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## The historical background

An object of worship, a target of hunters, a beast of burden, a burden to the people, gentle in captivity, dangerous in the wild, the pride of kings, the companion of mahouts, a machine of war, an envoy of peace, loved, feared and hated, the elephant has had a glorious and an infamous association with man in Asia. For its sheer contrast and splendour, this association is unequalled by any other interaction between animal and man in the world.

The Asian elephant (*Elephas maximus*) once held sway over a vast region from the Tigris–Euphrates in West Asia eastward through Persia into the Indian sub-continent, South and Southeast Asia including the islands of Sri Lanka, Java, Sumatra and Borneo, and into China northwards up to the Yangtze-Kiang. It has disappeared entirely from West Asia, Persia, Java and most of China. Its distribution over the Indian sub-continent and Southeast Asia is restricted largely to forested hilly tracts, which are usually the last habitats to be taken over by human settlements.

The current status of the Asian elephant, and its conservation problems, can best be understood in the context of its historical association with people. I therefore begin with an overview of the elephant's interaction with people through the centuries, resulting in its depletion in the wild. The historical account is confined to the Indian sub-continent, for which the literature is more extensive and better known than for any other region. This is followed by a review of the elephant's present-day distribution and conservation problems. In subsequent chapters I discuss the ecology of the elephant in the wild and elephant–human interaction. Finally, suggestions for conserving the elephant while minimizing its conflict with people are made.

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### 1.1 **The period before Christ**

The long and diverse evolutionary history of the Proboscidea, beginning with *Moeritherium* from the Eocene, has left only two living species, the African elephant (*Loxodonta africana*) and the Asian elephant (*Elephas maximus*). Man has been a predator of the Proboscidea since the Pleistocene. Pre-historic hunter-gatherers presumably viewed the elephant only as a source of meat, bones, hide and ivory. Stone Age hunters certainly killed elephants and their contemporaries, the mammoths and the mastodons, as revealed by archaeological remains and cave paintings in Europe, Africa, and Asia (references in Carrington 1958 and Freeman 1980). The earliest indications of domestication of the elephant are the engravings on seals of the Indus valley civilization, dated as third millenium bc (Rao 1957). There were probably wild elephants in this area during that period. The Dravidian people of the Indus civilization were displaced into southern India by the so-called Aryan invaders during the third millenium bc. The settlement of the Indo-Gangetic plains must have accelerated the reduction of natural vegetation and of the elephant population. Ancient literature such as the Rig Veda (twentieth to fifteenth century bc), the Upanishads (ninth to sixth century bc) and Gajasastra (Sanskrit for 'elephant lore') record details of the elephant's distribution, its life and habits (mixed with mythology, exaggeration and imagination) and instructions on its capture, training and maintenance. The Gajasastra, attributed to Palakapya (sixth to fifth century bc), mentions the presence of elephants in practically the whole of India, including the present states of Rajasthan, Punjab, Gujarat, Madhya Pradesh, Andhra and other places from which they have now disappeared. The conflict between elephants and people for cultivated crops, which must have begun with the times of shifting cultivation, would have intensified when settled agriculture became established in river valleys. In an obvious reference to crop raiding, the Gajasastra records that elephants devastated the kingdom of Anga ruled by Romapada.

We can only speculate that the capture and training of elephants, which was practised by the Indus people, became an occupation of the Aryan people. To this day one can see the traditional difference in the method of capturing elephants. In the north the Aryans captured entire elephant herds in stockades, whereas in the south the Dravidians captured them singly or in small numbers in pits (Stracey 1963). Once the elephant was domesticated and put to the service of man, it triggered the decline of its wild relatives. The clearing of the wilderness was made easier by using elephants to fell and transport timber. Trained elephants became indispensable in capturing and domesticating wild elephants.

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The next logical step must have been to use this large beast as a war machine. It is not known when the elephant was first used in war. In the Mahabharatha (c. 1100 BC) there is mention of an elephant named Aswathamma, which was killed in a battle between the Pandavas and the Kauravas. Cyrus the Great of Persia was killed in a battle (530 BC) with the Derbikes, who were supplied with Indian elephants. One of the first documented instances in which an army with elephants suffered a decisive defeat was the famous battle (326 BC), between Alexander the Great and the elephant army of Porus, on the banks of the Jhelum. This does not seem to have decreased the passion of kings for possessing war elephants; elephant armies continued to exist in the Indian sub-continent for another twenty centuries.

Chandragupta, the Mauryan emperor who defeated Alexander's successor Sellucus Nikator, had an army of 9000 elephants; other rulers in the sub-continent had between them at least 5000 elephants during this time. The Mauryan kingdom imported elephants from other regions of the sub-continent and probably also from Sri Lanka (see the testimony of Megasthenes referred to by Digby (1971); however, Trautmann (1982) says that elephants from Ceylon, i.e. Sri Lanka, did not go to the Mauryans but to Kalinga or Orissa). Thus in northern India a trade in elephants was set up from at least the third century BC.

During the second and first millennia BC, the kings and chieftains of the more advanced Aryan civilization, cultivating the river valleys, might have introduced a taboo on killing elephants for meat; elephants were more useful alive in their armies. Supplies of elephants may have come largely from hill forests inhabited by shifting cultivators and hunter-gatherers, who may have gradually ceased consuming elephant meat and, instead, captured elephants for the Aryan armies. Kautilya's Arthashastra (c. 300 BC to AD 300), a manual of statecraft, advised that elephants were to be eliminated from river valleys under settlement but preserved in the outer hill forests. It recommended setting up elephant sanctuaries, on the periphery of the kingdom, which were to be patrolled by guards. Anyone killing an elephant within the sanctuary was to be put to death. Interestingly, the Arthashastra also instructed that elephant calves, elephants with small tusks, tuskless males, diseased elephants, female elephants with young and suckling females were not to be captured, but a 20-year old elephant should be captured (see translations by Shamasastri 1960 and Kengle 1972). This effectively meant that only adult male tuskers could be captured; in a sense this was also a prudent way of harvesting the elephant population (discussed in Chapters 11 and 12). No doubt, these instructions were not always practised; we know that entire herds were captured by the *kheddah* method of driving them into stockades.

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### 1.2 **The period after Christ**

Information on certain aspects, such as elephant distribution or numbers of domestic elephants, is sketchy until the tenth century. The Tamil Sangam literature of southern India has many interesting references to the elephant's habits (Varadarajaiyer 1945). It mentions the presence of elephants in the Tirupati hills of Andhra, where they are now absent. Many tribal chieftains owned considerable numbers of elephants. A pointed reference is made to the abundance of male elephants (no doubt, tuskers) in the hilly country (the Western Ghats of Tamilnadu and Kerala) ruled by the Cheras.

The worship of the elephant god, Ganesha, which originated in the third or fourth century, must have created a strong ethos against the killing of elephants. Ganesha worship reached the Tamil land only during the Pallava regime of the seventh century. Hill tribes in the south certainly hunted elephants for their tusks and consumed elephant meat, probably before this time.

The role of the ivory trade in the decline of the Asian elephant cannot be clearly evaluated. Ivory objects are known from pre-dynastic Egypt, Assyria, Greece and Rome, and later mediaeval Europe and the Islamic countries (Freeman 1980). The principal centres of ivory carving in the East were China, Japan and India. The supply of local Indian ivory was never sufficient to meet the demands of the trade. The harvest of Indian elephants for ivory must have been relatively low because only male elephants carried tusks and tuskers were valued for armies. Thus, African ivory from Ethiopia was imported by India from the 6th century BC onwards (Warmington 1974). Part of this ivory could have been simply in transit to other regions, particularly China. Ivory and ivory objects were also supplied by India to Greece and Rome. The rise of the Babylonian and Persian civilizations across the land-routes between India and the west created a more extensive trade in Indian than in African ivory (Warmington 1974). The Roman trade in ivory was particularly large. How much of the Indian ivory supplied to the west was carved African ivory that had been imported is not known. Ivory from Indian elephants was certainly exported; the best quality ivory is reputed to have come from elephants in Orissa.

Whatever the impact of the ivory trade on elephant populations, the spread of settled agriculture and captures must have eliminated them from large tracts of the Indo-Gangetic plains and river basins in peninsular India by the tenth century. From the eleventh century onwards the rulers in the north obtained few of their war elephants from wild stocks in their own region.

The possession of a large *pil-khana* (elephant stable) was a matter of

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prestige to the northern rulers. An elephant army was still a psychological force to reckon with in direct battle. The Sultans of Delhi, who used elephants, lost their only battle to a foreign and elephantless army in AD 1398, after a successful reign extending over two centuries. The Ghaznavid kingdom had 1670 war elephants in AD 1031 (Digby 1971). This dropped considerably during the period of the Delhi Sultanate (AD 1192–1398). At the height of their power (c. AD 1340) the Delhi Sultanate possessed 3000 elephants, of which only 750–1000 were war elephants, the rest being young elephants or those unfit for battle. Most of the elephants in the Sultanate seemed to have come as captures from enemies in southern India, as tribute from subordinate rulers or imports from various regions including eastern Bengal, Sri Lanka and Pegu in lower Burma (Digby 1971). For instance, Sultan Malik Kafur received as tribute or captured a total of 512 elephants during his third Deccan expedition. The trade in elephants was a complex affair; for instance, elephants from Sri Lanka were exported through southern India and Gujarat, whereas those from Pegu may have been sent through Bengal and Sri Lanka. The import of elephants by the Sultanate was not necessarily due to a total absence of wild stocks from northern India, although it does imply serious depletion. Elephants from certain regions, such as Sri Lanka, were imported because they were considered especially suited for use in war. When the Sultanate was overthrown in AD 1398 by Amir Timur, the *pil-khana* had a mere 120 war elephants.

The invention of gunpowder reduced the effectiveness of the elephant in war, although elephants certainly fought in direct battle lines along with explosive weapons during the fourteenth century. Once rapidly firing artillery and hand guns came into use during the sixteenth century, the elephant ceased to be of any value in direct battle. It continued to be used as a perch for the commander, a siege engine and a haulier of war materials until the nineteenth century.

References to the distribution of wild elephants again surface from the writings of the Moghul rulers of the sixteenth and seventeenth centuries (Salim Ali 1927). Some of these elephants may have been in isolated populations, but others were certainly part of a more widespread distribution over central India adjoining the present elephant range in Orissa. Emperor Babur (AD 1526–30) noted that the elephant ‘inhabits the district of Kalpi and the higher you advance thence towards the east, the more do the elephants increase in number’. Abul Fazl’s *Ain-i-Akbari*, a chronicle of the times of Emperor Akbar (AD 1556–1605), records elephants in many parts of central India including Marwar, Chanderi, Satwas, Bijagarh, Raisen and Panna. Jehangir (AD 1605–27) described an elephant hunt in Dohad in the

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Panchmahal hills. The elephant hunts of the Moghul rulers seem to refer only to capture and not to killing of elephants, although other animals were killed during their sport hunts. There was hardly any breeding of elephants in captivity.

The Moghuls continued to build up elephant stocks in the same fashion as the Sultanate rulers. Their stables contained even more elephants than earlier. Jehangir is supposed to have possessed 12 000 elephants and over 40 000 in his empire (Jardine, cited by Olivier 1978*a*). Digby (1971) concedes that considerable numbers of elephants may have been maintained by the Moghuls throughout their kingdom, but considers such high figures as wild guesses and unlikely in view of the much smaller numbers available during the period of the Delhi Sultanate. Part of the confusion lies in the fact that only a fraction, usually less than one-third, of the total numbers held would be suited for direct use in war. It is also not clear whether the higher figure of 40 000 refers to the total numbers of tame and wild elephants estimated to be present within the kingdom. Nevertheless, it is not an impossible figure even if this refers only to tame elephants. Over-exploitation of the wild population, combined with the high longevity of elephants, could have resulted in a large domestic stock for at least a short period. Statistics of elephant captures during the nineteenth and twentieth centuries support such a possibility.

Whatever the true numbers of elephants held by the Moghuls, it is certain that the wild populations of central India, from Dohad (74° E) eastward to Mandla (81° E) were for all practical purposes wiped out (see Fig. 2.2). The distribution of elephants during the late Moghul period seems to have persisted into the nineteenth century. Jerdon (1874) gives its distribution as the Himalayan foothills from Bhutan westwards to Dehra Doon, and in central India from Midnapore (Bengal) to Mandla (Madhya Pradesh) and south nearly to the Godavary. He also mentions that elephants had recently disappeared from the Rajmahal hills. At least three distinct elephant regions had emerged: those in southern India, in central India and a long narrow belt along the Himalayan foothills from Dehra Doon in the northwest extending into northeast India. Each region had further fragmented populations. In the south, certain hills of the Eastern Ghats such as the Shevaroy and the Kollimalais still held small elephant herds. Francis (1906) mentions that elephants were also seen in the Kalrayans during the mid-nineteenth century, though they had disappeared by his time. By the late nineteenth century there were many isolated herds in central and northern India (Imperial Gazetteer of India 1907). References to stray herds mention Nahan and Ambala (Punjab), Udaipur state (Rajasthan), Bilaspur district (Madhya Pradesh) and Parkal (Andhra Pradesh). These highlight the process of habitat fragmentation, isolation and the ultimate disappearance of elephants.



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Another element accelerated the decline of the elephant: sport hunting of elephants introduced by the British, probably during the seventeenth or eighteenth century. The *shikar* literature of the nineteenth century testifies to the slaughter of elephants in the Indian sub-continent, Sri Lanka and Burma. Prior to 1873 the government offered rewards for the killing of elephants, both male and female and of all sizes, in order to control damage to crops. Fletcher (1911) records that one man alone killed about 300 elephants, mostly cows and calves, in the Wynad of southern India. In neighbouring Sri Lanka about 3500 elephants were shot in the Northern Province in three years up to 1848, and 2000 were shot in the Southern Province during 1851–55. One man named Rogers alone killed 1300 of these elephants (references are given in Gooneratne 1967 and Olivier 1978a). In October 1873 the Elephant Preservation Act came into force in the Madras Presidency. However, elephants could still be killed on private land. The British also began cultivating tea and coffee on a large scale in the hills of northeastern India and the Western Ghats of southern India during the nineteenth century. Many planters were also hunters.

The twentieth century has witnessed an increase in the human population in India from 236 million in 1901 to an estimated 790 million in 1988. The opening of new land for agriculture along the Himalayan foothills has separated the northwestern and northeastern elephant populations. Since independence in 1947 the accelerated development of industry, hydroelectric and irrigation dams, mining and agriculture has further reduced the elephant's habitat. Once the forests of the Western Ghats and the Terai were rid of malaria, they became home for immigrants from the plains. The last strongholds of the elephant had been conquered by man.

The story in other Asian countries has many similarities and some differences with the Indian situation. These are summarized by Olivier (1978a) and will not be repeated here. In China a major difference was that elephants did not have any religious significance and were usually exterminated as vermin. Elephants enjoyed a close cultural and religious association with man in Sri Lanka, Burma, Thailand and Kampuchea. In Malaysia and Sumatra a former cultural association with elephants has died.

The twentieth century elephant still finds a place in human affairs in Asia. It greets visitors to temples and carries tourists inside wildlife sanctuaries in India. Burma's force of 5400 domestic elephants is vital to its logging industry. During the Second World War (1939–45) the elephant was prized by both the British and the Japanese in their battle for Burma. While armoured tanks were firing in Europe, these skilled 'sappers' were patiently constructing roads and bridges, and transporting troops and supplies across treacherous terrain in Burma (Williams 1950). More recently, during the

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Vietnam War, elephants were bombed by American planes to prevent the Vietcong from using them as transport. In a way, the elephant has not yet died as an instrument of war.

### 1.3 **Elephants captured during the nineteenth and twentieth centuries**

The number of elephants captured for domestication or eliminated through shooting during the nineteenth and twentieth centuries in Asia far exceeds the present wild population (Table 1.1). Between 1868 and 1980 the available figures of captures in the Indian sub-continent add up to 19 000 elephants, assuming that an annual average of 400 elephants were captured in Assam for ten years during the late nineteenth century. Considering the lacunae in data, it is estimated that between 30 000 and 50 000 elephants would have been captured or killed in control measures during this period. Whatever the true numbers, the offtake has been consistently very much higher from northeastern India than from southern India. This is due to differences in the traditional capture methods. Entire herds were taken in the north but only solitary animals in the south, with the exception of the *kheddah* captures in the southern Mysore state, introduced by G. P. Sanderson in 1874.

Elephant populations in Sri Lanka were also seriously depleted through capture and slaughter during the nineteenth century. Nearly 17 000 elephants were captured during 1911–82 in Burma. The steady decline in the average annual numbers captured in Burma indicates a decline in wild populations. The available figures suggest that over 100 000 elephants have been captured in the whole of Asia during the past century. After the elephant was domesticated about four thousand years ago, anywhere between two and four million elephants may have been captured by man.

I have gone through this short exercise in history and numbers not to establish exact figures but merely to give an idea of the intensive interaction between the Asian elephant and people, resulting in enormous depletion in habitat and elephants. The magnitude of decline has been far greater for *Elephas maximus* than for *Loxodonta africana*. The Asian elephant has declined primarily because of reduction in habitat and captures, whereas the African elephant has been subject more to hunting pressure. About 0.6 million *Loxodonta* still inhabit a relatively large proportion of the African continent, although their numbers are also declining (Douglas-Hamilton 1987), whereas less than 50 000 *Elephas* are now confined to a small fraction of their original range.



Elephants captured in 19th–20th centuries 9

Table 1.1. *Partial record of elephants captured or killed in Asia during the nineteenth and twentieth centuries*

Region	Number of elephants captured/killed	Period of capture	Number of years	Average number per year	Remarks and source of information
Indian sub-continent					
Northeastern region					
Dacca hills	413	1868–76	7	59	Sanderson (1878)
Chittagong	85	1875–76	1	85	Sanderson (1878)
Dacca hills	503	1876–80	3	168	Balfour (1885)
Assam	c. 400	late 19th century	1	400	Annual catch in Garo hills for at least 10 years. Imperial Gazetteer (1907)
Lakhimpur, Assam	39	1904	1	39	Imperial Gazetteer (1907)
Garo hills, Assam	255	1911–14	3	85	Stracey (1963)
Goalpara, Bengal	621	1916–17	2	311	Stracey (1963)
Sibsagar–Naga hills	900	1934–36	3	300	Stracey (1963)
Assam	3026	1937–50	12	252	Figure supplied by E. P. Gee to Deraniyagala (1955)
Assam	1200	1955–60	6	200	Stracey (1963)
All northeast states	5564 +	1961–80	20	278	Lahiri Choudhury (1986)
	586	1961–80	20	29	Declared as rogues and shot
Southern India					
Mysore	718 +	1874–99	25	29	Kheddah captures, Neginhal (1974)
Mysore	1119	1904–71	69	16	Kheddah captures, Neginhal (1974)
Cochin	28	1902–04	3	9	Imperial Gazetteer (1907)
Mudumalai	130	1910–26	17	8	Forest department records
Madras Presidency and Tamilnadu	525 +	1926–80	55	10	Captured in pits, compiled from Forest Department records
Burma					
	8340	1910–30	20	417	Blower (1985), based on other references. See also references in Olivier (1978a)
	3740	1930–50	20	187	
	2940	1950–70	20	147	
	1560	1970–82	12	130	
	3370	1928–41	13	259	Elephants destroyed. References in Olivier (1978a)
Malaysia					
Perak	88	1948–69	22	4	All references for Malaysia in Olivier (1978a). All records of elephants shot or poisoned
Entire country	174	1960–68	9	19	
	36	1970–76	7	5	
Sri Lanka					
Matara	149	1829	1	149	Captured
Matara	370	1850	1	370	Captured
Northern Province	c. 3500	1845–48	3	1167	Shot
Southern Province	c. 2000	1851–55	4	500	Shot. One person named Rogers alone shot 1300 elephants. References in Gooneratne (1967) and Olivier (1978a)

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### Status and distribution of the Asian elephant

The first comprehensive review of the status and distribution of the Asian elephant was that of Olivier (1978a), made mainly on the basis of existing literature and a questionnaire survey. Since then the efforts of the Asian Elephant Specialist Group of the International Union for Conservation of Nature and Natural Resources, with the help of the World Wide Fund for Nature, have produced a more accurate picture, especially in surveyed areas of the Indian sub-continent, Sri Lanka, Thailand and Sumatra. These surveys have generally revealed that more Asian elephants exist than was hitherto believed. However, vast areas of the elephant range in Southeast Asia have yet to be systematically classified. Estimates of elephant numbers, even for surveyed regions, are mostly educated guesses. The logistics of systematically covering the densely forested regions of Asia are overwhelming. Unfavourable political conditions prevent field work in many countries.

This chapter provides an update of the status and distribution of the Asian elephant and outlines the major conservation issues. Most of the information summarized here is available only in unpublished reports of projects sponsored by the Asian Elephant Specialist Group of IUCN and by the WWF (Santiapillai 1987). The distribution of elephant populations often cuts across political boundaries over the continental mainland and also in certain islands of South and Southeast Asia.

Elephants occur in the following regions and countries.

- (a) Indian sub-continent: India, Nepal, Bhutan and Bangladesh.
- (b) Continental Southeast Asia: China, Burma, Thailand, Kampuchea, Laos, Vietnam and Malaysia.
- (c) Island Asia: Andaman Islands (India), Sri Lanka, Sumatra (Indonesia) and Borneo (Malaysia and Indonesia).