to within 5km of the coast. WKF-16/a1, spent the early wet season 2003 in the western section of the Hoarusib River between Purros and the coast. Later in the wet season, WKF-16/a1 and the family unit moved from within the Skeleton Coast Park (SCP) to approximately 80km upstream from Purros and approximately 40km in a straight line from Opuwo (a total move of approximately 120km). During the cold dry season 2003, WKF-16 has ranged between 80km upstream from Purros in the upper tributaries of the Hoarusib to 20km downstream of Purros. At the start of the hot dry season 2003, WKF-16/a1 remained within 20km of Purros. WKM-16/a1's daily movements have been small of the order of only 5-7 km and his 12-month home range was approx. 2573km².

WKF-18



After the collaring, WKF-18 moved immediately to the Hoanib River where she and her family unit spent the hot dry season 2003. The migration route to the Hoanib River initially followed the Gomatum River, crossing the Obias Plains, then into the Gunameb River before entering the Hoanib River at the Gunameb poort. WKF-18 spent the early wet season in the Hoanib River between the Mudurib River and the Skeleton Coast Park. On the 2nd of February 2003 WKF-18 left the Hoanib River and returned to the Hoarusib River via the Gomatum River and the Obias Plains arriving around Purros on the 12th February 2003. This was the same route that WKF-18 and her family unit used in October 2002 when moving from the Hoarusib to the Hoanib River. WKF-18 and her family unit continued moving to approximately 80km upstream from Purros, where they have remained for the rest of the wet season. She and her family unit have remained in the upper reaches of the Hoarusib River for the entire cold dry season 2003 and early hot dry season 2003. Her daily movements have been between 3-27km and her 12-month home range was 5900km².

WKM-10



Early in the hot dry season 2002 (28th October 2002), WKM-10 began his migration to the Hoarusib River. Initially, he crossed the Girribus plains through to the top of the Obias River, where he spent a day, then followed the river to its junction with Hoarusib River, arriving early in the morning on the 30th October. He then turned east and made his way to the Dubis wetlands where he spent the rest of the hot dry season. WKM-10 used a completely different migration route than WKF-18. During the early wet season 2003, WKM-10 remained within a radius of 20km around the Mudurib River and artificial water point. The rains of mid-April coincided with his musth period and he left the Hoarusib River on the 14th April 2003 and followed the other family units to the plains south of Scafontein. He spent nearly a month in the southern area foraging in the Etendecka Mountains before returning to the Hoarusib River early in the cold dry season 2003, spending only 3 days in the river before setting off for the Hoarusib River. He used a completely different route to return to Hoarusib River, preferring this time to enter the Skeleton Coast Park before turning north and entering the Hoarusib River approximately 40km from the coast. He was observed to be in musth from the 7th May until the 22nd June 2003. His continued moving upstream in the Hoarusib River for the rest of the cold dry season reaching approx. 75km upstream from Purros. He has remained in these areas in the early part of the hot dry season 2003. His daily movements have been between 3-32.6km and his 12-month home range was approx. 8648km².

References:

Viljoen, P.J. 1988. *The ecology of the desert-dwelling elephants *Loxodonta africana* (Blumenbach, 1797) of western Damaraland and Kaokoland*. PhD. Thesis, University of Pretoria, Pretoria, South Africa, 335 pages.

