

From Prince William Sound to the Arctic Ocean

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Climate change and its impact to the health and sustainability of the Alaska forests is arguably one of the greatest future challenges for forest managers. Many believe that mortality caused by insects and diseases will be the major catalyst of these changes to the vegetation, and some scientists theorize that the spruce beetle epidemic in the 1990s in Southcentral Alaska was caused by climate change, but it cannot be substantiated. A common recognition among our stakeholders (forest landowners and managers of the 129 million forested acres throughout Alaska) is that climate change impacts are already observable and will likely intensify.

Insects and diseases will likely respond to the changed environment and stress vegetation and thus play an early and key disturbance role in ecosystem responses. Invasive insect-, disease-, and plant-introductions and establishment also will pose a large threat to ecosystems, especially in the northern boreal forests with large stands and relatively low tree composition diversity.



The latitudinal transect is designed to parallel one of the few road systems in Southcentral and Interior Alaska, which facilitates several visits of the permanent plots each year.

In response, Alaska Region Forest Health Protection and its collaborators will establish a study plot trapline, of sorts, in the form of a transect that crosses several hundred latitudinal miles from Seward and Prince William Sound in the south to a bit beyond the northern extent of conifers on this continent, nearly to Prudhoe Bay and the Arctic Ocean in the north. Our logic is to use latitude as a surrogate for climate change; namely, what is occurring in the south will be occurring sometime later in the north.

The short-term goal of this study is to develop analytical and predictive tools based on rapid life-cycling insect populations

that are useful in understanding the effects of climate change in circumpolar northern forests. This study is designed to be an open-source research program where various collaborators can be involved in assessing the potential for different insect guilds as bio-indicators of climate change.

The long-term operationally practical goal of this study is to generate the information needed to establish a long-term monitoring program and early warning system based on insect bio-indicators.

For information about Alaska Region Forest Health Protection of the Pacific Northwest Research Station efforts in regard to climate change, check out these web sites:



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