

Fire and Aquatic Ecosystems of the Western USA:

Current Knowledge and Key Questions

Peter A. Bisson¹

Bruce E. Rieman²

Charlie Luce³

Paul F. Hessburg⁴

Danny C. Lee⁵

Jeffrey L. Kershner⁶

Gordon H. Reeves⁷

Robert E. Gresswell⁸

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¹ Corresponding author; USDA Forest Service, Pacific Northwest Research Station, 3625 93rd Avenue SW, Olympia, WA 98512, phone (360) 753-7671, fax (360) 956-2346, pbisson@fs.fed.us.

² USDA Forest Service, Rocky Mountain Research Station, Boise, ID.

³ USDA Forest Service, Rocky Mountain Research Station, Boise, ID.

⁴ USDA Forest Service, Pacific Northwest Research Station, Wenatchee, WA.

⁵ USDA Forest Service, Pacific Southwest Research Station, Arcata, CA.

⁶ USDA Forest Service, Washington Office, Logan, UT.

⁷ USDA Forest Service, Pacific Northwest Research Station, Corvallis, OR.

⁸ USGS Biological Resources Division, Forest and Rangeland Ecosystem Science Center, Corvallis, OR.

Abstract

Understanding of the effects of wildland fire and fire management on aquatic and riparian ecosystems is an evolving field, with many questions still to be resolved. Limitations of current knowledge, and the certainty that fire management will continue, underscore the need to summarize available information. Integrating fire and fuels management with aquatic ecosystem conservation begins with recognizing that terrestrial and aquatic ecosystems are linked and dynamic, and that fire can play a critical role in maintaining aquatic ecological diversity. To protect aquatic ecosystems we argue that it will be important to: (1) accommodate fire-related and other ecological processes that maintain aquatic habitats and biodiversity, and not simply control fires or fuels; (2) prioritize projects according to risks and opportunities for fire control and the protection of aquatic ecosystems; and (3) develop new consistency in the management and regulatory process. Ultimately all natural resource management is uncertain; the role of science is to apply experimental design and hypothesis testing to management applications that affect fire and aquatic ecosystems. Policy-makers and the public will benefit from an expanded appreciation of fire ecology that enables them to implement watershed management projects as experiments with hypothesized outcomes, adequate controls, and replication.

Keywords: Wildfire; fire and fuels management; conservation; restoration; aquatic and riparian ecosystems