

# Trends in Key African Elephant Populations

The index of trends in elephant populations, summarized on a map of Africa, is derived from aerial surveys indicated by solid lines, and from less certain evidence depicted by dotted lines.

The elephants of Zimbabwe, South Africa and Botswana are more secure than others, either stable or expanding. In the rest of Africa reports of declines still dominate, especially in unprotected areas. Factors causing trends have been discussed in *Newsletter 2*.

The threat to elephants of poachers and the ivory trade has once more come to be generally appreciated.

It will be seen that a common trend of elephants in protected areas is a humpback curve; the upward part is caused mainly by elephants moving to safe areas, followed by a fall usually caused by excessive human predation. Several populations which have so far shown increases may fall later, others may increase as compression continues, but the overall current trend is decline. Apparent increases may in some cases be given by improved censusing.

The proportions each region contributes to the continent's elephant range and population are taken from a best case scenario, which assumes that ranges have changed little since the 1979 maps. These proportions may change when better information is available.

What follows is a selection of trends in key populations which in total give a fair representation of what is happening on the continent. These populations are underlined and can be seen on the map of Africa. It is not comprehensive, but it does summarize all information on trends coming from questionnaire replies received since 1982.

West Africa (3% of range, 2% of population)

Senegal: The only viable population is in the Niokola Koba Park. Aerial counts showed an increase from an estimated 69 in 1967 to a maximum of 450 in 1979. Then the population rapidly collapsed to a current 50, due to poaching for ivory. We received reports from Andre Dupuy throughout the period. Some of the increases may have been due to improved techniques but the decline must be real, and the humpback curve is based on the best data available so far for West Africa.

Mali: Aerial surveys by Watson in Boucle de Baoule, failed to locate elephants in 1981. Only tracks and one dead elephant were seen, and it is possible that five to seven elephants survive out of the population estimated at 70 in 1977, and 20 in 1980 by Lamarche. Another population south-east of Bamako has also declined, according to Lamarche from 60 in 1974, to 35 in 1980 and less than 20 today.

Professional ivory poachers with heavy guns were said to be the cause. Elsewhere in Mali the situation is not better. Four populations are said to have disappeared altogether, other populations are believed to be in severe decline (Olivier, Van Wijngaarden, pers. comm.). The only viable population left is in the Gourma area, but it has never been properly estimated.

Ivory Coast: Roth has just published elephant range maps and estimates for the whole country in *Mammalia*. Elephants are fragmented into 3540 isolated populations and their range has diminished by 83% since the turn of the century. He identifies poaching for ivory as the main cause of the estimated 100% rate of decrease.

Liberia: A new range map has been received from Peal who has called for assistance in putting together a properly organized census as an aid to protecting the species. He believes that the elephants have been declining in all parts of Liberia due to ivory poaching and loss of habitat.

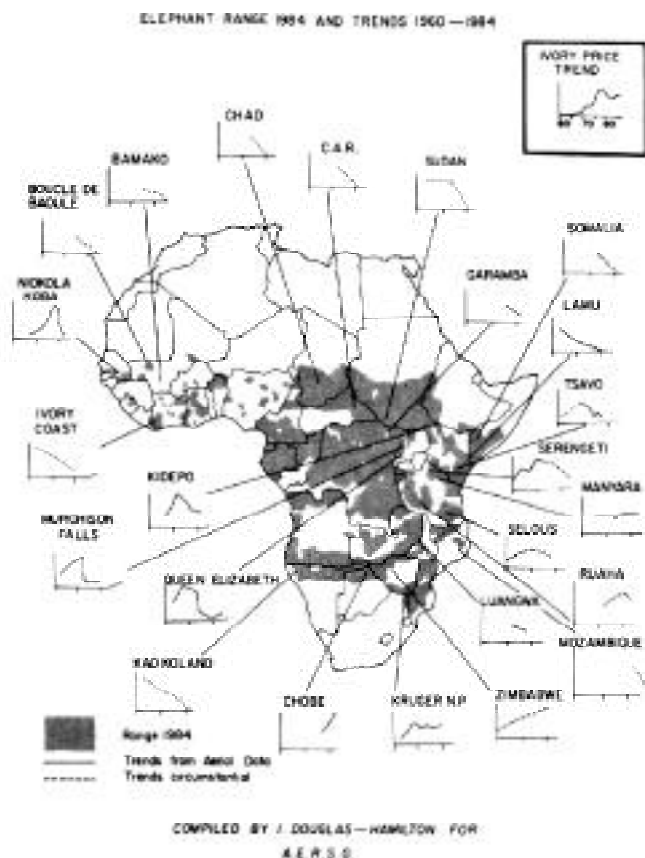
Niger: According to Newby, Parc W, which is shared with Upper Volta and Benin, has become the nucleus for the remaining elephants in the country. Despite poaching pressure, which he estimated at 20-30 elephants killed every year, out of a population of some 600 animals, he believes that the population is fairly stable and that ivory poaching does not seem to be a problem. He believes migration is taking place and that numbers have certainly increased over the last 25 years.

Togo: Additions have been made to our range map by the Directorate of Waters and Forests. The Department claims that there is no poaching of elephants and that the only elephant known to have died in the last year died of old age.

Upper Volta: Elephants were censused in the south-east of the country in 1981 by Bousquet, who returned an estimate of 2,300. Spinage has identified some small populations in the east of the country which have since disappeared. In spite of a hunting ban, poaching has remained at a high level throughout the country.

Central and Northern (61% of range, 37% of population)

Cameroon: Balinga found that the previous range map was accurate apart from an area omitted to the north of Yaounde which has been added and increases the elephant range by 9%.



Allo has modified the northern range suggesting a small reduction. Elephants are said to have increased in both the Waza and Kalamaloue National Parks through immigration from Chad, where a civil war has been raging. The Kalamaloue population has remained highly migratory. Reports on ivory poaching in the south have been conflicting.

Central African Republic: The most recent estimates are 10,000-15,000 elephants remaining in the country, compared to the first estimate of some 80-100,000 in 1976. According to Spinage, Ruggiero, and others ivory poaching has caused the collapse. This agrees with several other sources of information which we have received since 1978 regarding the flourishing and uncontrolled ivory trade and the formidable gangs of poachers operating with automatic weapons who often originate from Sudan or Chad.



*Elephant in Parc National Gounda-St. Floris, C.A.R.*  
[R.G. Ruggiero]

Chad: Ngaragdussou, a biologist working for Waters and Forests in Ndjamena finds the 1979 range map still substantially correct, but has no way of estimating elephant numbers other than to identify a herd of 200-400 that live in the extreme south. Because of the war and intensive poaching, the elephants spend much of their time on the move. There is a considerable commerce in ivory unlawfully authorized by various administrative officials. In view of the numerous forays of Chadian poachers into northern C.A.R., it is reasonable to suppose that the Chadian elephants have suffered a similar decline to those in

C.A.R.

Congo: A reply from Oko, of the Waters and Forests Trade Department, indicates that the range should be extended in the south-west and south of the country. No information was received on numbers or trends.

Zaire: Hillman and Borner's 1983 census in Garamba National Park indicated a decline of approximately 60% between 1976 and 1983. It is likely that surrounding, unprotected areas suffered a more severe decline. Parry suggests that large areas of north-east Zaire bordering Sudan are now devoid of elephants that have been killed by Arab poachers armed with automatic weapons.

In another part of Zaire elephants still appear to be secure. Professional hunter Robin Hurt found dense and undisturbed elephants in 1984 living in hunting block 7 along the C.A.R. border. The elephant population did not appear nervous, and he saw very few skeletons and none that was recent.

Sudan: According to Parry, Arabs from the north, organized into bands of approximately 60 and armed with Kalashnikov and G3 automatic rifles, raid protected and wilderness areas, in the dry season. The poachers are highly mobile, often operating on horseback and camel, nullifying the elephant's prime defence of being able to outwalk its human predators.

There have been a few fragmentary aerial surveys that support the widespread reports that elephant populations have collapsed. In the best case it is likely that Sudan has lost half of its elephants since 1975, but it is not improbable that the elephant decline has been similar to that of Uganda, a population crash of the order of 90% in the space of five years.

Somalia: Elephant poaching in Somalia was almost eliminated between 1971 and 1976. According to Bunderson, the elephants appeared to be expanding northwards, to the dismay of the agriculturalists along the rivers. This range expansion was attributed to effective protection by Abel and Fagotto. Some elephants may also have immigrated from Kenya where poaching was bad at that time. On an aerial survey in 1976 elephant carcasses were found at a highest density along the Kenya border.

Then in 1977 poaching for ivory got under way at a much higher rate. Omar (1981) wrote that elephant poaching, had suddenly increased with the easy availability of automatic weapons, and that the country had lost over half its elephants in the previous five years. (See *Newsletter 2*).

East Africa (14% of range, 29% of population)

Ethiopia: Ashine suggests a slight shift in the range of the southern elephant population, otherwise there is no new information. It is not known how the drought has affected elephants.

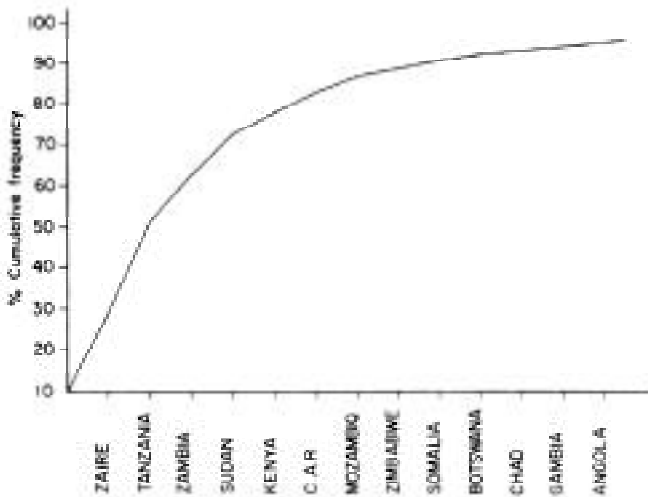
Kenya: The unprotected elephants of Lamu declined from 1976 onwards with poaching reported as exceptionally severe in the 1980 to 1983 period. Elephants have not been seen in the vicinity of the Kiwaiyu Tourist Camp for the last three years, where formerly they were plentiful, especially in the month of August. Apart from Lamu, elephant poaching is not as serious in Kenya as it was in the late 1970s before the ban on private ivory trading. The trend of the Tsavo elephants, still the most important population in the country, has been compiled by Ottichilo and shows the classical humpback curve.

Tanzania: Aerial surveys in the Selous Game Reserve suggest a 20-30% decline in elephants and a 50-75% decline of rhinos in the northern area between 1976 and 1981. If, as is likely, the population increased in the period 1960 to 1975, then the Selous elephants have also followed a humpback curve. The same may be true of Ruaha and Serengeti which showed increases in the sixties and seventies, if they are now in a downward phase. Manyara is a special case, a small park where, elephants initially increased in the fifties through immigration, in the late sixties through natural reproduction, and then in the absence of poaching or culling have remained relatively stable, being controlled by periodic disease.

Decreases in unprotected areas of Tanzania are thought to have been major. A carcass ratio map for Tanzania dated 1977-80 shows high carcass ratios especially in the north of the country.

Uganda: Elephant numbers in each of the three national parks, Queen Elizabeth Murchison and Kidepo followed the humpback curve over the last 25 years. After the severe decline of the late seventies, poaching appears to be held in check by the national parks' rehabilitation programme backed by

DISTRIBUTION OF ELEPHANTS BY COUNTRY



UNDP and EEC, but no new hard information has come in since the 1982 surveys reported in *Newsletter 1*.

Rwanda: Nicole Monfort writes that the 25 elephants still survive and are well in the Akagera Park, survivors of an eradication scheme where adults were shot and small calves were immobilized and transported.

Southern Africa (21% of range, 32% of population)

Angola: A reply from the Ministry of Agriculture indicated that no hard data is available on account of the war. Reports continue of guerrillas trading ivory for arms, but no quantitative measures have been obtained.

Zambia: A count in the Luangwa Valley in 1979, suggested that elephant numbers had declined by approximately 30%. The evidence available suggests that poaching may initially have caused a build up in numbers in the better protected areas, followed by a reduction. Whatever may have been the case formerly, it now appears that the remaining elephants have been compressed with in the national park, and recent reports suggest that despite local overcrowding the overall decline has continued.

Botswana: The country-wide range may be somewhat smaller than thought previously; Botswana is one of the few

countries where elephants may be stable or increasing. Recent aerial surveys in Chobe National Park have returned record dry season concentrations of elephants.

Mozambique: According to Tello, the elephant range still covers a third of the country, but the largest components in the centre and south of the country may have become fragmented between 1975 and 1983. By 1983 Tello believed that elephants in Niassa and Rovuma in the north and Marrromeu in the centre of the country were increasing and expanding their range.

The elephant situation since 1982 has changed radically for the worse through most of the country, with the exception of the north. The national elephant estimate, based on aerial reconnaissance and informed guesswork, fell sharply from about 51,000 in 1982 to about 27,000 in 1984. The actual numbers are not as important as the trend.

The principal reason has been increasing civil strife, with units of the army, the militia and the "resistance" each poaching in areas which they control. Gorongosa National Park has been overrun by rebels of the resistance, who have killed elephants for ivory and meat, reducing their numbers from an estimated 6,000 to 2,000. In the centre and west of the country the fall in elephant numbers is estimated to be of the order of 65% in the space of two years. Only in the Zambezi Utilization area was there some increase, due to immigration of elephants into a relatively safe area. Pitched battles were fought between rebels and wildlife departmental staff in this area.

In the south declines are thought to be more severe, of the order of 76% with the exception of Maputo Reserve, where numbers are still estimated around 200. In the north, Rovuma, Niassa, Cabodelgado ranges seem stable.

Zimbabwe: Cuming quoted a 5% annual increase in a 1981 questionnaire survey. This value is taken for the graph. The secure status of the elephants in Zimbabwe appears to be the result of strong government support for conservation policy.

South Africa: Elephants in the Kruger National Park, after a dramatic increase through immigration and natural reproduction in the sixties, are now held stable by culling.

Namibia: The population of the Etosha National Park is thought to be secure, but the western elephants living in desert conditions in Kaokoland are under threat. 1982 aerial censuses revealed some 220 animals left, which are unanimously agreed to be in decline due to poaching. In the latest Namibia Wildlife Trust *Newsletter*, a figure of 3,000 was quoted for the Kaoko land elephants in 1962 from the Odendaal report, which has been used as the base for the trend graph.

I. Douglas-Hamilton

Note: Sources available from author

## Managing African Elephants for Ivory Production

In the last *Newsletter*, we presented information indicating that large regional populations of African elephants may be in decline due to over-killing. A substantial decline in the number of elephants is to the long-term advantage of no one involved in the ivory trade. Producing nations, carvers and traders will all suffer financial losses.

In light of the economic drawbacks of a large decline in elephant numbers, those involved in the ivory trade should be interested in management strategies that will preserve both African elephant numbers and ivory production at a high level

for the foreseeable future.

In this article we will discuss several general types of management strategies and their effects on long-term ivory production. These management strategies are expressed as regulations of killing patterns.

The results were obtained through the use of a computerized simulation model. Basic parameters of elephant population dynamics, such as natural mortality and fertility, were built in, and a variety of management strategies were tried. Both population response and ivory production were recorded.