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Status and distribution of desert-dwelling elephants in the Hoarusib, Hoanib, and Uniab River drainages, Kunene Region, Namibia

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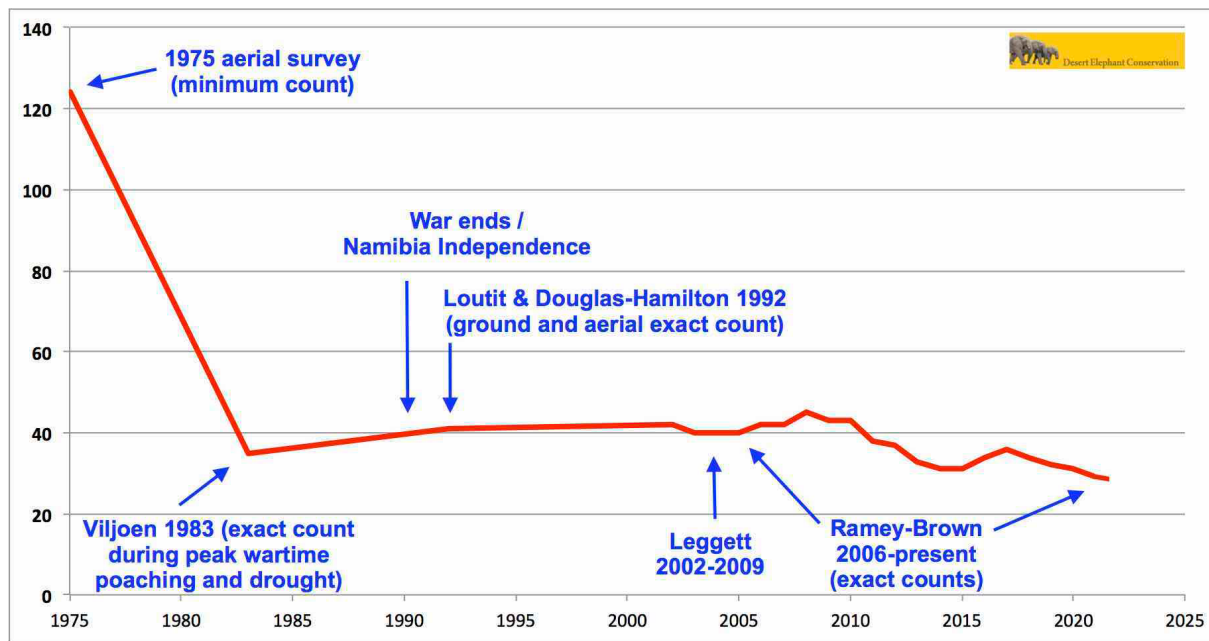


Figure 1. Elephant trends in the Hoarusib and Hoanib subpopulations: 1975-2022

Note: The following data on elephants of the Hoarusib, Hoanib, and Uniab river drainages is based on exact counts of known individuals from our photo ID database.

A) Hoarusib River elephants = 9 total.

The home range and migration routes of these elephants include: Skeleton Coast National Park, and the conservancies of Sesfontein, Puros, Okondjombo, Ombujokanguindi, Otjiu-West, and Ongongo.

Only 9 elephants remain in the Hoarusib River as of 31 December 2022. In 2018 there were 16, in 2020 there were 10 (please refer to our 2021 report for details about mortalities between 2016-2021.) On 11 December 2021 a mature bull (~29 years) was killed by MEFT in retaliation for the death of a local woman at Otjiu-West. There are now only 9 elephants remaining in the entire Hoarusib drainage, as follows:

The **Upper Hoarusib Group (=7)** (range: Ongongo, Otjiu-West, and Hoarusib gorge):

3 females breeding age (12, 20, 25 years) (None has yet produced a surviving calf)

1 female juvenile (8 years)

1 male sub-adult (16 years)

2 males breeding-age (26, ~35 years)

The **Lower Hoarusib Bulls (=2)** (range: from the coast into upper Hoarusib gorge):

2 male sub-adults (20, 22 years)

In April/May 2022 the **Upper Hoarusib Group of 7** were in the upper gorge and due to the amount of water in the Hoarusib following a very intense rainy season, it was not possible to reach the area where the elephants were. By August they had returned to the valley and were observed north of Puros by Allu Jauire of IRDNC. By the end of 2022 they were in the river drainage northwest of Otjiu-West and Ongongo.

This group of seven is what we call the “orphan group” as there is no matriarch leading the group. One of the seven is a breeding age male (~35 years) who may provide some protection and guidance. They mostly reside in the Ongongo and Otjiu-West area and the gorge above Puros, however they make occasional visits to the gorge below Puros.

In the lower Hoarusib River there is not a single breeding-age female remaining. With the death of the last two adult females WKF-16 (Left Fang/Skewetand) in 2018 (shot), and WKF-7 (Franny) in 2019 (possibly illness), the entire breeding herd is gone. Both young bulls in the **Lower Hoarusib Bulls group** were observed in the Hoanib floodplain in late April 2022. One was wearing a collar that was put on by MEFT sometime between December 2021 and April 2022.

Of the three breeding-age females in the **Upper Hoarusib Group of 7**, none has produced a living calf. Two of the females had calves that died soon after birth, while the oldest female (25 years) has never had a calf, and we believe she may be sterile. This sub-population is in effect, reproductively extinct. The only practical means by which to reverse this situation would be to capture and translocate several small family groups from nearby (e.g., Kamanjab area) for release along the lower Hoarusib River to augment the reproductive base of the population. We are currently preparing a translocation feasibility study for MEFT's consideration.

B) Hoanib River (west of Sesfontein) = 19 elephants in total.

The home range and migration routes of these elephants include: Skeleton Coast National Park, Sesfontein Conservancy, and northern edge of Palmwag Concession Area.

In the Hoanib River, 19 elephants remain, which is down from 21 elephants at the end of 2019. The oldest matriarch in the population, WKF-15 (Sofia), is close to 35 years of age.

The 19 elephants in the Hoanib sub-population are:

- 7 females of breeding age (12, 16, 18, 22, 23, 27, 35 years of age)
- 3 female sub-adults (10, 11, 12 years of age)
- 2 male juveniles (9, 11 years of age)
- 5 calves (3, 3, 3, 5, 6 years of age)
- 2 males of breeding-age (30, 37 years of age)

Almost all of the Hoanib River elephants were in the Hoanib floodplain in late April 2022 due to the vast amount of flooding that had come down the river during the prior rainy season. There were many standing pools of water and an abundance of green vegetation that the elephants were eating. As of late April 2022, the track from upriver through the floodplain to Mowe Bay was blocked off by standing water and deep mud, such that vehicles (including us) could not pass through to the coast.

The oldest breeding male WKM-20 (Arnold) was not with the rest of the Hoanib herd at the time of our visit, and reports were that he had gone south up the Mudorib River and into the Palmwag concession.

During the course of our 16-year study, elephants from the upper Hoanib catchment (upstream of Khowarib Schlucht), or from the mountains north of Warmquelle (Otjomatemba area), have not been documented to overlap in range with the Hoanib elephants west of Sesfontein. While there may have been historic movements between these areas, our observations and data indicate that these are now separate subpopulations. The loss of older female and male elephants with long-acquired knowledge of the landscape and migration routes, is likely to have contributed to this isolation, along with the increase in human presence which may hinder elephant movement. The decline in the number of breeding-aged bulls in the Hoarusib, Hoanib, and Uniab subpopulations is of immediate concern due to the potential for inbreeding.

C) Uniab River Catchment: count not available for 2022 (last minimum count = 44 elephants in 2021.)

This subpopulation primarily inhabits the Palmwag and Etendeka Concession Areas and immediate surroundings during the dry season. The home range and migration routes of these elephants includes: Skeleton Coast National Park, Palmwag Concession, Etendeka Concession, Torra Conservancy, and #Khoadi//Hôas Conservancy.

The elephants of the Uniab subpopulation comprise two main groups: the **Kawaxab Group** that have left the Palmwag concession area to inhabit the mountains above Etendeka, and the **Achab Group** that have typically been found during the drought in mountains and valleys from Palm south to the Huab River.

Since 2019, the Uniab elephants have mostly ranged outside out of the Palmwag concession due to the extreme drought conditions and lack of forage. In 2021 they were located in the Okavariona spring area, and the Arikana/Nigeria borehole area. In late April 2022 we made an excursion to the area of Okavariona Spring east of Etendeka in order to locate elephants of the **Kawaxab Group**. Following the extensive rainy season that finally broke the years-long drought, there was an abundance of grass, green vegetation, and easily available water in the area and the elephants were not coming in to drink at the usual springs (Okavariona, Otjiapa, and Otjatjekupe). Only one elephant female (PF-1)

was seen and identified just below Okavariona spring, and she was alone. There was spoor of other elephants in the area, however we were not able to follow due to vehicle problems (broken motor mount).

A search of the Arikana/Nigeria borehole area east of Wereldsend was not productive at locating any of the **Achab Group** in late April. Again, grass and woody vegetation was lush and green, water was available in many locations, and the elephants had taken to the high mountains as a result. (A plane flight would have been useful to try and locate them.)

The young bull of the Achab Group that we identify as PM-5, has continued to frequent Wereldsend in the latter part of 2022, in search of water. On a couple of occasions he has caused damage to the water pipes and solar installations at the Wereldsend Research Station.

Our minimum count of 44 elephants in the Uniab subpopulation from 2021 is the most recent count as of this writing, and we hope to have better success with a count in 2023.

D) Summary and Conclusions

We compiled data from our research (2006-2022) along with published accounts dating back to 1975 on the desert-dwelling elephant population in our study area of Skeleton Coast National Park and western Kunene region. This includes the Hoarusib, Hoanib, and Uniab subpopulations. Our analysis of the data reveal the profound influence that human-caused elephant mortality has had on the population over 15 years. An initial precipitous decline occurred due to wartime poaching in the 1980s. That was followed by four decades of low-level but demographically significant human-caused mortality of adult elephants, which in addition to natural mortality and a low reproductive rate, has prevented recovery of these subpopulations to pre-war levels (Figure 1). In fact, there are now fewer elephants in the study area than during the war in the 1980s.

The 2022 total is ~72 elephants for these three study areas.

By comparison, Viljoen (1987) documented 86 individuals in the same area in 1981, during the height of drought and poaching. Temporary population gains made during the mid-late 2000s have been lost, primarily due to the additive effects of human-caused mortality, which account for over half of the adult mortality, and poor recruitment where more than half of the calves that are born die within the first year. More recently, prolonged drought, which is common in the history of the northern Namib Desert, caused food-stress for the elephants, especially in the Hoarusib and Hoanib. Many were in poor condition up until the massive rains and floods that came in early 2022 and changed the habitat dramatically. During our April/May 2022 visit, all the elephants were in very good condition because of the amount of green vegetation that came up after the floods. Hopefully females went into estrus as a result and a few calves will be born in 2024. In the long-term, it is doubtful that the desert-dwelling elephant population will be sustainable if there is continued human-caused mortality, even though the 2022 rains and floods did bring a short reprieve to their situation.

The low number of breeding age bulls remaining is a significant conservation concern for the following reasons: First, reproduction will cease if these last few bulls are killed or die prematurely. Second, with so few bulls remaining, the danger of inbreeding is increased. Third, there has been zero immigration of male elephants from the highlands or Etosha National Park into the Hoarusib and Hoanib since 2009.

It is important to emphasize that boreholes are critical for desert elephant survival in the Hoanib River. Both boreholes at the two lodges - Natural Selection's Hoanib Valley Camp and Wilderness Safaris Hoanib Skeleton Coast Camp - provide valuable drinking opportunities for the resident breeding herd and supplement the two Presidential Boreholes that were built in the 1990s. Tourism at these camps and others nearby (e.g. Fort Sesfontein and Khowarib Lodge) lead to increased protection for these elephants and other wildlife because of the additional "eyes on the ground" that tour operators

provide in monitoring the elephants wellbeing. In addition, tourist lodges and operators provide jobs and income for people in the local communities, adding value to wildlife. It is imperative that drinker pools be periodically cleaned to ensure that concentrated use during the dry months of the year does not lead to fouling of the water or harmful blue-green algal blooms.

Literature Cited

Leggett, K.E.A., L.M. Brown, and R.R. Ramey. 2011. Matriarchal associations and reproduction in a remnant subpopulation of desert-dwelling elephants in Namibia. *Pachyderm* 49:20-32.

Lindeque, M. and Lindeque, P.M. 1991. Satellite tracking of elephants in northwest Namibia. *African Journal of Ecology* 29:196–206.

Viljoen, P.J. 1987. Status and past and present distribution of elephants in Kaokoveld, South West Africa/Namibia. *South African Journal of Zoology* 22:247-257.

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, South Africa.

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