

NARRATIVE REVIEW OF MODELING APPROACHES TOWARD CONSERVATION OF LAND SNAILS' RESPONSES TO CLIMATE CHANGE

D.M.L.C. Dissanayaka*# and N. Nilakarawasm

Faculty of Natural Sciences, Open University of Sri Lanka, Nawala, Nugegoda, Sri Lanka

*Correspondence E-mail: lakshinichamika88@gmail.com, Phone: +94766925999

#Presenting Author

Abstract: Climate is one of the most important drivers of species' distribution and abundance. Global mean surface temperature is projected to increase by $\sim 3.7^{\circ}\text{C}$, for the most optimistic scenario, to $\sim 1^{\circ}\text{C}$, for the least optimistic one. Land snails are important to nature as decomposers, recyclers, pollinators, food sources, environmental indicators, biodiversity predictors, disease hosts and even medical purposes. Many species are threatened and endangered according to regional assessments. Climate change cause direct negative impact on land snail populations due to invasive predators and habitat loss. Hence, there is a growing interest in illustrating the current and future conservation status of land snails following different models. The aim of this review is to provide a comprehensive assembly of studies that applied different models to assess the current and future status of land snails with climate change. A literature survey was carried out in popular scientific databases. The literature search identified a total of 687 articles in PubMed = 10, Scopus SciVerse® = 158, and Google Scholar = 519. After screening, 29 full length articles were included in this review, and they were categorized into four groups in which different models applied to find out the (i) diversity (14), (ii) habitat (6), (iii) biogeography (6), and (iv) phylogeography (3) of land snails' response to climate change. These studies have reported that the climate change will reduce the spatial distribution of land snails. Past literatures are highlighted in decreased population of land snails in Zimbabwe, North America's Pacific Northwest (27 land snail species), South America (*Megalobulimus sanctipauli*), Europe (Mediterranean helicoid terrestrial gastropods: *Ceruella virgata*, *Hygromia cinctella*), Switzerland (*Arianta arbustorum*), Seychelles Island (*Pachnodus velutinus*, *Rhachistia aldabrae*, North Queensland Australia (*Gnarosophia bellendenkerensis*), Grece (*Albinaria caerulea*). This collection of scientific data solidifies modelling of land snails' response to climate change towards their conservation will be beneficial to make healthy ecosystems.

Keywords: Climate change; Conservation; Endemicity; Land snails