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Behavior Associated with Habitat Utilization of Rhino Horned Lizard (*Ceratophora stoddartii*) (Sauria: Agamidae) in Montane Cloud Forests of Sri Lanka

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Abstract

Ceratophora stoddartii is an endemic endangered relict of the genus Ceratophora which inhabit few localities in the central highlands of Sri Lanka. This is a unique lizard species with a prominent rostral appendage which resembles a Rhino-horn. *C. stoddartii* is highly adapted to montane cloud forests of Sri Lanka. Therefore, this study was conducted to investigate the behaviours associated with its habitat utilisation in the Horton Plains National Park (HPNP) from January 2016 to January 2018. Transects of 100 m were conducted in the cloud forest and cloud forest die-back habitats of HPNP. A total of 324 line transects of 100 m were traversed monthly for *C. stoddartii* census. At each lizard sighting, the gender and maturity stage were determined. Body surface temperature of lizards was recorded at the first encounter using Extech IR201A Infra-Red thermometer. Substrate temperature and ambient temperature were also recorded. An ethogram was developed and focal animal sampling was conducted dividing the day into four time periods; morning, mid-day, evening and night. Activity level was determined considering the number of lizards that could be visually observed. The activity level peaked from 1000-1100h with an average of 5.1 ± 1.76 lizards and gradually decreased in the evening. Alert behavior was the prominent behavior (34.5%) followed by resting (23.7%). When compared to other lizard species, a relatively low time was allocated by *C. stoddartii* for foraging related activities that include feeding and hunting prey items. The reduced time alocation for basking (10.8%) and locomotion (12.3%) suggests that *C. stoddartii* is a less active lizard that mostly prefers sit and wait predation equipped with good camouflage strategies. This species was mostly using the substrate temperature for its thermoregulation where there was a strong positive correlation between body surface temperature and substrate temperature (Pearson correlation=0.871, $p<0.05$). The correlation between the body temperature and ambient temperature was not strong despite being significant (Pearson correlation=0.545, $p<0.05$). Behavioral thermoregulation was also observed where *C. stoddartii* was seen seeking insulation inside the cradles created by mosses and other epiphytes that are abundant in the cloud forest. Mosses provided them insulation in cold weather conditions as well as in high temperatures. Therefore, the mosses and lichens which are highly sensitive to climate change and pollution are vital components of their microhabitats. The data generated by the present study will be useful for the conservation and management of *C. stoddartii* as well as its natural habitat.

Keywords: Rhino-horned lizard, Behaviour, Thermoregulation, Cloud forests, Horton Plains National Park

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