Old-growth, disturbance, and ecosystem management: Reply

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Martell’s commentary on our paper (Johnson et al. 1995) addresses a small point that we raised at the end of the paper; he agrees with our main points. In this last section of our paper “Implications for management,” the intention was not to question fire suppression and certainly not the diligence and efficiency of the people engaged in fire suppression. The point we were trying to make was that published fire frequency and climatic studies indicate that large scale weather patterns are responsible for years with large numbers of fires and large areas burned (see references in Johnson et al. 1995). Therefore, these large-scale weather patterns over which we have no control put grave restrictions on what fire suppression can accomplish, despite the heroic efforts of fire suppression agencies. From 1970 to 1990, the large-area-burned years in Canada (Fig. 1) are related to these large-scale climatic patterns. For a description of these large-scale patterns, see Johnson and Wowchuk (1993) and others cited in Johnson et al. (1995).

A major problem in evaluating the effect of fire suppression on the landscape is the general scarcity of critical empirical studies in the refereed scientific literature. One reason for this may be that determining the effects of fire suppression is, in fact, much more complicated than it first appears. The problem is in trying to separate out all of the confounding factors and their effects, which can be obscured by summary tables often presented in government statistics. This is not a criticism of the government statistics, since they are designed for other purposes. These confounding factors include the proportions of human-caused vs. lightning-caused fires, the spatial patterns of burns resulting from these two causes, the continuity of the forest (fragmentation), and the extreme year-to-year variation in area burned such that a few large fires in a few years account for most of the total area burned (see Fig. 1 and also Van Wagner 1988). The latter observation points out the inadequacy of using averaged data. Without a clear separation of all of these factors from fire suppression, it is difficult to make valid comparisons between different areas and to confidently ascribe any differences found in area burned to the effects of fire suppression alone. We again emphasize that our comments are in no way meant to imply that fire suppression agencies are not doing their job, but we would conclude that, at present, the landscape-scale patterns of area burned in the boreal and subalpine forest are best explained by large-scale atmospheric processes.

References
