

## Editorial

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“How many wild elephants are there globally, in a particular region, country, or location?” is the universal question we are asked as conservationists, scientists, managers or simply people interested in elephants. Unfortunately, as Asian elephants live in low visibility habitats and are secretive and largely nocturnal, the answer to this question has been very elusive.

A variety of methods have been developed for counting elephants, such as direct aerial, vehicle, foot and waterhole counts of elephants; indirect estimates based on sign, dung and footprints; and individual identification based on genetics or photography and mark-capture or rarefaction curves. They range from the quick and dirty to highly technical. Obviously, ones with error estimates are preferable to those that only provide a number with no indication of how far or close to the truth that number is. Methods that estimate densities require a leap of faith in extrapolation to area extent, to arrive at the all important ‘number’. The proliferation of techniques is good evidence that there is not a single method that is easily applied, accurate and precise.

Given the difficulties in estimating it, why do we need to know the ‘number’? At a global-scale, perhaps to assess conservation status. The ‘number’ may help non-technical people relate to the threat to the species. If the global population of Asian elephants is 40,000 and that of African elephants is ten times that, the Asian is obviously more ‘endangered’. Are ‘guesstimates’ based on impressions of people who are in the field adequate for this purpose? If our estimate is 40,000 but there were actually 20,000 or 80,000 elephants does it matter? Would the species conservation status change significantly?

Does it have a bearing on resource allocation? Does the estimate of ten times less Asian than African elephants mean that Asian elephants get a greater share of global conservation funds? Consider the rhinos. Global population estimates

for each species are around 11,000 white; 3000 black; 1500 Indian; 200 Sumatran and 50 Javan. Does the allocation of global conservation funding have any relation to the respective numbers? Or if we take subspecies; 4 northern vs 11,000 southern white; 2 Vietnamese vs 50 Indonesian Javan rhinos. Did the provision or lack of resources play a role in the demise of those subspecies? Did the ‘number’ not help?

Perhaps the ‘number’ is important to monitor the success or lack of it of global conservation efforts? Published estimates for global numbers of Asian elephants since 1978 have ranged from 28,000-42,000 (Olivier 1978), 23,000-41,000 (Shoshani & Eisenberg 1982), 34,470-53,710 (Santiapillai & Jackson 1990) to 41,410-52,345 (Sukumar 2003). What do these numbers mean? Has the population over this 25 year period gone up, down, remained static or can we not say?

What about at the level of a country? Does it even make sense to state a ‘number’ of elephants where countries share borders and elephants range across them? Is it any better for island populations? Country estimates for Sri Lanka have ranged from 1500 (Norris 1959), 1600-2200 (McKay 1973) 2000-4000 (Olivier 1978), 5000 (Hoffmann 1978), 2700-3200 (Santiapillai & Jackson 1990), 1967 (Hendavitharana *et al.* 1994). Estimates for Sabah (Borneo) have ranged from 2000 (H. Keith 1949), 500-5000 (Banks 1949), 500-2000 (Davies & Payne 1982) to 1100-1600 (WWF-AREAS 2006). Again what do these numbers mean? Do they reflect real ups and downs? Did elephants in Sri Lanka actually increase from 1500 in 1951 to 5000 in 1978 and decrease to 1967 in 1994? Considering such estimates as real numbers could pose a very real danger to elephant conservation, as it can give completely erroneous impressions of success or failure of conservation efforts.

Could we use the ‘number’ to plan conservation strategies? Can we determine a-priori how

many elephants we want to have in a country - perhaps through Population Viability Analysis? An effective population of 50 may have an extinction probability of 0% over 100 years, which changes to certainty of extinction over 500 or 1000 years. If we want to account for genetic viability of populations, the number could be 5000 or 10,000. As the paper by Sitompul *et al.* in this issue states, the actual demographic parameters on which PVAs are based are not available even for well studied populations like Way Kambas. Even if we can come up with a desired number what then? Let's say we decide that a particular country should have 5000 elephants. Let's also assume that we can count accurately to the last elephant. We do the count and find that there are 20,103 elephants. Do we cull 15,103 because we only want 5000? Or let's say we find there are only 467. What are we going to do to increase it to 5000? Can we force them to breed more?

At the third level, we may want to know how many elephants there are in a particular location. Here again, does it make sense to talk of the number in a park if the home ranges of elephants are not restricted to the park? Maybe we want to know the number in a location because it is going to be developed or there is very high human-elephant conflict, and the elephants have to be removed. We want to decide whether to remove them by driving, capture-translocation, domestication or culling. Then we need to know how many elephants we are dealing with, because it will determine the method and logistics. However, even to get at the correct number of elephants

in a circumscribed area is no easy task. In Sri Lanka, the estimated number of elephants for the Walawe Left Bank drive area of about 500 km<sup>2</sup> was 116. When the drive was done in 2006, 200+ elephants were driven into the Lunugamvehera National Park and probably over 300 elephants still remain in the drive area.

So overall, the 'number' is probably impossible to get at for global, regional and country-wide scales, and its relevance to actual conservation is questionable. It is probably of value at local scales, for planning and monitoring the impact of management activities, which however, needs accuracy and precision. Unfortunately, the quick and dirty methods are neither accurate nor precise, so we have to rely on the more technical methods. These require a high degree of training, skill, expertise, funds, time and dedication.

What then of global, regional and country-wide scales? Is there any other way of assessing conservation status? What about the IUCN criteria of 'extent of occurrence' and 'area of occupancy'? Would these provide a better, more objective way of assessing and monitoring conservation status? Asian elephants have and continue to lose a significant extent of range, which can be objectively estimated at global, regional and country-wide scales. Would that then not provide hard data that is accurate, precise and easily collected over large areas, allowing better assessment and monitoring? These are issues we need to ponder as members of the AsESG.



'Elephant wall' at 'Yatala Seya' a 2300 year old stupa in Tissamaharama, Sri Lanka

Photo by Prithiviraj Fernando