
Wildfire and Water Quality: Processes, Impacts and Challenges
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The issue below the surface: wildfire, riverbed sediments and flow regulation

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Abstract The composition and structure of upland riverbed substrates subjected to variable but multiple stressors of wildfire and flow regulation were investigated. A range of coarse–fine riverbed sediment mixtures were recorded in the upland channels draining the Brindabella Ranges, in southeast Australia and these mixtures reflected the combination of stressors studied. Significant post-wildfire increases in the accumulation of fine sediment within the riverbed substrate occurred only in association with the individual stressor of wildfire. In contrast, no change in the accumulation of matrix sediment occurred in the regulated river that was also subjected to wildfire. The presence of a well-developed surface armour layer – a feature of gravel-bed regulated rivers – prevented the infilling of these riverbed substrates post-wildfire. Further study of the combined impacts of different stressors on the composition and structure of upland gravel-bed rivers will contribute to an improved understanding of their recovery from wildfire.

Key words sub-surface riverbed sediment; wildfire; fine sediment; flow regulation