Sublethal Glyphosate Reduces Thigmotaxis in Crayfish: A Two-Year Study

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Crayfish are a keystone species in freshwater ecosystems, meaning that disruptions to their behavior can cascade through the entire environment. Building upon statistically significant 2025 findings that Red Swamp crayfish (Procambarus clarkii) exhibit adverse behavioral responses when exposed to environmentally relevant concentrations of glyphosate (0.06–6 mg/L), this study investigates whether the Virile Crayfish (Faxonius virilis) shows similar effects. Although regulations exist to limit glyphosate runoff, they often overlook the effects of sublethal concentrations on aquatic animal behavior. In this experiment, crayfish were exposed to 0.06, 0.6, or 6 mg/L of glyphosate for 96 hours, followed by behavioral assessment in a light–dark plus maze to evaluate stress response. Statistical analyses reveal that glyphosate concentrations of 0.6 and 6 mg/L significantly alter Faxonius virilis behavior. In comparison with Procambarus clarkii, an even larger effect size was noticed. These minute, environmentally relevant concentrations may well cause behavioral effects, which could significantly impact freshwater ecosystems.

Awards Won:
Missouri University of Science and Technology: $2,500 tuition scholarship (renewable for up to 4 years)