

Predicting distributions of coniferous forest and Japanese pine sawyer beetle (*Monochamus alternatus* Hope) to support climate change adaptation policy

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## Abstract

To reduce impact of global warming both mitigation policy and adaptation policy are important. The Korean Government has established the 2<sup>nd</sup> National Climate Change Adaptation Policy (2016~2020). However, they do not provide impact assessments of climate change on each sector. Since the first discovery of the pine wilt disease (PWD) in 1988, we need appropriate responses because of its serious damage throughout the nation. Our objectives are to detect changes of coniferous forest and Japanese pine sawyer beetle (*Monochamus alternatus* Hope) which are a primary host and vector of pine wood nematode (*Bursaphelenchus xylophilus*) in the Republic of Korea. Input data for our research includes the RCP 8.5 scenario from Korea Meteorological Administration (KMA), forest type map from Korea Forest Service (KFS), and life cycle of Japanese pine sawyer beetle. Distribution of coniferous forest affected by climate change was predicted by applying species distribution model (SDM). Change of Japanese pine sawyer beetle was simulated by using MB index and CLIMEX model. The results show that coniferous forest is going to move northern and high-altitude area and Japanese pine sawyer beetle will expand throughout the nation. Our research will proceed to consider uncertainties of climate change, natural enemies, and adaptation options for effective adaptation policy.

Key words: Climate change, Pine Wilt Disease, Vector, Host, Adaptation policy

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