
Predicted impact of climate change on the distribution of some phytophagous hoverfly species (Diptera: Syrphidae: Merodontini) in Montenegro - from past to future

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Abstract

Global climate changes have a significant impact on species abundance and biodiversity. In Montenegro, one of the European biodiversity hotspot areas, more than 380 hoverfly species have been registered (Malidžan pers. comm.). According to few previous studies, climate changes have a negative impact on most of analyzed phytophagous species^{1,2}. In order to investigate climate change's impact on some species from genera *Eumerus* Meigen, 1822 and *Merodon* Meigen, 1803 of Montenegro, we analyze their potential past and current distribution, and their potential response to future climate change scenarios. Three climate models (CNRM-CM5, HadGEM2-ES, IPSL-CM5A-LR) were applied for past and five climate models (CNRM-CM5, HadGEM2-ES, IPSL-CM5A-LR, MPI-ESM-LR, NORESM1-M) for future climate prediction. According to our results, most of analyzed species could increase their potential distribution during the past to present timeframe. On the other hand, future predictions lead to decreasing in distribution for most of the studied species, except *Eumerus amoenus*, which would potentially increase its distribution in the future. As our results indicate that climate change can have a potentially negative effect on the distribution of these species in the future, in order to protect and preserve them, additional conservation measures should be considered.

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