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The Effect of Environmental Factors on the Diurnal Activities of a Common Wetland Predator (Aves, *Egretta garzetta*) in an Urban Wetland Complex in Colombo, Sri Lanka

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Abstract

The little egret (*Egretta garzetta*) is a common wetland bird in Sri Lanka. These small herons are abundant in many different wetland ecosystems, including marshes, paddy fields and around water bodies. They are also a common sight in many of the urban wetland complexes that have been incorporated around the capital city of Colombo, Sri Lanka. These birds are predators, feeding mainly on fish, and a majority of their day is spent foraging. The environmental parameters of these wetlands are often influenced by their urban surroundings. Hence, the aim of this study was to identify whether these environmental parameters, such as temperature, humidity and sound level, have a significant effect on the major diurnal activities of the little egret at one such urban wetland complex in Sri Lanka, the Kimbulawala wetland complex in Colombo. The proportions of time spent on six major diurnal behaviours (foraging, resting, preening, flying, vigilance and aggression) were recorded through focal sampling with 133 focal observations made across 17 sampling days (between July 2024 and February 2025). A typical sampling day spanned from 6:00 AM to 6.00 PM, divided into six time slots of two hours each. Temperature and relative humidity were measured at 15-minute intervals throughout the day while sound levels were measured at 10-minute intervals using standard data loggers. The associations between the proportion of time spent on each behaviour and the environmental parameters were analysed using Generalized Linear Mixed Models (GLMM's) in R. The results indicated that foraging and resting were affected by temperature and relative humidity (GLMM; $p<0.1$), with the proportion of time spent foraging tending to decrease as the diurnal temperature increased while the proportion of time spent resting tended to increase. No significant associations were found between its other behaviours and the environmental parameters, including sound (GLMM; $p>0.05$). These findings suggest that rising temperatures prompt the little egret to prioritize thermoregulation, reducing strenuous activity with a preference to rest during such times. Vigilance, flying and aggression were prompted by the presence of other factors, including conspecifics, other waterbirds and potential predators. It is possible that other parameters such as prey availability and water depth may have an effect as well. As such, this study was able to confirm how some of the environmental parameters of this urban wetland did have an effect on certain diurnal behaviours of the little egret.

Keywords: *Little egret, Urban wetland complex, Focal sampling*