

**M3-G.3 2:10 pm Combined effects of predator presence and pesticides on macro-invertebrate communities in a microcosm setting.** Wolmarans NJ\*, Kok A, Bervoets Lieven, Meire Patrick, Taylor JC, Smit NJ, Wepener V; North-West University and University of Antwerp [njwolmarans@gmail.com](mailto:njwolmarans@gmail.com)

**Abstract:** *Xenopus laevis* are common predators in South African aquatic ecosystems. Like most amphibians they are also important indicators of ecosystem health. As an addition to a study on the effects of pesticides on *X. laevis*, we investigated the effects pesticides would have on the invertebrate community structure in artificial microcosms over a period of 28 days while in the presence of *X. laevis*. Invertebrates in the microcosms naturally populated over eight weeks. Invertebrate communities were then live sampled, identified to family level, and returned to the microcosms. Four sub-adult frogs were added to each microcosm and the microcosms exposed to treatments consisting of control, two dichlorodiphenyltrichloroethane (DDT) concentrations, two deltamethrin concentrations and one mixture of both pesticides. All treatments were performed in triplicate. Commercial pesticide formulations were used for environmental relevance. Pesticides were applied at 0.1 % and 1 % of the LC50 concentrations for *X. laevis* embryos based on literature providing toxic equivalence to the frogs. After 96h two *X. laevis* were removed for separate analysis and two frogs remained in treatment for the full 28 days. Invertebrate communities were once again sampled at the end of the 28 day period. The results showed the presence of the frogs alone (controls) over 28 days stabilised the invertebrate community with reduction of the dominant taxa and an increase in the number of taxa present. Individual pesticides showed, with variation, the same reduction of dominant taxa abundance as in controls, but without the increasing richness in taxa. The 1 % mix treatment, however, had no invertebrates left after 28 days. This study indicates pesticide mixtures leaching into the aquatic environment may have ecological effects far more devastating than those of individual pesticides, and stresses the importance of simulated field studies in understanding the complex, cascading ecological effects of pollutants.