

Rapid recovery of macroinvertebrates in a South African stream treated with rotenone

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Abstract South Africa's Cape Fold Ecoregion supports a unique freshwater fish assemblage with many endemics. To mitigate impacts of alien invasive fishes on this unique assemblage, nature conservation authority CapeNature used rotenone to remove small-mouth bass (*Micropterus dolomieu*) from the Rondegat River. We investigated whether the rotenone treatments had an adverse impact on the aquatic macroinvertebrate community over the long-term, the first study of its kind in Africa. We measured

macroinvertebrates within treated and untreated (control) sites on multiple sampling events for 2 years before and 2 years after two rotenone treatments. We analysed the difference in invertebrate abundance between treatment and control sites before and after treatment, using generalised linear mixed models with sampling event as a random factor to partition out natural fluctuations in abundances over time. Populations fluctuated widely in control and treatment sites over the study period, and we found no effect that could be clearly attributed to rotenone. We conclude that macroinvertebrates recovered rapidly after treatment, probably through drift from untreated areas upstream, with no long-term adverse effects. We recommend that the presence of uninvaded upstream refuges that may provide demographic rescue be used

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