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Activity Pattern of the Sri Lankan Sloth Bear (*Melursus ursinus inornatus*) in Wilpattu National Park, Sri Lanka

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Abstract

The Sri Lankan Sloth Bear (*Melursus ursinus inornatus*) is an endangered and endemic subspecies of the Indian Sloth bear. It is a large carnivorous mammal confined to the lowland dry zone forest areas of Sri Lanka. Understanding its activity pattern is vital for effective target species specific conservation planning. This study examined the Activity pattern of Sloth Bears' in Wilpattu National Park (WNP), the largest and one of oldest protected areas in the country. Study was conducted from September 2024 to July 2025. Twelve passive infrared Browning camera traps were deployed following a systematic-random sampling design across 3×3 km² plots, and relocated every 1.5 months, they were operated continuously over 24 hours during the research period. Camera traps were distributed proportionally according to the percentage availability of each habitat type, ensuring approximately 40% coverage within each of the three dominant habitat types dry mixed evergreen forests, tropical thorn forests, and grasslands representing the dominant ecosystems of WNP. A total of 65 Sloth Bear footage records were obtained and used to analyze diel activity patterns, with time data converted to radians for circular analysis. All the collected data were used to generate the activity graphs by using the activity package in R 4.3.3. According to the graph, short peaks are observed during the daytime, while distinct bimodal peaks occur between 20:30-22:30 and 00:00-03:00 hours, indicating predominantly crepuscular and nocturnal activity (activity level=0.58; 95% CI: 0.31-0.65), with minimal activity during midday. These findings highlight that the Sri Lankan Sloth Bear in Wilpattu National Park is primarily active during crepuscular and nocturnal periods, with limited daytime movement. Understanding this activity pattern provides essential baseline information for improving conservation planning, optimizing monitoring efforts, and minimizing potential human bear encounters during peak activity hours.

Keywords: *Camera trapping, Activity pattern, R software, Wilpattu national park,*