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Diurnal Behavior of Captive and Free-Ranging Asian Elephants (*Elephas maximus*): A Case Study in Sri Lanka and Implications for Captive Management.

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Abstract

Keeping elephants in captivity is a centuries-old practice in many countries including Sri Lanka. Although captive management of elephants is challenging, there are few studies that focus on species-specific indicators that can be used to improve the wellbeing of captive individuals. Behavioral observation is one indicator that can be used as a tool to explore the condition of captive animals. In this study, the diurnal behavior of captive and free ranging elephants, *Elephas maximus* was assessed. Observations were recorded for six free ranging elephants at Udawalawe National Park and three captive elephants (two at the National Zoological Garden, Dehiwala and one at Palledbedda). Instantaneous scan sampling at five minute intervals were carried out and several behaviors were recorded. Observations were recorded from 0900h to 1700h for a total of 120 hours. We tested whether feeding, resting, locomotion and comfort behaviors were different between captive and wild elephants using ANOVA (using arcsine transformed data of proportions of counts for each behavior type). Wild elephants spent significantly more time feeding ($p=0.003$) and resting ($p=0.03$) than captive elephants, while there was a similar trend in comfort behavior ($p=0.05$). There was no difference between wild and captive elephants in the time spent resting ($p=0.15$). Stereotypic behavior was only observed in captive elephants (50% of observed time). These results emphasize the contrasting behavior of the two groups and highlight the importance of behavioral studies in captive elephant management. Successful management programs should focus on changing behavioral patterns of captive elephants to more closely resemble those of free-ranging elephants.

Keywords: Time budget, wild elephants, captive management, Asian elephant