



2019 Annual Research Report

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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 of the most significant events of 2019:

1.) In the Hoarusib River, a third of the remaining elephant population was lost in 2019. From a total of 16 elephants in 2018, there are now only 11 that remain. All the elephants were in poor condition due to the extensive drought that has affected the region and killed most of the cattle. The ongoing drought, in combination with continuing human-wildlife conflict, has had a serious impact on elephants and other wildlife species as well.

In the Hoarusib, the five elephants lost in 2019 were as follows:

WKF-7/a5 (Frodo) a young male 12-years-old, was shot illegally in May 2019 by persons unknown, 23km above Puros in upper Hoarusib gorge. A bullet slug was retrieved from the carcass by us in November 2019 and the evidence handed over to MET.

WKF-2 (Maisey) female matriarch ~33 years old, cause of death unknown, carcass not yet located.

WKF-12 (Buttonhole) female matriarch ~50 years old, cause of death unknown, carcass not yet located.

WKF-7 (Franny) female matriarch ~46 years old, died suddenly in August near Puros campsite of unknown cause. Initial scanning of the carcass did not detect bullets, however much elephant meat had been taken by local people for consumption.

WKF-7/a7 (Frida) the 2-year-old orphan calf of WKF-7 was captured by MET and transferred to Okutala Etosha Lodge for captive-rearing by the resident veterinarian.

2.) Also in the Hoarusib River, it was discovered that the well-known matriarch WKF-16 (Left Fang/Skewetand) who died in 2018, had been shot. It was previously assumed that she had died of illness in April 2018. Her carcass (with tusks still intact) was not discovered until seven months later in a wash south of the upper Hoarusib gorge. In November 2019, the carcass was scanned with a metal detector and a bullet slug was discovered. The evidence was given to MET.

3.) In the Hoanib River, the oldest matriarch WKF-11 (Enforcer) died suddenly on 24 December 2019 of unknown cause near the junction of Hoanib and Obias Valley. She was ~48 years old and had a milk-dependent calf just 7-months-old. There were no lactating females in WKF-11's family to adopt the orphan, so with MET's approval the male calf, WKF-11/a4 (Goliath), was captured and transferred to Okutala Etosha Lodge for captive-rearing by the resident veterinarian. (See photo at end of report).

4.) In the Hoanib River clan, seven elephant calves were born in 2019, between January and May. Three died within the first few days of birth of unknown cause. Four calves are still alive, including the above mentioned WKF-11/a4 (Goliath) and three that are doing well in the Hoanib River. A potential cause of these and other elephant calf deaths in our study area (and in the Huab and Ugab desert elephant population) is EEHV, an elephant herpes virus. We plan to conduct more research into this possibility in the near future.

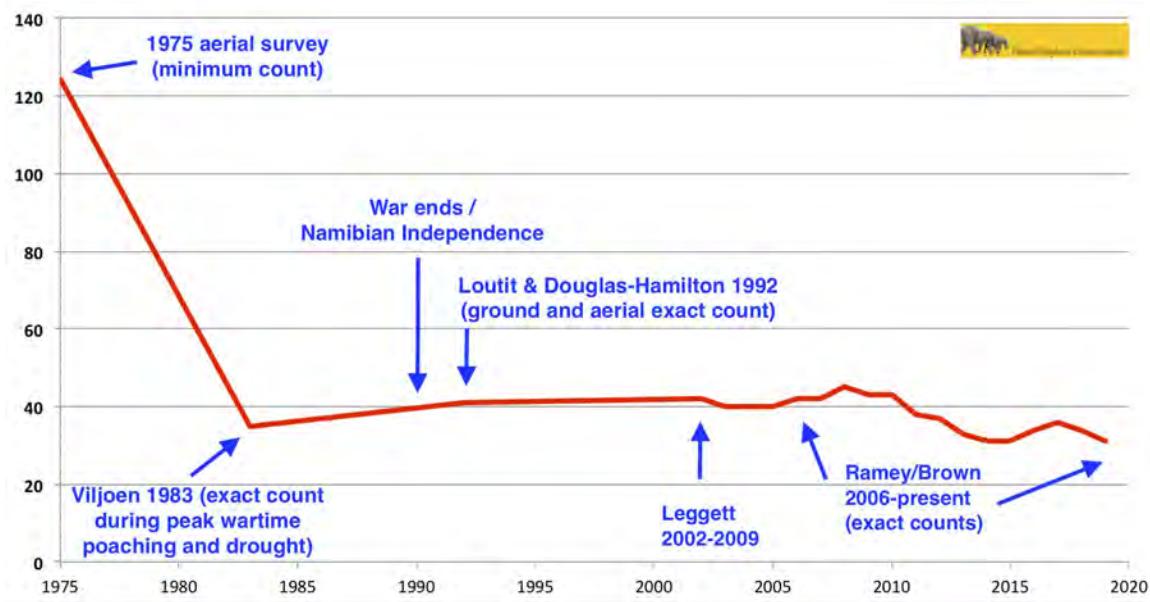
5.) The dominant bull WKM-20 (Arnold) of the Hoanib River went on walkabout for several weeks, as is his usual behavior during the wet season. In past years we have documented him going south up the Mudorib River and into the Palmwag concession.

This year, on 24 April, we encountered him at Okavariona Spring, on the east side of Etendeka, a straight line distance of 80km from his dry season home range in the Hoanib. Reports came that he returned to Hoanib a couple weeks later.

Summary and Conclusions

We compiled data from our research (2006-2019) 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 mortality has had on the population. An initial precipitous decline occurred due to wartime poaching (1980s). That was followed by three 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 prewar levels (Figure 1).

Figure 1. Elephant trends in the Hoarusib and Hoanib subpopulations: 1975-2019.

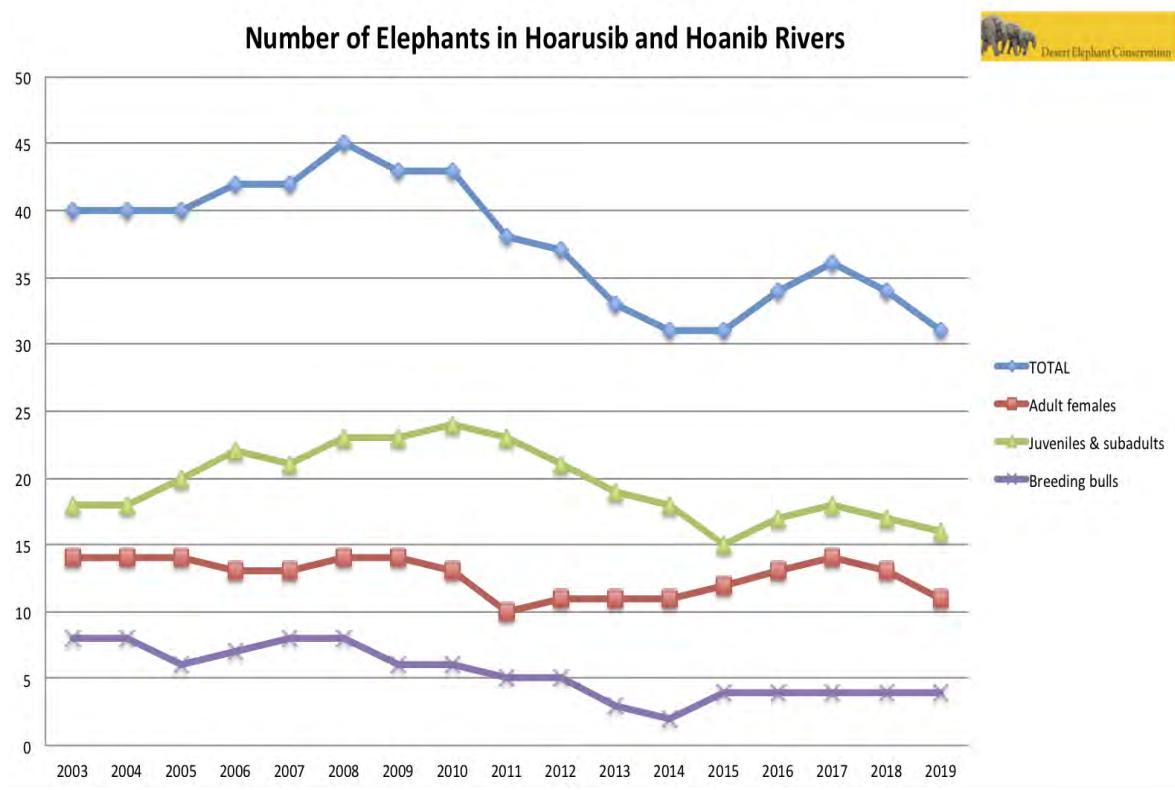


Despite recent gains from calves born (i.e. 2016-2019), the low number of breeding age bulls remaining in the Hoarusib, Hoanib (downstream of Sesfontein), and Uniab subpopulations (2, 2, and 3 breeding age bulls respectively) is a significant conservation concern for the following reasons:

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 greatly increased.
 Third, there has been zero immigration of male elephants from the highlands or Etosha National Park into the Hoarusib and Hoanib since 2009.

There are only 31 resident elephants in the Hoarusib-Hoanib subpopulation as of December 2019 (Hoarusib=11, Hoanib =20, based on exact counts of known individuals and multiple full-length surveys of each river). In 2018 there was a total of 34 elephants, and although there was a gain of seven new calves born in 2019, there was a loss of 10 elephants (3 calves died right after birth, 2 orphaned calves were removed for captive-rearing, 4 female matriarchs died of undetermined causes, and 1 young bull was shot illegally) (Figure 2).

Figure 2. Hoarusib-Hoanib subpopulation composition from 2002 through 2019.



In the Uniab drainage study area, all of the elephants had gone out of the study area due to the severe drought conditions, so we were not able to make an accurate count. The estimate from 2017 of ~50 elephants remains the most current estimate. This subpopulation has remained relatively stable due to the large protected area that it occupies (Palmwag and Etendeka Concession Areas).

The total for these three study areas is ~81 elephants. By comparison, Viljoen (1987) documented 86 individuals in the same area in 1981, during the height of drought and poaching. Our analysis of the data show that temporary population gains made during the mid-late 2000's have been lost, primarily due to the additive effects of human-caused mortality, which account for over half of the adult mortality (see 2015 and 2016 reports). In the long-term, it is doubtful that the desert-dwelling elephant subpopulation will be sustainable if there is continued human-caused mortality.

As previously reported by Viljoen (1987) and us (Ramey-Brown annual research reports), while some dry-season calf mortality can be expected, the observations of calves suggest that drought is not currently a limiting factor to these subpopulations. However, drought, coupled with a disease such as EEHV (elephant herpes virus) may contribute to increased calf mortality.

Our long-term research data shows that for both desert-dwelling elephants and transitional area elephants, home range and migration routes span multiple conservancies, and are therefore a shared responsibility.

It is important to emphasize that boreholes are critical for desert elephant survival in the Hoanib River. Both boreholes at Natural Selection's Hoanib Valley Camp and Wilderness Safaris Hoanib Skeleton Coast Camp provide valuable drinking opportunities for the resident breeding herd and supplement to 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.

Detailed Results

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

1) Hoarusib River elephants = 11 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.

In the **Lower Hoarusib River** (between the coast and Puros Valley), 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, leaving only young males and an orphan 3 year-old calf that usually follows an older brother (19 years-old). The last confirmed sighting of the young orphan was in November 2019, but the river then came down in flood in December, so observations are difficult.

From 7 total in 2018 to only 4 in 2019, the remaining elephants are as follows:

- 1 male breeding-age (~27 years)
- 2 males sub-adult (17, 19 years)
- 1 calf (3 years) (born May 2016 to WKF-16/Left Fang, and now an orphan)

In the **Upper Hoarusib River** (Ongongo, Otjiu West, and upper Hoarusib gorge) there are only 7 elephants remaining, a loss of three from the year before. They are as follows:

- 2 females breeding age (17, 22 years) (Neither has yet to produce a calf)
- 2 female juveniles (5, 9 years)
- 2 male sub-adults (13, 23 years)
- 1 male breeding-age (~32 years)

This group of seven is made up primarily of juveniles and sub-adults, all of whom have lost their mothers. There is not a clear matriarch leading this group but they are often seen with the breeding age male (~32 years) who may provide some protection and guidance. This Upper Hoarusib group of seven mostly resides in the Ongongo area and the gorge above Puros, however they make occasional visits to the gorge below Puros.

2) Hoanib River (west of Sesfontein) = 20 elephants total.

The home range and migration routes of these elephants include: Skeleton Coast National Park, Sesfontein Conservancy, and Palmwag Concession Area. This sub-population consists of:

- 8 females of breeding age (9, 13, 15, 19, 20, 24, 32, ~47 years)
- 3 juvenile females (7, 8, 9 years)
- 2 juvenile males (6, 8 years)
- 2 calves (2, 3 years)
- 3 calves newborn (born in 2019)
- 2 males of breeding-age (27, 34 years)

During the course of our 15-year study, elephants from the upper Hoanib catchment (upstream of Khowarib Schlucht), or from the mountains north of Warmquelle (Otjomatembwa 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 over the past decade indicate that these are now separate subpopulations. The loss of older female and male elephants (poached or killed as problem animals), 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 and habitation which may hinder elephant movement. The decline in the number of breeding-aged bulls in the Hoarusib and Hoanib (four total) is a concern due to the potential for inbreeding (Figure 2).

3) Uniab River

This subpopulation primarily inhabits the Palmwag Concession Area 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.)

Based on 2017 counts, the Uniab drainage has a population estimate of ~50 elephants.

During our field seasons in April 2019 and again in November 2019, the Uniab elephants had gone out of the Palmwag concession due to the extreme drought conditions and we

were unable to locate them for a count. The following population estimate from 2017, ~50 elephants, is the most current information:

In Nov-Dec 2017 a group of 19 elephants was observed in the Kawaxab drainage within Palmwag concession. This group included:

- 8 females of breeding age
- 11 juveniles and calves
- 0 males of breeding age

A separate group of 24 was observed near Spaarwater, after they came out of the Palmwag Concession and went into the hills east of the highway to eat fresh greens that resulted from the early rains. This group (which we call the Achab group) included:

- 11 females breeding-age
- 1 female subadult
- 5 juveniles
- 4 calves
- 1 male subadult
- 2 males breeding-age

This yields a current minimum of 43 elephants in the Uniab drainage based on direct observations in 2017. However, a group of 7 elephants that usually frequent the Barab drainage were not observed in 2017, and if added to the previous number, a total of ~50 is obtained.

According to local guides in the Palmwag concession, and our observations, there are only 3 bulls of breeding age in this subpopulation (not including WKM-20 of the Hoanib who only visits during wet season). One of the three Uniab bulls is the well-known and very calm “Jimbo” (PWM-1) who frequents the campsite, pool bar, and surrounding reeds at Palmwag Lodge. Posted signs warn tourists to be aware of the elephant’s presence and avoid potential accidents. (We observed calm and respectful behavior by both humans and the bull elephant during our stay.) The fact that these three bulls, plus WKM-20, roam more widely outside the concessions and into nearby conservancies means that they may be at risk of being erroneously termed “hunt-able” either as trophies or as problem animals. This would have serious consequences for future reproduction in the Uniab subpopulation.

In April 2019, with the help of Anabeb Conservancy staff member Ronald Karutjaiva, we met with local people living at Okavare, a settlement in the Hoanib drainage upstream of Khowarib Schluct in Omatendeka Conservancy. From them we heard reports of a breeding herd of 16 elephants that visit their borehole, and 2-3 bulls that also frequent the area and use the boreholes. Tracks of two bulls from the previous night were observed. Between April-November 2019 a bull was found dead in the Khowarib Schluct, the result of an illegal killing. We were not present at the time nor able to identify the bull based on photographs.

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.

Appendix A:

Figure A1: Map of the approximate home range of Hoarusib-Hoanib (green) and Uniab (blue) elephant subpopulations. Migration routes between the Hoarusib and Hoanib are indicated by the connecting lines. Mean annual rainfall is portrayed by isolines. These are the same subpopulations as studied by Viljoen (1987, 1988), with occasional, temporary movement outside these home ranges, as described by Lindeque and Lindeque (1991).

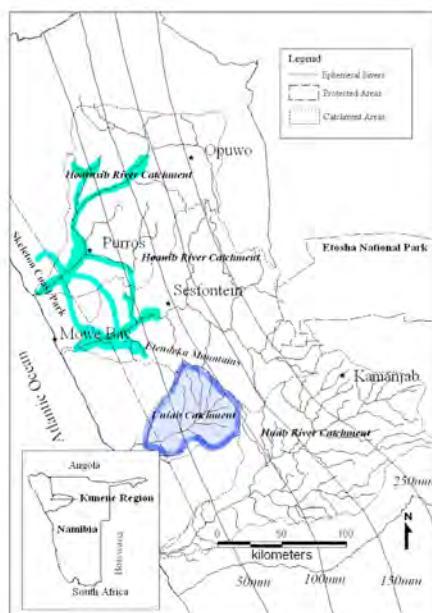




Figure A2. Seven elephant calves were born in Hoanib River between Jan-May 2019. Three died shortly after birth and one was removed for captive-rearing when his mother died suddenly. Three were alive and well in the Hoanib River as of end 2019.



Figure A3. Two of the three surviving calves born in Hoanib in 2019.



Figure A4. WKF-11 (Enforcer) died 24/12/19 in Hoanib near junction of Obias Valley. Her male calf WKF-11/a4 (Goliath) was rescued by authority of MET and transferred to Okutala Etosha Lodge for captive-rearing. (Photo credit: Allu Jauire).



Figure A5. Boreholes are critically important for desert elephant survival in the Hoanib River. Both the borehole at 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 Presidential Boreholes. Tourism at these camps and others nearby lead to increased protection for the elephants and other wildlife, as well as jobs and income for people in the local communities, adding value to wildlife.

Acknowledgements

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