

## The first national survey of elephants in Sri Lanka

‘For a number of reasons peculiar to Ceylon, it is a practical impossibility to make anything but a very approximate estimate of the total elephant population of this island.’

A. M. Morgan-Davies<sup>1</sup>

It is difficult to imagine Sri Lanka without its elephants, for they are so much a part of our culture, religion, history, literature, mythology, folklore and even politics. Nevertheless, elephants in Sri Lanka have an image problem: there are too many groups interested in them, and each group sees them differently – conservationists love them, cultivators loathe them.

The Department of Wildlife Conservation (DWC) carried out the first national survey of elephants in Sri Lanka from 11 to 13 August 2011 (ref. 2). Even before the exercise was over, it was criticized by a few people and their criticisms were widely highlighted in the media. This was rather unfortunate, for much of the criticism expressed by them was misplaced. The misunderstanding was largely due to either the inability or unwillingness of a few to distinguish between a survey and a census of elephants.

The principal objective of the survey was to determine the structure and composition of the herds that make up the population of elephants in Sri Lanka. The estimate for the minimum number of elephants was just a by-product.

An understanding of the structure and composition of a population of elephants is far more useful for its management than simply knowing its number or density (i.e. the number of elephants per unit area). A population of 100 elephants in a particular area today is of little significance, if its habitat is to be turned into a housing estate in a few years. Besides, as anyone who has studied elephants in the wild would know, it is impossible to count them in the dense and tangled vegetation of Sri Lanka<sup>3</sup>. Even on open grassland, it may not be possible to make an accurate count of a small herd as long as the animals remain bunched together (Figure 1). In Africa, elephants have been counted from fixed-winged aircraft on grasslands. But in Asia, it is virtually impossible to count elephants in this way.

Given such constraints, DWC opted to document the structure and composition of individual groups in order to determine the proportion of calves, juveniles, sub-adults, adults, tuskers and record the observed group sizes, sex ratios, and activity patterns. This can only be done when elephants are observed. Elephants in the wild can only be observed if and when they emerge from their forest habitat onto the grassland to feed or when they move to a water hole to drink.

Some of the critics questioned why the DWC did not carry out an indirect assessment of elephant numbers based on dung counts? This was not done for a number of reasons. First of all, estimation of population density was not the main objective. Furthermore, the proposed indirect method of estimating elephant numbers requires cutting literally hundreds of straight-line transects, each 2 km long, through elephant habitat (forest and grassland), and recording the dung piles that an observer sees on either side while walking along the transect, and measuring their perpendicular distance from the transect line. One can easily miss dung piles in the thorn scrub vegetation of the forest in Sri Lanka. Besides, you need to know the rate of dung deposition of the wild elephant over a 24 h period. You also need to know the rate at which these dung piles deteriorate, decay and disappear completely. This too cannot be done in Sri Lanka given the monsoonal pattern of rainfall. Before all the dung piles could deteriorate, decay and disappear, the monsoon rains will sweep them away

from the study site, as we have experienced. But even if you were to do this successfully, you will only end up with a density value, i.e. the method will tell you that there are ‘so many elephants per square km’. This was not the objective.

That is why the DWC decided to carry out a survey and not a census of elephants. By observing elephants that come to graze on open grassland or when they visit the water holes to drink, observers trained by the DWC recorded the elephants they encountered during the survey according to sex and age (e.g. calves, juveniles, sub-adults and adults). Particular attention was given to the presence of tusk-bearing elephants. Such information is invaluable for the DWC to study the performance of the population. The presence of numerous calves in a population signifies successful reproduction and turnover, while too many old or post-reproductive individuals may indicate a declining population. By repeating the survey at regular intervals of 3 or 4 years, even in parts of the elephant range, it would be possible for the management authority to monitor the rate of growth of the elephant population.

Although the survey was carried out for three days, by looking at the data for just one day and deleting all the doubtful ‘double counts’ and taking into consideration only the highest total recorded at each site, an estimate of the ‘minimum number’ of elephants was obtained. No one will ever know the absolute size of the elephant population (i.e. total number). The survey has revealed that there could be at least 5879 elephants in the



**Figure 1.** A herd of elephants feeding on grassland during the dry season in Wasgamuwa National Park, Sri Lanka (photo: Charles Santiapillai).

wild, of which 3285 (55.9%) were adults, 1487 (25.3%) were sub-adults, 731 (12.4%) were juveniles and 376 (6.4%) were calves.

The observed adult male to female sex ratio ranged from 1 : 1.01 in the Southern Wildlife Region (WLR) to 1 : 1.69 in the Northern WLR, while the national average was 1 : 1.09. Such least skewed adult sex ratios are indicative of low poaching pressure, which is a direct consequence of the fact that there are fewer tusk-ers in Sri Lanka compared to South India, where almost 90% of the bulls are tusk-ers. Hence, ivory poaching is not a major threat in Sri Lanka as it is in South India.

In 1993, tusk-ers constituted 7.3% of the bulls in Sri Lanka. By August 2011, the proportion of tusk-ers had declined to 5.3%. But this is not all doom and gloom if one considers the fact that these are all minimum estimates, and furthermore, there appears to be slightly more tusk-ers among the sub-adults: 35 tusk-ers from a total of 453 animals, thereby making the proportion sub-adult tusk-ers to be 7.7%.

Elephants appear to be breeding well in almost all wildlife regions. A total of 376 calves (less than a year old) were recorded from 5879 animals. Thus, calves represent 6.4% of the total population. However, the number of calves per 100 adult females ranges from 25.9 in the Northern WLR to 37.5 in both the Eastern and Northwestern WLRs.

The survey has shown that the island has a viable elephant population. The presence of a high proportion of young elephants (calves and juveniles) and the unbiased sex ratios suggest that the population, in all likelihood, is growing. The key to the stability of an elephant population is low death rates among

adult females, usually not more than 2–3% per year<sup>4</sup>. In Sri Lanka, much of the elephant mortality in the human–elephant conflict is targetted against the bulls and not at the adult females<sup>5</sup>.

As Samuel Johnson once said, ‘Round numbers are always false’. In 1981 the African Elephant Specialist Group agreed there were 1.1 million elephants in Africa<sup>6</sup>. This estimate was based on a questionnaire survey and not on any rigorous method. The quality of the estimate varied from rigorous surveys to wild guesses. On the other hand, Uganda’s Chief Warden, Rene Bere suggested that there were only about 300,000 elephants in the whole continent<sup>7</sup>. Douglas-Hamilton<sup>8</sup> argued that Africa’s elephants had declined to 500,000. Thus if we accept the starting estimate of 1.1 million, then the population had indeed declined by 55%. However, if we took Rene Bere’s estimate, the population had in fact increased by 67%. Both estimates cannot be right.

The DWC must be given full credit for having carried out successfully such a survey of elephants across the entire range of the species in Sri Lanka. Only a government institution such as the DWC has the required manpower, expertise and resources to carry out such a survey. As Caughley<sup>9</sup> argues, estimates of abundance have no intrinsic value and only a small number of management problems (e.g. sustained yield harvesting) requires information on the size of a population or its density. Many biological problems can be resolved even in the absence of an estimate of abundance.

Sri Lanka may have more ‘elephant experts’ than elephants. This is why there are almost as many opinions on the mana-

agement of elephants as there are people who hold them. There is an old African proverb that says it is the ground that suffers when elephants fight. This has been turned on its head in Sri Lanka: the elephant suffers as conservationists fight.

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