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Impacts of climate change on the potential distribution
of fruit bats (Chiroptera: Pteropodidae) in the Philippines

Bats perform essential roles in the maintenance of forest ecosystems as pollinators and seed dispersers. Fruit bat diversity in the Philippines is among the highest in Southeast Asia with 65% of the species endemic to the country. The impacts of climate change are known to affect a species distribution range through possible range expansion or contraction. Global warming, as one of the effects of climate change, is occurring at unprecedented rates and significantly affect biodiversity, including many bat species. Despite fruit bats' high diversity and importance in the ecosystem, there have been no studies projecting the potential effects of climate change on their distribution in the country. This study therefore aims to determine the present distribution ranges of seven fruit bat species in the Philippines and assess their potential changes under future climate change scenarios. To determine the current and potential distribution range of the species, species distribution modelling (SDM) will be implemented using occurrence records and bioclimatic variables. Species occurrences will be gathered from museum data, online databases such as Global Biodiversity Information Facility (GBIF), and published articles with bat distribution data. The SDMs will be generated via Maximum Entropy (MaxEnt) using an R-based modular workflow *Wallace* v2.03. Bioclimatic variables with the greatest influence on the distribution of the target species will be identified. Future bat distributions will be projected using two future CMIP6 climate scenarios for the year 2050: Shared Socioeconomic Pathways (SSP), SSP2-4.5 and SSP5-8.5, which are the intermediate and worst-case scenarios respectively. The current and future distribution ranges will be visualized as maps, and areas will be quantified and compared for each species to determine possible contraction or expansion of species' ranges. Lastly, boundaries of bat-suitable habitats will be delineated, and species occurrences within existing protected area boundaries will be counted. The results of the study can serve as a guide to identify critical habitats and priority areas for fruit bat conservation.

Keywords: fruit bats, climate change, MaxEnt, species distribution modelling (SDM), Wallace