(1464) Evolution of dom LAGERA 1984/085
animals. Longman

21

African elephant

I. Douglas-Hamilton

IUCN African Elephant Specialist Group, Nairobi, Kenya

Introduction

Nomenclature

The African elephant can easily be distinguished from the Indian species. It has an arched back and large ears. The head is sharply angled, compared to the Indian's bulbous dome, and is carried at a higher angle. Two subspecies are generally recognized, *Loxodonta africana africana*, the larger bush elephant, and *cyclotis*, the forest elephant. The subspecies can interbreed and hybrid populations exist. The bush elephant is found mainly in savannah in South, East, Central and West Africa, in semi-desert in Namibia, and in the Sahel as far north as the Assaba mountains in Mauritania. The forest elephant lives in forests of West and Central Africa, and some savannah areas such as the Garamba National Park in northern Zaire.

Present distribution and status

Although greatly diminished, the range of both subspecies is still extensive, of the order of 7 million km^2 but often at very low densities (Fig. 21.1) (Douglas-Hamilton 1979). The IUCN

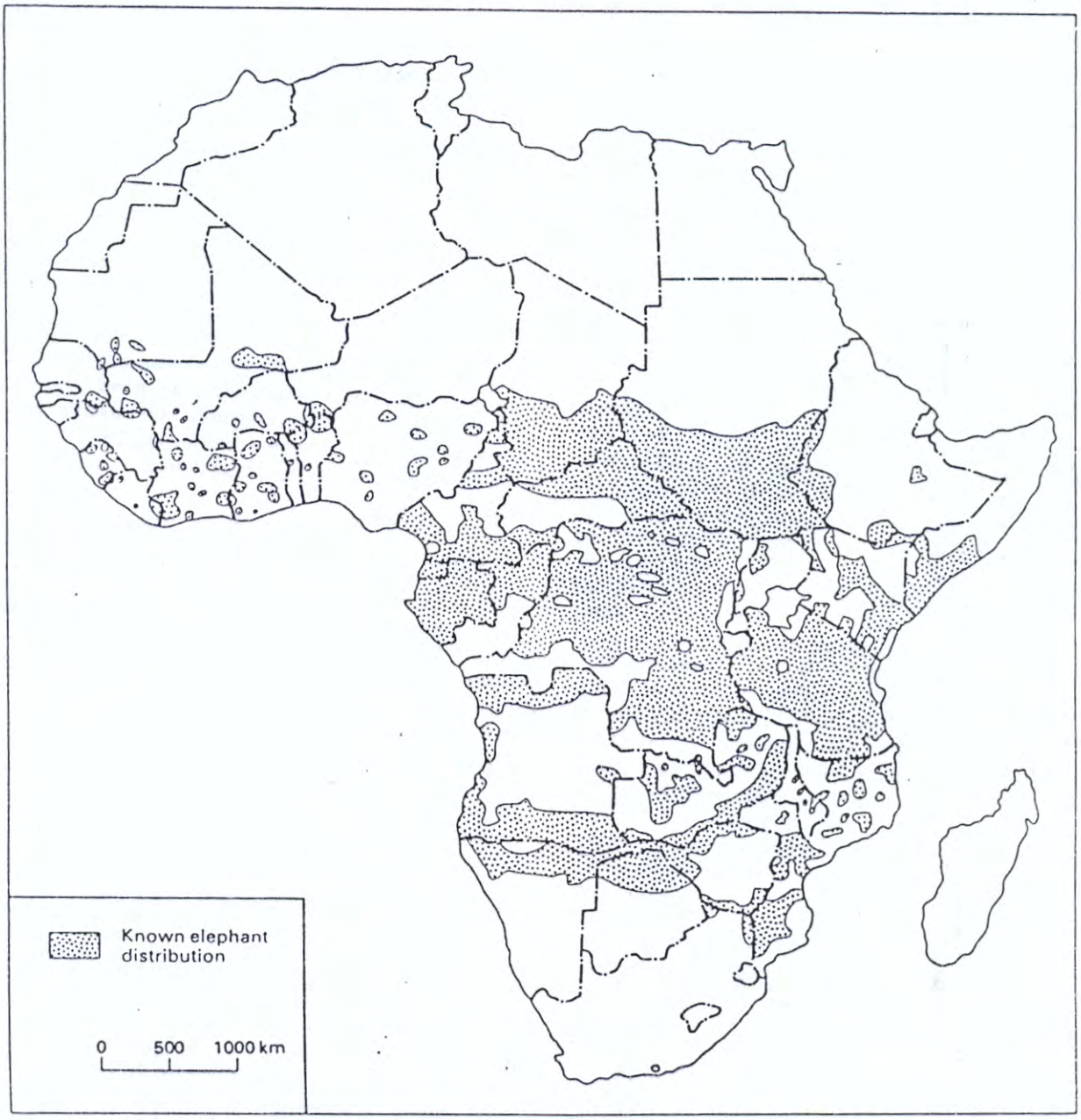

Fig. 21.1 Known distribution of African elephant. (From Douglas-Hamilton 1979)

Elephant Survey estimated a continental minimum of 1.3 million elephant between 1976 and 1979 (IUCN 1980). However, the majority of populations were reported to be decreasing due to the ivory trade and a rapid loss of range in the face of expanding cultivation. The introduction and spread of automatic weapons in Africa is now endangering the elephants in many areas where they were formerly regarded as safe.

Biology

The African elephant usually produces one young

at a time, but twinning occurs at a frequency of approximately 1 per cent. Some populations exhibit a marked breeding season (Hanks 1969, Laws 1969), but mating can occur in any month. Copulation usually takes place after a short chase by the male who mounts the female from the rear and remains up for some 120 seconds.

The gestation period is 22 months after which the young have a prolonged period of dependence on the mother and family unit which may last for 15 years or more, making it uneconomic to domesticate elephants from birth. Elephants, both Asian and African, are usually caught in the wild when already 5–15 years old. There have, therefore, been no attempts at selective breeding to improve the domestic stocks. However, the elephant's potential longevity is 60 years and the working life may be 30 years or more (Laws 1970, Sikes 1971).

Early domestication

Knowledge of tamed elephants reached Egypt at least as early as 1500 B.C. and an engraving of a domestic Asian elephant appears on the tomb of the vizier Rekhmir. However, there is no historical record that African elephants were domesticated until the Ptolemaic dynasty began capturing them for their armies about 270 B.C. When Alexander the Great died (323 B.C.) his generals, including Ptolemy, vied for his empire, and in the battles that followed war elephants originally captured from India were used, playing much the same role as a tank force. Victory often went to the side with the larger number (Gowers 1953). When Ptolemy, in Egypt, was cut off from the Asian supply of war elephants by the Seleucid dynasty, he and his son turned to the African continent to renew the supply. Expeditions sailed down the Red Sea as far as modern Eritrea, and the Horn of Africa. Ptolemy also sent envoys to Meroë, capital of a semi-hellenized civilization of the Upper Nile, in whose culture elephants played an important role. According to Scullard (1974), the Kingdom of Meroë had already domesticated elephants, although whether or not the technique had been learned from the Orient is not known. In any event, African elephants were vital to Ptolemy for his army, and while Indians probably helped with the training, he may also have obtained expert assistance from Meroë.

The only time African elephants were pitted against Asian elephants was at the battle of Raphia (217 B.C.) and contemporary accounts attest the superior size and training of the Asians. There is some possibility that the African elephants belonged to a small North African race now extinct, as is convincingly argued by Gowers (1948).

Use of African elephants in warfare spread from Egypt to Carthage with Hannibal's famous crossing of the Alps and, after the defeat of the Carthaginians, was carried on by the Romans in a relatively minor way, with the last recorded use being made by Mark Anthony in 43 B.C. Thus, for a period of 250 years, the ancients domesticated hundreds, if not thousands, of African elephants, and made use of them in scores of major battles (Scullard 1974). The main use of the elephant was to neutralize the enemy cavalry, break up the line of the infantry and breach walls or fortified encampments, or, if they faced other elephants, to take them on in individual duels. In many cases, cavalry facing elephants for the first time became quite uncontrollable.

The elephant behaviour described in ancient accounts was often no more than a pattern found normally in the wild. For example, a matriarch, if sufficiently aroused, may charge a pride of lions, a group of hyaenas, or a party of human beings on foot, with her family following on a broad front (Douglas-Hamilton 1972). Just as prisoners were trampled to death by the war elephants of the Greeks, the Carthaginians and the Romans, so have lion cubs been observed destroyed by elephants in the Lake Manyara National Park (Makacha and Schaller 1969). Again, leaning against walls until they topple, is much the same as leaning on trees for the same purpose.

What is more remarkable is that the ancients were able to switch on aggression by command, apparently sometimes with the additional stimulus of alcohol. Elephants in the wild, when facing an enemy, are usually finely balanced between fight and flight, and most charges are made as a demonstration, followed by withdrawal. One would not expect an excited elephant to distinguish readily between friend and foe. In many ancient battles the elephants charged the enemy and then retreated through their own lines, causing havoc to friend and foe alike.

There are also ancient accounts of war elephants being made to fight each other to the death. In the wild, bull elephants kill each other only extremely rarely. Presumably, this happens only when the animals are on musth, a hormonal condition of heightened aggression and sexuality, well known in the Asian species, when elephants become dangerous to their keepers, and which has recently been conclusively demonstrated in the African species through intensive behavioural observations (Poole and Moss 1981). Normally, however, bulls know each others' strength and a simple threat display, such as a head-shake or nod in the direction of the rival, is a sufficient signal of aggression to allow the weaker one to escape and the stronger to assert his superiority without any stress.

After the fall of Rome and Carthage, the African elephant disappears from the history of warfare and domestication, apart from fragmentary references to its being used by the Ethiopians in their battles against the Arabs.

Recent domestication

For thirteen centuries, there is no mention of domesticating the African elephant, and the knowledge gained by the ancients was lost. It was not until the end of the 19th century that the question again arose. King Leopold II of Belgium was struck by the intelligence, dexterity and usefulness of Asian elephants which he encountered in Ceylon (Sri Lanka). He financed an expedition in 1879 from Bombay, with four Indian elephants and thirteen mahouts, which arrived on the east coast of Africa, near Dar-er-Salaam, and set off to cross half the continent. Unfortunately, the elephants died one by one, and by the time they reached Karema, on Lake Tanganyika, only one remained. However, the expedition was judged a success in that elephants could be moved over long distances of Africa, despite the fact that the entire expedition was wiped out on the way home by an attack of Ruga-rugas.

Efforts were resumed in the Congo some 20 years later, once again at the instigation of the Belgian king. After studying native methods, the officer in charge of the project, Commandant Laplume, tried using pitfalls covered in branches, one of the time-proven methods used not only in Africa but also by cavemen to trap mammoths in Europe, and at times by the Ptolemys and the Carthaginians. The first elephant that fell into one of the pits was rescued by its family who broke down the retaining walls. The next one apparently died of shock. After these initial reverses, a modification of the Indian *khedda* system, where elephants are driven into stockades, was tried. Unfortunately, although the elephants walked into the traps, they proved to be quite intractable and the Belgians were forced to release them (Laplume 1911, Leplac 1918).

All this early experimenting lacked both Indian mahouts and trained monitor elephants which could be used to quieten new captives. Eventually, the Belgians developed a technique in which the capture teams literally ran the elephants down, splitting up large herds into small units and scaring other elephants away from the selected calf and its mother with blank shots. The commandant would ride out on a horse in front of the mother, distracting her, while the men on foot lassoed the calf by the feet and tied it to trees. Then monitor elephants were brought up to calm the captive and lead it away (Denis 1962). They learned to avoid taking animals that were either too small, as these invariably died, or too large, in which case they were untamable. Heights between 1.5 m and 1.8 m were judged the best (Huffman 1931). The method of capture remained the same for 30 years, but the capture teams acquired such dexterity that eventually they were taking animals that were near adult (Offermann 1930). The record size was 2.13 m. New captives were broken in according to methods brought from India. Local Azande tribesmen were trained as 'cornacs' by professional Indian mahouts, and even adopted a version of one of the Indian elephant songs which they sang to their elephants as they took them down to the river every day. To be a cornac was a matter of pride and status.

The elephants were used in many places and learned to draw carts. They were harnessed to ploughs and handled logs in the forests. An experiment to compare their efficiency with tractors was conducted at Bambesa cotton station in 1928. During the ploughing season, which corresponded with the rains, an elephant could work without stopping in wet soil, whereas the tractor

would frequently skid or subside in soft patches. When it came to negotiating obstacles like termite hills, the elephant could surmount them easily whereas the tractor was likely to turn over. Again, when the plough snagged on a rock, the elephant would immediately sense the obstruction and ease off before breaking the tackle. Finally, the elephant needed no imported fuel, oil, or spare parts, nor any mechanical knowledge on the part of its driver. In those days, taking into account the labour conditions of Africa and the frequent breakdown of tractors, the elephant was considered faster than a tractor and certainly much more economical (De Jongh 1929).

By the end of 1930 there were thirty elephants in use at Api, and forty in the new training school of Gangala-na-Bodio both in northeast Congo (now Zaire) (Huffman 1931). Of these, four had been born in captivity. Other countries, however, did not follow suit (Caldwell 1925).

With increased mechanization in the 1950s, and cheaper fuel, the use of elephants even in the Congo began to loss its economic edge over other forms of traction. The school diversified its activities, sold trained elephants to zoos and circuses and, until the eve of Independence in 1960, encouraged their use in scientific research and in the film industry (Lefebvre 1960). In the next often chaotic 20 years, the elephant school survived by a thread. When the station was overrun by Simba rebels, the cornacs hid their elephants in the bush and for 2 years kept them alive, bringing them food secretly, even though they themselves were unpaid. Many of the elephants died, but when I visited them in 1974 there were still nine left. Two of them were monitors, of which one, Wanda, had been born in captivity in 1929. However, the harness had rotted and rusted away, the carts were out of order, and the elephants were kept going more as a tradition than for any possible earnings.

Unfortunately, the great boom in tourism experienced in East Africa during the 1960s never developed in Zaire. Had it done so, the elephants could easily have been used to carry visitors to view the wild animals, as they are in the Kaziranga Park in Nepal. That this would be feasible is proved by the highly trained African elephants at the Basle Zoo which take thousands of visitors every year for rides on their backs, and which I have seen showing the utmost good nature and consideration for children runing between their legs.

Future prospects

Elephant domestication in Africa could only survive through drive, vision, organization, money and a market. Ironically, now that Zaire and other African countries are experiencing chronic deficiencies in transport, fuel and spare parts, the elephant could once more help with ploughing and carrying of goods. Unfortunately, although African cornacs were depicted on coins in Hannibal's time, 2000 years ago, elephant training has not survived in African culture, and the Belgian experiment was too short-lived to reintroduce the practice. It is unlikely that the domestication of the African elephant will survive the five ageing elephants and their cornacs still alive, in 1981, in the remote northeast of Zaire.

References

Caldwell, K. (1925) Elephant domestication in the Belgian Congo. *Journal of the Society for the Preservation of Fauna of the Empire*, Part 7: 71–82

De Jongh, E. (1929) Emploi des éléphants à la station de selection cotonnière de Bambesa (Uele). *Bulletin Agricole du Congo Belge*, 20: 283–4

Denis, A. (1963) *On Safari*. Collins: London

Douglas-Hamilton, I. (1972) on the ecology and behaviour of the African elephant. D.Phil. Thesis, Oxford

Douglas-Hamilton, I. (1979) African elephant ivory trade study. Final Report to U.S. Fish and Wildlife Service. (Typescript)

Gowers, W. F. (1948) African elephants and ancient authors. *African Affairs*, 47: 173–80

Gowers, W. F. (1953) The African elephant in history In: *The Elephant in Central East Africa*, ed W. C. O. Hill *et al.*, pp. 143–50. Rowland Ward London

Hanks, J. (1969) Seasonal breeding of the African elephant in Zambia. *East African Wildlife Journal* 7: 167

Huffmann, C. (1931) La domestication de l'éléphant au Congo Belge. *Bulletin Agricole du Congo Belge* 22 (1): 7–22

IUCN (1980) IUCN *Bulletin* 2 (1/2): 1–16.

Laplume, J. (1911) La domestication des éléphants au Congo. *Bulletin Agricole du Congo Belge*, 2: 405–1

Laws, R. M. (1969) Aspects of reproduction in the

African elephant *Loxodonta africana*. *Journal of Reproduction and Fertility*, Supplement 6: 193–217

Laws, R. M. (1970) The biology of the African elephant. *Science Progress*, 58: 251–62

Lefebvre, R. (1960) Note concernant le soixantième anniversaire des expériences de domestication de l'éléphant au Congo Belge. *Service des Eaux et Forêts Chasse et Peche. Bulletin*, 7 (25/26): 655–61

Leplac, E. (1918) La domestication de l'éléphant d'Afrique au Congo Belge. *Bulletin Agricole du Congo Belge*, 9: 37–77

Makacha, S. and Schaller, G. B. (1969) Observations on lions in the Lake Manyara National Park, Tanzania. *East African Wildlife Journal*, 7: 99–103

Offermann, P. (1930) La capture et la domestication des éléphants dans la province Orientale. *Bulletin Agricole du Congo Belge*, 21: 384–7

Poole, J. H. and Moss, C. J. (1981) Musth in the African elephant, *Loxodonta africana*. *Nature*, 292 (5826): 830–1

Sikes, S. K. (1971) *The National History of the African elephant*. Weidenfeld and Nicolson: London

Scullard, H. H. (1974) *The Elephant in the Greek and Roman World*. Thames and Hudson: London

22

Dog

Juliet Clutton-Brock

Department of Zoology, British Museum (Natural History), London, England

Introduction

Nomenclature

Despite their great array of sizes, shapes, and colours, domestic dogs throughout the world are sufficiently interfertile and sufficiently similar in their basic characteristics to be treated as a single domesticated species, the *Canis familiaris* of Linnaeus. In his *Systema Naturae* of 1758 Linnaeus listed the dog as a species separate from the wolf, *C. lupus*, and other wild canids. *Canis familiaris* has subsequently been designated the type of the genus which could cause problems if agreement were to be reached on the removal of domestic animals from formal zoological nomenclature. The question need not be discussed here, however, because in order to be consistent with the rest of the book the vernacular name 'dog' will be used. This term, when applied, together with the names of the breeds adequately describes the domestic animal in all its variations and distinguishes it from the other members of the genus *Canis*, these being the wolf, coyote, and four species of jackal.

Linnaeus divided domestic dogs into eleven groups based on differences in the carriage of the