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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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Summary

We compiled data from our research (2006-2025) 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 River, Hoanib River, and Uniab River sub-populations. Our analysis of the data reveal the profound influence that human-caused elephant mortality has had on the population over this time period. 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, prevented recovery of these sub-populations to pre-war levels (Figure 1). However, while there are now fewer elephants in the study area than during the 1980s war period, our recent data and observations reveal the following promising trends:

1) there have not been any documented human-caused mortalities in the study area since 2021;
2) ten calves were born in the Hoanib River sub-population in the time period May 2023-July 2024, and nine are still surviving (as of May 2025);
3) a recent (April 2023) migration of the entire Hoanib sub-population over to the lower Hoarusib River, and their subsequent return to the Hoanib the following week, indicates that knowledge of this migration route has not been lost in the Hoanib subpopulation;
4) communities and NGOs are giving serious consideration to a potential translocation of elephants into the Hoarusib River to bolster elephant numbers there;

5) an Hoanib elephant calf sustained an injury and was subsequently treated in the field by a MEFT veterinarian;
6) three young bulls from Otjikondavirongo area visited the Hoanib River briefly in Feb 2025.

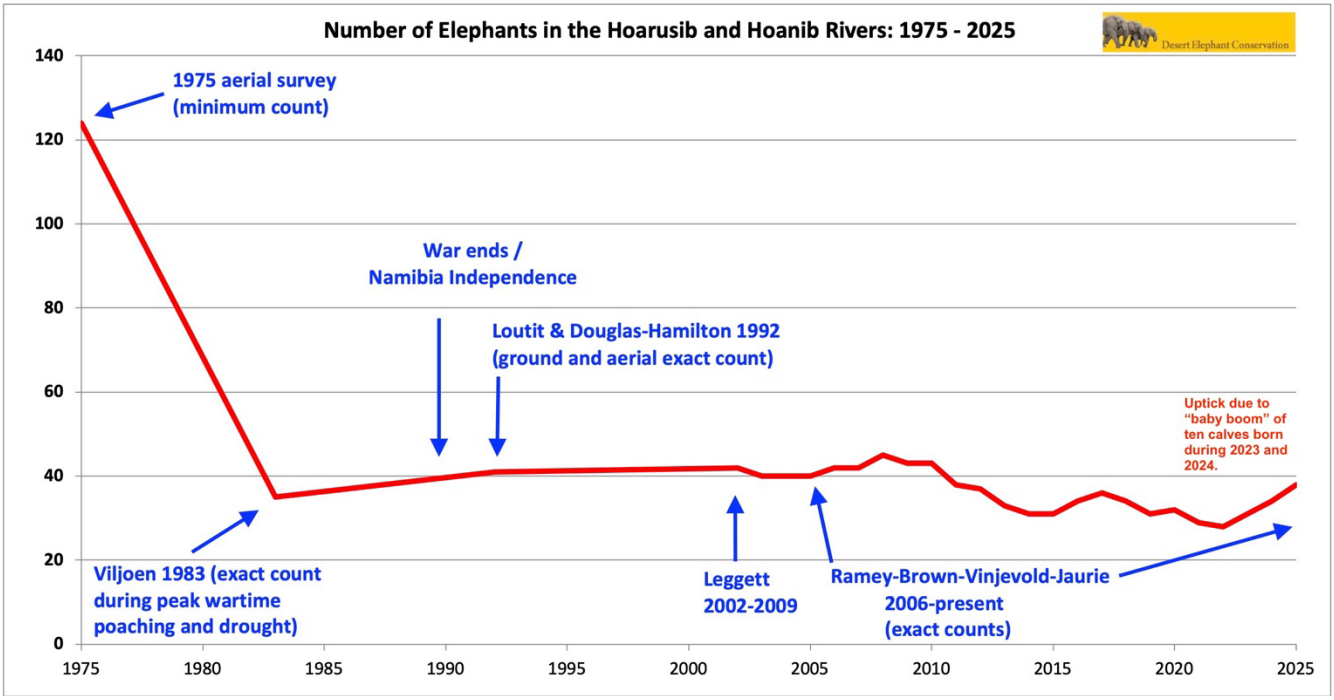

Figure 1. Elephant trends in the Hoarusib and Hoanib subpopulations: 1975-2025

A) Hoanib River (west of Sesfontein) = 28 elephants total.

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

The 28 elephants in the Hoanib sub-population are described as follows:

10 females of breeding age (13, 14, 15, 15, 19, 21, 25, 26, 30, 38 years of age)
14 calves (ages as of February 2025 as follows: 6, 8, & 9 months; 1, 1, 1, 1.5, 1.5, 2, 5, 6, 6, 8, 9 years of age)
2 male juveniles (12, 14 years of age)
2 males of breeding-age (~33, ~40 years of age)

10 calves were born (and 1 died at birth), from May 2023-July 2024, an increase of nine for this subpopulation!

A development of significance in the Hoanib occurred on 1April 2025, when an injured calf was reported by Hoanib Camp guides. This calf, number 22/a3 and known as "TM2" (age 15 months), is the youngest calf of WKF-22, known as "TurboMum" (age 26 years). The calf's left rear leg was severely swollen and oozing, and the calf was limping badly, unable to put any weight on the leg. On 13 April, the calf was again videoed and the leg appeared to be getting worse. On 17 April, a MEFT veterinarian, Dr. Sandra Shikomba, was flown in via helicopter to assess the calf's condition and provide treatment. With the assistance of Wilderness Hoanib Camp staff and Allu Jauire of IRDNC, both mother and calf were darted and sedated. The calf's leg revealed no broken bones so the wound

was cleaned and antibiotics administered. The veterinarian determined the wound and infection were likely caused by a lion bite, and that the calf has a good chance of recovery. MEFT also installed a radio collar on the mother WKF-22 "TurboMum." With such a small number of elephants inhabiting the desert subpopulations, every calf that is born has huge significance to future growth of the overall population.

MEFT is commended for their effort in providing medical assistance to the injured calf. Thank you!

During the course of our 20-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. This changed in late 2024 when two young bulls were photographed in the Hoanib by Allu Jaurie. In February 2025, these bulls and an additional young bull were tracked by Allu and game guards from Otjikondavirongo to the Hoanib. We observed and photographed these young bulls for future identification.

While there may have been historic movements between these areas that included family groups, our observations and data indicate that, with the exception of the three young bulls visiting the Hoanib, these are still effectively separate sub-populations (as are the Hoanib, Hoarusib, and Uniab 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 small number of breeding-age bulls in the Hoarusib, Hoanib, and Uniab subpopulations is of immediate concern due to the potential for inbreeding. Therefore, we are encouraged by the seasonal migration/visit of three young bulls to the Hoanib from Otjikondavirongo, as well as the ongoing seasonal migrations of two Lower Hoarusib bulls into the Hoanib floodplain. These young bulls, if they remain alive, will soon be of breeding age.

B) Hoarusib River elephants = 10 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. With the addition of a calf born in January, there are currently only ten resident elephants remaining in the entire Hoarusib River drainage west of Opuwo, as of May 2025. (Please refer to our 2021 report for details about mortalities through December 2021.) The elephants remaining in the Hoarusib drainage are described as follows:

Upper Hoarusib Group (=**8)** (range: Ongongo, Otjiu-West, and upper Hoarusib gorge):

3 females breeding-age (15, 23, 28 years) (One calf born to the 15-year-old female)
1 female juvenile (11 years)
1 calf (one year)
1 male sub-adult (19 years)
2 males breeding-age (29, ~38 years)

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

2 males (23, 25 years)

= 10 total

During our February 2025 field trip, we were not able to conduct a full survey due to recent flooding in the Hoarusib River, but Allu Jauire received reliable reports from colleagues living and working in the area.

The Upper Hoarusib group of eight is what we also refer to as the "orphan group" as there is no matriarch leading the group. One of the seven is a breeding age male (~38 years) who may provide some protection and guidance. They mostly inhabit 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 of the **Lower Hoarusib** are known to migrate to the Hoanib floodplain and were last observed and photographed there by Hoanib Camp guides in February 2025.

Of the three breeding-age females in the **Upper Hoarusib Group of 8**, only one has produced a surviving calf. Two have had calves that died soon after birth, while the oldest female (28 years) has never had a calf that we know of, and we believe she may be sterile. The mother of the calf born in January 2024 is the youngest of these three breeding-age females. 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 in discussions with IRDNC, TOSCO, and local conservancies, on a potential translocation of surplus elephants from the Kamanjab area to reverse the decline of the Hoarusib subpopulation.

C) Uniab River Catchment: count not available for 2025 (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 frequent the Palmwag concession area and also 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 of the Palmwag concession due to the extreme drought conditions and lack of forage. In 2021 and 2022 the Kawaxab Group were primarily located in the Okavariona Spring area, and the Achab Group was in the Arikana/Nigeria borehole area. In January 2024, the Achab group was observed and photographed in the Springbok River area by a local resident.

The young bull of the Achab Group that we identify as PM-5, has continued to frequent Wereldsend, the Springbok River area, and the Springbok Gate in the latter part of 2022, 2023, 2024, and early 2025, in search of water and food. On a couple of occasions, he has caused damage to the water pipes and solar installations at the Wereldsend Research Camp, as well as the fence and ornamental gardens at the Springbok Gate. However, consistent with findings of our previous research (Ramey et al. 2013), providing fresh water in upright 200L plastic barrels for the wandering bull has lessened his mischief at Wereldsend.

Our minimum count of 44 elephants in the Uniab sub-population from 2021 is the most recent count as of this writing, and we hope to have better success with a 2025 count later in the dry season.

The 2025 total is ~82 elephants for these three study areas.

By comparison, Viljoen (1987, 1988) documented 86 individuals in the same area in 1981, during the height of drought and poaching. During our 2021 and 2022 field seasons, all the elephants were in very good condition because of the amount of green vegetation that came up following the previous floods. This led to females coming into estrus and a “baby boom” of calves born between May 2023 and July 2024. With heavy rain in 2025 in each catchment, as well as rain in the western desert, green vegetation is abundant and the potential exists for another “baby boom” in 2027.

A significant conservation concern is the low number of breeding age bulls remaining in the study area. This is critical 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, until 2025 there has been zero immigration of male elephants from the highlands or Etosha National Park into the Hoarusib and Hoanib (since 2009.) This we know for a fact because we can identify (photo IDs) every elephant in these subpopulations, and there are no new individuals. Three new male visitors in February 2025 from Otjikondavirongo to Hoanib River, although they did not remain in Hoanib, indicates a promising trend of reconnection between isolated subpopulations.

It is important to emphasize that boreholes are critical for desert elephant survival in the Hoanib River. At the two lodges (Natural Selection's Hoanib Valley Camp and Wilderness Safaris Hoanib Skeleton Coast Camp) the boreholes provide valuable drinking water for the elephants 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. In addition, tourist lodges and operators provide jobs and income for the local communities, adding value to wildlife. It is imperative that drinker pools, both at the lodges and at government-constructed sites, 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. Clean drinking water, free of toxic blue-green algae (cyanobacteria), is imperative for healthy wildlife populations in the Hoanib. For information on the potential effect of toxic blue-green algae on elephants, see Lomeo et al. 2024 (https://www.sciencedirect.com/science/article/pii/S0048969724076824).

Prior to 2023 our data show that approximately half of calves died in their first year in the Hoanib and Hoarusib Rivers. However, with the most recent baby boom, nine out of ten calves have survived (from May of 2023 onwards). In February 2025, in order to test whether previously poor calf survival was due to inbreeding, as compared to the latest cohort of calves, we undertook collection of dung DNA samples from these recently born calves for paternity analysis. These samples will be analyzed at the genetics laboratory at Cheetah Conservation Fund.

MEFT staff member checking on WKF-22 and injured calf after darting. The immobilization dart can be seen protruding from calf's rump.

Dr. Sandra Shikomba treating the injured calf's leg wound. MEFT and Wilderness staff assisting.

WKF-22 “TurboMum” being fitted with MEFT radio collar while injured calf is being treated. Allu Jauire of IRDNC on right.

Treatment and radio collaring. Helicopter used for darting in background. (Photos kindly provided by Allu Jauire and Howard Groenewalt.)

Literature Cited

Lomeo, D., E.J. Tebbs, N.D. Babayani, M.A. Chadwick, M.J. Gondwe, A.D. Jungblut, G.P. McCulloch, E.R. Morgan, D.N. Schillereff, S.G.H. Simis, and A.C. Songhurst. 2024.Remote sensing and spatial analysis reveal unprecedented cyanobacteria bloom dynamics associated with elephant mass mortality. *Science of The Total Environment* 957, 20 December 2024, 177525. https://doi.org/10.1016/j.scitotenv.2024.177525.

Ramey, E.M., R.R. Ramey, L.M. Brown, and S.T. Kelley. 2013. Desert-dwelling elephants dig wells to purify drinking water. *Pachyderm* 53:66-72.

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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