

Translocation of problematic tuskers: Lessons learnt from practical experience with an Asiatic tusker (*Elephas maximus*) in Hosur forest division, Tamil Nadu, INDIA.

K. Ulaganathan¹, Dr. S. Paulraj² and S. Manoharan³

¹Conservator of Forests

²Executive member, TASPEF

³Forest Veterinary Officer

Man-Elephant conflicts are common in most of the elephant countries all over the world. Invasion of elephant herds or single tusker to human habitation is occasional or regular depending upon the places. Since it is a problem involving life and damage to human, it is viewed seriously by the government agencies and various measures to tackle the problem are in vogue in different parts of the country. Of all problematic issues concerning invading elephants, the issue of invasion by single adult tuskers is considered the most serious one since driving away an adult tusker from human habitations into the forests involve risks of more damage to property and human life. Many occasions, translocation would be the most practical solution to solve the problem of the invaded tuskers. By our practical experience with translocation of tusker, we learnt a lot in solving problems connected with translocation of tuskers. The whole episode has been videotaped for presentation. The following are the common problems encountered with the translocation of tuskers: i. Restricting the area of the movement, ii. Successful tranquilizing techniques, iii. Loading onto the truck and transporting and iv. Releasing into the forests and monitoring. Our practical experience with successful translocation of a problematic adult tusker, we learned a lot that can pave the way to further translocations of tuskers without problems. The present paper outlines various problems that are likely to occur with translocations and explains how to tackle them successfully.

The impacts of dehorning on the southern white rhinoceros (*Ceratotherium simum simum*)

Samuel G. Penny, Rachel L. White, Dawn M. Scott, Angelo P. Pernetta

School of Pharmacy and Biomolecular Science, Huxley Building, University of Brighton

Despite high rates of dehorning, few studies have investigated whether horn removal has an abject effect on rhinoceros health or behaviour. The process of dehorning removes a large portion of a rhino's horn mass without causing apparent injury to the animal. This is done for either conservation reasons, in the hope that it reduces their attractiveness to poachers, or for economic reasons, through the speculative stockpiling of horn. This study seeks to determine whether southern white rhinoceros (*Ceratotherium simum simum*) exhibit an observable physiological or behavioural response to dehorning, through either temporal variation in hormone levels or changes in sociality. It is hoped that this will inform future conservation policy and aid the debate on the reestablishment of the horn trade. Following exposure to a stressor, rhinos have been shown to experience elevated concentrations of adrenal steroids and suppressed concentrations of gonad steroids; these hormones can be reliably detected through the analysis of faeces. Faecal samples were collected from horned and dehorned rhino, both of which were darted over the course of the study period. Samples collected before or during immobilization will indicate baseline hormone levels, with subsequent samples collected at one to two week intervals indicating any consequent changes. Ongoing monitoring of hormone levels over a six-week period allows for the decoupling of the impact of immobilization on recorded levels from any effects of dehorning. Hormone metabolites were extracted in the field by adding faecal matter (0.15 g) to 90° ethanol (0.75 ml) and distilled water (0.75 ml). Samples were then vortexed (5 mins) and centrifuged (15 mins, 1,500 rpm) and

the resultant supernatant removed and refrigerated until analysis. Concentrations of corticosteroids, testosterone and progesterone were then determined by immunoassay. Preliminary analyses indicate that hormone levels can be reliably detected following storage for a number of months, with initial corticoid levels averaging 778 ± 876 ng g⁻¹ (n = 30). Faeces collected from an injured female shortly before death produced the highest value, at 4729 ng g⁻¹. The horns of rhinoceros are important for territorial defense but their evolutionary significance may also relate to foraging behaviour, maternal care and mate choice. The few existing studies to look at horn status have focused on black rhinoceros (*Diceros bicornis*), where horn size was found to confer dominance advantages. To investigate impacts on white rhinoceros, groups of horned and dehorned individuals were observed at two field sites in South Africa and classified by their age (based on body sizes) and gender. All dyadic interactions were recorded, with agonistic interactions scored as either a win or a loss to assess the dynamism of within-group dominance hierarchies. Data on location, group composition and habitat type were also recorded. Preliminary analysis (using generalized linear mixed models) will be presented here in order to establish how horn status influences group stability and sociality. Further data collection will continue to help identify whether behavioural or physiological changes exist between horned and dehorned rhino and provide insight into how effective dehorning is as a conservation technique.

Stress physiology in free-ranging Asian elephant: Influence of ecological factors.

Pokharel S.S.^{1, 2}, Seshagiri P.B.², Sukumar R.¹

¹Center for Ecological Sciences

²Department of Molecular Reproduction and Developmental Genetics, Indian Institute of Science

Conservation of flagship species like elephants is the major concern in the current scenario of degrading habitats and increasing anthropogenic activities, which might be adversely impacting the animal welfare in terms of health and reproduction. But before understanding the role of such activities in defining the health status of animals, it is very essential to study the influence of natural variations. Various ecological challenges like seasonal variations and resource availability are known to influence stress status of free-ranging Asian elephants. However, how such eco-variations influence animals' stress physiology is not yet assessed. We evaluated the influence of eco-variations, particularly seasonality, animals' body condition, sexes, age and habitat on the stress status of free-ranging Asian elephants in the Bandipur National Park (BNP), the Nagarhole National Park (NNP) and few samples from the Hassan district (H) of Karnataka, India. For this, we collected 296 fecal samples of elephants (in BNP, NNP and H) during two ecological seasons (wet and dry) in two years. We assessed animals' body condition score (BCS); scale: 1 to 5; 1, emaciated and 5, obese conditions. Fecal glucocorticoid metabolites (fGM) were measured ($\mu\text{g/g}$) using a group-specific 11-oxoetiocholanolone EIA (11-oxoetiocholanolone-17-CMO:BSA as an antibody and biotinylated-11-oxo-aetiocholanolone as a label). Our results show that while dry and wet seasons did not show any difference in fGM levels, individuals from BNP had a higher fGM level than those from the NNP. BCS and fGM levels showed strong negative correlation. Moreover, levels of fGM were more in females than in males and also including both sexes, they were more in adults than in sub-adults or juveniles. These results indicate that among the investigated parameters, BCS, habitat and sex of animals influence the stress status of free-ranging Asian elephants. Our ongoing studies on a large sample size would provide a detailed understanding of ecological factors affecting stress physiology of Asian elephants.