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Bifenthrin pesticide contamination: impacts and recovery at Jamison Creek, Wentworth Falls.

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Key Points

Jamison Creek in the Blue Mountains was contaminated by a pesticide, Bifenthrin, in July 2012. The pesticide caused a mass crayfish kill and severe, adverse effects on aquatic macroinvertebrates. Eighteen months later, the macroinvertebrate community (including crayfish) has recovered well. The incident highlights the risks associated with direct stormwater connections between urban areas and natural waterways.

Abstract

In July 2012, over 1000 dead Giant Spiny Crayfish (*Euastacus spinifer*) were found in a two kilometre reach of Jamison Creek, Wentworth Falls, including within the Greater Blue Mountains World Heritage Area. A multi-agency investigation discovered the crayfish were killed by a termiticide, Bifenthrin, and that the effects extended beyond the crayfish to the entire aquatic macroinvertebrate community. The contaminant entered the creek via a conventional stormwater drainage system of pits and pipes, which provided a direct connection between the property at which the pesticide was over-applied and the creek 300m away. The pest control operators involved were prosecuted.

Initial impacts were catastrophic, with most aquatic macroinvertebrate families previously recorded at the creek (pre-incident average of 17 families including 5 sensitive Ephemeroptera, Plecoptera and Trichoptera (EPT) taxa) absent from the July 2012 (post-incident) survey. In the eighteen months since the contamination, steady improvements in aquatic macroinvertebrate diversity and abundance have been observed (now similar to pre-incident results) and *E. spinifer* have recolonised the creek.

Factors believed to have assisted recovery include the presence of good-condition, pesticide-unaffected tributary streams, allowing for rapid re-recruitment into the main trunk of Jamison Creek. Inputs to the creek and its tributaries of high quality groundwater (via Blue Mountains Swamps) are also believed to have offset ongoing urban impacts and facilitated the re-establishment of a 'healthy' assemblage of aquatic biodiversity.

As well as having implications for the pest control industry, the incident demonstrates the dangers of having urban areas directly connected to natural waterways via conventional stormwater infrastructure (i.e. catchments with high levels of effective imperviousness) and highlights the importance of best practice water sensitive urban design, stormwater management and related education as protection for waterways.

Keywords

Bifenthrin, pesticide, contamination, freshwater crayfish, aquatic macroinvertebrates, effective imperviousness, recovery, Jamison Creek, Wentworth Falls, Blue Mountains

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