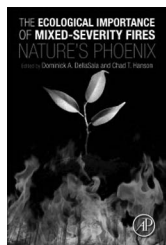


The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix



Edited by Dominick A. DellaSala, and Chad T. Hanson. 2015.

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The stated goal of a recent book, *The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix*, edited by Dominick A. DellaSala and Chad T. Hansen, is to provide a global reference on the benefits of mixed- and high-severity fires. Note that the goal is not to provide an objective reference on the ecological aspects of mixed- and high-severity fires. Rather, the book appears to be mostly about convincing the reader that large severe fires occur in perhaps all forest types and provide important biological legacies and rare early-seral habitats and further that postfire logging degrades a highly valued habitat and postfire conifer planting sets forests up for severe fires in the future.

The book is organized into 3 sections and 13 chapters written by 27 authors mostly from the United States, plus Canada, the Czech Republic, Australia, and Norway. Section 1 of the book is titled “Biodiversity of Mixed- and High-Severity Fires.” I was looking forward to a global accounting of the biodiversity of such fires and was instead surprised by the assortment of chapters in this section. Chapter 1, by Chad Hanson and colleagues, is designed to set the stage and focuses on dry ponderosa pine and mixed-conifer forest types. The main theme of this chapter is that large high-severity fires in these forest types were more common historically than many managers and scientists assume. Chapter 2 makes the case for how “mega-fires” have occurred in about every vegetation type in the United States plus a few in Portugal and Canada and that these large fires are exclusively driven by weather. Knowledgeable readers will note the authors’ reliance on only a subset of published work to support their premises and use of unpublished data to support certain points. For example, DellaSala and Hanson present unpublished data to counter published studies documenting low conifer regeneration on large severely burned areas; these unpublished data are then again referenced in Chapter 8. Chapter 3 is mostly focused on the northern Rockies and relies extensively on unpublished data even though there is a rich body of published work on birds associated with severely burned areas, including a number by Richard Hutto, the lead author. In Chapter 4, Monica Bond arranges the text by animal taxonomic group (bats, small mammals, carnivores, and ungulates), and the text drifts from deserts to high elevation forests. The appendix table summarizes the number of studies showing negative, neutral, or positive population response by mammal

species based on time since fire, but does not include vegetation type. In Chapter 5, Breeane Jackson and her colleagues focus on western North America, and the chapter is arranged by the major factors that influence the effects of fire on organisms and processes in linked stream-riparian ecosystems. In the final chapter in Section 1, Dominik Kulakowski and Thomas Veblen address the interaction between fire and bark beetle outbreaks in lodgepole pine and spruce-fir forests. This chapter relies more heavily on published literature than some of the others but clearly with a goal of asserting that bark beetle infestations in these two forest types do not set the stage for more severe fires. I was surprised that none of the chapters addresses other taxonomic groups such as plants (which constitute the majority of the biodiversity in many forest types) and arthropods (although there is a short case study on invertebrates in the second section).

Section 2 explores the prevalence and broad ecological importance of large fire events in space and time. In Chapter 7, Richard Halsey and Alexandra Syphard describe how the management paradigm in California chaparral is gradually shifting. In Chapter 8, Laurence Berry and Holly Sitters highlight concerns about clearcutting and postfire logging critically endangering mountain ash forests in southeastern Asia. Ronald Abrams describes how mixed- and high-severity fires are critical in maintaining biodiversity in sub-Saharan Africa and how people can and do live with high-severity fire. Chapter 8 concludes with Petr Heneberg’s case study about the importance of a mosaic of fire severities, including high severity, in sustaining invertebrate biodiversity in central Europe. The main theme of Chapter 9 is that warmer climates will indeed be linked with increases in the number and size of wildfires; however, whether such increases are within the (deep time) historical range of variability are unknown. That is, Cathy Whitlock and her colleagues contend that most studies cover only the recent past and therefore probably do not account for the “true” natural variability if a longer time period had been considered. In Chapter 10, Stephen Mitchell’s major theme regarding severe fires and carbon is that the majority of the carbon stored in montane forests remains unconsumed, even in high-severity wildfires, due to storage in the soil and tree boles.

Section 3 focuses on managing mixed- and high-severity fires. In Chapter 11, DellaSala and colleagues make the case that postfire

logging impedes natural processes by removing some of the rarest and most biodiverse wildlife habitat in many forest ecosystems, compacting soils, causing chronic erosion, delaying natural succession, and introducing or spreading invasive species. Case studies from the Biscuit, Rim, and Jasper Fires in the United States and the 2009 fires in Victoria, Australia, also reveal the political complexities of making postfire decisions. In Chapter 12 Timothy Ingalsbee and Urooj Raja make the case for what they call ecological fire use, maintaining that working with wildfires rather than fighting against them will be safer and more economical, result in less environmental degradation, and provide rare early-seral habitat. The book concludes with DellaSala and colleagues' suggestions for coexisting with mixed-severity fire. They note the need for a new dialogue that recognizes fire as an inevitable force of nature with beauty and magic as nature's phoenix. They also recommend using objective language when describing fire effects. The terms "catastrophic," "destroyed," "damaged," or "consumed" might be replaced with "restored," "rejuvenated," and "recovered." They contend that the term "salvage logging" needs to be replaced with what it really is—"postfire logging"—as nothing ecologically is being "salvaged" or recovered.

They suggest that a paradigm shift in land management is needed to restore mixed-severity fire by allowing wildland fires to burn in the backcountry while protecting postfire habitat from damaging practices such as postfire logging, shrub removal, and establishment of artificial plantations. The authors suggest that Smokey Bear's "fire-phobic messaging" should be replaced with ways to coexist in "firesheds," or the zone where homes are built in a watershed with similar fire risks.

In sum, the book falls short of providing a global perspective of the benefits of mixed- and high-severity burned areas. Further, scholars interested in a more objective book will be disappointed with the reliance on unpublished data and the omission or discrediting of information contrary to the authors' perspectives in several of the chapters. However, the collection of case studies does provide (mostly United States) examples of the benefits of these early-seral habitats and also encourages a different perspective on potential management options besides the log-and-plant status quo. If, in the end, the book stimulates a deeper conversation about the ecological value of severely burned areas and potential ways to sustain those values, that would be a valuable contribution.