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Systematic Review on Effects of Global Climate Change on Birds

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Abstract

Consequences of climatic change in migratory and resident birds in terms of behavior, physiology, genetics, ecology, and evolution are the best documented changes reported in the animal world. This systematic review focuses on the studies conducted in the two most recent decades (2001-2020) regarding the effects of global climate change on birds. The PSALSAR [Protocol, Search, Appraisal, Synthesis, Analysis and Reporting results] approach was used to conduct the review. Information from a total of 170 publications in two databases (PUBMED and Google Scholar) including journal articles, books, book chapters, reviews and reports were extracted and analyzed under ten criteria. An increase in publication number was observed in both databases. Overall, the highest number of publications were available for the year 2019. The highest number (141) of selected publications were journal articles. The highest number of articles (41) were from PLOS One. Selected articles ranged between 1,830 and 2,100. Twenty eight studies were done on a global scale. Other studies scaled around eight regions, five continents and 40 countries. Behavior and ecology related consequences were studied the most. 82 studies used primary data sources and 88 studies used secondary data sources. Quantification, mapping and modelling were the most utilized modes of assessments. Most studied species are Pied Flycatcher (*Ficedula hypoleuca*), Blue Tit (*Cyanistes caeruleus*) and Tree Swallow (*Tachycineta bicolor*) Majority of the publications were based on expansion of knowledge. In conclusion, research based on consequences of climate change is rapidly rising. Long term data sets are being used to study past events and models are being used to make projections. However, only behavior and ecology are studied to a greater extent. Therefore, measures have to be taken to study the other focus areas such as physiology, genetics, and evolution. Especially the lack of specific studies in Sri Lanka indicates a research gap that must be addressed.

Keywords: Birds, Climate change, Systematic review, Behaviour, Ecology