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Editorial

The Menaces of Forest Pest's Proliferation in Relation with Climate Change

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Forest ecosystems are dependent on insect diversity, which plays an important role in the stability and maintenance of their dynamics. However, these insects are surprisingly diverse, both biologically and behaviorally, with immense variability in the relationship between host tree and insect diversity. This topic has been the subject of various researches exploring the ecological mechanisms responsible for host tree selection.

Many insect species can share space and food at the same time in agricultural and forest landscapes and their dispersion is related to climate change. In this context, interspecific competition between species, predation and parasitism condition the spatio-temporal distribution of species and structure communities. The distribution of species is a dynamic phenomenon fluctuating between extinction and recolonization of local populations according to environmental conditions.

The fragility of the forest is a particularly favorable factor for the installation of pests, depending on the instability of the ecosystem. The forest landscape is largely influences the activity and dispersion of several pests. In the context of climate change, the increase in temperature and its annual seasonal fluctuations, as well as the amount of precipitation recorded over time, influence the movement of insect populations in their natural environments. Among pests, periodic outbreaks of various insect groups, including defoliators and wood borers, are considered a permanent threat to forests. Intensification of agricultural practices and clearing of forest areas have become triggers for insect pest outbreaks. Periodic outbreaks of certain insects and their expansion observed in different bioclimatic levels reflect the occupancy strategy of various species.

Various species have become indicators and biological models of climate change, such as the pine processionary moth. Moreover, the geographic range expansion of phytophagous and xylophagous species that's responsible of decline has been directly associated with increasing climate change which can profoundly alters the phenology of this insects. Despite extensive data on the ecology, biogeography, physiology, and phylogeny of various species, it is difficult to make general predictions about pest outbreaks and their geographic distribution. The threats and risks of pest infestation increase dramatically with latitude and altitude. Recent research suggests that forest ecosystems are susceptible to a variety of pests, particularly forest bark beetles, which strategically span the various continents.

Universally, forest health information and data on pest and diseases outbreaks are limited and surveys are extremely variable and incomplete as a whole. Few data exist on the pests and diseases for the most of countries that are not able to collect reliable data which are currently expanding beyond their potential range duo to the impact of climate change. Currently in forest landscape, the explosion of bark beetle populations is no longer to be demonstrated and their strategic activity in relation to climate change predicts more considerable losses. A sustainable management in a context of protection must be imperatively developed for the protection of these fragile environments.