Group size and population structure of megaherbivores (gaur *Bos gaurus* and Asian elephant *Elephas maximus*) in a deciduous habitat of Western Ghats, India

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Grouping is an important phenomenon influencing major aspects of social animal lives, such as predation pressure, pathogen pressure, aggression, foraging success, metabolism and sexual selection in animal community (Reiczigel et al. 2008). Moreover, group size is likely to be an insightful reflection of the immediate effect of important ecological parameters such as habitat structure, spatio-temporal distribution of food and predation pressure on group formation (Barrette 1991; Sankar 1994; Raman 1997). Group size varies widely within and between species (Altmann 1974; Geist 1974; Jarman 1974; Clutton-Brock and Harvey 1977; Rodman 1981). Group size is experienced by an average individual (Jarman 1974). Though average individuals come from groups larger than the average group size, another measure called “crowding” was used (Lloyd 1967; Stokols 1972; Marsden 1972; Reiczigel et al. 2008) in which an individual lives or is referred to group size experienced by any individuals.

Age structure of a population is useful for understanding dynamics of population growth and estimating life history parameters (Spillet 1966; Stearns 1992). Age structure of a population expressed as the distribution of the number of individuals in each age group reflects fecundity, mortality, reproductive status and population increase. It is an important measure of demographical change over time (Caughly 1977). Sex ratio is an indicator of the reproductive potentiality of a species. A high percentage of young as compared to adults generally indicates a fast growing or thriving population in contrast to a relatively smaller percentage of young that usually indicates a sluggish rate of population increase. A population with more females than males generally has a higher reproductive potential than the one that is predominantly composed of male (Spillet 1966). De and Spillet (1966) suggested that more or less 1:1 sex ratio may usually be found in an area free from selective shooting or predation. Poaching of adult male Asian elephant (*Elephas maximus*) has significantly altered their sex ratio in the Western Ghats (Arivazhagan 2005; Sukumar 2006). Birth of calves is timed to minimize environmental or energetic stress on mother or offspring (Leuthold and Leuthold 1975).

The gaur (*Bos gaurus*) and Asian elephant populations co-occur in India with the exception of the Central Indian highlands from where the Asian elephants have become extinct (Krishnan 1972). Gaur belongs to the wild oxen and Asia is home to them. It is the largest member of the family Bovidae. The Wyandad-Nagarhole-Bandipur-Mudumalai complex in Western Ghats constitutes one of the most extensive strongholds of viable gaur and elephant populations in India (Santiapillai and Jackson 1990; Ranjitsinh 1997; Sankar et al. 2001; Sukumar 2006). Rapid loss and fragmentation of forests, diseases, illegal hunting, ivory poaching of elephant, conflicts with people and escalating anthropogenic pressure seem to be the primary cause of decline of the gaur and Asian elephant population in India (Sankar et al. 2001; Sukumar 2006). Gaur and Asian elephant are categorized as vulnerable and endangered respectively by IUCN Red Data list (Duckworth et al. 2008; Choudhury et al. 2008) and listed in Schedule I of the Indian Wildlife Protection Act (1972). In the Indian sub-continent, studies give detailed information on group size and population structure of gaur (Schaller 1967; Sahai 1977; Chandiramani 1983; Moorthy 1989; Karanth and Sunquist 1992; Bhattacharya et al. 1997; Prayurasiddhi 1997; Vairavel 1998, Sankar et al. 2001; Kumar et al. 2004) and Asian elephant (Mckay 1973; Oliver 1978; Shahi 1980; Ishwaran 1981; Sukumar 1985; Karanth and Sunquist 1992; Easa and Balakrishnan 1995; Kurt et al. 1995; Katugaha et al. 1999; Arivazhagan 2005; Williams et al. 2007). Megaherbivores need more food and space than smaller herbivores. Habitat loss and frag-