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GAJAH is the official journal of the Asian Elephant Specialist Group (AsESG) of the Species Survival Commission (SSC) of the World Conservation Union (IUCN). The journal is intended as a medium for communication by members of the AsESG of important issues that concern the conservation and management of the Asian Elephant (*Elephas maximus*) both in the wild and in captivity. **GAJAH** welcomes communications and research papers on all aspects of the Asian elephant. **GAJAH** is aimed at professionals, biologists and academics carrying out research on Asian elephant, government and non-government organizations involved in its conservation, and interested members of the general public. All articles published in **GAJAH** are deemed to reflect the individual views of the authors and not the official points of view, either of the Asian Elephant Specialist Group (AsESG) or the Species Survival Commission (SSC). **GAJAH** is a non-profit publication that is supported by financial assistance from the U.S. Fish and Wildlife Service.

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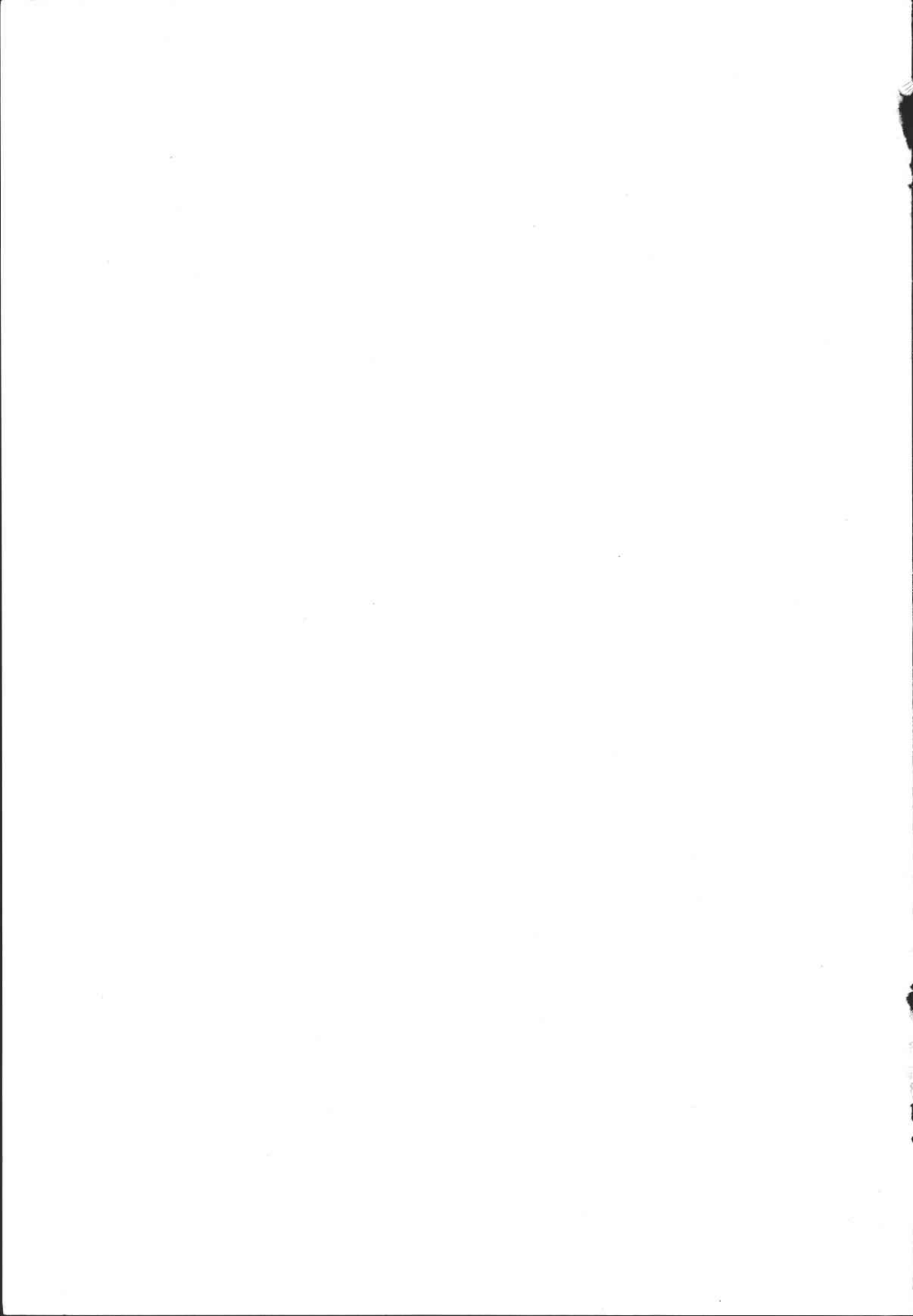
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Counting elephants in the wild

People in general are curious to know just how many elephants there are in an area. They are obsessed with numbers. Laymen often make the mistake of assuming that since elephants are so huge that it would be relatively easy to count them accurately in the field. Sometimes the less somebody knows about a subject, the easier they find a solution to it. Unfortunately, it is more difficult to count elephants in a forest than fish in a pond. As Cynthia Moss (1988) who has studied elephants in the wild in East Africa for more than two decades points out, it is precisely because they are so large that we can miss those animals that are either hidden behind the bulk of some huge ones or enclosed within a herd. Even in the grasslands of Sri Lanka where elephants are easily observed, sometimes one has to count a small herd of elephants several times before the exact number of animals can be determined.

To a fishery biologist, the number of fish of a particular species in a pond is important, as it constitutes a biological unit. But for an ecologist studying elephants, the size of an elephant population has very little biological significance, as the population cannot be circumscribed in the absence of clear boundaries. As Graeme Caughley (1977) argues, "density rather than size provides the biologically real measure of abundance", and "the majority of ecological problems can be tackled with the help of density, absolute estimates of density being unnecessary luxuries". Numbers do not represent much more than informed guesses. A population of 100 elephants in a particular area today would be of little significance if its habitat is to be converted to a sugarcane plantation or a housing estate in a few years' time.

Ideally, the collection of data on elephant numbers should be left to the management authority using qualified and experienced staff and standardized methods. In Sri Lanka, given the plethora of 'experts', elephant data are collected by a multiplicity of agencies and individuals using a variety of methods. Elephants are usually counted either from the air or from the ground. Ground surveys involve total counts by recognition and registration of individuals, or more commonly, dung counts. In Africa, where the bush elephant (*Loxodonta a. africana*) can be spotted easily as it moves across open savanna grasslands, the quickest technique for its census is the aerial survey conducted from fixed-wing aircraft or helicopter. Even aerial surveys are subject to considerable bias, and hence spot surveys on foot should be carried out in selected areas to establish 'ground truth' (Said *et al.*, 1995). But in Sri Lanka where the dense and tangled nature of the vegetation in the low country dry zone makes it difficult to observe elephants, aerial surveys are useless.

Estimating elephant numbers is not only difficult but expensive as well. The first attempt to estimate the number of elephants in Africa was made by Iain Douglas-Hamilton

in the 1970s, who arrived at an estimate of at least 1,300,000 animals. By 1987 the number of elephants in Africa was estimated to have declined to 750,000, and the African elephant was therefore placed on Appendix I of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1989. Today only about 600,000 animals are estimated to be present in Africa. Much of the information on elephant numbers in Africa and Asia is pure guesswork. Given the uncertainty, in Africa elephant numbers are assigned to four groups, **Definite**, **Probable**, **Possible** and **Speculative** (Said *et al.*, 1995). Thus the lack of accuracy of the number of elephants in the wild is not something unique to Asia.

The Asian Elephant Specialist Group (AsESG) of IUCN's Species Survival Commission (SSC), puts the number of wild elephants in Sri Lanka as anything between 3,000 and 4,000. It would not be possible to come out with an accurate estimate for the total number of elephants in the wild in Sri Lanka given that much of the north and east of the island could not be surveyed, because of two decades of war. The last survey of wild elephants in Sri Lanka was carried out by the Department of Wildlife Conservation in June 1993. Although the survey revealed that at least there were a minimum of about 2,000 elephants in the so called "safe areas" (Northwest, Mahaweli, Central, Eastern and Southern regions), the objective was not to estimate the number of elephants, instead it was designed to determine the structure and composition of the various groups of elephants that were encountered. The study provided information on the age and sex ratios, proportion of calves and percentage of tuskers in the populations.

All the gains in agriculture, literacy, healthcare in Sri Lanka are being undercut by one basic fact: the island's human population has increased from 3.6 million (or 55 people per sq.km) in 1900 to more than 19 (or 290 people per sq.km) in 2003. The trend in natural forest cover runs counter to the human population growth. As the forester R.W. Szechowycz (1956) pointed out almost 50 years ago, "Ceylon (as Sri Lanka was then known) from a point of view of forestry is analogous to a crowd of people moving happily around a floating ice which melts quickly till finally nothing stands under their feet". With an estimated forest cover of less than 23%, we are rapidly heading towards this situation. With the conversion of forest to other land uses, the elephant is running out of space in Sri Lanka. Most of the protected areas inhabited by elephants are small, less than 1,000 sq. km in size; nevertheless elephants, especially the bulls, may range over hundreds of square kilometers. The land/man ratio has declined from 2.7 ha in 1871 to less than 0.35 ha in 2000. The factors adverse to the survival of the elephant outside the protected areas stem not only from sheer growth in human population but also from the demands of the urban rich for goods of the kind that contribute to the degradation of elephant habitat. Their sheer size and gargantuan appetite mean that elephants and people cannot live together where agriculture is

the dominant form of land use, unless the damage they cause to farmers can be compensated. There are no easy solutions for resolving the human-elephant conflict in Sri Lanka. Much will depend on how rural people, gripped in the poverty vortex associated with poor soil and unreliable rainfall, perceive the worth of the elephant. To stop the wanton killing of elephants requires changing the perceptions of the farmers who suffer constant depredations from the animals. The capture of some elephants as a short-term solution was recommended long ago by Mr. Christy Wickremasinghe (retired Divisional Game Ranger of DWC) in 1964. The Ex-

President of the Wildlife and Nature Protection Society, Mr. Thilo Hoffmann too recognized the need to capture, over a few decades, as many as 1,000 elephants from areas outside the protected reserves. Unfortunately, their recommendations fell on deaf ears. Many are now convinced that the only way man and elephant can exist successfully in the same environment is through finding ways to use the elephant as a sustainable economic resource. In the final assessment, it is understanding rather than sentimentality that will do most for the conservation of the elephant.

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A herd of elephants in Minneriya National Park, Sri Lanka. (photo: S. Wijeyamohan)