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Professor Doutor Pedro Rodrigues

ijup@reit.up.pt

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21186 | Importance of climate change manifestations and urban green areas on the potential expansion of ixodid vectors

Barbosa, Rui, Faculty of Arts and Humanities of the University of Porto (FLUP), Department of Geography, Polytechnic Institute of Porto, School of Health, Department of Environmental Health, Porto, Portugal

Monteiro, Ana, Faculty of Arts and Humanities of the University of Porto (FLUP), Department of Geography, Porto, Portugal

Freitas, Marisa, Polytechnic Institute of Porto, School of Health, Department of Environmental Health, Porto, Portugal

Abstract

Urban development combined with climate change can trigger negative effects in the ecosystems. Although the recognized environmental benefits, the implementation of urban green areas can increase the number of habitats favorable to the spread of ixodid vectors, as well as to increase its contact with humans and animals, which may constitute a public health problem. Nowadays, to increase the effectiveness of health services intervention, is necessary to create multidisciplinary teams. In this context, geography, through Geographic Information Systems (GIS), plays a crucial role. This software contributes to operate and export geographic alphanumeric information in a global, regional, or local scale.

The aim of this study was to conjecture the potential vulnerabilities of climate change and the expansion of urban green areas on the occurrence of ixodid vectors in urban environments. Besides, it is intended to demonstrate the application of GIS methodology in delimiting higher risk zones and to propose new locations for ixodid vectors surveillance.

The study area was composed by four municipalities of Porto metropolitan zone (Northern Portugal). The study was divided into three topics: characterization of local climate conditions, climate forecasts as well as green areas, surveillance data of ixodid vectors in the study area, identification of susceptible and risk areas of ixodid vectors expansion.

The expansion of vectors in urban area was confirmed, evidencing that climate change combined with urban green areas can result in an increased dissemination of ixodid vectors in urban environments, consequently, may increase the incidence of diseases transmitted by them. This study shows that GIS constitute a profitable tool for a more fruitful site demarcation of ixodid vectors monitoring, increasing the success of its capture in the free-living phase. The more active identification of risk areas will allow health services to take more effective measures.

Keywords: Climate Change; Urban Green Areas, Public Health; Ixodid Vectors; Geographic Information Systems (GIS)