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Book Review

In Defense of Severe Fires

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A Beautifully Burned Forest: Learning to Celebrate Severe Forest Fire. Richard L. Hutto. Springer, 2025. 201 pp. $37.99 (ISBN: 978-3032031792, paperback).

The prevalent view among fire managers (and beyond) is that forest ecosystems may experience "good" fires (i.e., low-intensity surface fires that leave trees unaffected) or "bad" fires (i.e., high-intensity crown fires that severely damage or kill trees). I have always been critical of this simplistic and anthropocentric framework for describing complex natural processes. *A Beautifully Burned Forest* serves as an antidote to such simplifications and challenges the common belief that severe forest fires are inherently bad. Written in a first-person, narrative style, the book blends personal experiences, natural history, and scientific exposition to elaborate provocative ideas that challenge current forest management practices.

Drawing from about four decades of research and field experience as a fire ecologist and ornithologist, Hutto argues that intense wildfires are not ecological disasters but essential processes that have shaped biodiversity most western US forests, which is the focus region of the book. He contends that severely burned forests are "magical places that seem to harbor plant and animal species and visual experiences found under no other forest conditions." Although the ecological and evolutionary importance of high-severity fires is well known in Mediterranean shrublands (Keeley et al. 2012), this is not so widely recognized in western US forests.

The basis of Hutto's argument is that many bird species are quite restricted to the conditions following severe fires, and therefore, these fires must be historical and natural. The iconic case, illustrated on the book's cover and deeply studied by Hutto, is the black-backed woodpecker (*Picoides arcticus*). It is probably one of the most extreme examples of a fire-dependent bird; it is far more common in severely burned forests, where it finds its food (the larvae of wood-boring beetles) and nest sites (dead trees), than in any other vegetation type. Its coloration is also well adapted for camouflage among severely burned and blackened trees. "The only way a species could be restricted to burned forests is if it evolved in the presence of that forest condition for a very long time and concurrently evolved a behavior that limited its habitat breadth to that specific forest condition" Hutto argues. He further asserts that "If the black-backed woodpecker story can't convince you that blackened conifer forests represent perfectly natural and historically important environmental conditions that have always occurred within the bird's geographic range, then there is nothing in biology that can do so." But the black-backed woodpecker is certainly not the only species that prefers severely burned forest; Hutto mentions other birds, including other woodpeckers, the mountain bluebird, Townsend's solitaire, Clark's nutcracker, the pine siskin, the red crossbill, and other species, in addition to various insects, plants, and mushrooms. And as the forest recovers after a fire, fire-dependent birds move to other burnt patches, defining a dynamic process called the *shifting mosaic*. Overall, Hutto's writing spills over with admiration for severely burned forests, and he suggests spreading this appreciation by taking people to those forests, because "until you see these things for yourself," Hutto says, "it is hard to appreciate the biological value of the unique forest architecture created by a severe fire." I can only agree.

The corollary is that in most western US forest ecosystems, severe fires are natural events. This finding challenges the common belief that the natural fire regime consists of low-severity surface fires, with severe fires considered merely an artifact of fuel buildup following decades of fire exclusion. He suggests that "except for a small fraction of western forests that include low-elevation, ponderosa pine forest types (mostly in the Southwest) the idea that years of [fire] suppression and timber harvest and grazing have created out-of-whack [atypical high fuel] conditions is simply untrue" (my square brackets, for clarification). He even wonders if mixed-severity fire regime may characterize ponderosa pines better than the traditionally assumed low-severity fire regimes. Hutto identifies methodological biases in fire-scar studies, such as short historical series and selective tree sampling, that may have led previous fire ecologists to their biased conclusions. He argues that infrequent, severe fires have occurred in most western forest types but are just not captured by fire-scar studies. The existence of plants and animals that are well adapted to and even restricted to severe fires serve as support. Hutto certainly admits that some current fire regimes are outside their historical range, but he asserts that "forest conditions (i.e., fuel loads) account for less than a sliver of the variation in fire size and severity we are witnessing today," whereas climate change is the primary driver. The debate over the relative roles of fuel versus climate and weather in driving large fires has a long history in both forest and nonforest ecosystems.

This argument has strong implications for forest and fire management. Current management in many western US forests emphasizes fuel treatments to reduce the likelihood of crown fires, often under the umbrella of "restoring" surface fire regimes. However, these practices act against the creation and maintenance of severely burned forest conditions that Hutto knows so well. "A thinned forest that subsequently burns severely does not meet the needs of fire-adapted species," Hutto writes. Another of Hutto's critiques is on salvage logging: Nothing is more detrimental to fire-dependent animals than salvage logging after a fire. "Some places are in and of themselves too special to be altered by logging

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operations, an old-growth forest is one and a severely burned forest is another."

The book concludes by advocating for a paradigm shift in land management toward a more ecologically enlightened approach. This new framework should focus on supporting sustainable disturbance dynamics and shifting mosaics where severe fires are recognized as a key component. The book makes a solid argument for the ecoevolutionary importance of severe fire. However, the precise geographical and historical range of these fires and their role in a novel, warmer climate will likely be subjects of intense debate. Such controversy in science is not only healthy but necessary for advancing our knowledge.

Overall, Hutto has crafted a book that appeals to a broad audience interested in fire ecology, management, and ornithology. Through a blend of detailed ecological evidence and personal storytelling, Hutto invites readers to replace their fear of fire with an understanding of and even admiration for its irreplaceable role in sustaining biodiversity.

Author contribution statement

This article has been fully written by Juli G. Pausas, the only author of this article. The author declares no conflict of interest. .

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