

Forest Insect Disturbance in a Warming Environment

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Global climate change is affecting biotic disturbance patterns in forests around the world. The protection and preservation of this valuable resource is critical to the functioning of ecosystems and economies, and the future is uncertain. We are witnessing unprecedented severity and extent of forest insect outbreaks, and our ability to predict and prevent landscape level regime change is dependent on continued research and collaboration in the field of forest entomology.

At the conference on “Forest Insect Disturbance in a Warming Environment” held on September 15 – 19, 2013, at the Banff Centre, Banff National Park, Alberta Canada, and hosted by the Government of Alberta, Natural Resources Canada, Faculty of Forestry of the University of British Columbia, and Parks Canada, the 62 participants discussed the following key themes:

- a) Forest insect life-history strategies are being influenced by warming temperatures.
- b) New, computer-assisted analyses are improving our understanding of how climate and forest conditions influence the spatiotemporal dynamics of insect outbreaks.
- c) Drought influences tree vulnerability to insect attack.
- d) The roles of natural enemies, bacteria, and fungi in forest insect population dynamics and their potential for controlling pest populations are being investigated.
- e) Long-term analyses of forest insect populations aid in understanding future irruptions.
- f) Tree chemistry influences forest insect population success through multiple pathways.

In the conference, scientists described the latest developments in our understanding of the ecology and management of forest insects, and the potential for climate



Group photo provided by Barbara Bentz

and climate change to affect their dynamics. The influence of climate on key forest insect physiological processes that drive population irruptions and growth was a main theme throughout. Effects of warming on voltinism were surprisingly common among insects found on multiple continents. Water deficit was found to influence turgor potential, resin, molecular, and chemical responses to fungal and insect attack in many insect-tree systems. Forest insect associates, including bacteria and fungi, were shown to play important roles in digestion of host plant material and reduction of tree defensive compounds thereby benefiting their insect associate. Computer-assisted analytic methods continue to bring new insights into our understanding of forest insect population irruptions and their management.

Meeting website: <http://popecol.forestry.ubc.ca/iufro-altered-biotic-disturbances-in-a-warming-environment-2013/>