

PREFACE

In an era defined by the urgent need to address the consequences of climate change, the intricate relationship between biodiversity, climate factors, and the vulnerability of endemic species has emerged as a critical area of concern. This dissertation attempts to bridge this gap by pursuing three interconnected objectives-Firstly; this study aims to model the current climatic niche of the 29 endemic avifauna species in the Western Ghats. Secondly, this research project seeks to project the potential climatic niche shifts of these endemic bird species under two different future warming scenarios (2°C and 4°C). Finally, this study attempts to identify regions within the Western Ghats that could potentially serve as climate-change refugia for the endemic bird species. By harnessing the power of advanced ensemble modeling techniques and leveraging state-of-the-art tools, this research strives to provide a comprehensive understanding of the impacts of climate change on the endemic avifauna of the Western Ghats. Results indicate a substantial loss of climatic niche for the majority of species under both scenarios, with some species facing an extinction risk of over 70%. However, the Nilgiri Sholakili species is projected to expand its climatic niche. The study also identifies potential climate-change refugia in the mid-altitude region of the Western Ghats with wet evergreen forests. The Northern Western Ghats and Eastern Nilgiri hills were identified as areas experiencing significant declines. Range contraction was projected for most species, with some exceptions showing range expansion. Centroid shift analysis revealed directional shifts associated with range expansion and contraction. The findings highlight the urgency of protecting these endemic bird species and emphasize the importance of limiting temperature increases to below 2°C to ensure their conservation.