

Crown fires in conifer forests of the world: Do you have something to contribute or would like to know about something?

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Abstract

We are presently engaged in a project supported by the U.S. Joint Fire Science Program aimed at synthesizing the currently available information on crown fire behaviour in conifer forests (e.g., the onset of crowning, type of crown fire and the associated spread rate and fireline intensity) in relation to the wildland fire environment (i.e. fuels, weather and topography) (Alexander 2011a). While the focus is on the coniferous forests of the United States and adjacent areas of Canada, the synthesis is intended to be global in nature (Alexander 2011b) and is intended for multiple audiences ranging from the general public to college students to fire and land managers to university professors and other researchers.

In addition to summarizing the existing scientific and technical literature on the subject, project members are also actively seeking assistance from individuals in the form of field observations of crown fires and related experiences as well as still pictures and video footage in both natural forest stands and industrial plantations (Fig. 1). Information from all regions of the world would be appreciated, including Mexico, South Africa, Australasia, Europe, Central and South America, Europe and Asia. Feel free to contact any member of the project team.

Finally, we are interested in hearing from you as to your opinions on the subject of crown fires and any specific questions and/or research needs/knowledge gaps that you would like to see addressed or discussed in this crown fire synthesis project (Alexander *et al.* 2010). The Forest Fire Management Group (2007) in Australia have for example done an excellent job of enunciating many of their concerns regarding the implications of crown fires in softwood plantations.

Our project website is: <http://www.fs.fed.us/wwetac/projects/alexander.html>

Keywords: crown fire initiation, crown fire phenomenology, crown fire potential, crown fire rate of spread, crowning, extreme fire behaviour, knowledge gaps, research needs.

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References

- Alexander ME (2011a) A synthesis on crown fires in conifer forests in underway. *Fire Management Today* **71**(1), 36.
- Alexander ME (2011b) A global look at crown fires in conifer forests. *Wildfire* **20**(2), 9.
- Alexander ME, Cruz MG, Vaillant NM, Peterson DL (2010) Towards a crown fire synthesis: what would you like to know and what might you be able to contribute?. In 'Proceedings of 3rd Fire Behavior and Fuels Conference', 25-29 October 2010, Spokane, Washington. (CD-ROM) (International Association of Wildland Fire, Birmingham, AL)
- Cruz MG, Plucinski MP (2007) Billo Road Fire – report on fire behaviour phenomena and suppression activities. Bushfire Cooperative Research Centre, Report No. A.07.02. (East Melbourne, Victoria)
- Forest Fire Management Group (2007) Softwood plantation fire synopsis. Primary Industry Ministerial Council, Forestry and Forest Products Committee. (Canberra, Australian Capital Territory)



Figure 1 – Active crowning associated with the major run of the Billo Road Fire in New South Wales, Australia, on 10 December 2006 as described by Cruz and Plucinski (2007). The stand height of this 15-year-old radiata pine (*Pinus radiata*) fuel complex is ~18 m. Photo by S. Cathcart, National Parks and Wildlife Service of New South Wales.

